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Test Anxiety and Perfectionism

Melissa Landsman[1], Grace Escamilla[1#] and Justin Matyas[1#]

[1]Randolph High School
[#]Advisor

ABSTRACT

Past research demonstrates that test anxiety is an important component impacting academic performance. Perfectionism has been investigated as a factor associated with test anxiety. The purpose of this study is to contribute to an identified research gap by examining the distribution and association of perfectionism and test anxiety among high school students. This study included 74 high school students with the majority consisting of juniors and seniors in a suburban high school in Northeastern United States. Using the Westside Test Anxiety Scale and Short Almost Perfect Scale, 41% self-reported higher test anxiety and 66% self-reported perfectionism in the high school student sample. Correlational analyses revealed a strong positive association (r = .47) between perfectionism and test anxiety, a strong positive association (r = .49) between discrepancy perfectionism (i.e., self-criticism) and test anxiety, and a weak positive association (r = .18) between standards perfectionism (i.e., striving) and test anxiety. The findings are consistent with existing studies of other age samples and further the understanding of test anxiety and its association with perfectionism in high school students. Implications for school-based interventions to manage test anxiety and perfectionism and directions for future research are considered.

Introduction

Student performance in high school is filled with pressures for future success, whether with class exams or high stakes exams for college. A disadvantage of experiencing high anxiety with exams is that it can target performance and, consequently, students may disengage, quit, or underperform (Putwain & Daly, 2014; Von der Embse et al., 2018). Adolescence is a time of change, challenge and developing competencies. The constant pressures, such as exams can take a toll, leading to more behavioral or emotional stressors that increase students' needs in high school.

Literature Review

This study intends to investigate an association between perfectionism and test anxiety in high school students. To do so, it is important to understand and contextualize test anxiety, the relationship to academic performance, and factors that may be associated with test anxiety, including perfectionism as a factor associated with test anxiety.

Test Anxiety

Test anxiety refers to the experience of anxiety in evaluative performance situations, such as exams. Test anxiety consists of cognitive, affective, and physiological components. Cognitive components of test anxiety include intrusive thoughts such as self-doubts, threat appraisals, and fear of failing. Affective components consist of feelings such as worry and nervousness. Physiological arousal components are experiences such as tension, elevated heart rate, and sweating (Putwain & Daly, 2014, p. 555).

Studies of Test Anxiety Prevalence and Relationship to Academic Performance

High levels of anxiety can be related to evaluative assessment situations. Educational settings with high pressure generate academic anxiety referred to as test anxiety. Von der Embse and colleagues' (2018) meta-analysis reviewed 238 studies of test anxiety. They discovered that "between 15% and 22% of students exhibit high levels of test anxiety" (Von der Embse et al., 2018, p. 483). Similarly, supporting the findings of other studies of the prevalence of test anxiety among students (e.g., Thomas et al., 2018), Putwain and Daly (2014) found that over 16% of students in a high school sample exhibited high test anxiety when measuring the cognitive (i.e., worry) components of test anxiety, the physiological feelings (e.g., tension) associated with test anxiety, and the social (e.g., fear of others' judgments) components of test anxiety. Von der Embse and colleagues (2018) also found that there is a negative association between test anxiety and GPA as well as test anxiety and achievement testing. High schoolers' futures can be impacted by test anxiety, as "high levels of test anxiety can interfere with performance and perceived performance capacity, which can lead to underestimations of ability, skills or learning" (Putwain & Daly, 2014, p. 554). With the intense pressures to perform well and the potential consequences of performing poorly, test anxiety is ripe for study in high school students.

Similarly, Von der Embse and Hasson (2012) found that in a sample of 10th graders' test performance on a high-stakes exam, 4-15% of the variance in test scores was due to test anxiety. Affirming the work of Von der Embse and Hasson (2012), Kultur and Ozcan (2022) explored the connection between cognitive components of test anxiety and the performance on a high-stakes exam with a sample of 12th grade students, ranging from low to high achievers. The study considered dimensions of test anxiety and the issues underlying test anxiety, such as emotional reactions and thoughts about their performance. The authors found that test anxiety involving cognitive and emotional factors had a negative association to performance in high achievers (Kultur & Ozcan, 2022). High-stakes exams have "important academic, social, and professional consequences" (Kultur & Oxcan, 2022, p. 2). Thus, it is important to study the effects of test anxiety and determine factors associated to inform interventions to reduce test anxiety and improve performance levels.

