

EXAMINING THE ASSOCIATION BETWEEN INTERNALIZING SYMPTOMS, STUDENT-
TEACHER RELATIONSHIP QUALITY, AND ACADEMIC ACHIEVEMENT

by

JULIE GODEFROID

Submitted to the Department of Psychology
School of Natural and Social Sciences
in partial fulfillment of the requirements
for the degree of Bachelor of Arts

Purchase College
State University of New York

December 2019

Sponsor: Jacqueline Fisher, Ph.D.
Second Reader: Paul Siegel, Ph.D.

Abstract

This study used archival data from a study that was conducted to evaluate a school-based social emotional learning intervention. The sample included 532 adolescents in sixth and seventh grades and their teachers from 18 public schools in New York City. The associations between internalizing symptoms and (a) academic performance and (b) student-teacher relationship quality were investigated as well as the potential mediating role of student-teacher relationship quality between internalizing symptoms and academic performance. The results did not support the mediating role. However, a regression analysis seemed to indicate that student-teacher relationship quality and internalizing symptoms had a major impact on academic grades. Boys seemed to have a better student-teacher relationship quality while girls showed more internalizing symptoms. However, the negative correlation between depression and grades was significant for both genders. Because this sample came from an understudied population, more research with children from minorities is essential to understand the interplay between different factors in an urban school setting and their impacts on students' academic success.

Examining the Association Between Internalizing Symptoms, Student-Teacher Relationship Quality, and Academic Achievement

Adolescence is a sensitive period between childhood and adulthood during which significant biological, intellectual and psychological changes occur. These changes can affect functioning across a range of domains within many different contexts. Given that adolescents spend a significant amount of time in academic settings, it is important that research considers the impact of these changes on school-related factors. In particular, the transition to adolescence is generally marked by difficulties trusting adults, less confidence in their abilities, lower academic scores, and an increased level of emotional distress (Braddock & Mc Parltand, 1993; Eccles & Midgley, 1989; Feldman, Rubenstein, & Rubin, 1988; Rutter, 1986). One manifestation of this constellation of issues is a perception by adolescents that teachers in middle and high school are qualitatively different than teachers in primary school. Teachers in middle and high school seem to be more focused on class-wide test scores and grades, rather than on caring for each individual student's social and emotional needs (Harter, 1996).

This change in adolescent perceptions of their relationships with their teachers comes at a developmental period that is also characterized by increases in some mental health issues, including depression and anxiety. Depression and anxiety are the most commonly diagnosed mental health problems among adolescents, and research has consistently shown that these types of problems can have devastating impacts across contexts, including in school, where these internalizing problems are often associated with deficits in traditional markers of academic success (Masten et al., 2005; Kessler et al., 1994; Pine, Cohen, Gurley & Brook, 1998; Merikangas et al., 2010; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). The statistics showed the prevalence rate for depression is 6% between the age of 12-17. The prevalence rate for

anxiety is between 10% and 12% between the age of 12-17 (Ghandour et al., 2019). Anxiety or depression diagnosed among children between 6 to 17 years increased from 5.4% to 8.4% from 2003 to 2012. From 2007 to 2012, anxiety diagnoses increased from 5.5% to 6.4%, but no increase was reported for depression (Bitsko et al., 2018). Untreated internalizing symptoms in children and adolescents can lead to long term problems across a range of domains such as physical functioning and social functioning. Since the school setting not only provides a place for academic learning, but also social-emotional skill-building (Yeager, 2017; Zins, Elias, & Greenberg, 2007), it is important that current research also considers the effect of adolescent depression and anxiety on interpersonal relationships in the classroom. The present study will examine whether student-teacher relationship quality mediates the association between internalizing problems and academic performance among a sample of early adolescents in New York City.

The Impact of Teacher-Student Relationship Quality on Academic Achievement

Teachers, parents, and peers have an important role to play in school adjustment, including with adolescent students. A body of evidence has suggested that the teacher-student relationship can have a positive impact on school outcomes (e.g. Crosnoe, Johnson & Elder, 2004). The student-teacher relationship is an important non-parental relationship when the child starts school. A positive relationship characterized by high degrees of closeness (warmth and trust), and low degree of conflict and dependency fosters an attachment relationship between the children and the teachers in order for the students to learn in the best condition with the right tools such as social, behavioral and self-regulatory tools on hand (Pianta, 1999). Hamre and Pianta (2001) suggested that student-teacher relationship quality (STRQ) and children behavior rated by the teachers in Kindergarten could have an impact on children behavioral and academic

outcomes in lower elementary, upper elementary, and middle school. However, it is well noticed that early teacher-child relationships seemed to be the best predictor for school outcomes when the students are male or have a high level of behavior problems (high level of conflicts and dependent relationships).

Internalizing Symptoms and Student-Teacher Relationship Quality

Previous studies have suggested that internalizing problems among children have a negative impact on social and cognitive functioning (Ameringen, Mancini & Farvolden, 2003; Baker, Grant & Morlock, 2008; Fauber, Forehand, Long, Burk & Faust, 1987; Henricsson & Rydell, 2004; Mazzone, Ducci, Scoto, Passaniti, D'Arrigo & Vitiello, 2007; Zee & Roorda, 2018). Students with internalizing problems were more likely to have low-quality student-teacher relationships, in other word to have high level of conflicts and dependency between students and teachers (Baker, Grant & Morlock, 2008; Henricsson & Rydell, 2004; Murray & Murray, 2014; Zee & Roorda, 2018). Moreover, social well-being across context has an undeniable role to play in school outcomes for children with internalizing problems. High-quality S-T relationships were associated with positive school outcomes (reading grades, positive work habits and classroom adjustment) for students with behavior problems including internalizing problems (Baker, Grant & Morlock, 2008).

