Exploring the Relationship between Classroom Climate, Reading Motivation, and Achievement: A Look into 7th Grade Classrooms

Winnie Mucherah, Holmes Finch and Veronica Smith
Ball State University, U.S.A

Dee Ambrose-Stahl
Ligonier Valley High School, U.S.A

Abstract. Research has shown that reading development is impacted by a wide variety of factors, including both those specific to the student, most particularly the motivation to read, as well as external factors such as the climate of the reading classroom. Although a great deal of work has been done examining relationships among reading motivation, classroom climate and achievement constructs, there is no clear evidence to date regarding the mechanism by which student specific and external factors influence reading skill. The current study sought to bridge that gap through the use of a moderated mediation model in which the relationships between several aspects of classroom climate and reading achievement were mediated by reading motivation. In addition, the possibility of student gender moderating this mediation model was also investigated. Participants included 104 (49 females, 55 males) 7th grade students from a public school. Participants completed the classroom climate and reading motivation questionnaires after taking their standardized test. Results showed that indeed the relationship of classroom climate to reading achievement was mediated by student reading motivation, and certain aspects of this mediated relationship were moderated by gender. More specifically, greater perceived order and organization, teacher support, and affiliation was associated with higher test scores through the reading motivation mediators of aesthetics, challenge, efficacy, and compliance. Implications of the study are discussed.

Keywords: classroom climate; reading motivation; achievement; middle school students

Introduction

Classroom climate is a key influence on student motivation and, consequently, achievement. Classrooms with high teacher support and involvement tend to have students who enjoy learning and report a high desire for self-improvement and motivation for academic achievement (Battistich, Schaps, & Wilson, 2004; Goodenow, 1993; Patrick, Ryan, & Kaplan, 2007; Trickett & Moss, 1995). On the other hand, classrooms with high teacher control and strict rules are associated with students who report negative feelings about school and less interest in academic achievement and self-improvement (Battistich, Schaps, & Wilson, 2004). Students who are in task-oriented classrooms are more task focused and motivated (Chen, 2005; Klem & Connell, 2004). In a study examining middle school students' perceptions of their classroom social climate and motivation, results showed that the classroom social structure influenced student motivation. Teachers' involvement and autonomy support were positively correlated with student task involvement, motivation and achievement (Stornes, Bru, & Idsoe, 2008). It appears then that teachers can create classroom climates, situations, and relationships that encourage student motivation and eventually achievement.

Classroom climate, student achievement and student motivation are often studied separately but not together as three intertwined elements that need to be examined together (Reyes, Brackett, Rivers, White, & Salovey, 2012). There are numerous studies documenting the impact of classroom climate on student achievement (Allen et al., 2013; LaRoque, 2008; Ryan & Patrick, 2001; Wang & Holcombe, 2010). However, these studies do not explain the specific link between classroom climate and student achievement. Seeking to address the motivational factors influencing student achievement, researchers are focusing on student motivation and achievement but without examining the classroom climate (Kelley & Decker, 2009; Mucherah & Yoder, 2008; Mucherah & Herendeen, 2013; Unrau & Schlackman, 2006; Wigfield et al., 2008). In their study examining the link between classroom emotional climate, student engagement, and achievement, Reyes and colleagues (2012) found that student engagement (motivation) mediated the effects of classroom climate on achievement. The researchers concluded that achievement is not just a student responsibility but is largely associated with the teacher and the classroom climate (Reyes, Brackett, Rivers, White, & Salovey, 2012). In lieu of the above study, it is important to examine aspects of the classroom climate in relation to student motivation and achievement.

Classroom Climate and Achievement

According to Phillips (2003) students are greatly influenced by their teachers. Having this influence, teachers can create classroom climates that the students would choose to be a part of instead of climates where students are required to attend. Teachers who organize their classrooms as learning communities, support their students' autonomy and use innovative ways to present material to students witness increased academic achievement of their students (Phillips, 2003). A

relationship has been identified between classroom climate and academic achievement (Hamann et al., 1990). In this study, a relationship was found between the classroom climate dimensions of involvement, affiliation, teacher support, and organization and student achievement in music. Another study found that a classroom climate that is task oriented, has clear rules, is orderly and organized was positively associated with 6th grade students' academic achievement (Knight, 1991).

Several other studies support the significant impact of classroom climate on student achievement. Students' perceptions of the social structure in the classroom influence their motivation to learn (Allen & Fraser, 2007; Fraser & Fisher, 1986; Goh & Fraser, 1998; Stornes, Bru, & Idsoe, 2008). Additionally, students' perceptions of the school climate are significantly associated with their school engagement which in turn influences their academic achievement (Fraser, 1994). In a study examining the relationship between students' perceptions of school climate, engagement and achievement among 7th and 8th grade students, results showed that students' perceptions that their teachers promote mastery goals and provide social support were positively associated with greater school participation, identification, and grade point average (Wang & Holcombe, 2010). A similar study conducted with younger students revealed comparable results. In their study examining the relationship between classroom climate, motivation and engagement among 5th grade students, Patrick, Ryan, and Kaplan (2007) found that task-oriented classroom climates with high teacher support positively contributed to student regulation strategies, task-focus, and academic achievement.

