Fall 11-2013

The Relationship Between Weather and Lunar Changes on Student Achievement and Measures School Districts Utilize to Combat Potential Impact

Kendra Stuart

The Relationship Between Weather and Lunar Changes on Student Achievement and Measures School Districts Utilize to Combat Potential Impact

by

Kendra Stuart

November 4, 2013

A Dissertation submitted to the Education Faculty of Lindenwood University in

partial fulfillment of the requirement for the degree of

Doctor of Education

School of Education

The Relationship Between Weather and Lunar Changes on Student Achievement and Measures School Districts Utilize to Combat Potential Impact

by

Kendra Stuart

This dissertation has been approved in partial fulfillment of the requirements for the degree of

Doctor of Education

at Lindenwood University by the School of Education

Sherry R. DeVore — 11-4-13

Dr. Sherry DeVore, Dissertation Chair — Date

Patricia Conner — 11-04-13

Dr. Patricia Conner, Committee Member — Date

11/4/13

Dr. Terry Reid, Committee Member — Date

Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree.

Full Legal Name: Kendra Sue Stuart

Signature: Kendra Sue Stuart Date: 11-4-13

Acknowledgements

I would like to thank Dr. Patricia Conner and Dr. Sherry DeVore for their assistance and encouragement during this process. I would also like to thank my husband, Bill, for allowing me to pursue my goals and for his never-ending love, support, and encouragement. I could not have succeeded without him. Also, my children, Zach, Nick, McKenna, and Landry have been extremely patient with me and allowed me to disappear for hours on end.

Abstract

Classroom disruptions present an obstacle to raising student achievement for teachers and school administrators. This study was designed to investigate potential relationships between weather, specifically barometric pressure, or the lunar cycle, and whether either had a direct correlation with student discipline referrals. The intent was to discover trends concerning barometric pressure or lunar phases and their predictability on the number of discipline referrals. Data were collected on three years of elementary student discipline referrals and compared to barometric pressure readings and lunar phases over the same period. The study also surveyed elementary principals on current measures school districts are utilizing to combat potential obstacles to student achievement. A Pearson correlation coefficient was computed on the dependent variable, student disciplinary referrals, and the independent variables, barometric pressure and lunar phases. After analyzing student discipline data, historical barometric pressure readings, and lunar phases, results determined neither barometric pressure or a full or new moon were accepted as significant predictors of student discipline. Survey results, however, indicated a belief that weather has a strong effect on student behavior.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

Student behavior, specifically behavior resulting in one or more student discipline referrals, is a major obstacle to student achievement. Skiba and Rausch (2006) stated, "there can be no question that schools need sound disciplinary systems to maintain school safety and promote student learning" (p. 1063). According to Lagace-Sequin and D'Entremont (2005), inclement weather, including humidity and less sunshine, is related to behavior problems in children. This study investigated the relationship between a change in weather conditions, specifically barometric pressure, or the lunar cycle and whether these meteorological conditions correlate with an increase in student disciplinary referrals. This study also examined measures school districts utilize to combat any potential obstacles to achievement.

Background of the Study

The promotion of desired student behavior is the purpose of discipline in school (Payne, 2006). Teachers expect classroom management to include behavior redirection. Disciplinary action "will lead to reduced rates of inappropriate or disruptive behavior in the school setting" (Skiba & Rausch, 2006, p. 1064). However, student misbehavior is increasing nationally (Eberly Center, n.d.). According to Skiba and Rausch (2006), 93% of teachers and 88% of parents believe one fundamental element of a school's mission is to educate students on the rules of society.

A national survey, completed in 2011 by the Center for Disease Control, found 7.4% of students reported being threatened or injured with a weapon at school and 7% of teachers reported being physically attacked or threatened by a student (National Center for Injury Prevention and Control, 2013). Obviously not every school is dealing with

extreme violence, yet “even beyond issues of physical safety, students cannot learn and teachers cannot teach in a school environment characterized by disruption, chaos, or frequent behavioral interruptions” (Skiba & Rausch, 2006, p. 1064). Given the trend of the rising need for discipline and the spotlight on the importance of achievement, specifically standardized test scores, any actions towards tackling student misbehavior is of utmost value (Warren, 2007).

According to Tidwell, Flannery, and Lewis-Palmer (2003), “discipline systems in most schools are designed to react to rather than prevent problem behaviors” (p. 18). However, teachers proactively addressing negative student behaviors and, therefore, discipline needs, should expect to see similar improvement in student achievement. Teacher expectations make an impact and “when teachers expected their students to do well they interacted with them in ways that led to their expectations being fulfilled” (Rubie-Davis, Peterson, Irving, Widdowson, & Dixon, 2010, p. 36). Tidwell et al. (2003) expressed that reacting to misbehavior is not effective. Reactive discipline leads to increased misbehavior. Similarly, according to Monroe (2006), “behavioral expectations, policies, procedures, and patterns in classrooms are critical means toward productive educational ends” (p. 163).

Discipline issues, specifically those resulting in office referrals, present a tremendous obstacle to increasing student achievement. According to Monroe (2006), student discipline is a significant professional concern for educators. Misbehavior forces educators to “grapple with concerns such as low standardized test scores and difficulties in providing high-quality teaching and learning opportunities” (Monroe, 2006, p. 163).

Tidwell et al. (2003) expressed, “there is a growing recognition that schools

should adopt a variety of practices to create and maintain safe, proactive (positive and preventive) learning environments" (p. 18). Student discipline affects school climate and classroom atmosphere, which negatively impacts the educational goal of student learning (Kindelan, 2011). In order to be proactive and preventive, identifying potential triggers to student misbehavior is necessary. Kindelan (2011) stated, "reducing disruptive behaviors can increase the amount of time students spend in the classroom and teachers can increase effective teaching for all students" (p. 4).

Conceptual Framework

Changes in weather produce reactions in the brain. Brain based research might be used to combat the effects of weather on student discipline. For the purpose of this study, brain based research, examined through the lens of Jensen's (2011) and Tate's (2007) work, provided the conceptual framework. Ali, Hukamdad, Ghazi, Shahzad, and Khan (2010) also found brain based learning strategies positively impacted student achievement. For example, a relaxing classroom is created by using greens or blues, which are thought to be calming colors (Tate, 2007).

Seating alternatives in classrooms might be offered. Tate (2007) suggested alternative seating makes students more comfortable, encouraging increased dopamine production. Dopamine helps with attention span and focusing issues. Tate (2007) found, "more than 50 years ago, an extensive student survey of 160,000 students showed when lighting in classrooms improved, so did student difficulties with vision, nutrition, infections, posture, and fatigue" (p. 21). Simply put, when students feel better, they behave better.

Schools are “challenged with problematic behavior” (Kindelan, 2011, p. 4). Safran and Oswald (2003) reported “the increase in aggressive and delinquent behaviors in schools throughout the country has reached critical proportions” (p. 361). Due to the rise in student misbehavior, much attention has been given to environmental influences on student behavior and achievement.

Tate (2007) suggested educators utilize classroom lighting, music, and wall color as an aid in preventing educational disruptions. According to Jensen (1995), “bright fluorescent lights appeared to create restless, overactive learners while lower-level lighting appeared to calm students” (p. 22). Tate (2007) suggested appropriate music might cut classroom management problems in half. Jensen and Dabney (2000) stated, “color influences emotion, behavior, mood and even cognition” (p. 24).

Students are affected by many factors causing fear or stress. According to the Southwest Educational Development Laboratory or SEDL (2007), “studies that explore the effects of attitudes and emotions on learning indicate that stress and constant fear, at any age, can circumvent the brain’s normal circuits” (p. 2). Teachers who successfully encourage trust and decrease student fear, no matter what the cause, enhance learning and increase achievement. This can be achieved by “focusing less on the physical and biochemical structure of the brain and more on the mind – a complex mix of thoughts, perceptions, feelings, and reasoning” (SEDL, 2007, p. 2).

Statement of the Problem

Misbehavior occurs when students violate a classroom’s social norms (Croom & Moore, 2003). Negative student behavior in the classroom results in decreased achievement (Warren, 2007). As a result, educators must determine triggers or causes to

negative student behavior. Changes in weather and moon phases are possible triggers (Lagace-Seguin & d'Entremont, 2005). What relationship exists between weather changes or phases of the moon and student behavior resulting in a discipline referral? Specifically, the main problems presented in this study are the effects of barometric pressure and the phases of the moon and their contribution to student misbehavior in the classroom.

Minimizing classroom disruptions is vital in increasing student achievement. According to Walther-Thomas and Brownwell (2001), taking a proactive stance in the classroom is the best way to prevent behavior problems. Education is becoming more about teaching life-skills and character traits and managing disruptions in the classroom than focusing on the main goal of education which is student achievement. Tate (2007) acknowledged, "teachers are dealing with students' inability to pay attention, refusal to complete assigned work, blatant disrespect, and violence again adults and other students" (p. xii).

Purpose of the Study

The purpose of this study was to examine disciplinary student data in order to identify a statistically significant predictor of student classroom behavior which could then be used proactively in an effort to prevent educational disruptions, therefore reducing discipline issues. The behavior of elementary students is becoming more and more challenging each year (Payne, 2006). School staff insists student behavior can be predicted by the weather forecast. Disciplinary data were gathered and analyzed to determine the relationship between undesirable classroom behavior and weather changes. Specifically, this study examined the relationship between elementary student discipline

referrals and weather condition changes, or lunar phases, and identified measures school districts are using to combat obstacles to student achievement.

Significance of the Study

Jensen (2011) recognized, “in a perfect world, all children would arrive at school with workable academic and social operating systems, ready to be fine-tuned by a positive school experience” (p. 4). Educators acknowledge this is rarely the case. Although there are many barriers to learning which cannot be conquered, creating a manageable learning environment is possible. According to Tate (2007), effective instructors employ classroom management strategies, preventing problems from occurring.

The more that is known about what affects children and their behavior, the better prepared and more proactive educators can be in dealing with student discipline. Safran and Oswald (2003) generalized most individuals are proactive and prepare for safety when warned of oncoming severe weather. That being said, “if teachers and administrators are prepared for behavioral challenges, students, faculty, and staff can weather behavioral storms in a healthier and more productive manner” (Safran & Oswald, 2003, p. 371).

One possible trigger of classroom disruptions is that of the lunar cycles and/or changes in weather conditions. According to VanBuskirk (2011), “research has suggested that weather is associated with emotions, mood, and behavior in adulthood,” but, “scientific investigations of this potentially significant explanation for children’s behavior have been overlooked, including the impact of weather patterns on academic performance and behavior” (pp. 2-3). A 1995 study revealed “there are too many

environmental variables that play a significant role in children's emotions and behavior" (Lagace-Seguin & D'Entremont, 2005, p. 380). If teachers were able to predict possible emotional effects or negative behavior based on weather forecasts or moon phases, perhaps they might better prepare for, and possibly even prevent, classroom disruptions. In turn, a more positive, calmer classroom should promote higher student achievement.

Scope of the Study

This study utilized quantitative statistics. Data were gathered on student discipline referrals, historical weather readings, and lunar cycles, and were analyzed to determine the relationship between student discipline referrals, changes in barometric pressure readings, and/or phases of the moon. Elementary principals were surveyed to determine measures being taken to combat obstacles to student achievement.

The scope of this study was contained to a rural Missouri elementary school. Discipline data encompassed three school years, 2009 through 2012, ranging from kindergarten through fourth grade. The elementary school has an extremely large population of students who qualify for free or reduced priced meals (over 70% consistently), a low number of multi-cultural students (less than 5% consistently), and no limited English students.

Research Questions

The following questions were addressed in the study:

1. What relationship exists between weather changes and elementary student behavior resulting in discipline referrals?
2. What relationship exists between the phases of the moon and elementary student behavior resulting in discipline referrals?

3. What measures are school districts utilizing to combat potential weather and lunar obstacles to student achievement?

Variables

Independent Variables. This study focused on two separate independent variables. An independent variable in a research study is one that stands alone and cannot be controlled or manipulated in any way (Bluman, 2011). Levine and Stephan (2010) defined an independent variable as "the variable used to predict the dependent or response variable in a regression analysis" (p. 361).

The first independent variable in this study was the weather. More specifically, historical barometric pressure readings were used. The second independent variable used in this study was the different phases of the moon.

Dependent Variable. A dependent variable in a research study is one that cannot stand alone (Bluman, 2011). A dependent variable depends on other factors and can be controlled or manipulated by one or more independent variables (Bluman, 2011). In addition, the dependent variable is "the variable to be predicted in a regression analysis" (Levine & Stephan, 2010, p. 360).

The dependent variable in this study was student behavior. More specifically, the dependent variable was any form of student behavior which resulted in a disciplinary referral. Wright and Dusek, as cited in Safran and Oswald (2003), found "office referrals are an unobtrusive measure of student behaviors and may help minimize the extensive time commitment connected with direct observation and the subjectivity of behavior rating scales" (p. 363).

Hypotheses

Null Hypotheses. A null hypothesis is "a statement about a parameter equal to a specific value, or the statement that no difference exists between the parameters for two or more populations" (Levine & Stephan, 2010, p. 362). There were two null hypotheses proposed.

H_o 1. There is no significant correlation between barometric pressure levels and student discipline referrals.

H 2. There is no significant correlation between the moon phases and student discipline referrals.

Alternate Hypotheses. The alternate hypothesis is simply the opposite of the null hypothesis (Levine & Stephan, 2010, p. 362). There were two proposed alternate hypotheses.

H_1 1. There is a significant correlation between barometric pressure levels and student discipline referrals.

H 2. There is a significant correlation between the moon phases and student discipline referrals.

Definition of Key Terms

For the purpose of this study, the following terms were defined:

Attention Deficit Disorder (ADD). Attention Deficit Disorder usually begins in childhood and causes a child to be inattentive and unable to focus (National Library of Medicine, 2013).

Attention Deficit Hyperactivity Disorder (ADHD). Attention Deficit Hyperactivity Disorder is a disorder that usually begins in childhood and causes a child to

not be able to focus, control his or her behavior, and be overactive (National Library of Medicine, 2013).

Autism. A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance (U.S. Department of Education, 2003). Autism is "characterized by an impaired immune system, lack of theory of mind (the ability to intuit what another is thinking, to 'walk in their shoes'), and perseverative behaviors" (Jensen, 2011, p. 85).

Barometric pressure. Also known as atmospheric pressure, the pressure exerted by the atmosphere as a direct consequence of the gravity on the column of air lying directly above the place to be measured (American Meteorological Society, 2011).

Biometeorology. Biometeorology is the science of the relation between the atmosphere and life processes (Essa, Hilton, & Murray, 1990, p. 32).

Bullying. Repeated physical, verbal, or psychological abuse intended to cause harm (Graham, n.d.). Bullying is sometimes referred to as peer victimization or peer harassment (Graham, n.d.).

Burnout. According to Brouwers and Tomic (2000), burnout is "a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment that can occur among individuals who work with other people in some capacity" (p. 239).

Character. A set of values that shape thoughts, actions, reactions, and feelings (U.S. Department of Education, 2003).

Classroom management. The management of materials, lessons, behavior, and the social dynamics of a classroom (Holt, 2008).

Consequence. Something a student would not want to happen, but is not physically or psychologically harmful to the student (Tate, 2007).

Discipline. Discipline, as it applied to this study, is control gained by enforcing obedience or order (Merriam-Webster, 2010). In addition, "discipline may be defined as actions that prevent and address student behavior problems" (Holt, 2008, p. 5).

Discipline referral. A student referred to administration for either a bus referral, a referral to the recovery room, or an office referral. Kindelan (2006) defined a referral as "a report that documents a student's violation of a rule set by a teacher or school and that requires administrative support" (p. 9).

Dopamine. Dopamine is a neurotransmitter in the brain responsible for pleasure, emotion, and movement regulation (Psychology Today, n.d.).

Generational poverty. According to Payne (2005), generational poverty can be defined as being in poverty for two generations or longer.

Impulsivity. Impulsivity, in children, can be defined as "frequently [doing] things that pop into their heads without thinking of the consequences" (Caselman, 2009, p. viii).

Lunar. Lunar is an adjective meaning "of, relating to, or resembling the moon" (Merriam-Webster, 2010).

Lunar effect. The term lunar effect refers to the influence of the moon on human behavior (Chudler, n.d.).

Social-emotional. Social-emotional development is the "developing capacity of the child from birth through 5 years of age to form close and secure adult and peer

relationships; experience, regulate, and express emotions in socially and culturally appropriate ways; and explore the environment and learn" (Ashdown & Bernard, 2012, p. 397).

Socioeconomic. Refers to of, relating to, or involving a combination of social and economic factors (Merriam-Webster, 2010).

Stress. Formally defined as a significant or life-changing event, stress is now considered to include everyday hassles (Vera et al., 2011).

Student engagement. Alvarez and Frey (2012) defined student engagement as "a multifaceted construct that includes the subcategories of behavioral engagement, emotional engagement, and cognitive engagement" (p. 1).

Suspension. According to Kindelan (2006), suspension is "a disciplinary action or consequence for inappropriate behavior that removes a student from the school or classroom setting for a specific amount of time" (p. 11).

Limitations

Data were derived from an elementary school in a rural district. This created limitations including a small sample size and lack of cultural variation. According to Unite for Sight (2013), a small sample size can result in a waste of resources. The physical or mental state of the student at the time of referral was not taken into account.

It must be noted that disciplinary referral data gathered might not have been consistent. Tidwell et al. (2003) acknowledged, "each school and a teacher may define and make use of disciplinary referrals differently" (p. 20). There was not consideration for differences in classroom management strategies or teaching styles. Finally, no consideration was given to the time of the year in which the referral was given. In this

study, each day was considered equal and no adjustments were made, such as for holidays, early release days, or party days. Limitations were confined to the degree of participation of survey respondents and small sample size. Limitations were also confined to the accuracy exercised by survey respondents to the survey questions.

Discipline for classroom disruptions and other nonviolent behavior is typically handled inclusively within the two special education classrooms. Therefore, the research excluded all students spending the majority of their educational minutes within a special education room. Those participants within a preschool class were excluded. In addition, teacher quality and training, factors beyond the scope of the study, were also excluded.