Association between Internalizing Symptoms and Academic Performance

Anxiety and depression could also have a negative impact on student academic performance. The medical model of the ICF (International Classification of Functioning, Disability and Health) suggested that there was a negative effect of depression on academic performance among younger students; however the research linking depression and academic achievement was less consistent on adolescents. For example, Derdikman-Eiron et al. (2011) and

Fauber, Forehand, Long, Burk & Faust (1987) found that depression was negatively correlated with cognitive competence among adolescents, while other studies did not find this same link (Jaycox et al., 2009; Moilanen et al., 2010; Strauss, Lahey & Jacobsen, 1982; Reynolds et al., 1985). This may be due to the use of different instruments for measuring depression and academic performance across these studies. Research that has considered the association between anxiety and academic performance among adolescence have been more consistent, finding a significant detrimental effect of anxiety on grades in school across different cultures (e.g., Ameringen, Mancini, & Farvolden, 2003; Mazzone et al., 2007).

Demographic Differences

Research has also considered whether there are gender or race/ethnic differences in these associations. Research consistently indicated that there were gender and race/ethnic differences in internalizing problems and TSRQ. Among children and adolescents, females showed more internalizing symptoms than males (Leabeater, Kuperminc, Blatt, & Hertzog, 1999; Gore, Aseltine & Colten, 1993; Leadbeater, Blatt, & Quinlan, 1995; Pomerantz, Altermatt, Saxon, 2002). Regarding TSRQ, Crosnoe, Johnson, and Elder (2004) suggested that a positive high school teacher-student relationship was associated with an increase in academic achievement using a longitudinal study with a nationally representative sample in the U.S. This association was stronger for Hispanic girls followed by White girls. Murray & Murray (2014) suggested that girls had less conflict and more closeness in their relationships with teachers compared to boys. They also assumed African American students had more conflict compared to other racial groups, while white students seemed to be more dependent on teachers compared to other racial groups.

Studies in gender social relationships described females as more other-oriented than males. Other-oriented persons were more sensitive to the quality of their relationships than males, more involved in the problems, and the interests of others. They also tend to take into account opinions and evaluations of others (Blatt, Hertzog, Leabeater & Kuperminc, 1999; Gore, Aseltine, & Colten, 1993) compared to self-oriented individuals who did not assess their own abilities via others opinions. Moreover, pleasing adults was more important to girls compared to boys (Hoffman, 1972; Pomerantz, Saxon, & Kennedy, 2002). Female pleasing orientation was also part of this tendency for other orientation. Thus, one might assume that a good quality student-teacher relation for females' students might be more needed for their emotional and cognitive development compared to male students.

Regarding grades, gender studies have found inconsistent results. Although substantial research from the past 30 years has found that male students outperform female students when it comes to STEM topics (e.g., Guiso, Monte, Sapienza, & Zingales, 2008), more recent research is finding that this trend is disappearing. Girls had fewer academic issues than boys (Crosnoe, Johnson & Elder, 2004; Pomerantz, Altermatt, & Saxon, 2002; Scheiber, Reynolds, Hajovsky, & Kaufman, 2015). For example, in one recent study, research was unable to verify the popular belief that males excel in math compared to females, but females did seem to have a small advantage in reading and a significant advantage in writing which increase with age (Scheiber, Reynolds, Hajovsky, & Kaufman, 2015). In another study, following children from 4th, 5th and 6th, girls outperformed boys in language arts, math, science, and social studies even though they showed more internal distress than boys (Pomerantz, Altermatt, & Saxon, 2002). Internal distress was evaluated by children's self-evaluation, children's perceptions of global self-worth and internalizing symptoms. The internalizing symptoms consisted of children worrying about

academic performance, Children's general anxiety and children's depression. It is important to emphasize girls who were the most vulnerable to internal distress had difficulties in school and girls who did well in school have nevertheless more internal distress than did boys with similar grades in the 4 subjects. This study is especially relevant to my research because it exposed this gender pattern regarding grades, internalizing symptoms and gender differences with a sample with similar age than the present study.

The Present Study

So far, the impact of internalizing problems on academic performance and the impact of teacher-student relationship quality on academic performance have primarily been investigated separately, and few studies have considered gender differences in the associations between these factors. For example, Pomerantz, Altermatt, and Saxon (2002) investigated the impact of internal distress on academic grades and looked at gender differences, but they did not consider the role of interpersonal relationships. This study therefore built on Pomerantz, Altermatt, and Saxon (2002) by considering the potential mediating role of STRQ in the association between internalizing problems and academic performance and the potential moderating role of gender, given that prior research suggests that interpersonal relationships have more of an influence for females than for males (Ma & Huebner, 2008). The following research questions will be examined:

1. What is the association between adolescent anxiety and depression symptoms and (a) academic performance and (b) student-teacher relationship quality? It was hypothesized that students with more anxiety and depressive symptoms would have lower quality relationships with their teachers (i.e., less closeness and more conflict/dependency), and

that students with more anxiety and depressive symptoms would have lower grades in school.