Test anxiety has been shown to start early in development, as the study of middle school students by Frechette-Simard, Plante, Duchesne, and Chaffee (2022) revealed by focusing on the transition from elementary school to secondary school. Based on past findings, the authors believe that test anxiety during the secondary school transition would mediate the student's academic self-concept and expectations of success. The authors found that there was a negative association between test anxiety and academic self-concept (Frechette-Simard et al., 2022). The findings highlight that test anxiety may play a role in making the transition to secondary school more stressful, as students may have lower motivation and achievement from the impact of higher test anxiety. The authors note the need to investigate "other challenging transitions… where strong performance is expected" (Frechette-Simard et al., 2022, p. 10). Similar to motivation, emotional intelligence can be associated with test anxiety. A study by Aroline and Ansia (2017) of high school students who took a high-stakes test directly after completing a survey, revealed that there is a negative correlation between test anxiety and emotional intelligence, showing higher levels of test anxiety are associated with a reduced ability to handle emotions and stress effectively. Additionally, 92.5% of the students in this sample reported test anxiety, affirming the need for further research on high school students as they engage in high-stakes exams (Aroline & Ansia, 2017).

These past studies inform the current study as they identify test anxiety in secondary school students, examine potential associated factors, and reinforce the need to investigate test anxiety for its impact on students. Studying perfectionism in the current study will help consider a potential factor associated with test anxiety in high school students, a gap in the research that will be explicated in the sections below.

Perfectionism

Affirming the importance of studying test anxiety, the current study seeks to understand test anxiety and its association with perfectionism. Perfectionism has been discussed as holding very high or unrealistic standards for oneself coupled with a fear of making mistakes and high concern about others' judgments. Perfectionism can be understood as multi-dimensional. Higher-level factors of perfectionism involve standards perfectionism and discrepancy perfectionism and have been explored as adaptive and maladaptive factors, respectively (Bieling et al., 2004). Standards perfectionism describes striving or setting high expectations, working to achieve goals, and trying to avoid failure and thus can be seen as adaptive. Conversely, discrepancy perfectionism describes setting expectations that often cannot be met, with a bar that is unrealistically high and leads to self-criticism and constant self-doubt. Discrepancy perfectionism comes with a high concern with status and others' expectations of them.

Studies of Test Anxiety and Perfectionism

Burcas and Cretu (2021) provided a meta-analysis review of research on test anxiety and its association with perfectionism. They found that discrepancy perfectionism had a significant positive association with test anxiety, such that higher levels of discrepancy perfectionism were associated with higher levels of test anxiety, while standards perfectionism did not show a significant association with test anxiety. Similar to the findings of Burcas and Cretu (2021), Bieling and colleagues' (2004) study of undergraduates, using self-report measures, found that discrepancy perfectionism was positively associated with test anxiety, explaining 17% of the variance in test anxiety. Standards perfectionism had a weaker positive association with test anxiety. As Beiling and colleagues (2004) assert, it is challenging to ascertain if "perfectionism always, and uniformly, leads to difficulties for the individual" (p. 1374). Affirming Beiling et al.'s (2004) work, Kavanagh and colleagues (2016) also found a positive association while exploring test anxiety and perfectionism in a study of Australian and U.S. undergraduates. Bong and colleagues (2014) investigated perfectionism in association with achievement-related outcomes in Korean 7th graders. The study used self-report measures and measured academic achievement using a national competency exam. They found that standards perfectionism was positively associated with academic achievement, while discrepancy perfectionism was negatively associated with academic achievement. This study investigated perfectionism and its association to academic achievement, just as test anxiety research has shown an association with academic achievement, asserting the importance of studying all educational levels to understand the impact of test anxiety and its associated factors influencing academic success.