Summary

Even as far back as 1943, educators were charged with transforming children into successful, productive adults. Rogers (2003) acknowledged, "the Annual Report to the Board of Overseers of Harvard University on January 11, 1943, stated:

> The primary concerns of American education today is…to cultivate in the largest possible number of our future citizens an appreciation of both the responsibilities and the benefits which come to them because they are Americans and are free. (p. 79)

In order to meet this objective, schools must provide the highest level of appropriate education to each and every student. A positive, calm and safe learning environment is crucial for raising student achievement. In schools, it is becoming increasingly more difficult to create this type of atmosphere.

Teachers must use every means possible to minimize undesirable student behavior. This requires a proactive stance on classroom management. Teachers who

manage discipline proactively do so by anticipating student behavior and preventing or minimizing the occurrence and might prevent negative classroom behavior through anticipation and by asking sensible questions about possible triggers (Tate 2007).

This study focused on two possible triggers to classroom disruptions: unstable weather conditions, more specifically, levels of barometric pressure and the lunar cycle. Data were gathered on student disciplinary referrals and compared to historical barometric pressure reading and the timing of the phases of the moon. An electronic survey was administered to elementary principals to gather information on measures school districts are taking to combat obstacles to student achievement.

In Chapter Two, factors affecting student behavior and classroom discipline were explored. Causes for misbehavior were explored, as well as possible indirect influences on student behavior. The topics discussed included weather and behavior, the phases of the moon, and childhood disorders. The methodology used in this study was explained in Chapter Three. Detailed study results for each research question were provided in Chapter Four. Conclusions, implications for educators, and future research recommendations were detailed in Chapter Five.

Chapter Two: Review of Literature

Abundant research has been conducted on the causes of, detriment of, and solutions to student misbehavior and discipline (Warren, 2007). Student disciplinary issues of all types are holding back or preventing gains in student achievement in the classroom. According to Luiselli, Putnam, Handler, and Feinberg (2005), "problems such as violence, vandalism, bullying, and similar behaviours create an unsafe learning environment, undermine instruction, and pose a threat to the school population" (p. 183).

Student based "crime around a school erodes the feelings of safety our children need in order to focus on learning and growing" (Dorn, 2006, p. 53). Discussion is centered on serious disciplinary concerns, such as school shootings, but according to Anderson and Kincaid (2005):

> Even more prevalent, are behavior problems which disrupt learning and negatively affect school climate…examples of such behaviors include off-task behavior, noncompliance, defiance, disruptive behavior in the classroom, threatening teachers and other students, and drug use. (p. 49)

According to Kindelan (2011), "disobedience and disrespect were at the top of the list for reasons for the discipline referral" (p. 10). This chapter examines past and current student discipline topics, causes of classroom disruptions, preventive and proactive measures in dealing with classroom behavior, weather conditions related to human behavior, and the Lunar Effect.

Background

Student discipline referrals have been on the rise for many years. According to Hudley, Graham, and Taylor (2007), violence and aggression among youth have become

more obvious in the past few years. Kindelan (2011) named defiance, fighting, and inappropriate language as some of the top reasons for office referrals. Lewis, Sugai, and Colvin (1998) reported, “the prevalence and incidence of problem behavior in public schools has been a concern among teachers, families, and community members” (p. 446). Student disruptions have been and continue to be a main concern for schools (Skiba, Peterson, & Williams, 1997). In a study by Skiba et al. (1997), most discipline referrals were due to disrespect and insubordination and not safety.

According to Jensen (2011), the brain “is highly susceptible to environmental input” (p. 12). Ali et al. (2010) agreed, “environments, diet, amount of sleep, music, color, oxygen, movement, exercise, and water intake all affect the way our brain responds and learns” (p. 543). Environmental influence on student behavior and achievement is evident. Wachob (2012) agreed, “brain-based learning research has many implications for changing classroom dynamics that many researchers believe can improve academic success, decrease off-task behaviors, and improve overall school climate” (p. 8).

Factors such as music, wall color, and lighting have shown to decrease misbehavior. Winterbottom and Wilkins (2009) observed students to be more relaxed and engaged in bright light. Offering seating alternatives or allowing students out of their seats periodically may ease stress. According to Tomporowski, Davis, Miller, and Naglieri (2008), encouraging students to engage in physical activity results in cooperation in the classroom.

Brain based research findings might be successful in counteracting the effects of weather and lunar phases on student discipline. For example, “finding ways to vent emotions productively can help students deal with inevitable instances of anger, fear,

hurt, and tension in daily life" (SEDL, 2007). When students feel better, they usually behave better.

Education Variables Negatively Impacting Student Behavior

There are an endless number of reasons as to why students misbehave in the classroom. Students may misbehave because of low self-esteem, not feeling well, fatigue, or another problem (College of Saint Mary, n.d.). Tate (2007) named "four major reasons for student misbehavior: desire for attention, desire for control, boredom, and feelings of inadequacy" (p. 15). Sadly, these misbehaviors result in a disruption to the learning environment. Kraemer, Davies, Arndt, and Hunley (2012) explained, "within the classroom, disruptive behaviors impact the learning process, reduce instruction time, and make it more difficult for students to succeed academically" (p. 163).

Lack of preparation. One possible contributor to an increase in discipline referrals is inadequate teacher preparation. According to Holt (2008), "teacher preparation is now taking center stage in the national discussion of student achievement" (p. 2).The single most important factor in improving classroom achievement is an effective teacher (Leone, 2009). Brouwers and Tomic (1998) noted, "the ability to control students in a classroom is a critical factor in any educational setting" and "in order to reach instructional goals it is necessary for teachers to deal adequately with disruptive behavior in the classroom" (p. 242).

Inexperienced educators may enter into power struggles with students, causing further classroom disruption (Skiba & Peterson, 2000). According to Payne (2006), effective educators recognize a correlation between mutual respect and the need for discipline. When teachers are effectively trained on school discipline, they are more

likely to utilize “appropriate strategies for handling misbehavior” and more apt to teach “appropriate behavior [that] can help prevent minor misbehavior from accelerating into a classroom or school crisis” (Skiba & Peterson, 2000, p. 338).

Teacher attitude. Teacher attitude impacts classroom atmosphere which, in turn, impacts student behavior. Scrivner (2009) explained, “the attitudes teachers hold associated with what they teach, how they teach, and how they perceive students and student learning impact their teaching behaviors” (p. 9). Similarly, Payne (2005) claimed role-modeling by a teacher is extremely valuable, yet monetarily inexpensive.

In addition to role-modeling, teachers need to set clear objectives and expectations for students. Tate (2007) posited higher expectations which are clearly communicated to students result in a better increase in student achievement. Kindalen (2011) stated students need direct and explicit instruction about the expectations for their behavior to be successful. Accordingly, “teachers can prevent problem behaviors from occurring by teaching in ways that promote high levels of academic engagement and by assigning tasks that promote high rates of accurate responses” (College of Saint Mary, n.d., p. 15). Similarly, Rubie-Davies et al. (2010) found students were more likely to reach their full potential when teachers communicated high expectations.

A teacher’s attitude affects student achievement. According to Scrivner (2009), “exploring the relationship between teacher attitude and student achievement is an ethical, political, and legal issue for every school district in every state” (p. 2). Scrivner (2009) further explained teacher attitude directly affects teacher effectiveness which, in turn, has an enormous effect on student achievement.

Classroom management. Teachers experiencing burnout and a lack of classroom management could be partly to blame for student discipline problems. One of the most common reasons given for teacher burnout is a lack of effective classroom management strategies (Kratochwill, 2011). Gavish and Friedman (2010) found teaching was one of the most tiring and stressful professions. Holt (2008) explained, "as the student population becomes more diverse, experienced teachers in classrooms today could also benefit from in-service training to make their classrooms more effective" (p. 6). Regan (2009) noted teacher attrition can often be blamed on stress and failure to prepare adequately for behavior management. According to Skiba and Rausch (2006):

> Teachers who (1) distrust their classroom management abilities under standard job conditions and (2) understand the importance of that competence, (3) cannot avoid the management tasks if they are to reach the education goals, and (4) are informed that colleagues routinely obtain a comfortable learning environment, can easily suffer stress, exhaustion, and negative attitudes. (p. 242)

Teachers experiencing burnout may present negative attitudes which could easily flow through to the students. For example, according to Koenig (as cited in Tate, 2007), "threatening students may be ineffective because angry threats cause angry responses, escalate power struggles that erode cooperation, and are laden with empty promises that students know will never be carried out" (p. 104). In addition, "students' disrespect for teachers, their disregard for the teacher's authority, and the absence of harmonious relations with students, may contribute to the deepest feelings of unsuccessfulness and professional failure, as well as acute feelings of worthlessness" (Gavish & Friedman, 2010, p. 162).

Bullying. According to Olweus, (as cited in Phillips & Cornell, 2012):

> Bullying is defined as the use of one's strength or popularity to injure, threaten, or embarrass another person. Bullying can be physical, verbal, or social. It is not bullying when two students of about the same strength argue or fight. (p. 124)

Phillips and Cornell (2012) also revealed, "a large body of evidence now shows that victims of bullying experience increased rates of many social, emotional, and academic problems" (p. 123). Basch (2011) reported victims often suffer from future mental and emotional issues, do not feel safe at school, and have trouble feeling a sense of connectedness at school.

Sadly, bullying reports are continually on the rise, and bullying is one form of student misbehavior that could be considered as becoming out of control. Kokkinos and Kipritsi (2012) stated:

> Researchers claim that bullying is characterized by intentionality, repetition, and imbalance of power and define it as a unique sub-category of aggression, aimed at causing either physical or psychological harm to an individual, who is weaker and not in a position to defend her/himself and has not provoked the behavior. (p. 42)

According to one study, adolescents' benchmark scores were significantly impacted by bullying (Rothon, Head, Klineberg, & Stansfeld, 2011).

Kokkinos and Kipritsi (2012) reported males as more actively involved in the act of bullying because of their tendency for physical aggression. Although boys tend to bully more than girls, "bullying does not discriminate. It is truly an equal-opportunity problem that occurs with alarming frequency on our nation's campuses" (Dorn, 2006, p.

xv). Bullying happens to all types of individuals for many different reasons. Bullies target students because of racial or religious differences, language differences, noticeable disabilities, or many other reasons (Dorn, 2006).

The World Teachers Press (2003) compared bullying to other societal problems such as skin cancer, smoking diseases, and obesity. However, bullying can and should be addressed proactively and seriously. According to Phillips and Cornell (2012), "bullying victimization is associated with increased rates of depression, anxiety, psychosomatic complaints, and other internalizing problems" (p. 123).

The World Teachers Press (2003) reported that, in most cases, "adequate and appropriate preventive measures will stop the condition from arising altogether" (p. 3). According to Kindelan (2011), the majority of states have initiated bullying and character education mandates. Also, most schools treat bullying as reactively instead of proactively (Kindelan, 2011).

O'Malley (2009) explained most educators are not trained to deal with bullying. Teacher attitude, modeling, and classroom atmosphere affects bullying. O'Malley (2009) observed "teachers who promote a positive caring environment, treat children fairly, and provide meaningful opportunities for learning significantly reduce bullying behavior in their classrooms" (p. 47).

Classroom lighting. Many classroom disruptions are caused by the learning environment or the classroom itself. Fluorescent classroom lighting can affect behavior. Tate (2007) reported, "this type of light tends to make hyperactive children more hyperactive, increase the onset of migraine headaches, and can cause those who are prone

to epileptic seizures to experience an increase in the frequency and severity of those seizures" (p. 21).

Winterbottom and Wilkins (2009) found classrooms have too much lighting and with "unnecessarily inefficient form of fluorescent lighting that has been shown to cause headaches and impair visual performance" (p. 75). According to Jensen (1995), who has done extensive research on brain-related learning, "bright fluorescent lights appeared to create restless, overactive learners while lower-level lighting appeared to calm students" (p. 22).

Student behavior might be improved simply by lighting a classroom optimally. Tate (2007) reported, "more than 50 years ago, an extensive study of 160,000 students showed that when lighting in classrooms improved, so did student difficulties with vision, nutrition, infections, posture, and fatigue" (p. 21). Improved lighting might be as simple as a classroom window. Shemirani, Memarian, Naseri, Nejad, and Vaziri (2011) found windows attract elementary age students because they "prefer a high visual stimulus and are attracted by many of the aspects of windows including sunlight, daylight, view out, view content and visible activity" (p. 238).

According to Winterbottom and Wilkins (2009), colored overlays, which reduce the luminance of pages, have been found to "increase reading speed and reduce symptoms of visual stress and headaches" (p. 73). With regard to lighting fixtures, Warner and Myers (2009) suggested replacing fluorescent bulbs with full-spectrum bulbs, which might decrease student fatigue and improve vision.

Education Variables Positively Impacting Student Behavior

Effective classroom management. Classroom management skills are crucial for handling students. Vallaire-Thomas, Hicks, and Growe (2011) explained, "classroom teachers are under enormous pressure to meet the academic and behavioral needs of their students, fulfill state achievement requirements and satisfy the demands of the No Child Left Behind (NCLB) Act" (p. 226). Kindelan (2011) believed, "effective teaching and learning takes place in a well-managed classroom and school, because the students are engaged and interested" (p. 8).

An effective classroom manager prevents disruptions from occurring instead of waiting for misbehavior and then applying discipline or punishment. According to Jennings and Greenburg (2009):

> Socially and emotionally competent teachers set the tone of the classroom by developing supportive and encouraging relationships with their students, designing lessons that build on student strengths and abilities, establishing and implementing behavioral guidelines in ways that promote intrinsic motivation, coaching students through conflict situations, encouraging cooperation among students, and acting as a role model for respectful and appropriate communication and exhibitions of prosocial behavior. (p. 492)

Effective teachers look for causes to classroom disruptions and do not dwell on symptoms (Tate, 2007).

According to Rappaport and Minahan (2013), "principals and teachers recognize that just one severely disruptive student can quickly immobilize a classroom, or even the entire school" (p. 18). Teachers reap the benefit of higher achievement by assisting

students with developing behavior goals (Balfanz, 2009). Student achievement and improved behavior might be a result of effective classroom management and sound instructional strategies (Tidwell et al., 2003). Regan (2009) suggested teachers must continually reflect on the success or failure of discipline strategies in the classroom.

Teachers, who are proactive rather than reactive, are far more successful in dealing with student disciplinary issues in the classroom. Ediger (2009) stated, "proactive strategies need to be in the offing to minimize/eliminate negative behavior such as harassing others" (p. 1370). Payne (2005) suggested using discipline as instruction. However, being a proactive teacher does not ensure he or she will not get frustrated in the classroom.

According to Tate (2007), "angry, proactive teachers note their anger and calmly state what the student needs to do. Reactive teachers make the choice to take their anger out on students" (p. 103). In addition, Bernaus and Gardner (2008) found a teacher's personality impacts the effectiveness of instructional and disciplinary strategies. Students taught by sensitive, warm teachers who develop close relationships exhibit positive social behaviors (Merritt, Wanless, Rimm-Kaufman, Cameron & Peugh, 2012).

Discipline management. Sometimes, discipline is a necessary consequence. However, the type or process of discipline must be appropriate. According to Reglin, Akpo-Sanni, and Losike-Sedimo (2010), "the management of discipline problems at the elementary school level should no longer focus on punishment and retribution, but on conflict resolution, guidance, positive behavior motivational incentives and training good classroom management strategies to teachers" (p. 5). Discipline should never seek to threaten or embarrass a child.

Suspension may not be appropriate for several reasons. Reglin et al. (2010) pointed out students might not be properly supervised if their parents must work, and troubled students may get even farther behind in their work. According to Sullivan, Klingbeil, and Van Norman (2013), "educators commonly use exclusionary discipline strategies (i.e., suspension and expulsion) to address students' problem behavior even though they are ineffective for reducing unwanted behavior and are associated [with] academic failure, dropout, and family disruption" (p. 99).

Music in the classroom. Often classrooms are noisy, which prompts some students to become distracted and disruptive. One suggestion to help calm the classroom atmosphere is the use of appropriate background music. Lantieri (2008) reported, "it is a well-documented fact that listening to calming music has a direct correlation with a lowered respiration and heart rate, and can change our emotional moods" (p. 35). Therefore, incorporating music into the classroom can improve student behavior. Appropriate background music may eliminate a large portion of disruptive classroom behavior (Tate, 2007).

According to Crawford (2004), "teachers should play music when they are not lecturing because background noise keeps students from feeling the need to create it themselves by talking" (p. 6). Background music can also enhance classroom performance. Warner and Myers (2010) revealed, "the use of appropriate music, used at the right time and at the right volume can further enhance the creative atmosphere of any classroom or lab" (p. 34).

Caution should be taken, however. Approximately 60-70% of class time should be without music. Tate (2007) warned, "be aware of students who have difficulty

concentrating when there is any music played at all" (p. 29). Discipline issues could be promoted by those who are easily agitated or unable to concentrate, therefore providing a detriment to the classroom environment.

Color in the classroom. Color has been shown to affect student behavior. Ali et al. (2010) observed that carefully planned color schemes of classroom walls affect the achievement of elementary students in a positive way. Unfortunately, "the color of the walls in most of the classrooms across America do not speak of creativity, they speak of institutional blandness" (Warner & Myers, 2010, p. 30). Researchers have found "color influences emotion, behavior, mood and even cognition" (Jensen & Dabney, 2000, p. 33). "Preschool students who experienced wall colors that appealed to them as well as other positive environmental changes cooperated more after their exposure than before" (Tate, 2007, p. 32).

Warner and Myers (2010) suggested beige or pale green to "reduce agitation, apprehension, and promote a sense of well-being" (p. 32). Reds, oranges, and yellows are thought to excite students, possibly motivating them, but could aggravate behavior. Warm colors increase respiration, blood pressure, and activity in the brain (Ali et al., 2010). In addition, Tate (2007) suggested a relaxing classroom could possibly be created by using the calming colors of blue and green. Ali et al. (2010) agreed, stating cool color schemes decrease tension and blood pressure.

Classroom setup. The physical setup of a classroom can be a factor on student behavior. Cramped, cluttered rooms can prevent students from feeling comfortable with learning. When students become uncomfortable, misbehavior is more likely to occur. The

actual physical arrangement of a classroom can promote a positive, calm learning environment.

Warner and Myers (2010) explained, “room design influences the social context of the classes, student-instructor and student-student relations, instructional design options, and the overall effectiveness of instructional technology” (p. 28). Likewise, “a peace or calming corner is a special place that is set aside in the classroom. Young people can go there whenever they need calm and stillness” (Lantieri, 2008, p. 34).