2. Does student-teacher relationship quality, measured by closeness, conflict, and dependency, mediate the association between internalizing symptoms and academic performance among adolescents? It was hypothesized that students with internalizing symptoms who have better STRQ would have better grades.
3. Is the relationship between internalizing symptoms, student-teacher relationship quality, and academic performance the same for males and females? It was hypothesized that STRQ would mediate the association between internalizing symptoms and academic performance more strongly for females than for males.

This study used archival data from an evaluation study of a school-based social-emotional learning intervention with a large sample of early adolescents in 6th and 7th grades (Horan, Brown, Jones & Aber, 2015). Specifically, data were collected from 1404 adolescents and their primary caregivers and teachers, recruited from 18 public schools in New York City. The study methodology relied on self-reported surveys (Two subscales of the BASC for the internalizing symptoms and the Student-Teacher Relationship Scale) and on official Department of Education records of academic performance.

Method

Participants

Data were collected from an original sample of 1404 youths and their teachers when the youths were in sixth grade and seventh grade. The present study is an archival analysis using a subset of the original study data. The sample for this archival analysis included 532 adolescents for whom data were available on all of the measures of interest . These youth were recruited

from 18 public schools in New York City as part of an evaluation study of a school-based social-emotional intervention. The adolescents were 270 (19.2 %) female and 262 male (18.7%) between the ages of 11-14. Ten (1.9 %) of adolescents were non-Hispanic White, 237 (44.5%) were Hispanic or Hispanic Biracial, 251 (47.2%) were Black and African American, and 34 (6.4%) self-identified as another race/ethnicity not listed (see Table 1).

Tables 1. *Demographic Statistics for the Sample*

	<i>N</i>	%
Gender		
Boys	262	49.2
Girls	270	50.8
Race		
Non-Hispanic White	10	1.9
Hispanic or Hispanic Biracial	237	44.5
Black or African American	251	47.2
Other	34	6.4

Procedure

This study was a secondary analysis using surveys on an study of a school-based social-emotional intervention with children in 3th, 4th and 5th grade recruited from 18 public schools in New York City. The purpose of this intervention was to improve social emotional development diffused in the English/ Language Arts Course. The research team got additional funding when the students were in 6th/7th and then 9th /10th to investigate the effect of this intervention. Because data when the youth were in 6th and 7th comprised all the variables of interests at the same

timeline, this age range was chosen to conduct the study.

Although the teachers and adolescents were interviewed twice per academic year, only data from the end of the academic year of 2009 were taken into account in the study, in order to ensure that teachers knew the youth well enough to report on their relationship quality. Teachers were given questionnaires to complete on their own time. Youth took a battery of tests for two hours at home with a researcher who read out loud all the questions without the presence of their parents while the teachers also filled out another battery of tests concerning each of their students, but with any assistance.

Measures

The study relied on surveys completed by the youths and their teachers, as well as official Department of Education records of academic performance. Two subscales of the Behavioral Assessment System for Children (BASC-2 ; Reynold & Kamphaus, 2004) was used for anxiety and depression symptoms for the study. The scales consist of 13 items for each symptom. The responds was rated as “True” (coded as 1) or “False (coded as 0) by the youths.

This multimethod and multi-dimensional system seems to be a valid and reliable assessment tool to understand a large area of emotional and behavioral issues among children to young adult using different sources: parents, teacher, student and observational report (Sandoval & Echandia, 1994; Tan, 2007). The measures of the BASC results seems to correlate with other measures that targets the same constructs: The Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1940) and the Youth Self-Report (YSR; Achenbach & Edelbrock, 1987). Past and recent research on various mental health issues among children and adolescents has largely used the BASC in educational setting using the subscales of interests (e.g. Smith, Eadeh, Breaux, & Landberg, 2019).

Abbreviated Student-Teacher Relationship scale (STRS; Pianta, 2001) was used in the

study to measure teacher-reported student-teacher relationship quality between age 3 to 8 based on three subscales: Closeness Conflict, and Dependency. The response format consists of a 5-point scale: Definitely does not apply (1), not really (2), neutral, no sure (3), applies somewhat (4) and definitely applies (5). This assessment is administered for an individual child.

Initially, the Student-Teacher Relationship scale was created to target children between age 3 to 8. This scale has been intensively used with children in pre-school and primary school (e.g. Hamre & Pianta, 2001), and to a lesser extent with young adolescents in middle school (e.g. Duong et al., 2018). However, the Student-Teacher Relationship Scale seems to be the best valid and reliable scale to evaluate across age from 3 to 12, ethnicity and socioeconomic status (Lynch & Cicchetti, 1992).

Each student's average grade for the 2008-2009 school year was provided to the study researchers by the Department of Education in New York City. Scores ranged between 0-100. Previous studies have manipulated the grade variable in different ways. Depending on the age of the students, and the purpose of the study, the researchers used recent report card or grades usually at the end of the academic year or semester. Averaging the grades for the main subjects and the conversion from letter grades to numerical values were commonly used in most studies like in the present study (Crosnoe, Johnson & Elder, 2004, Pomerantz, Altermatt, & Saxon, 2002). Even though the procedure was always slightly different from one study to another regarding the format of the conversion.