In order to further examine the association of perfectionism and test anxiety, some studies have explored potential mediating factors, such as coping strategies, academic hardiness, or goal orientations. Arana and Furlan (2016) investigated the association between perfectionism, test anxiety, and coping strategies prior to a stressful academic task. Affirming other studies, the study of Argentinian undergraduates found that discrepancy perfectionism had a strong positive association with test anxiety while standards perfectionism had a weak positive association with test anxiety (Arana & Furlan, 2016). They also found standards perfectionism and health coping strategies to be positively associated and found that adaptive perfectionists utilized problem-oriented coping rather than avoidance or procrastination. Likewise, in a sample of Iranian high school students, Abdollahi and colleagues (2018) found academic hardiness was a moderator between perfectionism and test anxiety and believe standards perfectionism may give one a more positive self-evaluation, while discrepancy perfectionism promotes doubt. Their study supports a deeper understanding of factors that may impact the association of perfectionism and test anxiety.

Similarly, Eum and Rice (2011) investigated the relationship among perfectionism, goal orientations, cognitive test anxiety, and academic performance in an undergraduate sample. Using a self-report measure of test anxiety that focused solely on cognitive factors of anxiety, results revealed high test-anxious students performed less well than less test-anxious students and were more likely to experience discrepancy perfectionism and had less reasonable goals (Eum & Rice, 2011). They believe people who have discrepancy perfectionism may be severely critical of their own

performance which can promote test anxiety. Similar to other studies (e.g., Beiling et al., 2004), there was a weak positive association between standards perfectionism and anxiety (Eum & Rice, 2011).

Previous studies revealed perfectionism to be positively associated with test anxiety. The majority of these studies consisted of undergraduate participants. This is not a coincidence, as Burcas and Cretu (2021) discovered that over 65% of the samples in the studies they reviewed consisted of undergraduates, while only 35% of the studies sampled primary or secondary school students. The investigators specifically suggested that studies are needed that consist of samples of primary and secondary school students to understand prevalence and impact of educational level on test anxiety and its association with perfectionism. This meta-analytical review helped uncover this important research gap and supports this current study's focus on high school students and the association of perfectionism and test anxiety. Based on the findings of the literature review, the current study will examine the hypothesis that perfectionism is positively associated with test anxiety in high school students.

Method

Overview

My method consisted of seven main steps: 1) create an interest survey, consent forms, and Microsoft Forms survey consisting of the Westside Test Anxiety Scale (WTAS) and Short Almost Perfect Scale (SAPS), 2) request a school authority to send out the interest survey to all of the students, 3) use the email addresses of respondents from the interest survey to send out consent forms from those who expressed interest, 4) email the WTAS and SAPS survey to individuals completing the consent form, 5) hand out a hard copy of the consent forms and survey to students aged 18 in the classroom, 6) analyze the data using Excel, and 7) interpret results. I used correlational research because I investigated an association between perfectionism and test anxiety, and it was the most feasible method for me as a high school student with limited resources. Additionally, correlational research is commonly used in studies regarding test anxiety and perfectionism.

Ethical Considerations

Participants were recruited with the help of school authorities that supported the research study. There was a summary explaining the project and an offer to learn about findings in the future. Each participant turned in parental consent and a signed student assent. Only students (under 18) who returned the parent consent form were asked to complete the survey. All human subjects were anonymous, voluntary, and allowed to withdraw from the study at any time.

Participants and Procedure

The present study consisted of 74 participants recruited at a suburban high school in the Northeastern United States. Of the total respondents, 61% were female and 36% were male.

I used valid and reliable survey tools to collect my data: SAPS and WTAS. I created my survey using Microsoft Forms. The 21-item survey consisted of multiple-choice questions regarding gender, grade level, SAPS, and WTAS. The data obtained addressed the gap because it asks high school students about their experience regarding test anxiety and perfectionism. Along with following the method of past studies that commonly used self-report measures, using a survey seemed the best choice as many high school students may not want to take the time to participate in an interview on these topics. Additionally, I was unsure how people would feel opening up about their feelings regarding perfectionism and test anxiety with me. Therefore, I believed that an anonymous, quick, and easy survey was the best way for me to collect the largest and most honest data with less potential for impression management. Once the survey was created and I determined the approximate amount of time it would take to complete the survey, I created an

interest survey on Microsoft Forms to identify those with an interest in participating in the study. The interest survey consisted of two multiple choice questions regarding interest and grade level and two short-response questions requesting the email address for the student and parent or guardian. The interest survey link was shared on Microsoft Teams, the school's learning management system, to students with the help of my school counselor, teachers, and clubs. Interested students completed the interest survey and were then sent an email with a parent and student consent form attached. When participants emailed the appropriate signed consent forms back to me, I emailed them a link to the Forms survey. Throughout this three-month process, I sent multiple reminder emails to the participants to sign the consent forms and complete the Forms survey. The guidance counselor, teachers, and club leaders also posted reminders.