According to Friend and Pope (2005), educators must focus “on fundamental principles for creating and sustaining classrooms in which all students can achieve” (p. 56). Warner and Myers (2010) suggested using student work displays to prompt creativity. Also, a classroom “should be kept slightly cool to help keep an edge on students’ creative energies and to encourage movement and activity” (Warner & Myers, 2010, p. 32).

Tate (2007) provided ideas on creating an effective classroom space. For hyperactive students unable to constantly sit, provide a podium in the back of the room so they might stand for some time. Tate (2007) suggested that seating alternatives should be provided and “students will learn with more comfort and their brains will simultaneously produce dopamine – the neurotransmitter that assists them in focusing and paying attention” (p. 41).

Extraneous Variables Affecting Student Behavior

Students are presented with a large variety of obstacles to achievement. However, many of these barriers are not directly related to the school environment. Rubie-Davies et al. (2010) identified some extraneous barriers as financial, lack of parental support, low

expectations, ethnic and/or gender discrimination, and actual student ability. These barriers and others are examined more in-depth.

Geographic location. Geographic location has also been suggested as a possible factor on negative student behavior. Dorn (2006) explained, “we know that a school is but a microcosm of a community. School reflects the best and the worst of what is in our society” (p. 34). Schools in large urban areas are continually thought to have a greater percentage of student misbehavior, violence, and/or bullying. Neighborhood perception may increase the frequency of aggression (Espelage, Bosworth, & Simon, 2000). Similarly, “urban schools often struggle with higher levels of violence, mobility, truancy, under-qualified staff, and staff turnover” (Feuerborn & Tyre, 2012, p. 48).

Studies have indicated all school settings, not just those found in urban locations, are at risk. A 2013 report observed rural schools experience violence at the same rate as urban schools (Lambert, 2013). Likewise, “bullying, taunting, intimidation and hazing can be found in well-funded, newly constructed suburban schools as often as they are found on inner-city campuses surrounded by blight” (Dorn, 2006, p. xv).

Family background. In regards to student discipline, the familial background of the student is as much, if not more, of a factor as the school setting. According to Vallaire-Thomas et al. (2011), “from birth to about five years of age, the immediate family and friends of a child are among the greatest influence of that child’s social development” (p. 227). Understandingly, educators place partial responsibility for lack of achievement on home environment (Ballard & Bates, 2008).

An emotionally stressful home life negatively affects a child’s ability to learn (SEDL, 2007, p. 2). LaCour and Tissington (2011) noted, “one of the primary effects

parents have on children regarding violence is teaching children to be violent as violence is a learned behavior" (p. 8). Thus, teachers are responsible for parenting children socially as well as educating them academically. Tate (2007) elaborated, "natural disasters and tragedies, transitions, unhealthy family situations, lack of parental discipline, marital discord, and disagreements within the family are all home and life factors which can increase in-school behavior problems" (p. 18). Also, "parental physical discipline, time spent without adult supervision, negative peer influences, and neighborhood safety concerns were each positively associated with bullying behavior" (Espelage et al., 2000, p. 327).

Often, family relations are responsible for student misbehavior. According to Ford and Nikapota (2000), "the most common barrier to managing children with behavioral disorders was problematic relationships with parents: 17/25 reported lack of support from parents and 11/25 poor parenting" (p. 458). Similarly, 71% of teachers pointed to a lack of parental supervision as the main cause of increasing school violence (Tate, 2007). Sheldon and Epstein (2002) reported, "certain parenting styles, disciplinary approaches, parental monitoring, family problem-solving strategies, and levels of conflict within the home are all predictive of delinquency among juveniles" (p. 8).

Parental involvement. Evidenced by research, parental involvement is crucial for student success. According to Bower and Griffin (2011), "parental involvement is seen as an effective strategy to ensure student success, as evidenced by several correlational studies, with the overarching benefit of parental involvement being increased academic performance" (p. 77). Rubie-Davies et al. (2010) found, "parents who held high expectations for their children and provided them with nurturing support were spoken by

students as having an important influence on their motivation and achievement" (p. 37). Likewise, "a supportive and stable home environment has a positive impact on school performance and the degree to which [a] child is engaged in school and learning" (National Association of School Psychologists, 2004, p. 1).

Student attitude, related to school and achievement, is established by parents (Morse, Christenson, & Lehr, 2004). Positive attitudes cannot be established or promoted if parents are not involved themselves. Adelman and Taylor (2012) recognized that a school's environment is more caring and efficient when a relationship is formed between the school, the parents, and the community.

Greene-Clemons and Flood (2013) suggested, "schools may need to encourage, praise, and help meet the needs of parents in order to secure their commitment" (p. 47). Parents may require assistance or resources from the school in order to encourage positive home relationships. Sheldon and Epstein (2002) observed "interventions designed to improve the interactions between parents and children may help reduce delinquency and problem behaviors of students in schools" (p. 8).

A student with a positive attitude is more likely to behave in the classroom, stay engaged, and achieve at a higher level. Tate (2007) noted, "whether dealing with two-parent families, single-parent families, teen-parent families, step-parent families, or no-parent families, students excel when their teacher and parent or caregiver enjoy a positive relationship" (p. 123). In 2002, the United States Department of Education stated that "every school will promote partnerships that will increase parental involvement and participation in promoting social, emotional, and academic growth of children" (Tate, 2007, p. 123). Rappaport and Minahan (2013) pointed out that a strong coalition between

a student's school and his or her parents is even more crucial for students with more challenging classroom behavior.

Socioeconomic status. Relating to familial influence, a student's socioeconomic status may affect his or her classroom behavior and academic achievement. Irvin (2012) stated, "economic deprivation among children is a potent influence on various educational and social-emotional outcomes and a risk factor for achievement difficulties and aggression" (p. 176). Baker and Johnston (2011) agreed "a child's SES [socioeconomic status] may play an important role in his/her learning and high-stakes test performance" (p. 193) and confirmed this in their 2011 study. Vera et al. (2011) observed:

> Researchers have found that urban hassles, or chronic stressors experienced as a function of living in a lower income environment (e.g., having to be safety conscious in one's neighborhood, seeing groups of kids hanging out in the streets), are relevant to a variety of psychological and academic outcomes of urban adolescents. (p. 56)

Nihart, Lersch, Sellers, and Mieczkowski (2005) assessed "when compared to their middle class peers, lower class, minority youths were at a disadvantage in competitive environments such as schools" (p. 80).

Generational poverty can affect a child's behavior in and out of a school setting. To survive in the world of poverty, one must be able to adequately fight (Payne, 2005). This tendency, coupled with a 2011 poverty rate of 21.9% of children under the age of 18, creates a likelihood of violence in schools (U.S. Census Bureau, 2012). In addition,

"poor inner-city youths are seven times more likely to be the victims of child abuse or neglect than are children of high social and economic status" (Payne, 2005, p. 4).

Rusby, Taylor, and Foster (2007) observed a low socioeconomic status as a predictor for receiving a discipline referral in elementary school; therefore, teachers should make an effort to educate themselves on the economic situation of students. Payne (2005) suggested, "an understanding of the culture and values of poverty will lessen the anger and frustration that educators may periodically feel when dealing with these students and parents" (p. 45). Basch (2011) also found inner city minority youth to be most affected.

Most educators understand a good portion of negative behavior displayed in the classroom can be attributed to a home environment laden with negativity or out of a student's necessity for survival. Payne (2005) explained students exhibit behaviors in school they need out of school for survival. However, family resources and background cannot always be blamed for student misbehavior. Payne (2005) suggested, "liberals should acknowledge the truth of the conservative contention that many problems of today's children and families have their roots in detrimental behavior patterns, rather than in a lack of opportunity or …resources" (p. 129).

Race. Race has often been seen as an indicator for school discipline issues. According to Sullivan, Klingbeil, and Van Norman (2013), "racial disproportionality in school discipline warrants attention because of the detrimental academic and social outcomes associated with exclusion and the compounding of this problem with other educational disparities" (p. 100). When compared to White students, Sullivan et al. (2013) observed Black students as being twice as likely to be suspended, Hispanic and

Native American students 20% more likely to be suspended, and Asian students much less likely.

Aside from Asian Americans, minority students receive discipline more often than White students; Asian students are the only group to receive less (Wallace, Goodking, Wallace, & Bachman, 2008). Wallace et al. (2008) reported, “nationally, Black students are more than twice as likely as White students to be suspended or expelled and in urban districts the disparity has been found to range from three to twenty-two times as likely” (p. 2). Blacks are not only more likely to be suspended; they are more likely to be suspended more than once and for longer periods of time (Sullivan et al., 2013). Elias (2013) reported “black children constitute 18 percent of students, but they account 46 percent of those suspended more than once” (p. 40).

According to McCreary et al. (2011), “African American males have the lowest academic achievement, highest behavioral problems, and worst attendance records due to punishment” (p. 126). A Skiba and Rausch (2006) study reported:

> For over 25 years, in national-, state-, district-, and building-level data, students of color have been found to be suspended at rates 2 to 3 times that of other students, and similarly overrepresented in office referrals, corporal punishment, and school expulsion. (p. 1073)

Kindelan (2011) indicated, “school administrators also must be vigilant to ensure students from minority groups are not overrepresented in discipline data and, if they are overrepresented, this needs to be addressed” (p. 4).

Gender. Some educators imply and expect a child’s gender to affect his or her behavior in the classroom. Eighty-five percent of referrals are given to male students

(Costello, 2009). This may be due to the fact boys are more likely to distract others by fidgeting, fail to complete assignments, or refuse to pay attention (Costello, 2009).

A 2009 study showed “males displayed higher levels of problem behaviors, and lower levels of social-emotional well-being, social-emotional competence, and social skills” (Ashdown & Bernard, 2012, p. 397). Male students exhibit aggression at school more often than females and, therefore, receive more office referrals (Rusby et al., 2007). Further, most violent acts involving weapons are committed by males, although violence committed by females is on the rise (LaCour & Tissington, 2011).

Similarly, “within the racial and ethnic subgroups, boys are consistently more likely than girls of the same racial or ethnic group to have experienced school discipline” (Wallace et al., 2008, p. 7). When discussing attitude toward authority figures, “boys are under much greater pressure than girls to adopt and conform to values and norms of the delinquent subculture” (Nihart et al., 2005, p. 81). However, Espelage et al. (2000) found gender “was not a significant modifier of any of the associations between bullying and familial, peer, and other contextual variables” (p. 328).

Discipline discrepancies. The type of discipline assigned often varies between students. “Low socioeconomic, minority and special education students appear to be at greater risk for receiving a variety of harsh disciplinary practices, including suspension, expulsion, and corporal punishment” (Skiba et al., 1997, p. 296). Sometimes discipline can be predicted based on student demographics.

Skiba and Peterson (2000) found, “while student behavior and attitude were correlated with suspension, school characteristics such as school governance, teacher attitude towards students, and race made a greater overall contribution toward predicting

suspension" (p. 337). Similarly, an ethnographic study reported "disciplinary sanctions at the secondary level were perceived to be unfairly targeted at low-income students by both high- and low-income students" (Skiba & Peterson, 2000, p. 338).

Student Engagement

In order to improve achievement, engagement is crucial (Lippman & Rivers, 2008). According to the National Association of School Psychologists [NASP], student engagement:

> Includes basic behaviors such as the student's compliance with school and class rules, promptness in arriving at school and classes, attending to the teacher, and classroom participation and also encompasses a student's sense of belonging, social ties and bonds, relationship with teachers, sense of safety and security at school, and the extent to which the student values school success. (Morse et al., 2004, p. 69)

Alvarez and Frey (2012) reported "a trusting working relationship with students and families that promotes connectedness with school personnel is at the heart of school engagement" (p. 1). Irvin (2012) explained that student engagement can be broken down into several components which "include behavioral engagement (e.g., attendance, class participation, extracurricular activities), psychological or emotional engagement (e.g., school belonging, identification with school), academic engagement (e.g., time-on-task), and cognitive engagement (e.g., depth of processing, learning goals, school relevance)" (p. 178).

Similarly, the NASP named four facets of student engagement. The first facet is academic or "the amount of time a student spends on task," the second is cognitive which

considers “when a student focuses on and thinks about academic tasks, processing information, and self-directed learning,” the behavioral, or third, facet concerns “a student’s participation in classroom and extracurricular activities,” and the fourth facet, psychological, is “a student’s sense of identification with school, sense of membership at the school, and positive relationships with peers” (Morse et al., 2004, p. 69).

Lack of student engagement leads to undesirable classroom behavior. According to Lippman and Rivers (2008), if a student is not engaged, he or she is at risk for dropping out, drug use, low achievement, and even sexual activity. Wachob (2012) named boredom, lack of teacher-student relationships, and non-interest as reasons for a lack of engagement in the classroom. Classroom disruptions are prevented when teachers engage students effectively (College of Saint Mary, n.d). According to Tate (2007), “because classroom management is tightly tied to how we deliver instruction, lessons that engage and motivate students minimize management concerns” and “to establish students’ need for what you are teaching, give them a purpose for learning it” (p. 50).

Engagement is linked to a positive educational environment. According to Lippman and Rivers (2008), “levels of school engagement are much lower in environments that lack adequate school supports such as a challenging curriculum, caring teachers, clear and consistent goals, and a school community that emphasizes support and belonging” (p. 1). Therefore, it is important students feel emotionally comfortable in the classroom as well as engaged. Educators need to give students a voice in the classroom. Ross, Neeley, and Baggs (2007) suggested, “by learning to verbally express their feelings and emotions, these children might be able to reduce the number of episodes of disruptive behavior previously used to vent frustration and emotion” (p. 210).

Physical or Mental State of Student

According to Adelman and Taylor (2012), “it has long been acknowledged that a variety of psychosocial and health problems affect learning and performance in profound ways” (p. 9). Lippman and Rivers (2008) observed fatigue, hunger, deficiencies in nutrition, and alcohol use have a negative effect on student engagement. Not only does the mental state of a child affect academic achievement in the classroom, it can also predict future problems. Morris (2010) recognized a student’s “physical and emotional well-being is closely associated with the ability to think and learn efficiently” (p. 1). In addition, “mental, emotional, and behavioral disorders often emerge during childhood and are predictive of lower school achievement, increased demands on the juvenile justice system, increased burden on the child welfare system, and substantial cost” (Chafouleas, Volpe, Gresham & Cook, 2010, p. 343).

Lippman and Rivers (2008) reported academic engagement is declining. Children’s actions, thoughts, and self-control are different in society today. “Students now, as in the past, continue to experience depression and anxiety, face issues such as bullying and interpersonal conflict, and engage in behaviors such as drug and alcohol use, eating disorders, and self-harm” (Adelman & Taylor, 2010, p. 164).

Impulsivity is a major problem in schools. According to Caselman (2009), social and academic problems can be related to a lack of impulse control. Studies relate impulsivity to poor grades, failure to analyze work, poor reading skills, numerous errors, and problem solving.

Kuhnle, Hofer, and Killian (2012) stated, “it is theorized that students with a higher level of self-control are better able to distribute their time in a satisfying way over

academic and leisure matters, and are better able to shield their studying against distractions" (p. 534). Impulsive children do not manage their behavior well, "engage in 'unchecked action' and tend to miss information that would assist in identifying consequences for acting in inappropriate and impulsive ways" (Caselman, 2009, p. viii). Jensen (2011) stated that children with impulsive problems fail to internalize cause and effect.

Teachers might help impulsivity in students by "listening to students and suggesting to them how to act and feel in different situations where they experience anger" (World Teachers Press, 2003, p. 42) or feel as though they might lose control. Students need to find outlets for their anger or frustration. Jensen (2011) suggested teachers "model good stress management skills and, when appropriate, incorporate into lesson plans such activities as deep breathing, stretching, visualization, goal setting, good eating habits, problems solving, and exercise" (p. 65).

Early detection is a must for combating future discipline problems in students with repeated disciplinary issues. According to Barnett (2012), "without proper identification and treatment such students pose substantial challenges to their teachers, administrators, and peers, including classroom disruptions and school safety issues" (p. 21). Also, "children who enter school displaying disruptive behavior, such as oppositional and aggressive behavior, are at elevated risk for continued social and academic difficulties throughout elementary school" (Rusby et al., 2007, p. 334).

Jensen (2011) also recognized physical aggression in early education might be a predictor for adult behavior. According to Luiselli et al. (2005), an "early onset of discipline problems in school children predicts later maladjustment" (p. 183). Similarly,

Hudley et al. (2007) agreed aggressive behavior patterns observed during childhood and adolescence often extend throughout a lifetime.

Early intervention is crucial. Tate (2007) suggested educators "intervene early with students who display symptoms of these chronic behaviors. Early intervention appears to correlate with a reduction in antisocial behavior as the student ages" (p. 115). Nihart et al. (2005) agreed, "as most of the current studies suggest, attitudes developed early in life often persist into adulthood" (p. 84).

A 2001 survey published by the *Journal of the American Medical Association* found "that bullying is not only a sign of troubled youth, but also can portend violence later in life" (Dorn, 2006, p. xvi). Similarly, "within the school setting there is emerging evidence that early identification, combined with early and comprehensive prevention and intervention, can decrease the likelihood of academic failure and future life difficulties" (Eklund et al., 2009, p. 89). According to Eklund et al. (2009), the longer a student goes unidentified the more stable the maladaptive trajectory and, unfortunately, many teachers fail to refer students because they perceive the referral as someone else's responsibility.

Communication disorders. Research has been conducted on students with communication disorders as related to discipline issues. Due to a lack of self-expression capabilities, "children with language impairments exhibited significantly more behavioral problems and poorer social competence than those children with articulation-only disorders and children without any impairments" (Ross et al., 2007, p. 202). According to the National Institute on Deafness and Other Communication Disorders (2010), approximately 8-9% of young children have noticeable language or speech problems.

Students with a communication disorder are more likely to receive a discipline referral than students with normal speech. This is due to the child's frustration with an inability to successfully communicate which increases the likelihood of socially unacceptable classroom disruptions (Ross et al., 2007). Based on numerous studies and an attempt to decrease discipline referrals, researchers have "proposed language intervention strategies that can be beneficial in reducing the effects of conduct problems in the classroom and in other environments" (Ross et al., 2007, p. 2009). Teachers should be purposeful in their use of a calm, friendly voice to minimize anxiety in students (Cowden, 2010, p. 301).