Statistical Analyses

All descriptive and inferential statistical analyses for this study were conducted using SPSS. To test the first hypothesis, that students with more anxiety and depressive symptoms would have lower quality relationships with their teachers (i.e., less closeness and more

conflict/dependency), and that students with lower quality relationships with their teachers would have lower grades in school, a series of correlation analyses were conducted. To test the second hypothesis that STRQ would mediate the association between internalizing symptoms and academic performance, a regression analysis was conducted followed by Sobel's test for mediation. To test the third hypothesis that STRQ more strongly would mediate the association between internalizing symptoms and academic performance for females than for males, this regression analysis with Sobel's test was then conducted separately by gender and the coefficients were compared to determine if the difference was statistically significant.

Participants' scores on each of the five study constructs (internalizing symptoms, depression symptoms, anxiety symptoms, STRQ and grades) were computed by averaging scores across all the items in each scale. Reverse codes were computed for 8 items in the Student-Teacher Relationship scale. Higher scores on the Student-Teacher Relationship scale meant low level of STRQ. The mean score on the measure of internalizing symptoms was ($M = 0.20$, $SD = 0.18$), the mean for depression was ($M = 0.12$, $SD = 0.19$), the mean for anxiety was ($M = 0.31$, $SD = 0.23$), the mean for STRQ was ($M = 2.23$, $SD = 0.58$), and the mean for grades was ($M = 68.05$, $SD = 14.74$).

Table 2. *Descriptive Statistics for the Main Study Variables*

	N	Range	Mean	SD
Grades	394	21.00 - 97.00	68.05	14.74
Depression symptoms	518	0.00 - 1.00	0.12	0.19
Anxiety symptoms	518	0.00 - 1.00	0.31	0.23
Internalizing symptoms	518	0.00 - 0.92	0.21	0.18
STRQ	342	1.20 - 4.00	2.22	0.60

For each of the main study variables, an independent-samples t-test was conducted to investigate any gender differences. The mean for academic grades between boys ($M = 69.00$, $SD = 14.25$) and girls ($M = 68.47$, $SD = 14.05$) were very similar. For internalizing symptoms, girls ($M = 0.24$, $SD = 0.19$) had a higher mean than boys ($M = 0.17$, $SD = 0.16$) as well as for depression and anxiety symptoms (see table 2). But girls ($M = 69.00$, $SD = 0.49$) had a lower mean for STRQ than boys ($M = 69.00$, $SD = 0.59$). An independent samples t-test comparing the mean for academic grades between gender revealed no significant difference between the means of the two groups, $t(313) = 0.326$, $p = 0.745$, $d = 0.52$. This means the grades of boys and girls did not significantly differ. It also revealed that the means for internalizing symptoms, depression symptoms, anxiety symptoms and STRQ between gender were significantly difference between gender, $t(516) = -4.9$, $p = 0.00$, $d = -0.77$, $t(516) = -2.00$, $p = 0.047$, $d = -0.033$, $t(516) = -6.23$, $p = 0.00$, $d = -0.12$, $t(340) = 7.51$, $p = 0.00$, $d = 0.44$. This means that girls seem to show more internalizing symptoms than boys as well as depression and anxiety symptoms. However, boys seem to have a better STRQ than girls.

The results of the first correlational analysis indicated that internalizing symptoms did not significantly correlated with academic performance, $r(308) = -0.098$, $p = 0.087$. In other words, a high level of internalizing symptoms is not associated with a low level of academic performance. Internalizing symptoms did not significantly correlate with Student-Teacher Relationship scale, $r(332) = -0.040$, $p = 0.464$. High level of internalizing symptoms was not associated with a low level of Student-Teacher Relationship scale.

Table 3. *Result showing any Differences between Gender on the Mean of the main Study Variable*

	Child Sex	N	Mean	F	Sig.	t	df	Sig. (2-tailed)
Grades	boys	150	68.9933	0.382	0.537	0.326	313	0.745
	girls	165	68.4727					
Depression symptoms	boys	255	0.1026	6.407	0.012	-1.995	516	0.047
	girls	263	0.1360					
Anxiety symptoms	boys	255	0.2457	3.605	0.058	-6.233	516	0.000
	girls	263	0.3686					
Internalizing symptoms	boys	255	0.1706	8.197	0.004	-4.931	516	0.000
	girls	263	0.2479					
Teacher-Student Relationship Quality	boys	166	2.4528	4.651	0.032	7.508	340	0.000
	girls	176	2.0152					

Table 4. *Correlations Results*

		Internalizing symptoms	STRQ
STRQ	Pearson correlation	-0.040	
	Sig. (2-tailed)	0.464	
	N	332	
Academic grades	Pearson correlation	-0.098	-0.240**
	Sig. (2-tailed)	0.087	0.001
	N	394	202

** . Correlation is significant at the level 0.01 level (2-tailed).

A second round of the same correlation was conducted with depression and anxiety symptoms as two distinct measures. Depression and anxiety symptoms were computed the same way as the other constructs by averaging the level of agreement or response value across the statements corresponding to the specific symptoms in the scale. The results of the correlational

analysis indicated that depression symptoms significantly correlated with academic performance, $r(308) = -.186, p = 0.001$, while anxiety symptoms did not, $r(308) = -0.007, p = 0.899$. In other words, a high level of depression symptoms was associated with a low level of academic performance, but a high level of anxiety symptoms was not associated with a low level of academic performance. The results indicated that depression symptoms as well as anxiety symptoms did not significantly correlate with Student-Teacher Relationship scale, $r(332) = 0.010, p = 0.861, r(332) = -0.067, p = 0.221$. In other words, high level of depression and high level of anxiety were not associated with a low level of Student-Teacher Relationship scale. Finally, the results indicated depression symptoms significantly correlated with anxiety symptoms, $r(518) = 0.46, p = 0.00$. In other words, high level of depression were associated with high level of anxiety.