Teacher-student interaction is another aspect of classroom climate associated with student achievement. Research evidence shows that students who report having positive relationships with their teachers also report being more motivated and engaged in classroom activities than students who report having negative relationships (Goh & Fraser, 2000; Goh, Young, & Fraser, 1995; Klem & Connell, 2004; Vedder, Kouwehoven, & Burk, 2009). Allen and colleagues' study (2013) examined the relationship between teacher-student interactions and achievement among secondary school students. Results showed that positive classroom climates characterized by teacher sensitivity, regard for adolescents' perspectives, order and organization, and task-focus significantly predicted student achievement (Allen et al., 2013). The authors conclude that secondary school class interactions are valuable for student learning and achievement. However, classroom climate in and of itself is not entirely sufficient to promote student achievement. Student engagement in classroom tasks and activities compliment classroom climate to yield positive outcomes.

Reading Motivation and Achievement

Ryan and Deci define motivation as "an internal state that arouses, directs, and maintains behavior" (Ryan & Deci, 2000, p. 56). Behavior can be energized and directed by drives, needs, incentives, goals, social pressure, interests, curiosity, values and expectations, and more. Psychologists have made a distinction in

motivation based on intrinsic and extrinsic factors. Intrinsic motivation refers to the natural tendency to seek out challenges as one pursues personal interests and goals (Ryan & Deci, 2000). When individuals are intrinsically motivated, they engage in activities without expecting incentives or rewards. On the other hand, individuals that engage in tasks because of rewards or punishment are extrinsically motivated (Ryan & Deci, 2000). For example, students may be motivated to read for grades or teacher recognition. Why the interest in motivation, particularly motivation among adolescents? Accumulating evidence provides support for the impact of motivation on student academic outcomes (Guthrie & Cox, 2001; Kelly & Decker, 2009; Mucherah & Yoder, 2008; Mucherah & Herendeen, 2013; Unrau & Schlackman, 2006; Wigfield et al., 2008). Recent findings show motivation, specifically reading motivation, begins to decline in adolescence (Kelley & Decker, 2009; LaRocque, 2008; Lau, 2009). This has prompted an increased interest in motivation among adolescents. In a study conducted in the United States examining middle school students' motivation to read, results showed that motivation to read decreased as grade level increased (Kelley & Decker, 2009). Another study conducted in Hong Kong examining the difference in reading motivation found that students in higher grades (8-9 grades) had significantly lower reading motivation compared to the primary school students (Lau, 2009). The decline in reading motivation is well-established by current research. However, more research is needed to find the reason for this decline.

Most research on reading motivation has utilized the Motivation for Reading Questionnaire (MRQ), a tool developed by Wigfield and Guthrie (1995). Through factor analysis, this research has identified various intrinsic and extrinsic reading motivation aspects that are perceived by students as being distinct. These aspects include reading challenge, efficacy, curiosity, aesthetic enjoyment, grades, recognition, compliance, competition, social reasons, and work avoidance (Guthrie & Cox, 2001; Guthrie et al., 2007; Lau, 2009; McGeown, Goodwin, Henderson, & Wright, 2012; Mucherah & Yoder, 2008; Mucherah & Herendeen, 2013; Unrau & Schlackman, 2006). These studies provide empirical support for the significance of these aspects of reading motivation in student achievement both in the United States and in other countries. Additionally, these studies reveal that different aspects of reading motivation affect achievement differently.

Studies using the MRQ have found reading motivation to be a significant predictor of achievement with different aspects of motivation being uniquely related to achievement. For example, studies conducted in the US among middle school students have found motivation for reading challenge, efficacy, and aesthetics to positively influence achievement (Fulmer & Frijters, 2011; Guthrie et al., 2007; McGeown, Goodwin, Henderson, & Wright, 2012; Mucherah & Yoder, 2008; Unrau & Schlackman, 2006; Wigfield et al., 2008). Similar findings were found in the UK among middle school students (Logan & Medford, 2011; McGeown, Goodwin, Henderson, & Wright, 2012), in China (Lau, 2009; Law, 2008) and in Belgium (De Naeghel, Van Keer, Vansteenkiste, & Rosseel, 2012). However, other studies have

found different results. For example, a study conducted in Kenya examining 6-8th grade students' reading motivation and achievement found that reading challenge and aesthetics but not efficacy significantly predicted achievement (Mucherah & Herendeen, 2013). Another study comparing reading motivation and achievement in 7th grade students from Kenya and the US found reading efficacy and importance of reading to be significant predictors of achievement for the US students while reading challenge and compliance were significant predictors of achievement for the Kenyan students (Mucherah & Ambrose-Stahl, 2014). These studies indicate that reading motivation may not influence achievement similarly across different groups.

Other researchers not using the MRQ have also found a significant relationship between reading motivation and achievement (Kelly & Decker, 2009; Reyes, Brackett, Rivers, White, & Salovey, 2012). In one study, Fulmer and Frijters (2011) explored the influence of a challenging task on middle school students' motivation, attributions for failure and persistence. Results showed that students who were highly motivated were more persistent, read more, and reported fewer attributes to failure. These students also had higher task performance. On the contrary, students who were less motivated read less and reported more attributes for failure such as researcher unfairness, less interest and lack of effort (Fulmer & Frijters, 2011). In summary, accumulating evidence suggests that when students are highly motivated to read, they experience academic success. However, even though research in this area provides empirical support for the significant relationship between reading motivation and achievement, researchers have paid limited attention, if any, to the role classroom climate plays in this relationship. Is it possible that the classroom climate in middle school influences student motivation which then impacts achievement? The current study attempts to address this question.