Of 1,405 students at the high school, 138 responded positively to the interest survey and approximately 30% completed the research survey. When I first started receiving responses to my research survey, there was a low response rate. The need for student and parent consent forms may have been an obstacle for completing the survey. I asked a teacher if I could enter their classes and hand out a paper version of the survey. I decided to conduct data collection with a class of senior students because any seniors that were 18 did not need parental consent. I went to two class periods and received 21 participants during the class periods. Students were more open to completing the survey because they did not need to get a parental consent form signed. The data collection occurred from Dec 2022 - Feb 2023 and was stored using Excel.

Measures

Westside Test Anxiety Scale (WTAS)

The Westside Test Anxiety Scale (Driscoll, 2004) is a ten-item instrument that assesses through self-report for various components of test anxiety. Driscoll developed the WTAS that is used in educational settings. The instrument assesses factors such as worry and interference. The validation study by Driscoll (2004) used both college students and fifth graders and found high scale validity in terms of current standards ($r = 0.44$). Additionally, construct validity, high reliability, and invariance across genders was found in a study of undergraduates by Talwar and colleagues (2019). Talwar and colleagues found that composite reliability of the WTAS was 0.88 (Talwar et al., 2019). These studies informed me that the WTAS is a valid and reliable measure, and the studies recommend its use as a screening instrument for test anxiety. The participants rate how true the statement is to them on a 1-5 scale with 1 being "not at all or never true" and 5 being "extremely or always true." I chose this scale because it was free, I was allowed to use it for research purposes, and it is reliable, valid, and used in educational settings.

Short Almost Perfect Scale (SAPS)

Rice and colleagues (2014) studied the psychometric properties of the Short Almost Perfect Scale (SAPS), which is a refined, briefer version of the Almost Perfect Scale-Revised. With use of a Likert scale, they found that the measure's eight items adequately measured the two-factor structure of perfectionism, specifically, standards and discrepancy perfectionism. Using undergraduates, the reliability of the measure was found to be adequate and invariance for gender was met which will help with understanding findings in the high school sample. They found strong item-factor loadings, convergent, discriminant, and criterion-related validity. All in all, this measure is a reliable and valid measure of perfectionism. The participants rate their degree of agreement with the statements on a 7-point scale with 1 being "strongly disagree" and 7 being "strongly agree."

Rice and Ashby (2007) examined cutoff scores for examining perfectionism with a longer version of SAPS known as the Almost Perfect Scale-Revised. After combing the research to understand the scoring system and cutoff

scores for the SAPS, I was unable to find information regarding the scoring system and contacted an author of the SAPS. Dr. Rice states:

> Someone who is likely perfectionistic probably has a score of 3.5 or higher on Discrepancy, they are probably in what we used to call the "maladaptive" perfectionistic group. If they have high Standards but Discrepancy is less than 3.5, they might be what we called "adaptive" perfectionists. (K. Rice, personal communication, October 25, 2022)

The "Psychometric evidence of the Short Almost Perfect Scale (SAPS) in Brazil" psychometric study by Coelho and colleagues of the SAPS used a Brazilian online sample (aged 14-67) and found that the scale is an adequate assessment of perfectionism, for both validity and reliability (Coelho et al., 2021). The SAPS presents a two-factor structure that was replicated in this study for standards and discrepancy perfectionism. They went beyond the 2014 study by Rice and colleagues to use item response theory as a technique to explore the items and their underlying constructs. They also ensured relevance to their Brazilian population of the usefulness of SAPS for their culture. This study informs me that the measure is reliable and valid across cultures and assesses perfectionism adequately. The measure was also free and allowed its use for research purposes.