ADD/ADHD. Many behavior problems can be attributed to behavior disorders in children. The most prevalent of these disorders is Attention Deficit Disorder, or ADD. Tate (2007) reported, "the number of American students diagnosed with ADD has increased more than seven times since 1990" (p. 111).

According to Tate (2007), "the brain of the ADD child experiences difficulty distinguishing environmental (external) from mental (internal) states, moving from other-directed to self-directed, distinguishing the here and now from the future, and delaying immediate gratification" (p. 111). Students diagnosed with ADD also "exhibit a persistent disabling pattern of behavior as well as memory impairment; impulsivity; and poor prediction, planning, and reflection skills" (Jensen, 2011, p. 144).

All ADD symptoms present challenges for students in the classroom setting. According to Anderson, Watt, and Noble (2012), "children with ADHD take up teachers' time, are often distracting to other children, and cause disruptions in class" (p. 523). Sadly, "students with ADHD may know what to do, but they are not always able to do it

because of an inability to manage their own responses" (Jensen, 2011, p. 136). Until ADD diagnosed children learn to deal with challenges, either with self-control or medication, they will "have a difficult time taking care of their day-to-day responsibilities that require timing and lack of impulsivity" (Tate, 2007, p. 111). Even worse, "untreated ADHD carries its share of risks, including academic underachievement, legal problems, substance abuse, social difficulties, and risk behaviors" (Jensen, 2011, p. 137).

Autism. Negative classroom behavior may be a result of misdiagnosed or undiagnosed childhood disorders. One common cause of disruptions is autism. According to the Centers for Disease Control and Prevention or CDC (2013), 1 in 88 children is affected with some form of autism. This number is up dramatically from a few decades ago when "this disorder affected one in ten thousand children" (McCarthy, 2007, p. ix). Boys are affected five times more often than girls (CDC, 2013). The most common form of autism is Asperger syndrome (Jensen, 2011).

Often, children displaying symptoms of autism are thought to be misbehaving. Possible mistaken actions include deviant language, self-inflicted pain, hypersensitivity to touch or sounds, spinning, and flapping (Jensen, 2011). Jensen (2011) stated, "autism symptoms include impairment in social interaction, a fixation on inanimate objects, repetitive behaviors, the inability to communicate normally, and resistance to changes in daily routine" (p. 90).

However, unidentified physical symptoms of autism may be the root of misbehavior. Autistic children may experience diarrhea, constipation, seizures, and bloating (Jensen, 2011). Students are often unable to communicate verbally or successfully express what they are feeling, therefore being forced to scream or throw fits.

Since autism is represented by a broad spectrum, it may go undiagnosed for years or a lifetime. “Years ago, parents with children who were withdrawn dismissed them as unsociable” (Jensen, 2011, p. 83). Many today look at an autism diagnosis as a means to more academic resources or financial gains. The severity differs greatly even within the diagnosis. “Some are severely afflicted and need institutional care, while others are only ‘brushed’ with the disorder and grow up, work, marry, and have children of their own” (McCarthy, 2007, p. ix).

Conduct disorders. According to Rappaport and Minahan (2013), anxiety-related or oppositional disorders are found to be the most challenging behaviors seen in schools. Conduct disorders are considered “the predecessors to psychopathic behavior” and could be considered “a teacher’s greatest challenge” (Tate, 2007, p. 111). Students with conduct disorders are prone to cause classroom disruptions.

Violent behaviors are often associated with students having a conduct disorder (Tate, 2007). Children with conduct disorder may exhibit emotional outbursts, extreme and consistent disrespect for others, random violent displays, and a lack of social skills. Teachers may experience a lack of control in the classroom due to this type of student “refusing to follow stated directions” or “blaming others for one’s own shortcomings” (Tate, 2007, p. 112).

Physically, “students who show signs of conduct disorder may experience diminished levels of the stress hormone cortisol, which causes them to not fear retribution. They could also have reduced activity in the brain’s medial prefrontal cortex, which stops aggressive behavior” (Tate, 2007, p. 115). Jensen (2011) revealed, “when

compared to others, they usually have the worst academic performance records, the poorest relationships, and the weakest self-management skills" (p. 45).

Childhood depression. Rappaport and Minahan (2013) stated up to 10% of school-age children suffer from depression and other mental health issues. Depression in children can cause lack of interest, trouble concentrating, irritability, fluctuation between highs and lows, increased fatigue, and insomnia. Jensen (2011) maintained, "this highly disruptive condition typically impairs academic performance, job performance, and family life, and it can sometimes lead to suicide" (p. 72). Any one of the symptoms of depression can manifest as classroom misbehavior. Unfortunately, "even students who have completely recovered from mild depression can experience permanent damage to the hippocampus, the part of the brain that is crucial for factual memory," (Tate, 2007, p. 115) which could negatively affect student achievement as well.

Stress. Children and achievement are negatively affected by stress, just as adults are. A survey of 875 children named "the top three sources of stress that they reported were grades, school, and homework (36%); family (32%); and friends, peers, gossip, and teasing (21%)" (Lantieri, 2008, p. 32). Jensen (2011) agreed, "stress disorders, which affect test scores, behaviors, and social decisions, encompass a large class of conditions, including general anxiety disorder, bipolar disorder, major depression, attachment disorder, posttraumatic stress disorder (PTSD), learned helplessness, and season affective disorder" (p. 56).

Jensen (2011) also named stress as the most frequent cause of academic demotivation. In addition to affecting academic achievement, children are physically affected by stress. Vera et al. (2011) reported "stress exposure has been associated with

various negative outcomes such as risky sexual behaviors, anxiety, headaches, and abdominal pain" (p. 55).

Lack of skills. No matter what underlying cause, most students want to control their behavior. The behavior may be due to a lack of social-emotional skills. Vallaire-Thomas et al. (2011) defined social skills as competencies that contribute to friendship, encourage positive relationships, and allow cope with their environment. Thomas et al. (2011) also stated "cooperation, self-control, and other such behavioral and social skills are critical to the overall success of a child" (p. 227).

Ashdown and Bernard (2012) acknowledged the need for children to develop self-confidence, concentration, effective communication, listening skills, and the ability to develop positive relationships in order to be successful socially and academically. Unfortunately, 40% of children in kindergarten have the social-emotional skills necessary to be successful (Ashdown & Bernart, 2012). According to Rappaport and Minahan (2013):

> If a student can't behave, it's often because he or she has not developed the necessary skills such as self-regulation (ability to calm one's self and manage frustration), social skills (e.g., perspective-taking or ability to take turns and share), and executive function skills (including flexibility, organization, and the ability to think before acting. (p. 20)

Teachers should be trained on "how to prevent and manager common environmental triggers" and "set up the classroom with a space (such as a quiet corner with pillows) to encourage self-calming" (Rappaport & Minahan, 2013, p. 21). Basch (2011) suggested creating a comprehensive health program to address these necessary skills. Some of the

skills needed address conflict resolution, impulse control, communication, anger management, and problem solving (Basch, 2011).

Students should be taught self-control early on. According to Merritt et al. (2012), “self-control refers to the ability to intentionally change one’s behaviors and exhibit a nondominant response instead of one that is dominant” (p. 143). Good self-control has been shown to lead to higher achievement, while “children with poor behavioral self-control are more likely to experience concurrent and sustained academic difficulty” (Merritt et al., 2012, p. 143).

Character Education

Character education has become a popular educational topic over the past several years. Holtzapple et al. (2011) stated “character education programs support the development of positive character traits in children and adults” and “address moral and ethical values such as respect, responsibility, trustworthiness, and caring concern for others” (p. 57). According to Williams (2000), character education could be considered the “fastest growing reform movement in P-12 education” (p. 3). Most schools either employ a separate character education curriculum or imbed character education within core subjects. The purpose of character education, according to the American School Counselor Association (1998), is to help students acknowledge and set goals in life and become more positive.

According to Holtzapple et al. (2011), “school-based character education and violence prevention programs focus on improving prosocial competencies and reducing negative behaviors in students” (p. 71). Therefore, successful character education should minimize discipline necessities in schools. At Atlantis Elementary School in Cocoa,

Florida, “discipline referrals dropped from approximately 500 to 145 during the first year of their character education initiative” (Williams & Taylor, 2003, p. 42). If successful, a character education program could serve to minimize problems years later as those students move out into society as adults. Respect is taught throughout all character education curriculums. Rogers (2003) agreed, “mutual respect for one another is a primal ingredient for a happy and productive life and an essential glue in holding communities and nations together” (p. vii).

Student behavior is not always paramount in academic settings. This may be a direct result of the importance placed on increasing student achievement and test scores. Sheldon and Epstein (2002) theorized, “although incidents of student disruption and minor conflicts do not receive the same media attention as achievement test scores, issues of student behavior are no less important for student success in school” (p. 5).

Weather and Behavior

Temperature. Essa et al. (1990) revealed, “from earliest recorded history, people have connected human behavior and well-being with the weather” (p. 33). There are several weather factors thought, by some, to influence the behavior of children. According to Essa et al. (1990), biometeorologists found weather changes lead to whining, low energy levels and mood changes in children.

The first weather factor thought to influence behavior is temperature. Studies have shown as “increase in aggressive behavior during warm summer months or in geographic locations where the ambient temperature remains high for prolonged periods of time” (Lagace-Seguin & D’Entremont, 2005, p. 381). Lagace-Seguin and D’Entremont (2005) stated, “the majority of findings seem to suggest that rises in temperature are

paired with aggressive acts and crime-related behaviors" and "significant positive relations have been found between temperature and a child's alert state" (p. 389). Laboratory experiments have shown people are angrier and think more aggressively in a hot room (Lalonde, 2001, p. 48). Lalonde (2001) stated, "other laboratory research has shown that hot temperatures can, when coupled with provocation, increase a person's willingness to hurt another person" (p. 49).

Humidity. Humidity has been studied as a factor on human behavior. A 1984 study "examined a number of weather variables in relation to many different dimensions, including concentration, cooperation, anxiety, aggression, depression, fatigue and optimism. The major finding in this study was that humidity had the greatest effect upon all of these dimensions" (Lagace-Seguin & D'Entremont, 2005, p. 382). In addition, "excitability can also increase when humidity is high" and "humidity sometimes rises when a summer storm is brewing" (Lalonde, 2001, p. 48).

Barometric pressure. Multiple studies named barometric pressure as the weather factor most affecting human behavior. According to Schory, Piecznski, Nair, and El-Mallakh (2003), there is a "possible relation between barometric pressure and impulsivity" (p. 625). More specifically, researchers advised, "we hypothesize that barometric pressure may alter the propensity toward impulsive behavior through changes in brain monoamines or cerebral blood flow" (Schory et al., 2003, p. 627). Lalonde (2001) quoted Dr. Lee Kudrow, who suggested, "prestorm conditions, barometric changes, and winds create an excess of positive ions that can alter cerebral serotonin levels and bring on vascular headaches" (p. 48).

In 1984, it was reported “low barometric pressure may negatively affect children’s ability to concentrate in the classroom” and “changes in barometric pressure and sunshine hours were correlated with mood scores” (Lagace-Seguin & D’Entremont, 2005, p. 382). Essa et al. (1990) stated, “Scagliotta (1980) reported the effect of changes in barometric pressure on the behavior of 127 boys, noting increased behavioral disturbances when pressure decreased” (p. 32).

Changes in barometric pressure often cause aches in the body. Lalonde (2001) explained that pressure changes cannot be equalized in joints in the body because joints are sealed-off from other body parts. According to Lalonde (2001), “blood-sugar levels are higher during periods of high [barometric] pressure and lower during low-pressure weather.

Blood-sugar levels are related to energy levels. As blood-sugar levels go up, energy levels go up” (p. 2). It has been found females are more likely to be affected by a swing in barometric pressure. Scientists have “linked females’ heightened weather sensitivity to the relatively greater percentage of body fluids in women’s bodies, which in turn respond more to fluctuations in barometric pressure” (Essa et al., 1990, p. 32).

Seasonal Affective Disorder. One possible weather-related cause for changes in emotion or mood leading to negative behavior is Seasonal Affective Disorder, or SAD. Seasonal Affective Disorder is defined as a form of depression occurring the same time each year. According to the Mayo Clinic Staff (2009), most people are affected in the fall and symptoms include moodiness, lack of energy, and difficulty concentrating. Additionally, “reduced sunlight can cause a drop in serotonin, perhaps leading to depression” (Mayo Clinic Staff, 2009, p. 1).

Similarly, “Seasonal Affective Disorder has been associated with variations in daylight that influence norepinephrine levels and this may contribute towards mood dysregulation” (Lagace-Seguin & D’Entremont, 2005, p. 389). Low norepinephrine levels are thought to cause depression, while higher levels have been known to cause mania (Mayo Clinic Staff, 2009). “Some researchers believe this may be a mild version of bipolar disorder” (Jensen, 2011, p. 72).

Just as unfavorable or unstable weather conditions might lead to classroom disruptions, “favorable weather may have prompted feelings of confidence and security that lead children to feel less threatened by the environment and more able to play independently” (Lagace-Seguin & D’Entremont, 2005, p. 382). Results from Lagace-Seguin’s 2004 study showed that “favorable weather may lead to behaviors indicative of good positive social adjustment in situations where child affect provides expectations of unfavorable outcomes.” Overall results of the study “revealed that favorable temperature and an increased amount of sunshine promote social behaviors in children who are prone to higher levels of negative affect” (Lagace-Seguin & D’Entremont, 2005, p. 383). Simply put, “when weather is stable, people (children included) may feel more content and go about their business more easily” (Essa et al., 1990, p. 35).

Weather and Animal Behavior

Animals of all species react to changes in the weather. Birds, especially seabirds, “are genetically programmed to detect shifts in barometric pressure such as that connected with the approach of a low pressure system” (BBC, n.d.). According to Bronikowski and Altmann (1996), “temperature and rainfall have pervasive effects on

animals not just directly, but also indirectly by affecting productivity of food and availability of drinking water" (p. 11).

Many believe animals can actually be used to forecast weather. In 2004, a devastating tsunami hit Southeast Asia killing 200,000 humans, yet, "almost no wild animals perished" (Toothman, n.d.). Bees return to their hives and usually do not swarm when a rain storm is impending (BBC, n.d.). However, most animal behavior might be explained without regard to weather. "Animals frequently exhibit behavior changes, and there's no practical way of deciphering whether a change in behavior is related to an impending natural disaster or just a reaction to something completely unrelated" (Toothman, n.d.).

Lunar Effect

The Lunar Effect, the effect of the lunar cycle on human behavior, is discussed more often than the weather's effects on behavior. In fact, "the words 'lunacy' and 'lunatic' are derived from the same Latin root that gives us the word 'lunar,' as people often attributed intermittent insanity to the phases of the moon" (Grant, 2008, p. 1). The moon's effects on humans have been discussed for a long time. Neal and Colledge (2000) reported, "the effect of the full moon on human behavior, the so-called 'Transylvania hypotheses,' has fascinated the public and occupied the mind of researchers for centuries" (p. 472).

University of Washington Faculty (n.d.) revealed, "popular legend has it that the full moon brings out the worst in people: more violence, more suicides, more accidents, more aggression" (p.1). According to a 2006 Polish Academy of Sciences article, "human and animal physiology are subject to seasonal, lunar, and circadian

rhythms" (Zimecki, 2006, p. 5). Zimecki (2006) identified a connection between the lunar cycle and human reproduction and birth rate. Scuffy (2011) has linked moon phases to environmental factors such as weather, ions in the atmosphere, gravity, and electromagnetic forces.

Although much has been written about the way the moon affects behavior in children and adults, most research refutes a direct correlation. Nunez, Perez, and Aguirre-Jaime (2002) noted, "despite the attractiveness of the popular belief that the moon influences human behavior, the analysis of our data does not support an association between lunar phases and the frequency of violent behavior" (p. 127). A University of Washington psychologist agreed, "I find that there is very little evidence that the full moon has a direct effect on human or animal behavior" (Roach, 2004, p. 2).

Sleep deprivation may be one possible explanation for why the full moon was thought to affect behavior. Raison, Klein, and Steckler (1999) explained, "prior to the advent of modern lighting the moon was a significant source of nocturnal illumination that affected sleep-wake cycle, tending to cause sleep deprivation around the time of the full moon" (p. 101). Another possible explanation as to why the moon may be unfairly blamed for societal disruptions is offered by a Canadian psychologist, Kelly, who suggested, "people who conduct studies on the relationship between the full moon and human behavior often do not collect data throughout the entire month to see if behavior is more elevated at full-moon time compared to the rest of the month" (as cited in Roach, 2004, p. 1).

Summary

Student discipline concerns remain a high priority for schools. According to Safran and Oswald (2003), “the increase in aggressive and delinquent behaviors in school throughout the country has reached critical proportions” (p. 361). Schools are experiencing drops in student achievement as a result of many different factors. Luiselli et al. (2005) pointed out, “antisocial behavior, academic underachievement, and poor development of prosocial skills among students attending our nation’s public schools remain a concern for educators, parents, and the lay public” (p. 183).

The teaching profession has changed dramatically. No longer are teachers just held responsible for teaching math and reading. Anderson and Kincaid (2005) reported, “teachers increasingly are faced with discipline problems that not only may endanger other students, the teacher, and the student him- or herself, but also disrupt the learning of all students” (p. 59). Until educators are able to prevent student discipline issues, student achievement will most likely continue to suffer.

While the focus of Chapter Two surrounded current topics in student discipline issues, Chapter Three examined research, design, and methodology used in this study. The population and sample was defined and discussed. Data collection procedures were notated. In analyzing sample data, appropriate measures were taken to provide a means to either accept or reject the null hypotheses. Data was gathered, analyzed, and tested, as specified in the upcoming chapter. Chapter Three was meant to educate and inform readers as to how the study was planned.

The next chapter, Chapter Four, explained the procedures chosen to analyze the data. Chapter Four examined each research question and the statistical results based on

correlational analyses. In addition, Chapter Four revealed the results of the electronic survey sent to Missouri principals. Finally, Chapter Five provided implications for educators and included recommendations for future related research.

Chapter Three: Methodology

Student achievement is the primary objective of any elementary school. The necessity for student discipline, as a result of student misbehavior and classroom disruptions, presents a never-ending obstacle to raising student achievement for teachers and school administrators. This study was designed to discover if changes in weather conditions, particularly barometric pressure readings, or the phases of the moon could be used as accurate indicators of student discipline in an elementary school. The study was also designed to recognize measures school districts are utilizing to combat decreases in student achievement.