The purpose of the present study is to examine whether students' perceptions of their reading motivation mediate the relationship between classroom climate and reading achievement on a state standardized test. The following hypotheses were tested:

H1: The impact of competition in the classroom on achievement is mediated by the challenge, and efficacy aspects of student reading motivation.

H2: The impact of teacher support on achievement is mediated by the challenge, efficacy, and compliance aspects of student reading motivation.

H3: The impact of classroom affiliation on achievement is mediated by the aesthetics and social aspects of student reading motivation.

H4: The impact of classroom order and organization on achievement is mediated by the aesthetics, challenge, efficacy, and compliance aspects of student reading motivation.

H5: The mediation effects hypothesized in H1-H4 will be moderated by student gender.

Method

Participants

Data for the current study was collected from 104 students in two public school 7th grade classrooms in the East coast region of the United States. There were 49 females and 55 males. Two English language arts teachers were also examined: one male teacher with 8 years of teaching experience, and one female teacher with 15 years of teaching experience. Of the 104 students, 30 were in the male teacher's classroom. The majority of the student population is white, with 2% minority students. According to U.S. Department of Education, 29.8% of the district's students were enrolled in the federal free and reduced lunch program (US Department of Education, 2012).

Measures

Reading Motivation. Students' reading motivation was assessed using a shortened version of the Motivation for Reading Questionnaire (MRQ) (Wigfield & Guthrie, 1995). The original questionnaire contained 54 items with 11 subscales. The shortened version used in this study contained 29 items and all eleven original subscales. This measure allows for the assessment of 11 different domains of reading motivation. It assesses the domains of *Reading Efficacy* (3 items, e.g. "I am a good reader"), *Reading Challenge* (2 items, e.g. "I like hard, challenging books"), *Reading Curiosity* (3 items, e.g. "I read to learn new information about topics that interest me"), *Aesthetic Enjoyment* (3 items, e.g. "I make pictures in my mind when I read"), *Importance of reading* (2 items, e.g. "It is very important to me to be a good reader"), *Recognition* (3 items, e.g. "I like to get compliments for my reading"), *Compliance* (3 items, e.g. "Finishing every reading assignment is very important to me"), *Reading for grades* (2 items, e.g. "I look forward to finding out my reading grade"), *Social reasons* (3 items, e.g. "I like to tell my family about what I am reading"), *Competition* (3 items, e.g. "I like being the best at reading"), and *Avoidance* (2 items, e.g. "I don't like reading something when the words are too difficult"). The students rated themselves on a four point Likert continuum (e.g., 1="very different from me" to 4= "A lot like me").

This questionnaire was chosen because it assesses multiple dimensions of reading motivation, such as students' overall perception of competency, their intrinsic and extrinsic motivations, and the social aspects of reading. In addition, it distinguishes different kinds of extrinsic motivations such as Reading for Recognition, and Reading for Grades.

Because the measure was shortened, a reliability test was conducted on all 11 subscales. All the subscales received a reasonable Cronbach's reliability value that ranged between 0.61 and 0.84 (see Table 1).

Table 1: Cronbach's Alpha Reliabilities (number of items) of the Reading Motivation Subscales for the Original and Current Study

Subscale	Wigfield &Guthrie[1]	Current Study
Efficacy	.68 (3)	.76(3)
Challenge	.80 (5)	.75(2)
Curiosity	.77 (5)	.71(3)
Aesthetic Enjoyment	.76 (7)	.66(3)
Importance	.52 (2)	.76(2)
Recognition	.55 (5)	.84(3)
Compliance	.69 (5)	.65(3)
Grades	.43 (4)	.63(2)
Social	.72 (7)	.82(3)
Competition	.81 (6)	.74(3)
Work Avoidance	.60 (4)	.74(2)

[1]Wigfield & Guthrie (1995)

Classroom Climate. To assess the classroom climate, students completed a shortened version of the Classroom Climate Questionnaire (CCQ) (Trickett & Moos, 1995). This questionnaire examines students' perceptions of their classroom climate and assesses three major sets of classroom dimensions including relationships, personal growth, and systems maintenance and change. Within the three major dimensions are nine specific domains of classroom climate: *Involvement* (4 items, e.g. "Students put a lot of energy into what they do here"), *Affiliation* (5 items, e.g. "Students enjoy working together on projects in this class"), *Teacher Support* (4 items, e.g. "The teacher takes a personal interest in students"), *Task Involvement* (2 items, e.g. "Getting a certain amount of class work done is very important in this class"), *Competition* (3 items, "Grades are very important in this class"), *Order and Organization* (2 items, e.g. "Activities in this class are clearly and carefully planned"), *Rule Clarity* (2 items, e.g. "The teacher explains what the rules are"), *Rule Strictness* (4 items, e.g. "The teacher will kick a student out of class if he/she acts up"), and *Innovation* (2 items, "The teacher likes students to try unusual projects").