Table 5. *Second round of Correlation Results*

		Depression	Anxiety	STRQ
Anxiety	Pearson correlation	0.46		
	Sig. (2-tailed)	0.000		
	N	518		
STRQ	Pearson correlation	0.010	-.067	
	Sig. (2-tailed)	0.861	0.221	
	N	332	332	
Academic Grades	Pearson correlation	-.186**	-0.007	-0.240**
	Sig. (2-tailed)	0.001	0.899	0.001
	N	308	308	202

** . Correlation is significant at the level 0.01 level (2-tailed).

To test whether STRQ mediates the association between internalizing symptoms and academic grades, Sobel's test for mediation was conducted. First, two separate linear regression analyses were conducted to obtain the unstandardized coefficients and standard errors for the following: (1) the association between internalizing symptoms and STRQ; (2) the association between STRQ and academic performance. The results of these analyses are presented in Table 6, 7 and respectively. The first linear regression analysis indicated that internalizing symptoms was not significantly associated with STRQ, given that no significant regression equation was found ($F(1,330) = 0.54, p = -0.73$), with an R^2 of 0,002.

Table 6. *Linear Regression Analysis of the Association between Internalizing symptoms and Student-Teacher Relationship Quality*

	Unstandardized Coefficients		Beta	<i>t</i>	<i>p</i>
	B	Std. Error			
Internalizing Symptoms	-0.13	0.17	-0.40	-0.73	0.46

The second linear regression analysis indicated that STRQ was not significantly associated with academic grades, given that a significant regression equation was found ($F(1, 200) = 12.21, p = 0,46$), with an R^2 of 0.058 .

As the final step in this analysis, the unstandardized coefficients and standard errors of internalizing symptoms on STRQ and STRQ on academic grades accounting for internalizing symptoms were entered into a Sobel's calculator. The Sobel's test statistic was 0.72 ($p = 0.47$), suggesting that STRQ does not mediate the association between internalizing symptoms and

academic grades. Students with internalizing symptoms who had higher STRQ did not seem to have better grades.

Table 7. *Linear Regression Analysis of the Association between Student-Teacher Relationships Quality and Grades*

	Unstandardized Coefficients		Beta	<i>t</i>	<i>p</i>
	B	Std. Error			
STRQ	-6.18	1.768	-0.24	-3.50	0.001

Because depression symptoms were negatively correlate with academic grades, a second regression analysis were conducted to investigate whether STRQ mediates the association between depression symptoms and academic grades, followed by Sobel's test for mediation. Like the first analysis on the mediating effect, two separate linear regression analyses were conducted to obtain the unstandardized coefficients and standard errors for the following: (1) the association between depression symptoms and STRQ; (2) the association between STRQ and academic performance. The first linear regression analysis indicated that depression symptoms was not significantly associated with STRQ, given that no significant regression equation was found ($F(1, 330) = 0.031, p = 0.86$), with an R^2 of 0.00. The second linear analysis is identical to the second linear analysis conducted to test the first mediation (see table 6). The Sobel's test statistic was - 0.72 ($p = 0.86$), suggesting that STRQ does not mediate the association between depression symptoms and academic grades. Students with depression symptoms who had higher STRQ did not have better grades. Because no mediating effect was found, no test was conducted to investigate as to whether this effect was the same for females and males.

Table 8. *Linear Regression Analysis of the Association between Depression Symptoms Student-Teacher Relationships Quality*

	Unstandardized Coefficients		Beta	<i>t</i>	<i>p</i>
	B	Std. Error			
Depression symptoms	0.029	0.17	0.01	0.17	0.86

Then a multiple regression analysis was used to predict academic grades based on, anxiety symptoms, depression symptoms, STRQ, gender, and race. The model was significant, $F(5, 192) = 4.97, p = 0.00$, and explained 11.5% of the total variance in academic grades. STRQ ($\beta = -0.31, t = -4.20, p = 0.00$), gender ($\beta = -0.16, t = -2.12, p = 0.03$), anxiety symptoms ($\beta = 0.15, t = 2.00, p = 0.05$), and depression symptoms ($\beta = -0.20, t = -2.55, p = 0.01$) were all significant positive predictors of academic grades, but race was not ($\beta = 0.51, t = 0.74, p = 0.46$).

Discussion

It was hypothesized that students with more anxiety and depressive symptoms would have lower quality relationships with their teachers, that students with lower quality relationships with their teachers would have lower grades in school, and that students with high level of internalizing symptoms would have lower grades. It was further hypothesized that students with internalizing symptoms who have a high STRQ would have better grades, and that mediation would be stronger for females than for males. This mediation analysis has never been done. The results showed that STRQ had a significant positive correlation with academic grades, and that depression had a negative correlation with grades. Those results are consistent with previous

research. Previous studies have shown that STRQ had a positive impact on student's success in school in their academic achievement (e.g. Crosnoe, Johnson, and Elder, 2004). Nevertheless, the results of previous studies for the link between depression and academic were less consistent and determined mostly by the methodology used.