Educators could predict disciplinary trends and proactively address them if weather or moon phases are found to be accurate indicators. Safran and Oswald (2003) suggested, “if teachers and administrators are prepared for behavioral challenges, students, faculty, and staff can weather behavioral storms in a healthier and more productive manner” (p. 371). This would reduce the impact of student misbehavior and allow for greater student achievement.

Problem and Purpose Overview

Educators need to determine those causes to student misbehavior which negatively affect student achievement (Warren, 2007). According to Walther-Thomas and Brownwell (2001), one of the best ways to prevent classroom disruptions is by using a proactive stance in the classroom. Proactive discipline requires a teacher to acknowledge triggers to misbehavior such as weather and moon phases (Lagace-Seguin & d’Entremont, 2005).

The behavior of elementary students is increasing each year (Payne, 2006). The purpose of this study was to examine student discipline data to identify significant predictors of student classroom behavior. These predictors could then be used proactively to prevent discipline, therefore minimizing effects on achievement.

Research Questions. The following questions were addressed in the study:

1. What relationship exists between weather changes and elementary student behavior resulting in discipline referrals?

2. What relationship exists between the phases of the moon and elementary student behavior resulting in discipline referrals?

3. What measures are school districts utilizing to combat potential weather and lunar obstacles to student achievement?

Hypotheses

Null hypotheses.

H_o 1. There is no significant correlation between barometric pressure levels and student discipline referrals.

H□ 2. There is no significant correlation between the moon phases and student discipline referrals.

Alternate hypotheses.

H_1 1. There is a significant correlation between barometric pressure levels and student discipline referrals.

H□ 2. There is a significant correlation between the moon phases and student discipline referrals.

Variables

The first independent variable in this study was the weather. More specifically, historical barometric pressure readings were used. The second independent variable used in this study was the different phases of the moon. The dependent variable in this study was student behavior which resulted in a disciplinary referral.

Research Design

This study used quantitative methods with a correlational design incorporating a number of statistical measures to determine if the null hypothesis would or would not be rejected. The correlational design was chosen because the study was conducted to examine the relationship, if any, between the independent and dependent variables (Bluman, 2011). In addition, principals from Missouri were surveyed to determine measures being taken to combat obstacles to student achievement. The survey added a descriptive quantitative component to compare with the results of the correlational analysis.

Population and Sample

The study population consisted of all kindergarten through fourth grade students in Missouri. Missouri demographics included 23.9% minority, 76.1% Caucasian, and 43.7% free or reduced price meals. District demographics included 4.1% minority, 95.8% Caucasian, and 65% free or reduced price meals.

Sample data consisted of student discipline referral counts from a rural Missouri elementary school. Referral counts originated from kindergarten through fourth grade students and were compiled over a three year period: the 2009 through 2012 school years. Demographics for the rural Missouri elementary school for the 2009-2010 school year

were as follows: total elementary school enrollment was 449 students, 71.9% received free or reduced price meals, and 95.3% of students were white. The 2010-2011 school year total enrollment was 424 students, 74.5% received free or reduced price meals, and 93.9% of students were white. The 2011-2012 school year total enrollment was 416 students, 73.4% received free or reduced price meals, and 94.5% of students were white.

Therefore, as compared to the entire population, the district studied was rural, has a high free and reduced student population, and a low minority population. This study's sample should be considered understudied due to unique demographics of the sample district. In addition, a random sample was not appropriate due to the small sample size. All student discipline names were kept anonymous for the purpose of this research.

Instrumentation

An electronic survey was developed to gather quantitative data. The electronic survey was field-tested by a select group of educators to assure clarity and understanding. The questions were designed to gather demographic data on the respondents and their respective schools. Questions were also designed to obtain the opinions of the respondents on their students' behavior, perceived triggers of student misbehavior, the effect of misbehavior on student achievement, and the measures utilized to attempt to combat any classroom disruptions.

The survey was distributed electronically to elementary school principals in Missouri. Principals were randomly selected from the Missouri Association of Elementary Principals' member database. An email was sent explaining the purpose of the study, the intent of the survey, and contained an Informed Consent (see Appendix A) with a link to the survey. The principals were assured that no identifying information

would be gathered. They were also assured that participation was voluntary. A follow-up email was sent to those who did not respond after two weeks.

Data Collection

The research implemented in this study consisted of several sequential steps. First, IRB approval was obtained from Lindenwood University (See Appendix B). Student discipline referral counts from a rural elementary school were then compiled from the first day of the 2009-2010 school year in August through May of the 2011-2012 school year. These referral counts included bus discipline, time-out or recovery room, and office referrals.

Historical barometric pressure readings were collected for each day school was in session. Barometric pressure readings were gathered through Weather Underground, Inc., a weather related website which originated through the University of Michigan in 1995 (Weather Underground, 1995). Lunar phases were researched and recorded by date. The United States Naval Oceanography website was used to record historical information on lunar phases (Naval Meteorology and Oceanography Command, n.d.). An electronic survey of 100 principals conducted in an effort to determine how districts were combating obstacles to student achievement.

Data Analysis

In order to answer Research Questions One and Two, discipline data from the sample population were run through Microsoft Excel 2010 software to statistically analyze the data and to reduce potential calculation errors. A statistical significance level of positive .05 was necessary to reject either null hypothesis and accept either alternate hypothesis (Bluman, 2011). There were two independent variables in this study, weather

changes, specifically barometric pressure readings, and moon phases. The dependent variable was student behavior resulting in a discipline referral.

Descriptive statistics. Bluman (2011) defined descriptive statistics as consisting "of the collection, organization, summarization, and presentation of data" (p. 652). Similarly, Levine and Stephan (2010) defined descriptive statistics as "the branch of statistics that focuses on collecting, summarizing, and presenting a set of data" (p. 360). Descriptive statistics has also been defined as "a term used to denote statistical data of a descriptive kind or the methods of handling such data, as contrasted with theoretical statistics which, though dealing with practical data, usually involve some process of inference in probability for their interpretation" (Organisation For Economic and Co-Operation and Development, n.d.). Descriptive statistics were used to describe the survey results.

Mean. Mean is a measure of central tendency calculated by adding all scores in a data set and dividing by the number of scores. The mean can also be defined as "the balance point in a set of data that is calculated by summing the observed numerical values in a set of data and then dividing by the number of values involved" (Levine & Stephan, 2010, p. 361) or "the sum of the values divided by the total number of values" (Bluman, 2011, p. 104). In this study the mean provided for a basis for comparison between grade levels.

Pearson correlation coefficient. This is the primary statistical model used in this study. The Pearson Correlation Coefficient describes the extent to which data fit in a linear model. Levine and Stephan (2010) described the coefficient of correlation as measuring "strength of the linear relationship between two variables" (p. 360). The

symbol for the sample correlation coefficient is *r*. The symbol for the population correlation coefficient is ρ, or the Greek letter rho.

The coefficient ranges in value from -1 to +1. A strong positive linear relationship between variables is indicated by a correlation coefficient of close to +1. Conversely, a strong negative linear relationship is indicated by a correlation coefficient of close to -1. Zero indicates the linear relationship between variables is weak or nonexistent (Bluman, 2011).

Scatter plot. A scatter plot is a graph of ordered pairs of data values used to determine if a relationship exists between two variables (Bluman, 2011). According to Levine and Stephan (2010), a scatter plot is "a chart that plots the values of two variables for each response. In a scatter plot, the X axis (the horizontal axis) always represents units of one variable and the Y axis (the vertical axis) always represents units of the second variable" (p. 363). In this study, a scatter plot was utilized to illustrate the possible relationship between barometric pressure readings and the number of discipline referrals.

Internal Validity and Reliability

The electronic survey was sent to four district principals to field test the instrument as a means to verify validity and reliability. Validity assesses whether or not the instrument measures the criteria intended. Field test responses were checked and it was determined the survey was appropriate, comprehensive, and readable. Survey responses on the field test were verified against the study results and it was also deemed reliable as it accurately measured intended responses.

Ethical Considerations

During this process, all standards of ethical research were followed. No one was harmed as a result of this study. Confidentiality was very strict. Data were kept in a secure location. IRB approval (see Appendix B) was obtained prior to the data collection phase.

Summary

Rogers (2003) considered, “the acquisition of knowledge, is the first business of youth” (p. vii). Improving student achievement, or acquiring knowledge, is the goal of every school. According to Hudley et al. (2007), “there is a chilling tendency in our society to give up on children much too quickly and declare them casualties of societal risk factors” (p. 259). Educators must attempt to prevent or overcome any of the multiple factors impacting student achievement and learning.

One of the greatest factors is student behavior, as it affects school building climate and classroom atmosphere. All educators would acknowledge the behavior of children can be altered by factors too numerous to mention. This study aimed to determine if there was a relationship between student behavior, specifically that which results in a disciplinary referral and two of these factors.

According to Sanders and Brizzolara (1982), “the atmospheric environment has pronounced effects on human behavior, health, emotion, and mood” (p. 155). Weather has long been thought to affect the behavior of human beings, including children. “At the dawn of modern medicine, Hippocrates observed cold and warm winds affected the physical and psychological wellness of his patients” (Schory et al., 2003, p. 624). Barometric pressure readings, one aspect of weather, were examined in this study to

attempt to determine a possible correlation between pressure changes and classroom behavior. According to Schory et al. (2003), "barometric pressure may alter the propensity toward impulsive behavior" (p. 626).

The moon or lunar phases, along with changes in the weather, is often blamed for changes in the behavior of children in the classroom. Lunar phases were also examined and compared to student disciplinary data to determine a possible relationship between moon phases, a full moon for example, and the behavior of students within an academic setting. Research "has established numerous links between regularly occurring human behavior…[and] phases of the moon" (Townley, 1997, para. 3).

The intent was to conduct a study which addressed two independent variables and their implications on affecting student discipline. Through data analysis, information on student discipline referrals, barometric pressure readings, and lunar phases were examined to determine the strength of a possible relationship between variables. The implications of this study will be great for those in an academic setting. The more information educators can obtain on what does or does not affect classroom behavior, the better prepared school staff might be in order to proactively address barriers to student learning.

Chapter Four examined the procedures chosen to analyze the data. Each research question, the statistical results based on correlational analyses, and the results of the electronic survey sent to Missouri principals are revealed in Chapter Four. Finally, Chapter Five provided implications for educators and included recommendations for future related research.

Chapter Four: Analyzing the Results

The problem addressed in this study was negative student behavior. Negative classroom behavior, especially behavior requiring disciplinary action, results in decreased achievement. The purpose of this study was to examine disciplinary student data in order to find a statistically significant predictor of student behavior which could be used proactively in an effort to prevent educational disruptions. The prevention of classroom disruptions would reduce the necessity of discipline.

Three research questions were addressed in this study. First, what relationship exists between weather changes and elementary student behavior resulting in discipline referrals? Similarly, what relationship exists between the phases of the moon and elementary student behavior resulting in discipline referrals? Also, what measures are school districts utilizing to combat potential weather and lunar obstacles to student achievement?

There were several factors to take into consideration when interpreting study results. First, the entire elementary student population in one rural school district was included. This consisted of all students in grades kindergarten through fourth. However, special education students spending the majority of their educational minutes outside the regular education classroom were excluded.

The study did not take into account the physical state of the student. Student behavior is directly related to how he or she feels on a particular day. Children are sensitive to sickness, pain, and fatigue, and, like adults, are often unable to use self-discipline or control impulsive actions when not feeling well. In addition, the mental state of the student was not considered.

A third factor to consider is the time of year. Behavior issues often escalate near holidays and school breaks. In this study, each day was considered equal and no adjustments were made for holidays, early dismissals, party days, etc.

Analyses of Data

Three school years' of discipline data were compiled for this study. The number of data in the sample, *n*, was 516. The variable reliability was calculated for the first two research questions by using a correlation coefficient.

Research question 1. What relationship exists between weather changes and elementary student behavior resulting in discipline referrals?

In order to calculate the correlation between the dependent and independent variables, the first step was to chart the barometric pressure, the independent variable, by date. The unit of measurement for barometric pressure is the mbar (hPa). The mean pressure reading was 30.01 mbar for 2009-2010, 30.01 mbar for 2010-2011, and 30.05 mbar for 2011-2012. (see Figures 1, 2, and 3).

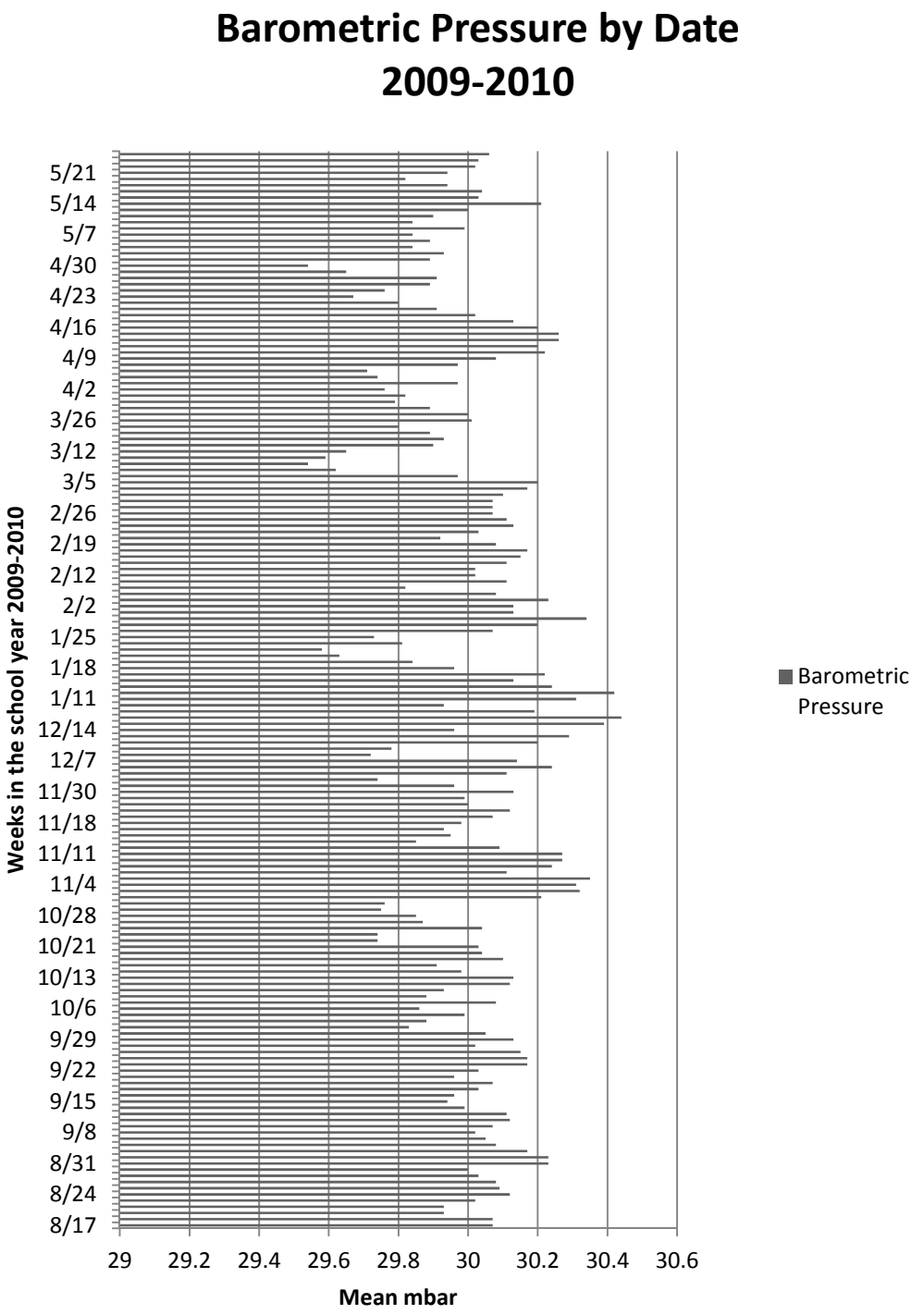

Figure 1. 2009-2010 Barometric pressure by date. The mean pressure reading for 2009-2010 was 30.01 mbar which was in the normal range.

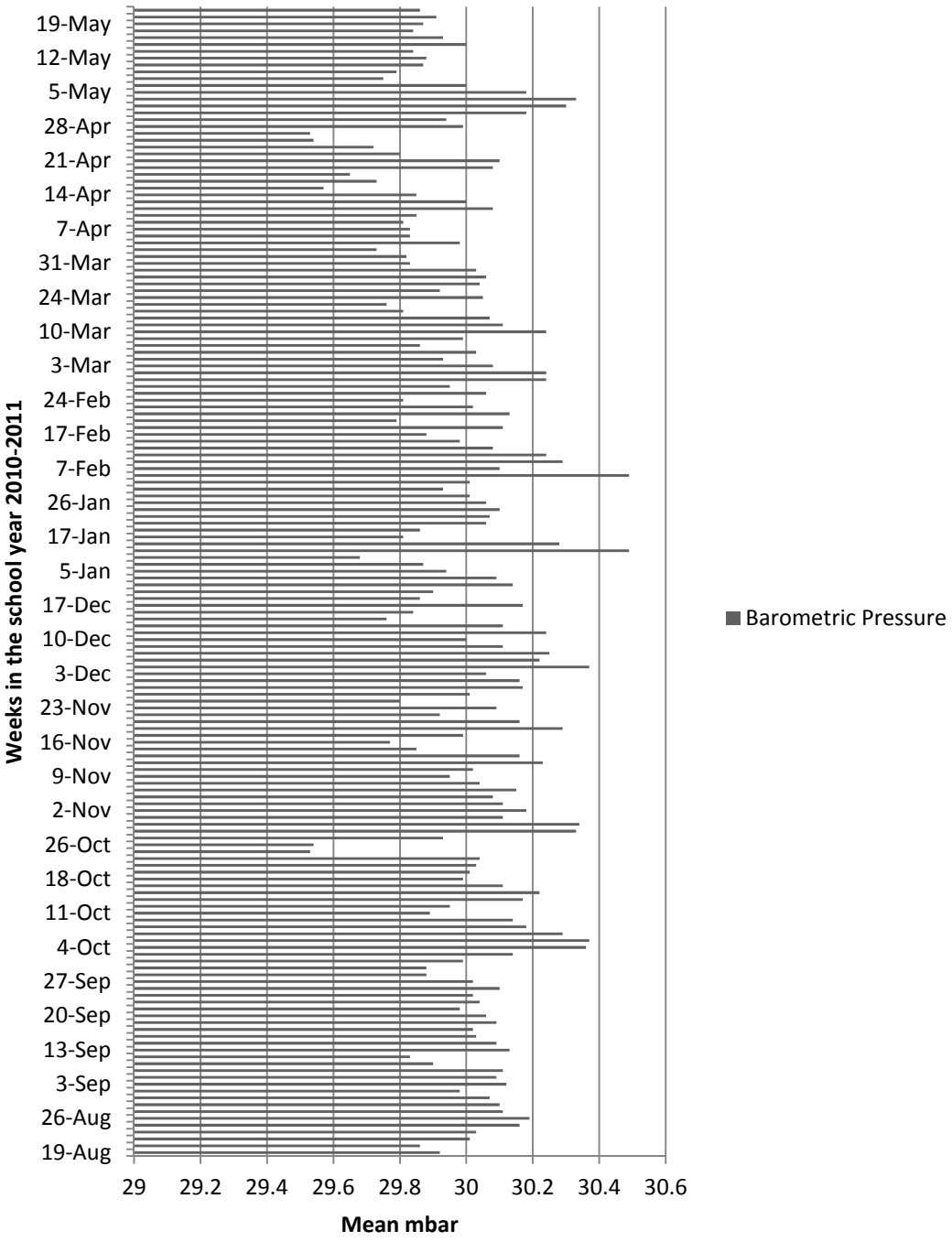

Figure 2. 2010-2011 Barometric pressure by date. The mean pressure reading for 2010-2011 was 30.01 mbar which was in the normal range.