The students were asked to rate how frequently they perceive this occurs in their class on a four point Likert continuum (1=Never; 4=Often). This questionnaire has been used in previous studies and received test-retest reliabilities ranging from 0.72 to 0.90 (Trickett & Moos, 1995; Walberg, 1979). The current study had acceptable reliability values between 0.61 and 0.80 (See Table 2).

Table 2: Cronbach's Alpha Reliabilities (number of items) of the Classroom Climate Subscales for the Original and Current Study

Subscale	Trickett & Moos[1]	Current Study
Competition	.68 (3)	.64(3)
Innovation	.80 (5)	.66(2)
Task involvement	.77 (5)	.65(2)
Rule strictness	.76 (7)	.61(4)
Teacher support	.52 (2)	.80(4)
Rule clarity	.55 (5)	.78(3)
Involvement	.69 (5)	.71(4)
Affiliation	.43 (4)	.76(5)
Order & Organization	.72 (7)	.71(2)

[1]Trickett & Moos (1995)

Academic Achievement. We assessed academic achievement using a state standardized test. The Pennsylvania System of School Assessment (PSSA) test is a state mandated annual test given to Pennsylvania students in grades three through eleven. The PSSA Reading test is based on the state's academic standards for Reading. The test consists of both multiple choice (selected response) and open-ended (constructed response) questions. All questions refer back to reading passages.

It is a criterion-referenced assessment measuring both individual student success on the standards as well as the school's success in providing instruction based on the standards. The state's standards setting committee establishes cut-off scores that indicate mastery (Advanced and Proficient) and non-mastery (Basic and Below Basic). The range of scores for the seventh grade performance level was as follows: 1456+ = Advanced; 1278-1455 = Proficient; 1121-1277 = Basic; and 700-1120 = Below Basic. In the current study scores ranged from 889-2338. Note: This state standardized test has been used previously by Mucherah & Ambrose-Stahl (2014).

Procedure

Student ratings of classroom climate and reading motivation were drawn from questionnaires administered by research assistants who collected data from students during the regular school day. Students were allowed to read independently; however, the graduate assistants were available to answer any questions pertaining to specific items on the questionnaires. Each survey took approximately 15-20 minutes to complete. Reading achievement scores were obtained from the state mandated standardized test: the Pennsylvania System of School Assessment (PSSA) results.

Analysis

First, a test of means for all the classroom climate and reading motivation variables was conducted using the 2 teachers as independent variables. No significant difference was found between the 2 teachers; therefore, the teacher variable was not included in subsequent analyses. In order to test the aforementioned hypotheses regarding the reading motivation subscales serving as mediators for specific classroom climate subscales, a mediated regression model was fit to the data using SPSS, version 21 (IBM SPSS Statistics, 2012). Specifically, the bootstrap method for calculating standard errors (Preacher & Hayes, 2008) was used in conjunction with regression models to test the hypotheses described previously. For each of the classroom climate variables, both direct and indirect paths were tested for statistical significance. For a given climate variable, a significant result for indirect effects coupled with a non-significant direct effect would indicate the presence of full mediation. Conversely, significant indirect effects coupled with a significant direct effect would mean that partial mediation was present. Finally, no significant indirect effects for a particular classroom climate variable would, of course, mean that no mediation was present for that variable. Hypothesis 5, involving the moderation by gender of the mediated relationships, was assessed using the bootstrap standard error approach described by Preacher and Hayes (2008). All analyses were conducted using SPSS macros associated with the methods described in Preacher and Hayes.

Results

Descriptive Analyses

The means and standard deviations for the variables used in this study appear in Table 3. The means for the significant classroom climate subscale scores of order and organization, competition, affiliation, and teacher support were 3.50 (SD = 0.55), 3.44 (SD = 0.46), 3.18 (SD = 0.48), and 3.05 (SD = 0.59), respectively. In this study, females perceived their classroom climate to be higher on affiliation than did males, but for each of the other climate variables means for the two genders were quite comparable. The means for the significant reading motivation scales of aesthetics, compliance, efficacy, challenge, and social were 3. 02 (SD = 0.73), 2.94 (SD=0.77), 2.79 (SD = 0.67), 2.77 (0.89), and 2.16 (SD = 0.94), respectively. In this study, female students rated themselves higher on all the reading motivation aspects (see Table 3).

Table 3: Mean (Standard Deviation) of variables used in the model

Variable	Total sample (101)	Males (53)	Females (48)	p-value
Achievement score	1474.84 (236.40)	1443.02 (253.63)	1509.98 (212.92)	0.017
Reading Motivation subscales				
Climate Competition	3.44 (0.46)	3.44 (0.44)	3.43 (0.49)	0.569
Teacher Support	3.05 (0.59)	3.05 (0.62)	3.04 (0.55)	0.661
Affiliation	3.18 (0.48)	3.14 (0.54)	3.23 (0.41)	0.021
Order	3.50 (0.55	3.50 (0.56)	3.51 (0.53)	0.756
Classroom Climate subscales				
Aesthetics	3.02 (0.73)	2.82 (0.72)	3.24 (0.68)	0.003
Challenge	2.77 (0.89)	2.65 (0.97)	2.90 (0.80)	0.030
Efficacy	2.79 (0.67)	2.71 (0.65)	2.88 (0.69)	0.037
Social	2.16 (0.94)	1.82 (0.74)	2.54 (1.01)	<0.001
Compliance	2.94 (0.77)	2.84 (0.81)	3.06 (0.70)	0.028

Mediation Model

The Standardized direct and indirect effects of the mediation model appear in Table 4. Of the four Classroom Climate variables, only order and organization had a statistically significant direct effect on the achievement test score when controlling for the mediation effects. This relationship was positive, indicating that the more orderly and organized the students believed the classroom was, the higher their performance on the achievement test. In addition, each of the indirect effects for order and organization was statistically significant and positively related to achievement test scores.