The other hypotheses were not supported. Internalizing symptoms were not correlated with STRQ and anxiety symptoms were not correlated with academic grades. However, some previous research did find that internalizing symptoms had a negative impact on social and cognitive abilities in an educational setting (Baker, Grant & Morlock, 2008; Henricsson & Rydell, 2004; Murray & Murray, 2014; Zee & Roorda, 2018; Mazzone et al., 2007; Van Ameringen, Mancini, & Farvolden, 2001). The experimental hypothesis about STRQ as a mediator was not supported. STRQ did not seem to support students with internalizing symptoms to have better grades. After running a regression analysis, STRQ and internalizing symptoms seemed to have a major impact on academic grades. A positive connection between students and their teachers as well as fewer internalizing symptoms could positively affect students' academic success. It is worth noting that the direction of the causation was unclear. The results of this regression analysis could not determine whether a good STRQ influences academic grades or academic grades influences STRQ. The same issues applied to internalizing symptoms and grades. Bidirectional causation could be considered as well.

In conclusion, no mediation effect was found. This mediation was built on the hypotheses regarding the association between three factors (internalizing symptoms, STRQ and grades). For this mediation to succeed, all the hypotheses concerning the association between factors should have been confirmed. Unfortunately, internalizing symptoms were not negatively correlated with STRQ and with grades. One explanation could be that most of the students were in the low range

of internalizing symptoms. Then internalizing symptoms for this sample did not interfere with STRQ and grades. Because internalizing symptoms increase with age, future research could investigate the same hypotheses with high school or college students.

Some additional analyses of gender differences showed that grades are the same for males and females, which contrast with previous studies that assumed girls have fewer academic issues (Pomerantz, Altermatt, & Saxon, 2002; Scheiber, Reynolds, Hajovsky, & Kaufman, 2015). The results also showed that girls seem to have more internalizing symptoms than boys, which is strongly supported by previous literature (Blatt, Hertzog, Leabeater & kuperminc, 1999; Gore, Aseltine & Colten, 1993; Leadbeater, Blatt, & Quinlan, 1995; Pomerantz, Altermatt, Saxon, 2002). Interestingly, boys had a better relationship quality than girls, although according to Crosnoe, Johnson, & Elder (2004) White and Hispanic American females have a better STRQ.

Because the methodology of this study relied mostly on self-report measures, issues such as introspective ability and impression management issues could have arisen. The adolescent participants might not have been aware of their own self. Moreover, symptoms such as anxiety and depression are particularly difficult to acknowledge. Participants might have wanted to preserve a positive image about themselves, especially at this age where they are still figuring out their own identity. The results for internalizing could have been underestimated. Internalizing symptoms in a low range could not be negatively associated with STRQ and Grades. Therefore, the odds to observe the mediation were very low.

On the teachers' side, fatigue could have also influenced the results. Issues such as mood, impression management and fatigue could interfere on how teachers evaluate their student relationship quality. The teachers might have overestimated or underestimated their relationship

with their students. Future research could ask both the teachers and the students to evaluate their teacher relationship quality to increase the validity of the STRQ measure.

It is also important to consider that this mediation might not exist. It is possible that, when internalizing symptoms affect students' academic success, teachers found difficult to implement a positive relationship with their students. For the mediation to be tested, the sample should consist of students with the same level of internalizing symptoms but different STRQ. This condition might be impossible to meet. According to Henricsson & Rydell (2004), the teachers seem to avoid contact with students with internalizing symptoms and students who try to have contact have more conflicts than those who do not try. A possible explanation is that a person with internalizing symptoms could misinterpret social cues due to cognitive distortions and poor social skills (Hammen, 1999). Another reason may be that teachers subconsciously or consciously avoid students who appear overly anxious or down. Maybe, conducting a school-based intervention focusing on Cognitive Behavioral Therapy with teachers and students with internalizing symptoms could be a way to assess or to improve STRQ.

It is essential to keep in mind that the sample of the present study was a unique sample of adolescents from 18 public school in New-York City. In contrast to samples of previous studies, comprised mostly of Caucasians, the present sample was composed of a majority of African American and Hispanic or Hispanic Biracial students. Because this sample came from an understudied population, more research with children from minorities is essential to understand the interplay between different factors in an urban school setting and their impacts on students' academic success.