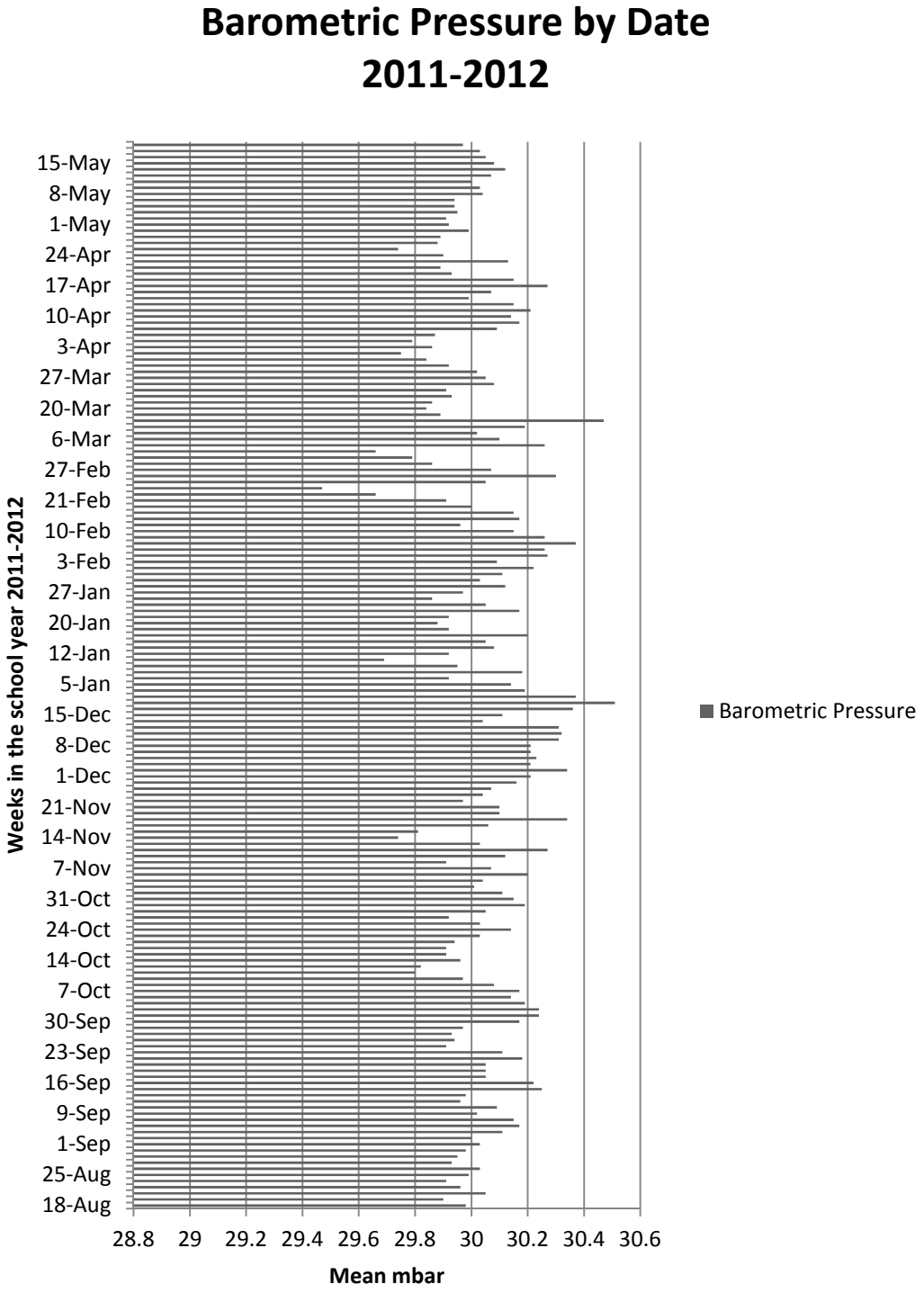

Figure 3. 2011-2012 Barometric pressure by date. The mean pressure reading for 2011-2012 was 30.05 mbar which was in the normal range.

The next step was to chart the number of student discipline referrals (dependent variable) by date. These referrals consisted of bus, recovery room, and office referrals compiled into one number. The mean, or average number of referrals for 2009-2010 was 5.55, for 2010-2011 was 5.54, and was 6.77 for 2011-2012. (see Figures 4, 5, and 6).

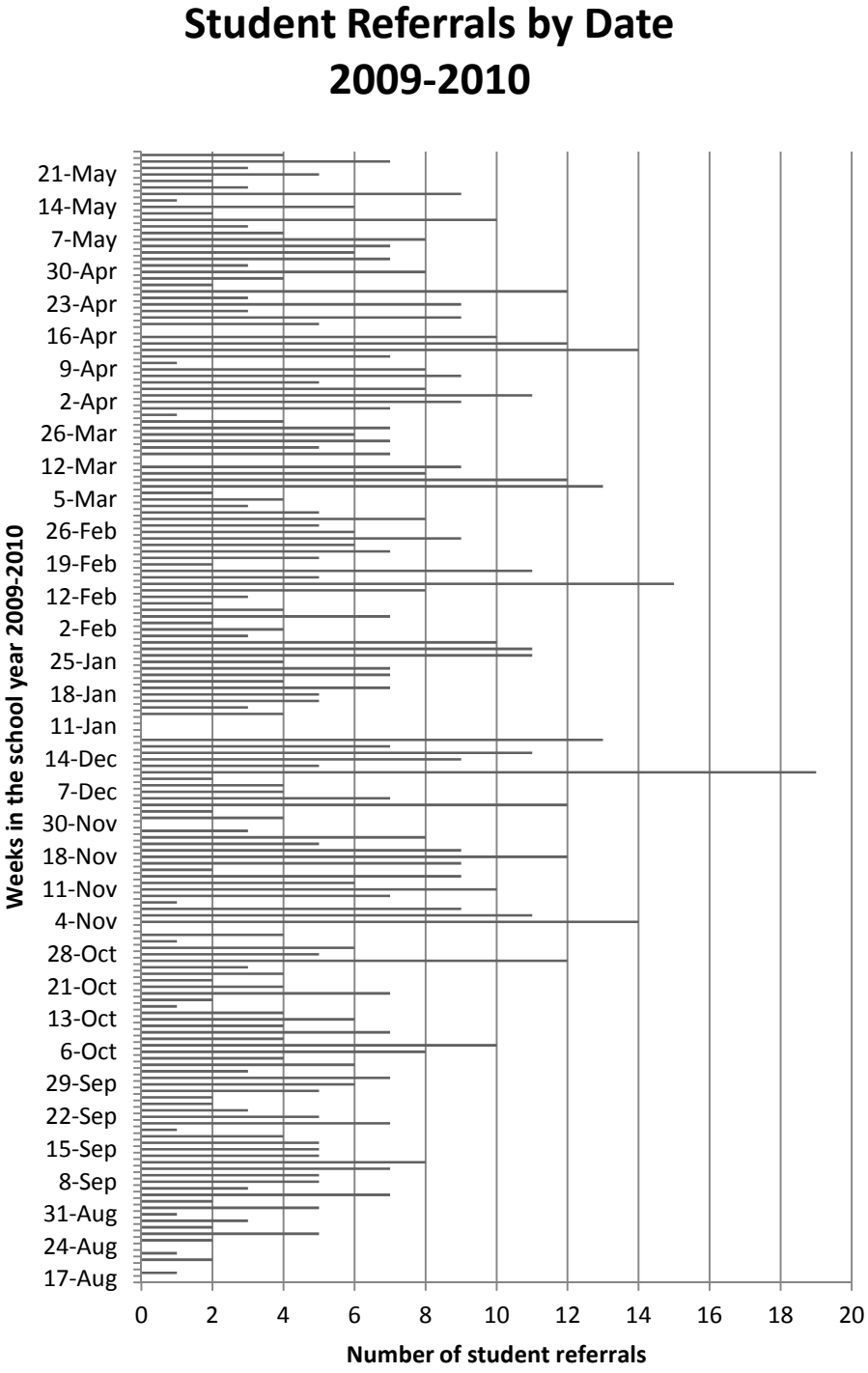

Figure 4. 2009-2010 Student referral count by date.

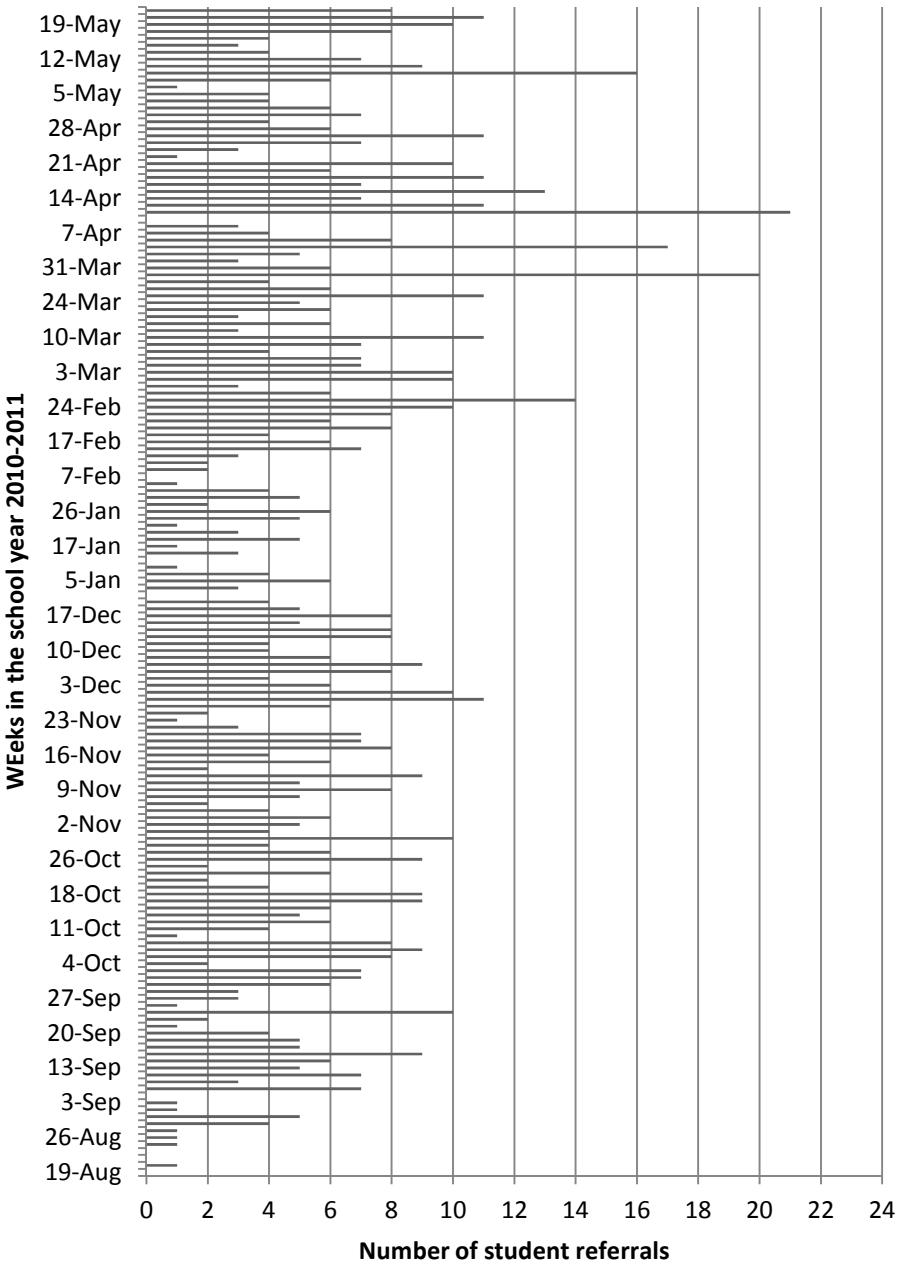

Figure 5. 2010-2011 Student referral count by date.

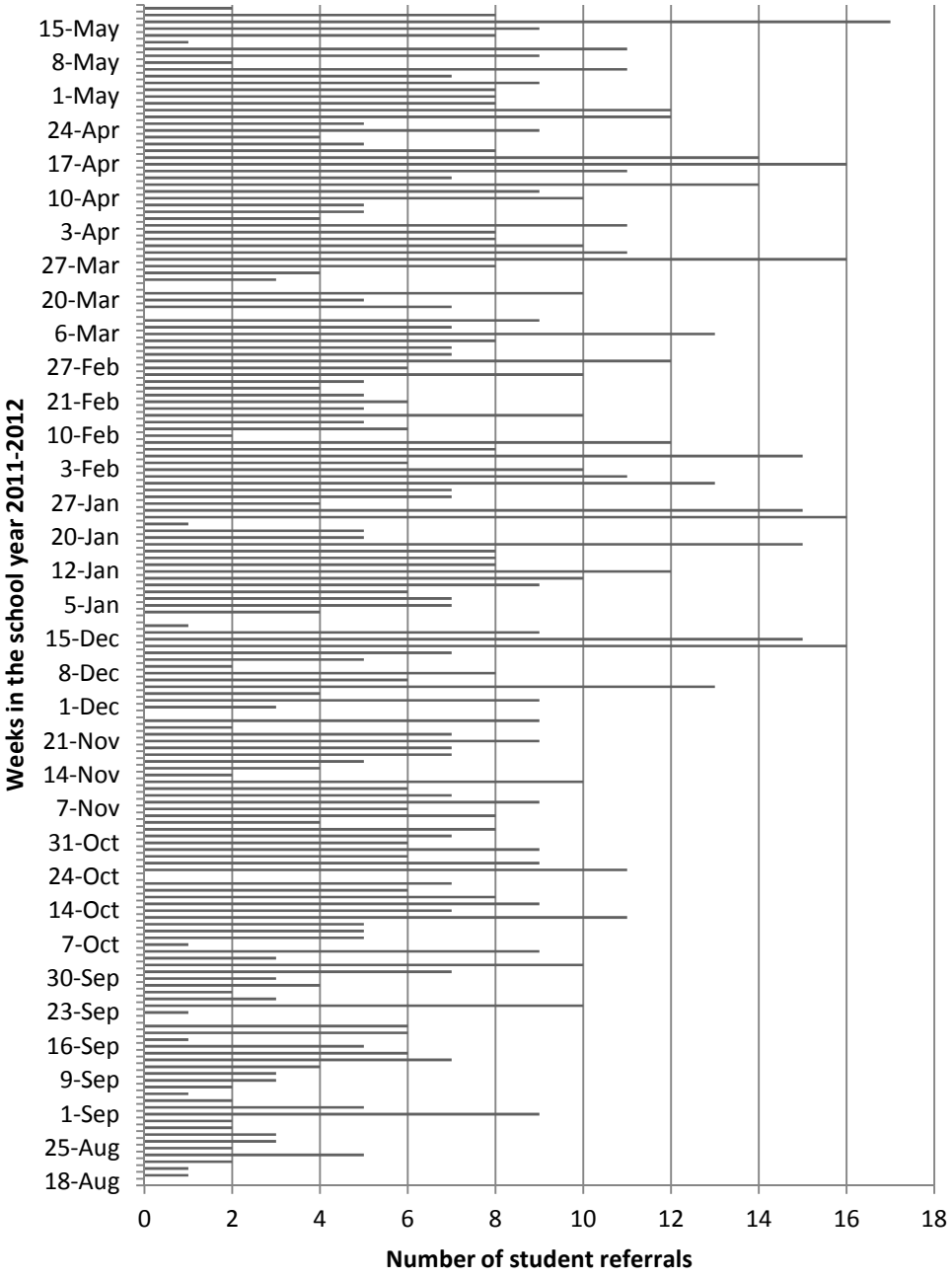

Figure 6. 2011-2012 Student referral count by date.

A frequency bar chart was utilized to illustrate the most frequently occurring number of student discipline referrals by day. This chart served to illustrate the mean, or average, of the referral count data. (see Figures 7, 8, and 9).