More specifically, greater perceived order and organization was associated with higher test scores through the reading motivation mediators of aesthetics, challenge, efficacy, and compliance. Taken together, these results demonstrate that the relationship of order and organization with achievement was partially mediated by aesthetics, challenge, efficacy, and compliance. See Figure 1 for details.
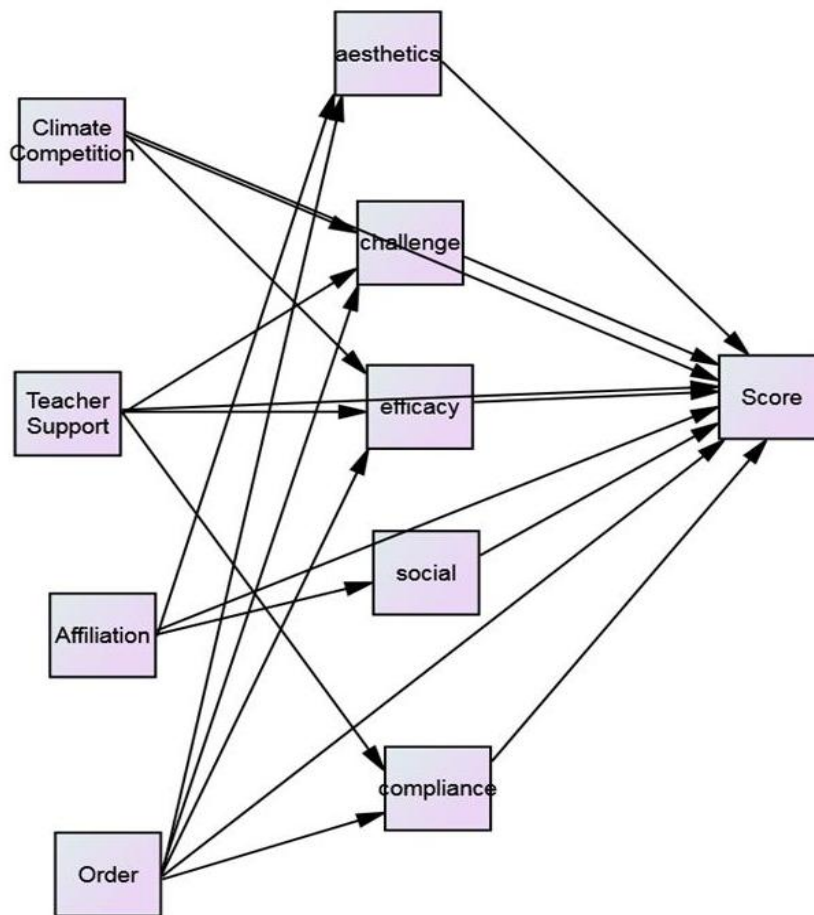
Figure 1. Mediation Model: How classroom climate mediates the association between reading motivation and achievement.

The relationships between each of the other Classroom Climate variables and the achievement test scores were fully mediated by several of the Reading Motivation subscales, with each having at least one statistically significant indirect effect, and none having significant direct effects. For example, the standardized indirect effect of climate competition on the achievement test score through the mediator challenge was 0.25, indicating that the greater the competitive climate in the classroom, the higher the achievement test score, through the challenge mediator. Similar positive statistically significant indirect effects were in evidence for teacher support, through efficacy and compliance, respectively. These results indicate that higher teacher support scores were associated with higher achievement test scores through the efficacy and compliance reading motivation subscale scores. The relationship of affiliation and test score was positively mediated through the social reading motivation subscale, such that a classroom with a higher sense of affiliation (as reported by students) was associated with higher academic achievement, through the social reading motivation subscale. Finally, Table 4 also includes the adjusted R^2 values for the achievement test score by each of the classroom climate

variables and all of their indirect effects together. The total variance explained in achievement by the model was $R^2=0.2341$. With regard to individual classroom climate variables, order and organization, and teacher support, along with their indirect effects, explained the largest proportion of variance in achievement, with values just above 0.2, whereas affiliation and its indirect effects explained the least amount of variance in achievement, at 0.13.