Data Analysis

Using Excel, I used percentage analyses to explore the distribution of test anxiety and perfectionism in the sample as well as gender to understand the composition of the sample. I used correlational analyses (*r* tests analyses) to explore associations between test anxiety and perfectionism. Descriptive results for anxiety and perfectionism scores are presented in tables. I examined potential differences for gender on reported test anxiety, perfectionism, and the two-factor subscales of perfectionism. A Pivot table and cutoff scores were used to determine the percentage of individuals with high test anxiety, perfectionism, high standards perfectionism, and high discrepancy perfectionism. The cutoff score for high test anxiety is 3.5 or greater, according to Driscoll (2004). The perfectionism cutoff score is 5.1 or above, high standards perfectionism is 6 or above, and high discrepancy perfectionism is 3.5 or above, (K. Rice, personal communication, October 25, 2022). The percentages were displayed in pie and bar charts.

Results

Main Research Question 1: How does perfectionism relate to test anxiety in high school students?

> I hypothesized that I expected a positive association between perfectionism and test anxiety in high school students. There was a strong positive association between perfectionism and test anxiety (r = .47).

Exploratory Research Question 2a: How does discrepancy perfectionism relate to test anxiety in high school students?

> As some other past studies have found, there was a strong positive association between discrepancy perfectionism and test anxiety in high school students (r = .49).

Exploratory Research Question 2b: How does standards perfectionism relate to test anxiety in high school students?

> As some other past studies have found, there was a weak positive association between standards perfectionism and test anxiety (r = .18). For the total sample, means and standard deviations on WTAS, SAPS, and the two-factor subscales of perfectionism are presented in Tables 1 and 2.

Table 1: *Mean and Standard Deviation for WTAS and SAPS*

		WTAS	SAPS
Total Sample	N	74	74
	MEAN	3.24	5.34
	SD	0.73	0.75
Gender			
Male	N	27	27
	MEAN	2.88	5.07
	SD	0.68	0.77
Female	N	45	45
	MEAN	3.39	5.46
	SD	0.66	0.68
Nonbinary	N	2	2
	MEAN	4.5	6.44
	SD	0.1	0.06

Table 2: *Means and Standard Deviations of Two Factors of Perfectionism*

		Standards Perfectionism	Discrepancy Perfectionism
Total Sample	N	74	74
	MEAN	6.19	4.49
	SD	0.72	1.19
Gender			
Male	N	27	27
	MEAN	6.01	4.12
	SD	0.69	1.27
Female	N	45	45
	MEAN	6.29	4.63
	SD	0.73	1.05
Nonbinary	N	2	2
	MEAN	6.5	6.38
	SD	0.5	0.38

Percentage Analyses - Total Sample

Forty-one percent of the sample (N = 30) reported high test anxiety and 66% of the sample (N = 49) reported perfectionism. Sixty five percent of the sample (N = 48) reported high standards perfectionism, while 78% of the sample (N = 58) reported high discrepancy perfectionism. Finally, 22% of the sample (N = 13) reported high standards perfectionism coupled with low discrepancy perfectionism which demonstrates more adaptive perfectionism.

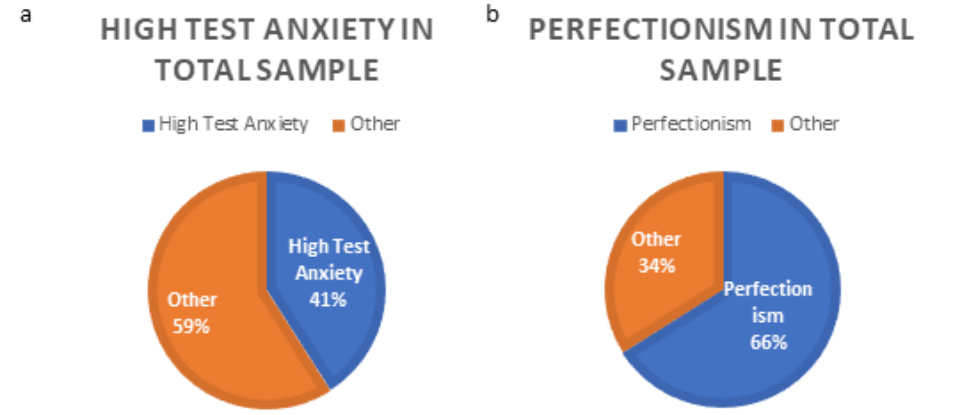

Fig. 1
How does perfectionism relate to test anxiety in high school students?
a. Forty-one percent of the sample (N = 30) reported high test anxiety b. 66% of the sample (N = 49) reported perfectionism.