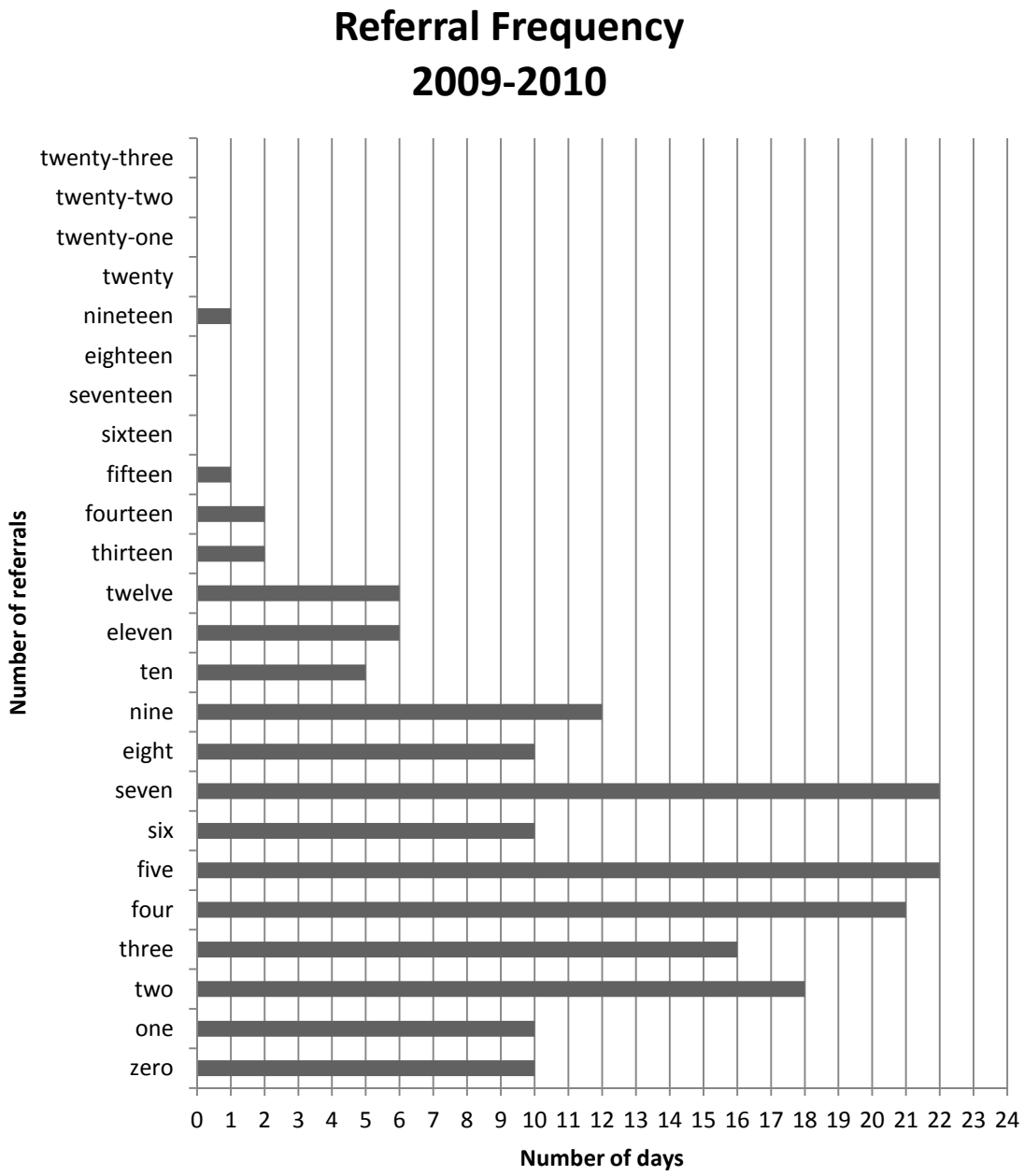

Figure 7. 2009-2010 Referral frequency.

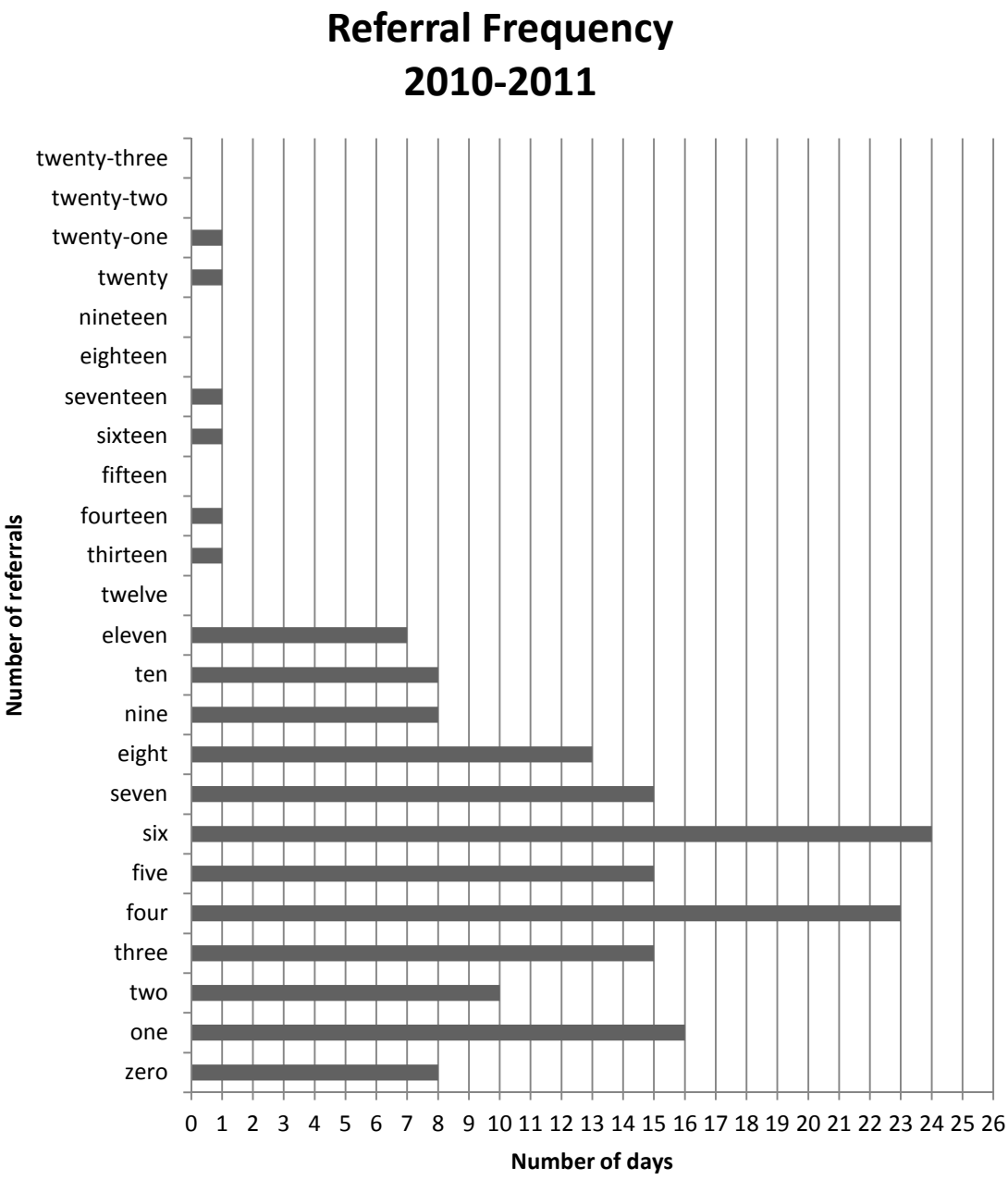

Figure 8. 2010-2011 Referral frequency.

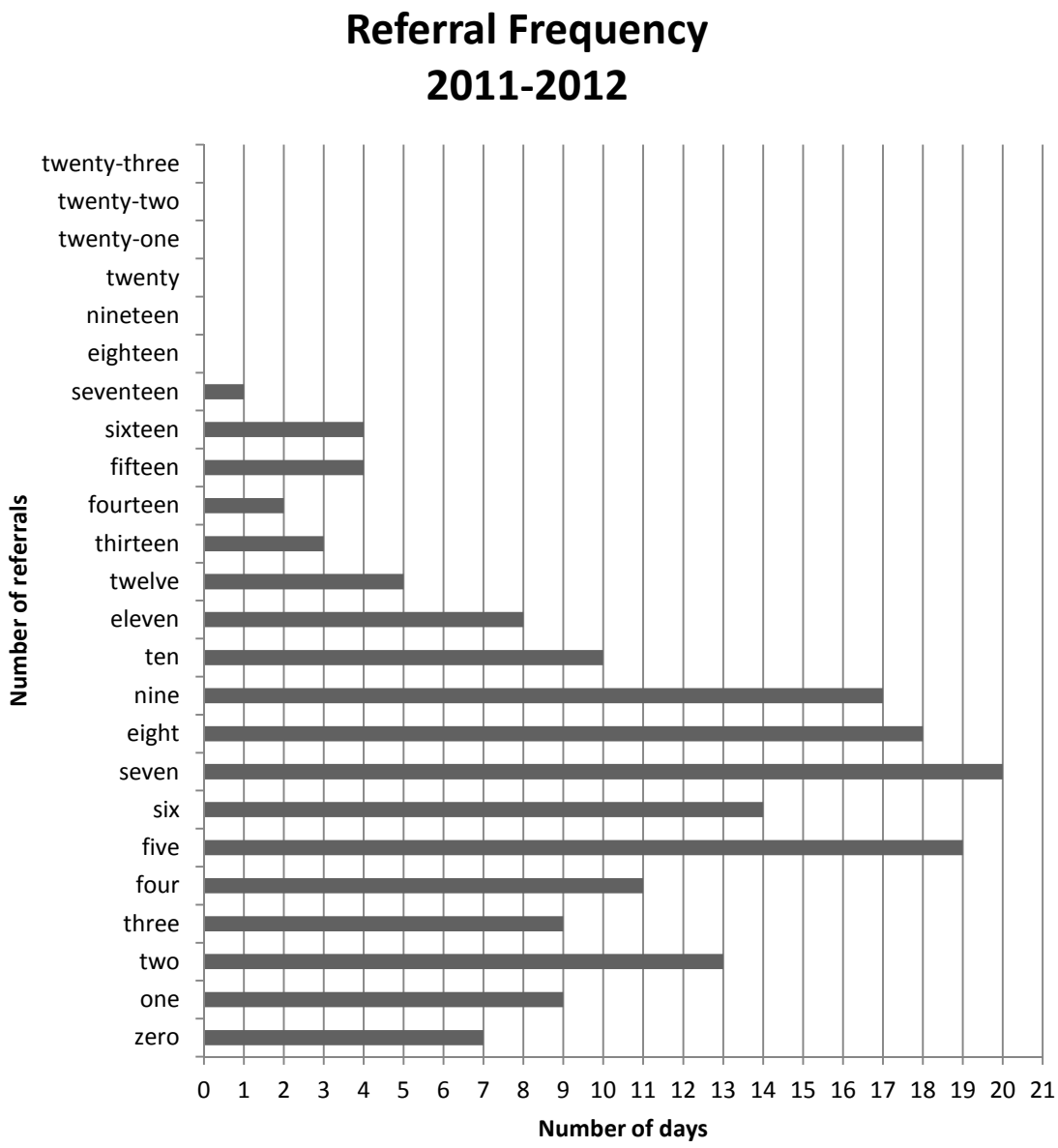

Figure 9. 2011-2012 Referral frequency.

Both the dependent and independent variables were then plotted on a scatter plot. Figures 10, 11, and 12 illustrated the result of this plotting.

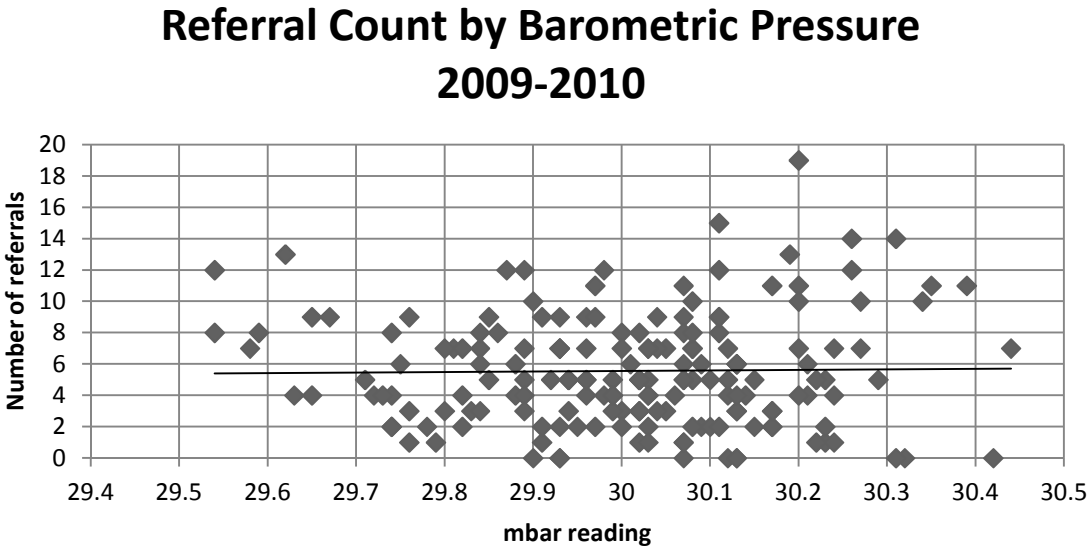

Figure 10. 2009-2010 Referral count by barometric pressure.

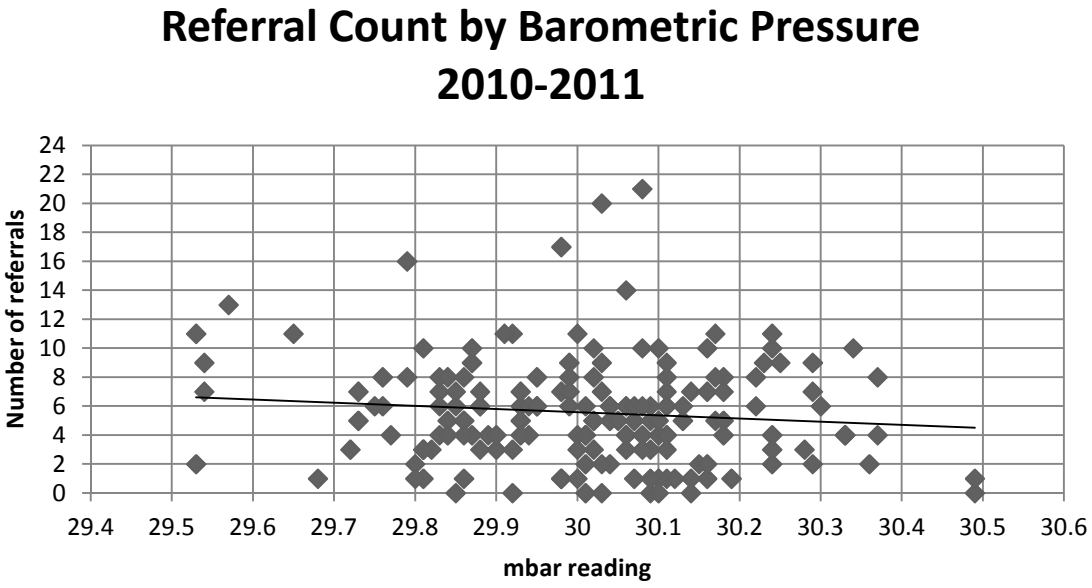

Figure 11. 2010-2011 Referral count by barometric pressure.

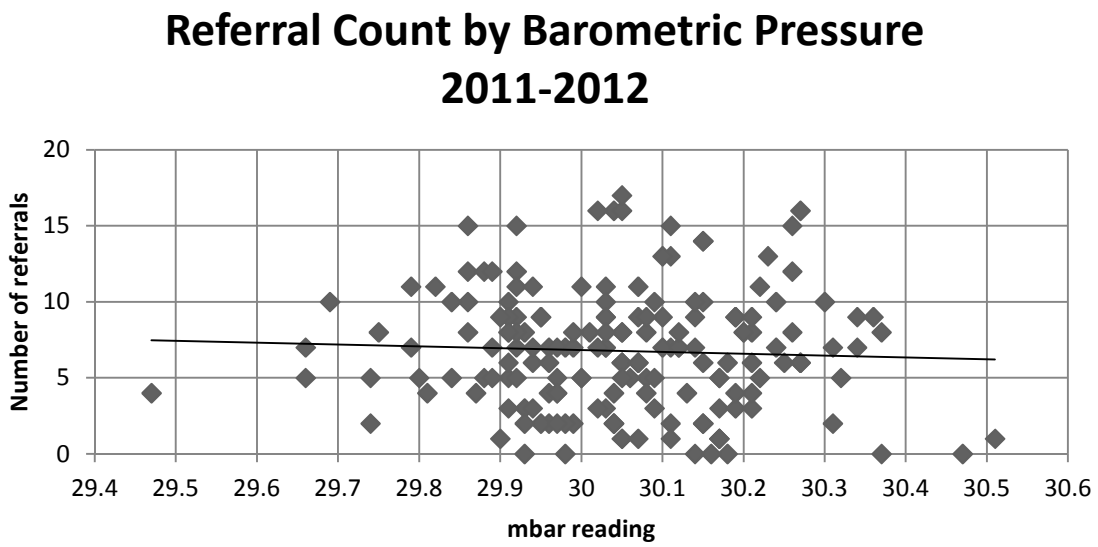

Figure 12. 2011-2012 Referral count by barometric pressure.

Correlational analyses. A correlation coefficient was calculated on each year's data (referral counts and barometric pressure readings). This correlation coefficient equaled 0.0165 for the 2009-2010 data, -0.1079 for 2010-2011, and -0.0494 for the 2011-2012 school year. A +1.0 coefficient or -1.0 coefficient signifies a strong relationship exists between independent and dependent variables. Since the correlation coefficients computed to 0.0165, -0.1079, and -0.0494 respectively, which were all relatively close to the value of 0, it should be considered there was no significant relationship between the dependent variable (student discipline referrals) and the independent variable (barometric pressure).

Deductive conclusions. Based on the results, it was necessary to fail to reject the null hypothesis, H_o. This study concluded there was not a significant correlation between weather, barometric pressure specifically, and student discipline referrals. The alternate

hypothesis, H_1, was thereby rejected. It is, however, important to point out there appeared to be a slight relationship shown by the plotting of the variables.

Research Question 2. What relationship exists between the phases of the moon and elementary student behavior resulting in discipline referrals?

In order to calculate the correlation between the dependent and independent variables, the lunar phases were charted by date. For the purpose of this study, the phases identified were the new moon and full moon. Both the dependent variables, student referrals, and independent variables, lunar phases, were then charted on a bar graph. (see Figures 13, 14, and 15).