Table 4: Standardized Mediation Effects for Academic Achievement

Effect	Direct Effect	Indirect Effect	$AdjR^2$**
Climate Competition > Challenge	0.02	0.25*	0.18
Climate Competition > Efficacy			
		0.12	
Teacher Support > Challenge	0.03		0.21
		0.07	
Teacher Support > Efficacy		0.12*	
Teacher Support > Compliance		0.17*	
Affiliation > Aesthetics	0.01		0.13
		0.04	
Affiliation > Social		0.14*	
Order > Aesthetics	0.23*	0.13*	0.22
Order > Challenge		0.14*	
Order > Efficacy		0.13*	
Order > Compliance		0.16*	

*Statistically significant at a=0.05

**Adjusted R^2 values for achievement test score associated with individual classroom climate variables and all of their indirect effect

Moderated Mediation

In addition to the hypothesized mediation model, a second primary research question to be addressed in the current study concerned the possibility of student gender being a moderator of the mediated relationships. An examination of the gender effect was important because past research has revealed a gender difference in student reading motivation and achievement (Kelly & Decker, 2009; Logan & Medford, 2011; McGeown, Goodwin, Henderson, & Wright, 2012; Mucherah & Yoder, 2008). In order to address this issue, the approach to fitting the moderated mediation model suggested by Preacher, Rucker, and Hayes (2008), which relies on using the bootstrap to estimate standard errors for the indirect effects, was used. Table 5 includes the standardized indirect effect coefficients for males and females, for those mediated relationships that were found to be statistically significantly different between the genders. As an example, the relationship between climate competition and achievement test score, mediated through challenge, was found to differ between male and female study participants, with the effect being greater for females than males. In other words, the mediated relationship between a competitive classroom climate and student achievement, through the reading motivator of challenge was stronger for females than it was for males. Similar patterns were in evidence for the significant moderated mediator effects associated

with the classroom climate variable order and organization; these indirect relationships were stronger for females than for males. In other words, the relationship of an orderly and organized classroom climate with achievement, through the motivators of aesthetics, challenge, efficacy, and compliance, was stronger for female participants. In contrast, the mediation effects associated with teacher support and affiliation were not moderated by student gender, meaning that the relationships between these variables and achievement that are displayed in Table 4 were statistically equivalent for males and females.

Table 5: Statistically Significant Moderated Mediation Indirect Effects for Academic Achievement

Effect	Male Coefficient	Female Coefficient
Climate Competition > Challenge	0.22	0.28
Order > Aesthetics	0.04	0.24
Order > Challenge	0.13	0.27
Order > Efficacy	0.13	0.22
Order > Compliance	0.11	0.40

*$p<0.05$

Discussion

The goal of this study was to investigate the extent to which the relationship between classroom climate and reading achievement is mediated by individual students' reading motivation and whether these relationships are further moderated by student gender. In particular, four mediational hypotheses were tested, one involving each of the classroom climate variables of climate competition, teacher support, affiliation, and order and organization. The results presented above showed that the relationships between reading achievement and climate competition, teacher support, and affiliation were indeed fully mediated by some aspect of reading motivation. In the case of competition, mediation was completely through challenge, whereas for teacher support mediation was through both efficacy and compliance. For affiliation, the mediated relationship was through social reasons. These results mean that each of these classroom climate constructs is related to achievement only through the lens of some aspect of reading motivation. Conversely, the degree to which the classroom is orderly and organized was found to have both direct and indirect relationships with student achievement. The mediated aspects of this relationship were found to be through the aesthetics, challenge, efficacy, and compliance aspects of reading motivation. Taken together, these results at least partially support each of the hypotheses that were made regarding mediation. Primarily, the impact of classroom climate on achievement does appear to be mediated by reading motivation, and these relationships were all found to be positive. Thus, higher climate competition, teacher support, affiliation, and order and organization scores were associated with higher student reading achievement, through the significant mediating relationships described above.

The final hypothesis that was addressed in this study involved the moderation of these mediated relationships by student gender. In other words, to what extent do the indirect effects described above differ between male and female students? Results presented here showed that student gender did indeed moderate the mediation for climate competition and order and organization. More specifically, the indirect effects of both of these classroom climate variables were stronger for females than for males. Thus, it is possible to conclude that climate competition and order and organization, as mediated by specific reading motivation variables, are more closely associated with reading achievement for girls than they are for boys; however, gender did not moderate the relationships between teacher support or affiliation with achievement. As with the hypotheses associated with mediation, these results partially support the moderation hypothesis described previously.

There were some limitations to this study. Absent are the teachers' and observers' perceptions of the classroom climate and student motivation. Research shows that teachers tend to perceive their classroom climate more positively than their students (Mucherah, 2008; Trickett & Moos, 1995). Triangulation of data sources (from students, teachers and observers) would have provided a complete picture of the classroom climate and student motivation. In addition, having qualitative data on student motivation and the type of material they prefer to read would have provided some data to help interpret the study findings on reading motivation and achievement. Future studies should consider conducting either focus groups, or having interest surveys on reading motivation and classroom climate with middle school students. Having concrete information from students on what they like to read and their ideal classroom climate is beneficial for both researchers and teachers.

Conclusion and Implications

This study has significant practical implications, specifically for educators. As indicated earlier, most research on the relationship between classroom climate and achievement or reading motivation and achievement tends to be general and rarely provides specific information on how student motivation is mediated by specific classroom climate aspects. For example, studies have shown that students who are motivated to read challenging material, have high efficacy, and enjoy reading for aesthetic reasons do better on reading achievement (Guthrie & Cox, 2001; Mucherah & Yoder, 2008; Mucherah & Herendeen, 2013; Wigfield et al., 2008). However, these studies do not explain how certain aspects of the classroom climate might influence these outcomes. The current study suggests there are indeed specific practices that teachers can engage in, with regard to the classroom climate, that are most likely to maximize their students' motivation and achievement. Furthermore, past studies have found a competitive classroom climate to have a less positive influence on student motivation and achievement (Koth, Bradshaw & Leaf, 2008; Mucherah, 2008; Vedder, Kouwehoven & Burk, 2009). Teachers have considerable influence on how their classroom is structured and organized. This study shows that having a competitive classroom that is well organized and orderly, coupled with teacher

support and high student affiliation has a significant positive impact on student motivation and achievement.