Percentage Analyses - Gender

Fifty-one percent of females (N = 23) reported high test anxiety, whereas 19% of males (N = 5) reported high test anxiety. Individuals identifying as non-binary (N = 2) reported high test anxiety. Seventy-six percent of females (N = 34) reported perfectionism, whereas 48% of males (N = 13) reported perfectionism. Individuals identifying as non-binary (N = 2) reported perfectionism. Sixty-seven percent of females (N = 30) reported high standards perfectionism, and 59% males (N = 16) reported high standards perfectionism. Individuals identifying as non-binary (N = 2) reported high standards perfectionism. Eighty-seven percent of females (N = 39) reported high discrepancy perfectionism, and 63% of males (N = 17) reported high discrepancy perfectionism. Individuals identifying as non-binary (N = 2) reported high discrepancy perfectionism. For males, females, and non-binary individuals, means and standard deviations on WTAS, SAPS, and the two-factor structure of perfectionism are presented in Tables 1 and 2.

Discussion

Current Study's Findings

Association of Perfectionism and Test Anxiety

I aimed to examine the association between perfectionism and test anxiety for high school students. Results indicate the initial hypothesis was supported as there was a strong positive association between perfectionism and test anxiety for high school students. Perfectionistic concerns showed a strong positive association with test anxiety. Addressing the research gap by studying high school students, this study demonstrates similar results to studies of undergraduate student samples (Burcas & Cretu, 2021; Kavanaugh et al., 2016).

There are theoretical models suggesting explanations for the association between perfectionism and test anxiety. The biopsychosocial theory asserts that individuals with perfectionism may already be inclined to trait anxiety and have personal features in their reactions to stress, such as a need to please others and achieve status, that impacts the level of test anxiety (Burcas & Cretu, 2021). Alternatively, the self-regulation model suggests that pathways related to perfectionistic features will trigger test anxiety (Burcas & Cretu, 2021). Expectations are so high for perfectionistic students, and they may perceive discrepancies with their performance, doubt their ability, and experience increased test anxiety.

Association of Discrepancy Perfectionism and Test Anxiety

I explored discrepancy perfectionism and test anxiety in high school students and found there was a strong positive association. Discrepancy perfectionism entails high self-criticism and setting goals that can be hard to achieve. Similar to other studies (Beiling et al., 2004; Burcas & Cretu, 2021), there were high scores exhibited on discrepancy perfectionism which can be less adaptive than standards perfectionism. Discrepancy perfectionism may impact the intensity of maladaptive anxiety during tests.

Association of Standards Perfectionism and Test Anxiety

Consistent with Burcas & Cretu (2021) and Eum & Rice (2011), there was a weak positive association between standards perfectionism and test anxiety. Standards perfectionism entails academic striving and setting goals that are reasonable and realistic and thus, may impact less on test anxiety. When studying test anxiety in high school students, it's important to examine the two factors of perfectionism since academic striving is more adaptive if it is balanced with realistic goal setting. Bong and colleagues (2014) found a positive association between standards perfectionism and academic performance. Standards perfectionism may demonstrate feeling more secure in one's skills and able to achieve goals, which may have less impact on test anxiety.

Percentage Findings of Test Anxiety and Perfectionism

A significant percentage (41%) of the sample reported high test anxiety and over half (66%) reported perfectionism. More than half of the sample reported high discrepancy perfectionism and high standards perfectionism, and only 22% were found to be adaptive perfectionists (i.e., high standards perfectionism coupled with low discrepancy perfectionism). School interventions can help with these high levels of anxiety and the potential impact on performance tests, grades, and feelings of competence. School interventions can help students set reasonable goals and discover their individual strengths.