References

- Achenbach, T. M., & Edelbrock, C. (1987). *Manual for the Youth Self-Report*, Burlington, VT: University of Vermont, Department of Psychiatry.
- Ameringen, M. V., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of Anxiety Disorders, 17*(5), 561-571.
doi:[http://ezproxy.purchase.edu:2111/10.1016/S0887-6185\(02\)00228-1](http://ezproxy.purchase.edu:2111/10.1016/S0887-6185(02)00228-1)
- Baker, J. A., Grant, S., & Morlock, L. (2008). The teacher-student relationship as a developmental context for children with internalizing or externalizing behavior problems. *School Psychology Quarterly, 23*(1), 3-15.
- Bitsko, R. H., Holbrook, J. R., Ghandour, R. M., Blumberg, S. J., Visser, S. N., Perou, R., & Walkup, J. T. (2018). Epidemiology and impact of health care provider–diagnosed anxiety and depression among US children. *Journal of Developmental & Behavioral Pediatrics, 39*(5), 395-403.
- Braddock, J. H., & McPartland, J. M. (1993). Chapter 4: Education of early adolescents. *Review of Research in Education, 19*(1), 135-170.
- Crosnoe, R., Johnson, M. K., & Elder, G. H., Jr. (2004). Intergenerational bonding in school: The behavioral and contextual correlates of student-teacher relationships. *Sociology of Education, 77*(1), 60-81. doi:<http://10.1177/003804070407700103>
- Derdikman-Eiron, R., Indredavik, M. S., Bratberg, G. H., Taraldsen, G., Bakken, I. J., & Colton, M. (2011). Gender differences in subjective well-being, self-esteem and psychosocial functioning in adolescents with symptoms of anxiety and depression: Findings from the Nord-Trøndelag health study. *Scandinavian Journal of Psychology, 52*(3), 261-267.
doi:<http://dx.doi.org/10.1111/j.1467-9450.2010.00859.x>

- Duong, M. T., Pullmann, M. D., Buntain-Ricklefs, J., Lee, K., Benjamin, K. S., Nguyen, L., & Cook, C. R. (2018). Brief teacher training improves student behavior and student–teacher relationships in middle school. *School Psychology Quarterly*.
- Eccles, J. S., & Midgley, C. (1989). Stage-environment fit: Developmentally appropriate classrooms for young adolescents. *Research on motivation in education*, 3(1), 139-186.
- Fagot, B. I. (1994). Peer relations and the development of competence in boys and girls. In C. Leaper (Ed.), *Childhood gender segregation: Causes and consequences; childhood gender segregation: Causes and consequences* (pp. 53-65, 104 Pages) Jossey-Bass, San Francisco, CA. Retrieved from <http://ezproxy.purchase.edu:2048/login?url=https://ezproxy.purchase.edu:4131/docview/618575276?accountid=14171>
- Fauber, R., Forehand, R., Long, N., Burke, M., & Faust, J. (1987). The relationship of young adolescent Children's Depression Inventory (CDI) scores to their social and cognitive functioning. *Journal of Psychopathology and Behavioral Assessment*, 9(2), 161-172.
- Feldman, S. S., Rubenstein, J. L., & Rubin, C. (1988). Depressive affect and restraint in early adolescents: Relationships with family structure, family process and friendship support. *The Journal of Early Adolescence*, 8(3), 279-296.
doi:<http://dx.doi.org/10.1177/0272431688083005>
- Ghandour, R. M., Sherman, L. J., Vladutiu, C. J., Ali, M. M., Lynch, S. E., Bitsko, R. H., & Blumberg, S. J. (2019). Prevalence and treatment of depression, anxiety, and conduct problems in US children. *The Journal of pediatrics*, 206, 256-267.

- Gore, S., Aseltine, R. H., & Colten, M. E. (1993). Gender, social-relational involvement, and depression. *Journal of Research on Adolescence*, 3(2), 101-125.
doi:http://ezproxy.purchase.edu:2111/10.1207/s15327795jra0302_1
- Guiso, L., Monte, F., Sapienza, P., & Zingales, L. (2008). Culture, gender, and math. *Science*, 320 (5880), 1164-1165.
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72(2), 625-638.
doi:<http://dx.doi.org/10.1111/1467-8624.00301>
- Harter, S. (1996). Teacher and classmate influences on scholastic motivation, self-esteem, and level of voice in adolescents. In J. Juvonen, & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment; social motivation: Understanding children's school adjustment* (pp. 11-42, Chapter xv, 375 Pages) Cambridge University Press, New York, NY.
- Hathaway, S. R., & McKinley, J. C. (1940). A multiphasic personality schedule (Minnesota): I. Construction of the schedule. *The Journal of Psychology*, 10(2), 249-254.
- Henricsson, L., & Rydell, A. (2004). Elementary school children with behavior problems: Teacher-child relations and self-perception. A prospective study. *Merrill-Palmer Quarterly*, 50(2), 111-138. doi:<http://ezproxy.purchase.edu:2111/10.1353/mpq.2004.0012>
- Hoffman, L. W. (1972). Early childhood experiences and women's achievement motives. *Journal of Social Issues*, 28(2), 129-155.
- Horan, J. M., Brown, J. L., Jones, S. M., & Aber, J. L. (2016). The influence of conduct problems and callous-unemotional traits on academic development among youth. *Journal of youth and adolescence*, 45(6), 1245-1260.

Jaycox, L. H., Stein, B. D., Paddock, S., Miles, J. N. V., Chandra, A., Meredith, L. S., . . .

Burnam, M. A. (2009). Impact of teen depression on academic, social, and physical functioning. *Pediatrics*, *124*(4), e596-e605. doi:<http://dx.doi.org/10.1542/peds.2008-3348>

Ma, C. Q., & Huebner, E. S. (2008). Attachment relationships and adolescents' life satisfaction: Some relationships matter more to girls than boys. *Psychology in the Schools*, *45*(2), 177-190.

Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., ... & Tellegen, A. (2005). Developmental cascades: linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental psychology*, *41*(5), 733.

Mazzone, L., Ducci, F., Scoto, M. C., Passaniti, E., D'Arrigo, V. G., & Vitiello, B. (2007). The role of anxiety symptoms in school performance in a community sample of children and adolescents. *BMC Public Health*, *7*(1), 347.

Merikangas, K. R., He, J. P., Brody, D., Fisher, P. W., Bourdon, K., & Koretz, D. S. (2010). Prevalence and treatment of mental disorders among US children in the 2001–2004 NHANES. *Pediatrics*, *125*(1), 75-81.

Moilanen, K. L., Shaw, D. S., & Maxwell, K. L. (2010). Developmental cascades: Externalizing, internalizing, and academic competence from middle childhood to early adolescence. *Development and Psychopathology*, *22*(3), 635-653.
doi:<http://dx.doi.org/10.1017/S0954579410000337>

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., ... & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: results from the National Comorbidity Survey. *Archives of general psychiatry*, *51*(1), 8-19.

- Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology, 35*(5), 1268-1282.
doi:<http://ezproxy.purchase.edu:2111/10.1037/0012-1649.35.5.1268>
- Leadbeater, B. J., Blatt, S. J., & Quinlan, D. M. (1995). Gender-linked vulnerabilities to depressive symptoms, stress, and problem behaviors in adolescents. *Journal of Research on Adolescence, 5*(1), 1-29.
- Lynch, M., & Cicchetti, D. (1992). Maltreated children's reports of relatedness to their teachers. *New directions for child and adolescent development, 1992*(57), 81-107.
- Pianta, R. C. (1999). *Enhancing relationships between children and teachers* American Psychological Association, Washington, DC.
- Pianta, Robert C. *STRS: Student-teacher Relationship Scale: professional manual*. Psychological Assessment Resources, 2001.
- Pine, D. S., Cohen, P., Gurley, D., Brook, J., & Ma, Y. (1998). The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of general psychiatry, 55*(1), 56-64.
- Pomerantz, E. M., Altermatt, E. R., & Saxon, J. L. (2002). Making the grade but feeling distressed: Gender differences in academic performance and internal distress. *Journal of Educational Psychology, 94*(2), 396-404.
doi:<http://ezproxy.purchase.edu:2111/10.1037/0022-0663.94.2.396>
- Reynolds, W. M., Anderson, G., & Bartell, N. (1985). Measuring depression in children: A multimethod assessment investigation. *Journal of Abnormal Child Psychology, 13*(4), 513-526. doi:<http://dx.doi.org/10.1007/BF00923138>

- Reynolds, C. R., & Kamphaus, R. W. (2004). Behavior assessment system for children, (BASC-2). Circle Pines, MN: American Guidance Service.
- Rutter, M. (1986). The developmental psychopathology of depression: Issues and perspectives. *Depression in young people: Developmental and clinical perspectives*, 491-519.
- Sandoval, J., & Echandia, A. (1994). Behavior assessment system for children. *Journal of School Psychology*, 32(4), 419-425.
- Scheiber, C., Reynolds, M. R., Hajovsky, D. B., & Kaufman, A. S. (2015). Gender differences in achievement in a large, nationally representative sample of children and adolescents. *Psychology in the Schools*, 52(4), 335-348. doi:<http://dx.doi.org/10.1002/pits.21827>
- Smith, Z. R., Eadeh, H. M., Breaux, R. P., & Langberg, J. M. (2019). Sleepy, sluggish, worried, or down? The distinction between self-reported sluggish cognitive tempo, daytime sleepiness, and internalizing symptoms in youth with attention-deficit/hyperactivity disorder. *Psychological assessment*, 31(3), 365.
- Strauss, C. C., Lahey, B. B., & Jacobsen, R. H. (1982). The relationship of three measures of childhood depression to academic underachievement. *Journal of Applied Developmental Psychology*, 3(4), 375-380. doi:[http://dx.doi.org/10.1016/0193-3973\(82\)90009-0](http://dx.doi.org/10.1016/0193-3973(82)90009-0)
- Tan, C. S. (2007). Test Review: Reynolds, CR, & Kamphaus, RW (2004). Behavior assessment system for children . Circle Pines, MN: American Guidance Service. *Assessment for Effective Intervention*, 32(2), 121-124.
- Yeager, D. (2017). Social and Emotional Learning Programs for Adolescents. *The Future of Children*, 27(1), 73-94. Retrieved from www.jstor.org/stable/44219022
- Zahn-Waxler, C., Klimes-Dougan, B., & Slattery, M. J. (2000). Internalizing problems of childhood and adolescence: Prospects, pitfalls, and progress in understanding the

development of anxiety and depression. *Development and psychopathology*, 12(3), 443-466.

Zee, M., & Roorda, D. L. (2018). Student–teacher relationships in elementary school: The unique role of shyness, anxiety, and emotional problems. *Learning and Individual Differences*, 67, 156-166.

doi:<http://ezproxy.purchase.edu:2111/10.1016/j.lindif.2018.08.006>

Zins, J. E., Elias, M. J., & Greenberg, M. T. (2007). School practices to build social-emotional competence as the foundation of academic and life success. *Educating people to be emotionally intelligent*, 79-94.