In lieu of the above finding, it is suggested that teachers create an atmosphere of reading as a paired, social activity in which students and the teacher share with one another what they are reading and what their opinion of the material is. It appears that the strong focus on reading in order to do well on the high-stakes test has worked to negate viewing reading as an enjoyable activity for students; therefore, this "sharing circle" activity has the potential to reduce that misconception. Having the teacher contribute to the discussion lends credibility to the message that reading can be enjoyed. Additionally, devoting a space to student book reviews is also suggested. This is especially beneficial for students who may be reluctant to speak in class about a book. Seeing their peers reading and reviewing books encourages students to do the same; it is positive peer pressure. The format for the book reviews should be simple so as to encourage students to complete and read them.

With regard to gender differences in motivation, classroom climate, and achievement, our study results are similar to past studies that have consistently found gender difference between males and females specifically in reading motivation and reading achievement (Kelly & Decker, 2009; LaRocque, 2008; McGeown, Goodwin, Henderson, & Wright, 2012; Mucherah & Herendeen, 2013). Except for compliance, females in the present study were intrinsically motivated to read through aesthetics, challenge and efficacy which resulted in high reading achievement. Middle school teachers should pay close attention to what types of reading materials are made available to their students. While most teachers have a library of books in their classroom, it is recommended that the classroom library be expanded to include high interest magazines and other print materials. Doing so may encourage students to read for enjoyment. Interest surveys will help teachers learn what topics are most likely to appeal to their student population; armed with that information, teachers can strive to have relevant reading materials available in their classrooms. Here is an observation from one middle school teacher "In my own personal experience, middle school boys LOVE nonfiction like the Guinness World Record books. Their zeal for those books led me to purchase duplicate copies for my library so as to avoid a fight over which boy got to read it at what time!" (D. A., personal communication, March 26, 2014).

References

Allen, D.A., & Fraser, B.J. (2007). Parent and student perceptions of classroom learning environment and its association with student outcomes. *Learning Environments Research, 10*, 67-82. Doi:10.1007/s10984-007-9018-z

Allen, J., Gregory, A., Mikami, A., Lun, J., Hamre, B. & Pianta, R. (2013). Observations of effective teacher-student interactions in secondary school classrooms: Predicting student achievement with the classroom assessment scoring system – Secondary. *School Psychology Review, 42*(1), 76-98.

Battistich, V., Schaps, E., & Wilson, N. (2004). Effects of an elementary school intervention on students' connectedness to school and social adjustment during middle school. *The Journal of Primary Prevention, 24*(3), 243-262. doi: 10.1023/B:JOPP.0000018048.38517.cd

Chen, J. (2005). Relation of academic support from parents, teachers, and peers to Hong Kong adolescents' academic achievement: The mediating role of academic engagement. *Genetic, Social, and General Psychology Monographs, 131,* 77-127. doi: 10.3200/MONO. 131.2.77-127.

De Naeghel, J., Van Keer, H., Vansteenkiste, M., & Rosseel, Y. (2012). The relation between elementary students' recreational and academic reading motivation, reading frequency, engagement, and competition: A self-determination theory perspective. *Journal of Educational Psychology*, *104*(4), 1006-1021.

Fraser, B. J. (1994). Research on classroom and school climate. In D.L. Gabel (Ed.), *Handbook of research on science teaching and learning* (pp. 493-541).

Fraser, B. J., & Fisher, D.L. (1986). Predicting student outcome from their perceptions of classroom psychosocial environment. *American Education Research Journal, 19,* 498-518.

Fulmer, S. M., & Frijters, J. C. (2011). Motivation during an excessively challenging reading task: The buffering role of relative topic of interest. *The Journal of Experimental Education, 79,* 185-208.

Goh, S.C., & Fraser, B. J. (2000). Teacher interpersonal behavior and elementary students' outcomes. *Journal of Research in Childhood Education, 14,* 216-231. doi: 10.1080/02568540009595765

Goh, S.C., & Fraser, B.J. (1998). Teacher interpersonal behavior, classroom environment and student outcomes in primary mathematics in Singapore. *Learning Environments Research, 1,* 199-229.

Goh, S.C., Young, D.J., & Fraser, B.J. (1995). Psychosocial climate and student outcomes in elementary mathematics classrooms: A multilevel analysis. *Journal of Experimental Education, 64,* 29-40. Doi:10.1080/00220973.1995.9943793

Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *Journal of Early Adolescence, 13*(1), 21-43.

Guthrie, J. T. & Cox, K. E. (2001). Classroom Conditions for Motivation and engagement in reading. *Educational Psychology Review, 13*(3), 283-302.

Guthrie, J. T., Hoa, L. W., Wigfield, A., Tonks, S. M., Humenick, N. M. & Littles, E. (2007). Reading motivation and reading comprehension in the later elementary years. *Contemporary Educational Psychology, 32,* 282-313.

Hamann, D. L. et. al.(1990). Classroom environments as related to contest ratings among high school performing ensembles. *Journal of Research in Music Education,38(3)*, 215-224.

IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.

Kelly, M. J., & Decker , E. O. (2009). The current state of motivation to read among middle school students. *Reading Psychology*, *30*, 466-485.

Klem, A. M., & Connell, J. P. (2004). Relationships matter: Linking teacher support to student engagement. *Journal of School Health, 74* (7), 262-273.

Knight, S. L. (1991). The effects of students' perceptions of the learning environment on their motivation in language arts. *Journal of Classroom Interaction, 25(2),* 19-23.

Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: The effect of classroom-level factors. *Journal of Educational Psychology, 100*(1), 96-104.

LaRocque, M. (2008). Assessing perceptions of the environment in elementary classrooms: The link with achievement. *Educational Psychology in Practice*,*24*(4), 289-305.

Lau, K. (2009). Reading motivation, perceptions of reading instruction, and reading amount: a comparison of junior and senior secondary students in Hong Kong. *Journal of Research in Reading*, *32*(4), 366-382.

Law, Y. (2008). The relationship between extrinsic motivation, home literacy, classroom instructional practices, and reading proficiency in second-grade Chinese children. *Research in Education*, *80*(1), 37-51.

Logan, S. & Medford, E. (2011). Gender differences in the strength of association between motivation, competency beliefs and reading skill. *Emotional Research, 53*(1), 85-94.

McGeown, S., Goodwin, H., Henderson, N. &Wright, P. (2012). Gender differences in reading motivation: Does sex or gender identity provide a better account? *Journal of Research in Reading, 35*(3), 328-336.

Mucherah, W. (2008). Classroom climate and students' goal structures in high school biology classrooms in Kenya. *Learning Environment Research, 11*, 63-81. doi: 10.1007/s10984-007-9036-x

Mucherah, W., & Yoder, A. (2008). Motivation for reading and middle school students' performance on standardized testing in reading. *Reading Psychology*, *29*(3), 214-235.

Mucherah, W. & Herendeen, A. (2013). Motivation for reading and upper primary school students' academic achievement in reading in Kenya. *Reading Psychology,34*, 569-593. doi: 10.1080/02702711.2012.664249

Mucherah, W., & Ambrose-Stahl, D. (2014). Relation of Reading Motivation to Reading Achievement in the 7th grade students from Kenya and the United States. *International Perspectives in Psychology*: *Research, Practice, Consultation, 3*(3), 154-166. DOI: 10.1037/ipp0000012

Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology, 99*(1), 83-98. DOI: 10.1037/0022-0663.99.1.83

Phillips, J. (2003). Powerful learning: Creating learning communities in urban school reform. *Journal of Curriculum and Supervision, 18*(3), 240-258.

Preacher, K.J. & Hayes, A.F. (2008). Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models. *Behavior Research Methods, 40*, 879-891.

Reyes, M. R., Brackett, M. A., Rivers, S. E., White, M., & Salovey, P. (2012). Classroom emotional climate, student engagement, and academic achievement. *Journal of Educational Psychology*, *104*(3), 700-712.

Ryan, A., & Patrick, H. (2001). The classroom social environment and changes in adolescents' motivation and engagement during middle school. *American Educational Research Journal, 38*(2), 437-460.

Ryan, R. M., & Deci, E.L. (2000). Intrinsic and extrinsic motivation: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54-67.

Stornes, T., Bru, E. & Idsoe, T. (2008). Classroom social structure and motivational climates: On the influence of teachers' involvement, teachers' autonomy support and regulation in relation to motivational climates in school classrooms. *Scandinavian Journal of Educational Research, 52*(3), 315-329.

Trickett, E. J., & Moos, R. H. (1995). *A social climate scale: Classroom environment scale manual* (3rd ed.). Palo Alto, CA: Consulting Psychologist Press.

Unrau, N., & Schlackman, J. (2006). Motivation and its relationship with reading achievement in an urban middle school. *The Journal of Educational Research*, *100*(2), 81-101.

US Department of Education. (2012). *Digest of Education Statistics* 2011 (NCES 2012-001). Washington, DC: U.S. Government Printing Office. Retrieved from http://nces.ed.gov/pubs2012/2012001.pdf

Vedder, P., Kouwehoven, C., & Burk, W. J. (2009). Classroom climate and students goal preferences: A cross-cultural comparison. *Scandinavian Journal of Psychology, 50*(2), 143-150. doi:10.111/j/1467-9450.2008.00691.x

Wang, M. & Holcombe, R. (2010). Adolescents' perceptions of school environment, engagement, and academic achievement in middle school. *American Educational Research Journal, 47*(3), 633-662. doi: 10.3102/0002831209361209

Walberg, H. J. (Ed.). (1979). Educational environments and effects: Evaluation, policy, and productivity. Berkley, CA: McCutchan.

Wigfield, A., & Guthrie, J.T. (1995). *Dimensions of children's motivations for reading: An initial study* (Research Rep. No. 34). Athens, GA: National Reading Research Center.

Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology, 89*, 420-432.

Wigfield, A.,Guthrie, J. T., Perencevich, K. C., Taboada, A., Klauda, S. L., Mcrae, A., & Barbosa, P. (2008). Role of reading engagement in mediating effects of reading comprehension instruction on reading outcomes. *Psychology in the Schools, 45*(5), 432-445.