Gender Differences

Twice the percent of females reported high test anxiety as compared to males. Kavanaugh (2016) and Putwain and Daly (2014) both found female high school students had higher test anxiety than males, whereas Aroline and Ansia (2017) found no significant gender differences between gender and test anxiety. Kavanaugh (2016) questioned whether the difference was influenced by the unequal sample of gender, similar to this study's sample. Over thirty percent more females than males reported perfectionism. For the subscales of perfectionism, over 25% more females reported high discrepancy perfectionism than males. Standards perfectionism was seen at a more similar rate for both females and males.

Implications for Interventions and Practices

As school educators are advocating for more equity and social justice, this study helps identify the needs of adolescent students and helps fill a gap to inform school-based interventions about students' unmet needs. School-based interventions, such as counseling and assemblies, are an important resource in improving equity by having access to many types of students regardless of socioeconomic status, cultural background, or other demographics. In response to the pandemic, Governor Murphy of NJ has made it his mission to provide a large budget specifically for school-based interventions, addressing care and health needs throughout the state with less obstacles to implement and serve different populations when delivered at school.

In the long run, this research area can reduce health disparities by affording more academic opportunities and feelings of competence to more students, opening up more options for underserved students. For instance, school interventions can help high school students reduce excessive self-criticism and unreasonable goals. With reductions in test anxiety, scores may reflect actual academic ability. Finally, this study advocates for teachers to continue to discover avenues for more positive testing environments, affording all students the opportunity to reach their potential.

Limitations of the Study

There are several limitations to the present study. Although this study addressed a research gap in the literature by sampling high school students, the sample may not be representative of all types of students. A low response rate was noted as under 10% showed interest with the preliminary interest survey and it seemed that some students were ready to participate until there were more steps prior to completing the survey, such as having a parent sign a consent form if under age 18. Due to the small sample size, suburban setting, and as most potential participants had to obtain parental or guardian consent, the sample may be biased to students that followed through on the protocol. Many surveys were obtained from clubs and senior English classes which may have skewed the participation to a restricted range of student characteristics.

One limitation in studies of test anxiety and perfectionism is the use of diverse measures to assess both test anxiety and perfectionism. Different criteria measured for test anxiety and perfectionism may impact the strength of the associations found in different studies. For instance, some studies measured mostly the cognitive (i.e., worry) factors of test anxiety, others measured cognitive factors and physiological arousal, and so on. It would be helpful to use a single validated assessment tool for test anxiety for all studies and would help more accurately compare studies of different samples or populations. In addition, assessing academic achievement would be a helpful variable, such as GPA was not investigated in this study to minimize intrusion of privacy and allow for the best chance of completion of the survey.

The study was correlational in nature, causal interpretations cannot be drawn. Also, self-report measures can be subject to social desirability bias, as responses may be influenced by impression management. A mixed method of data collection could be helpful, such as interviewing participants along with self-report measures or assessing participants at the time of an actual high-stakes exam.

Future Research

Future research needs to attend to other factors impacting on test anxiety and perfectionism. More sophisticated analyses could investigate the variance accounted for by variables such as gender and pair with academic achievement indicators, such as GPA and high-stakes exam scores. Gender, academic achievement indicators, academic hardiness, and self-efficacy are variables that may be helpful to examine in their influence on perfectionism and its association with test anxiety.

Future research could focus on maladaptive perfectionism to better understand the potential detrimental factors associated with test anxiety. For instance, social media is an important component of students' lives in this generation. Social media may impact test anxiety, such as influencers' impact on how students judge themselves in comparison with others. Also, students develop Instagram pages to show their college commitments and other types of online pages. Perhaps the degree of discrepancy perfectionism may be influenced by social media's social judgments and the negative effects.

Studies of cultural and demographic factors of high school students and test anxiety are helpful. Past studies from other countries have studied test anxiety and perfectionism, such as with high-stakes exams which can have different implications in different countries and cultures. For example, high-stakes exams can determine whether a country's adolescents can attain a white collar vs. blue collar career track or the type of education they are allowed to obtain in the future. The findings of a strong positive association between perfectionism and test anxiety demonstrate the need for further studies of high school students to enhance students' academic performance and future opportunities.

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