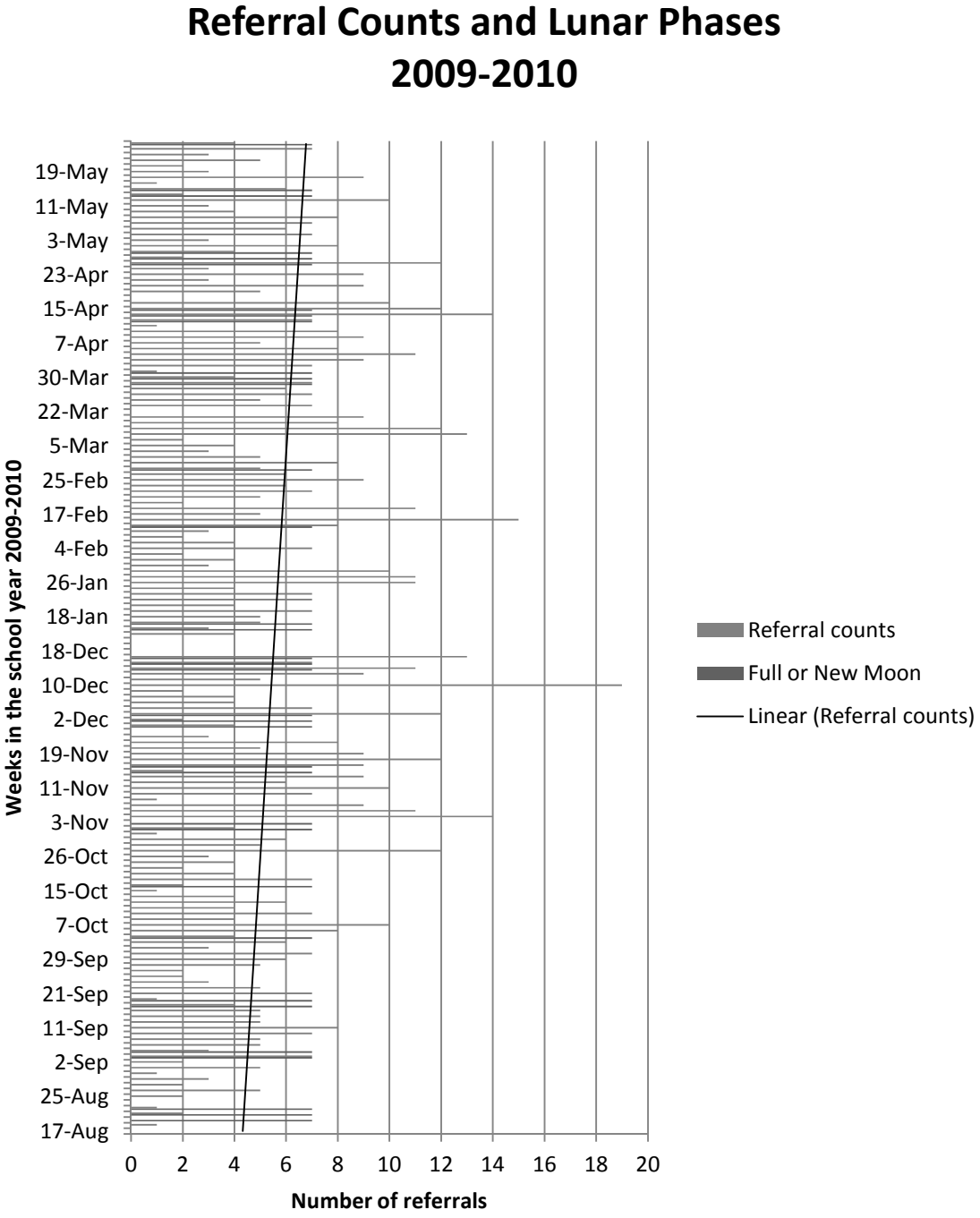

Figure 13. 2009-2010 Referral counts and lunar phases by date.

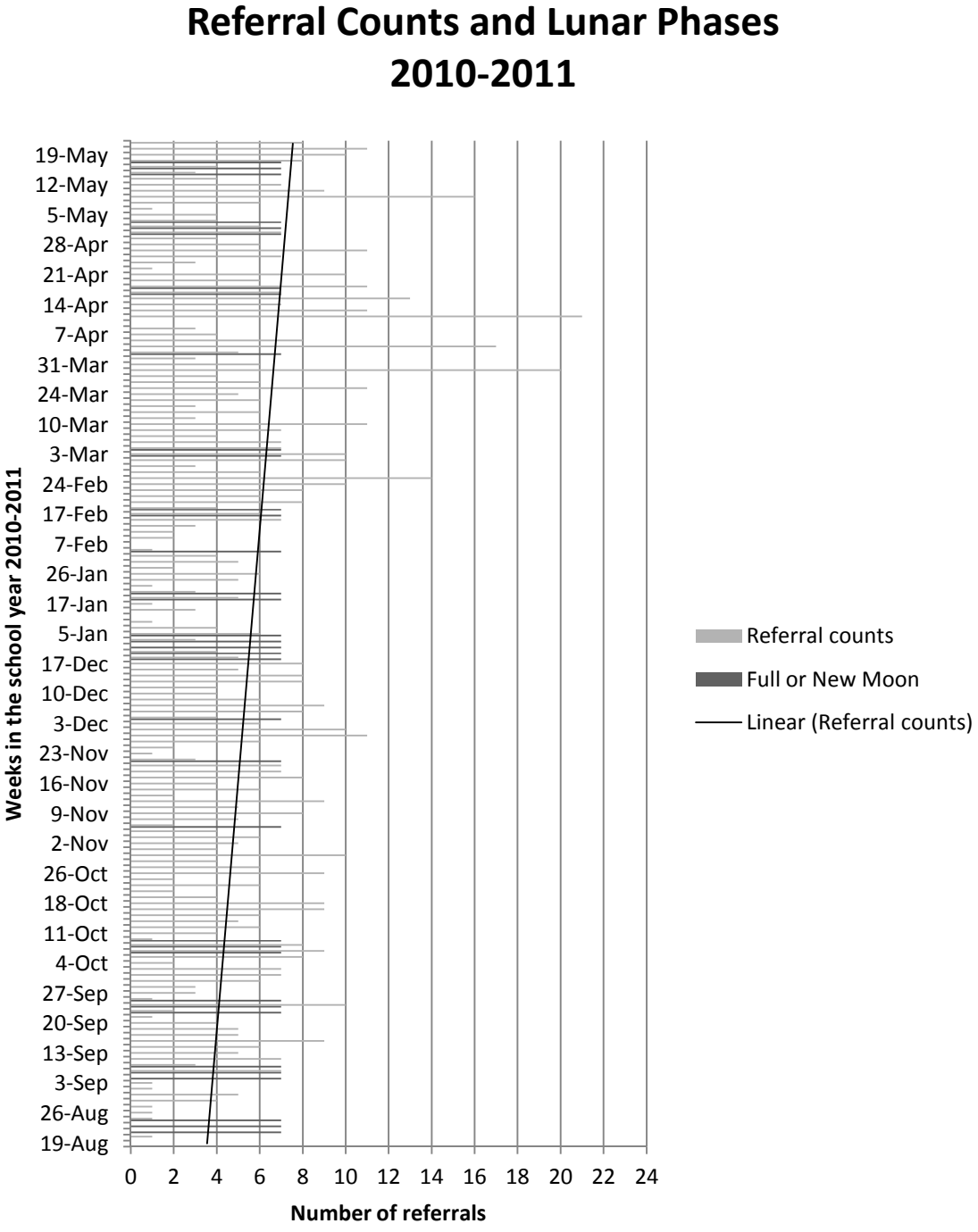

Figure 14. 2010-2011 Referral counts and lunar phases by date.

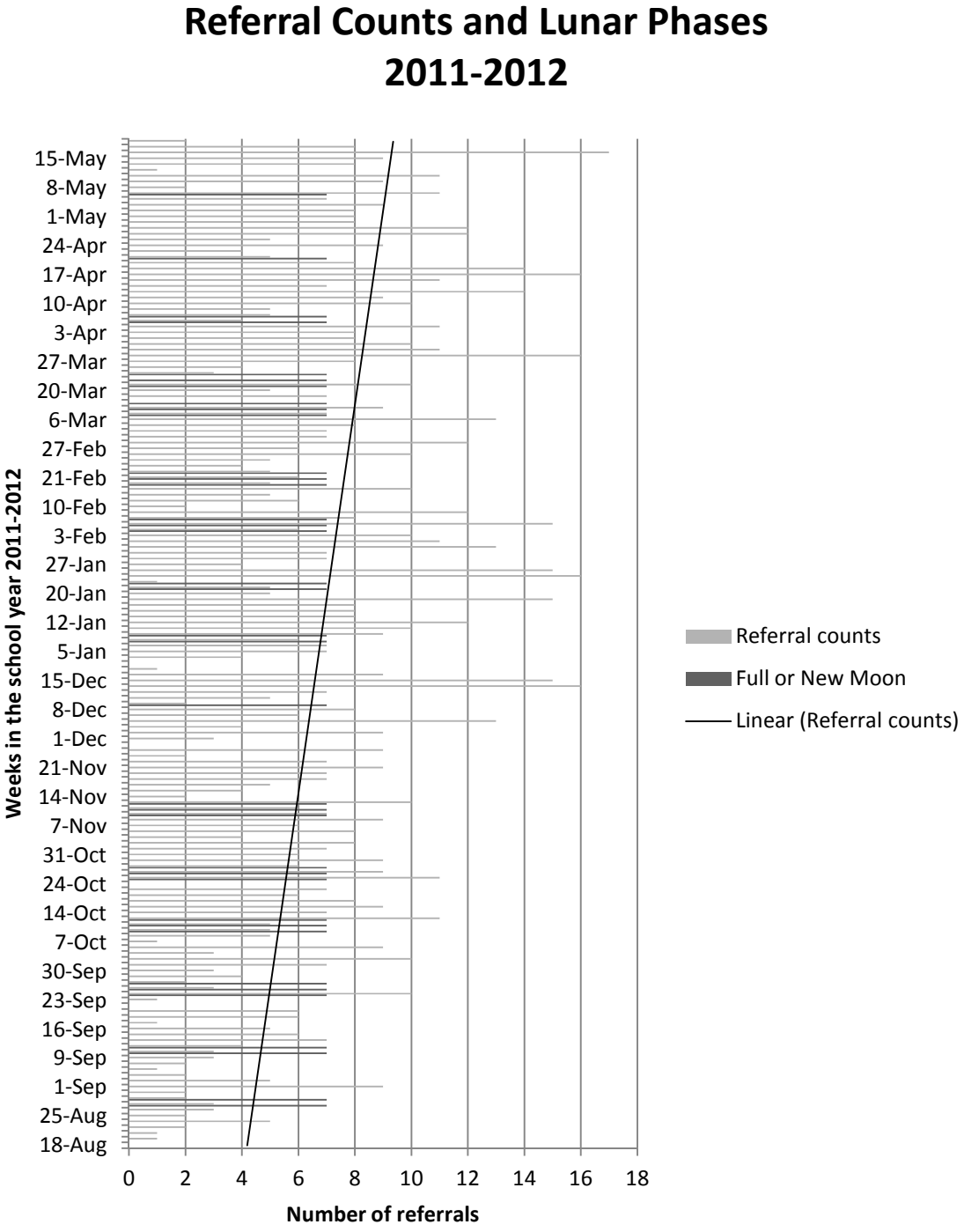

Figure 15. 2011-2012 Referral counts and lunar phases by date.

Correlational analyses. A correlation coefficient was calculated on the data from each school year, including student discipline referrals and lunar phases. This correlation coefficient equaled -0.0415 in 2009-2010. In the 2010-2011 school year, the correlation coefficient equaled -0.01565 and was -0.1138 in 2011-2012. A positive 1 coefficient or negative 1 coefficient signifies a strong relationship exists between independent and dependent variables. Since the correlation coefficients computed to -0.0415, -0.01565, and -0.1138 respectively, which were all relatively close to the value of 0, it should be considered there is no significant relationship between the dependent variable, student discipline referrals, and the independent variable, phases of the moon.

Deductive Conclusions. Based on the study results, it was necessary to fail to reject the null hypothesis, H_o. This study concludes there was not a significant correlation between the phases of the moon and student discipline referrals. It was, however, important to point out there appeared to be a slight relationship shown by the plotting of the variables.

Research Question 3. What measures are school districts utilizing to combat potential weather and lunar obstacles to student achievement?

An online survey was developed to gather quantitative data from Missouri elementary principals. The survey questions were designed to gather demographic data on the respondents' schools. Questions also addressed student behavior, perceived triggers of student misbehavior, the effect of misbehavior on student achievement, and how the respondents combat classroom disruptions and decreased achievement. Survey results follow and were reported only in relation to the research questions. The survey was completed by 34 principals.

Thirty-three of the thirty-four principals felt student behavior is affected by weather changes. One principal reported more discipline referrals when there is a drastically changing cold or warm front. Several respondents noted increases in behaviors from autistic children, more impulsivity, and general instability. Others blame anxiety of storms, tornadoes, or dark clouds. Multiple principals commented on hyperactivity, excitability, and noisiness in students as a result of a change or expected change in the weather conditions.

Of the respondents, 52.9%, or eighteen of the thirty-four, felt student behavior is impacted by the phases of the moon. Although numerous principals blamed misbehavior and hyperactivity on lunar changes, more than one admitted the change in behavior could be merely coincidence. One respondent has watched moon phases for years and believes children and adults behavior differently during full moons. A respondent noted that behavior changes based on the lunar phases were not as noticeable as weather-based behavior because lunar changes occur over a longer time period.

Principals were asked how they currently combat obstacles, such as classroom disruptions, to student achievement. Classroom management and/or proactive discipline were reported by all but one, or 97.1%, to be the most common strategy. This strategy was closely followed by increasing student engagement and motivation (88.2%) and the early intervention of students with behavior issues (76.5%). Figure 16 shows the breakdown and percentage by strategy.

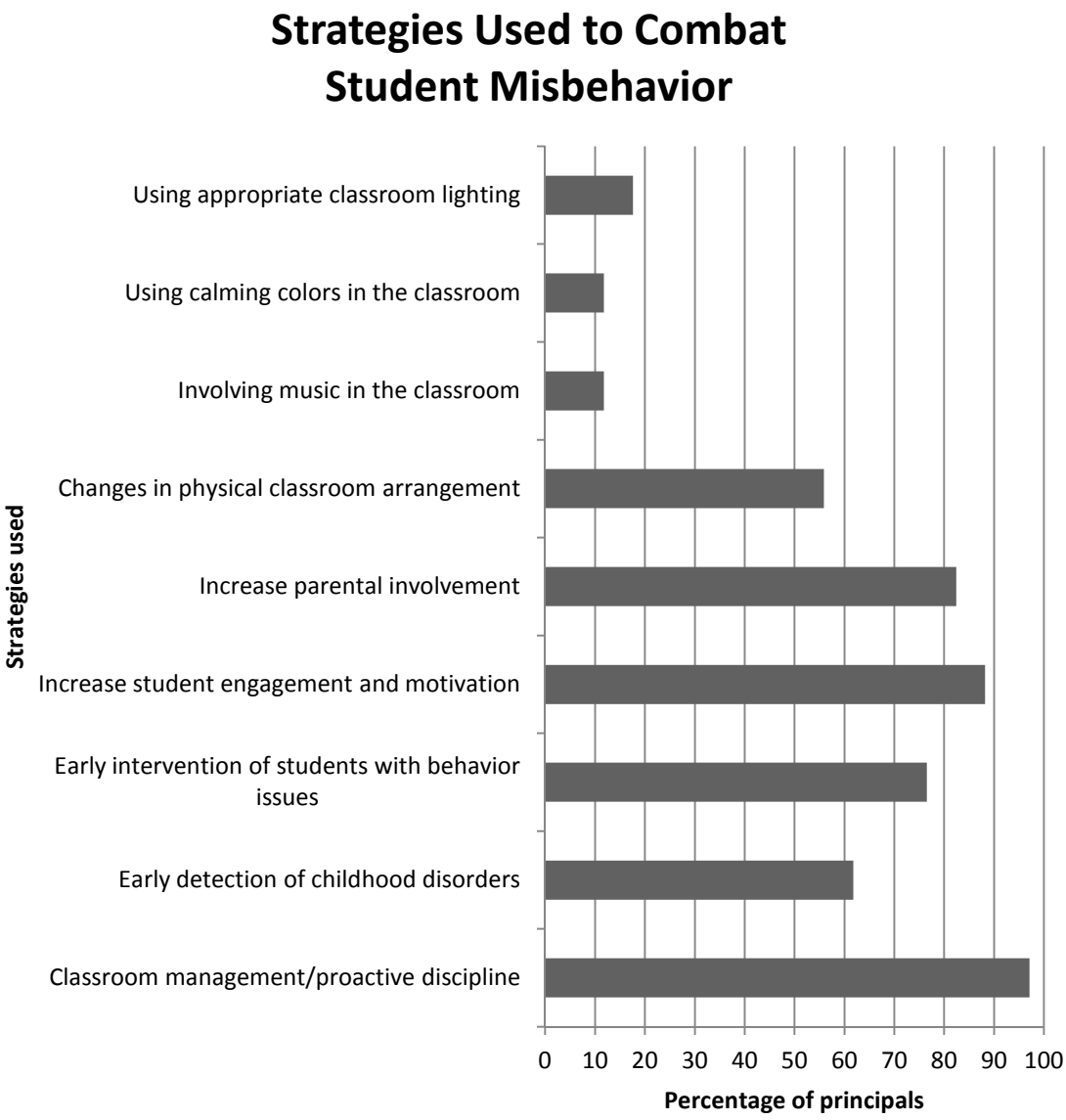

Figure 16. Percentage of strategies utilized to combat student misbehavior.

Respondents were asked about variables they felt affect achievement at their respective schools. Lack of parental involvement was chosen most by 76.5% of the principals. Socioeconomic status (73.5%), family background (64.7%), and lack of student engagement (55.9%) were also blamed. Weather (26.5%) and the Lunar Effect

(20.6%) were followed only by race (2.9%) as the lowest percentage. Figure 17 shows the variables by percentage.

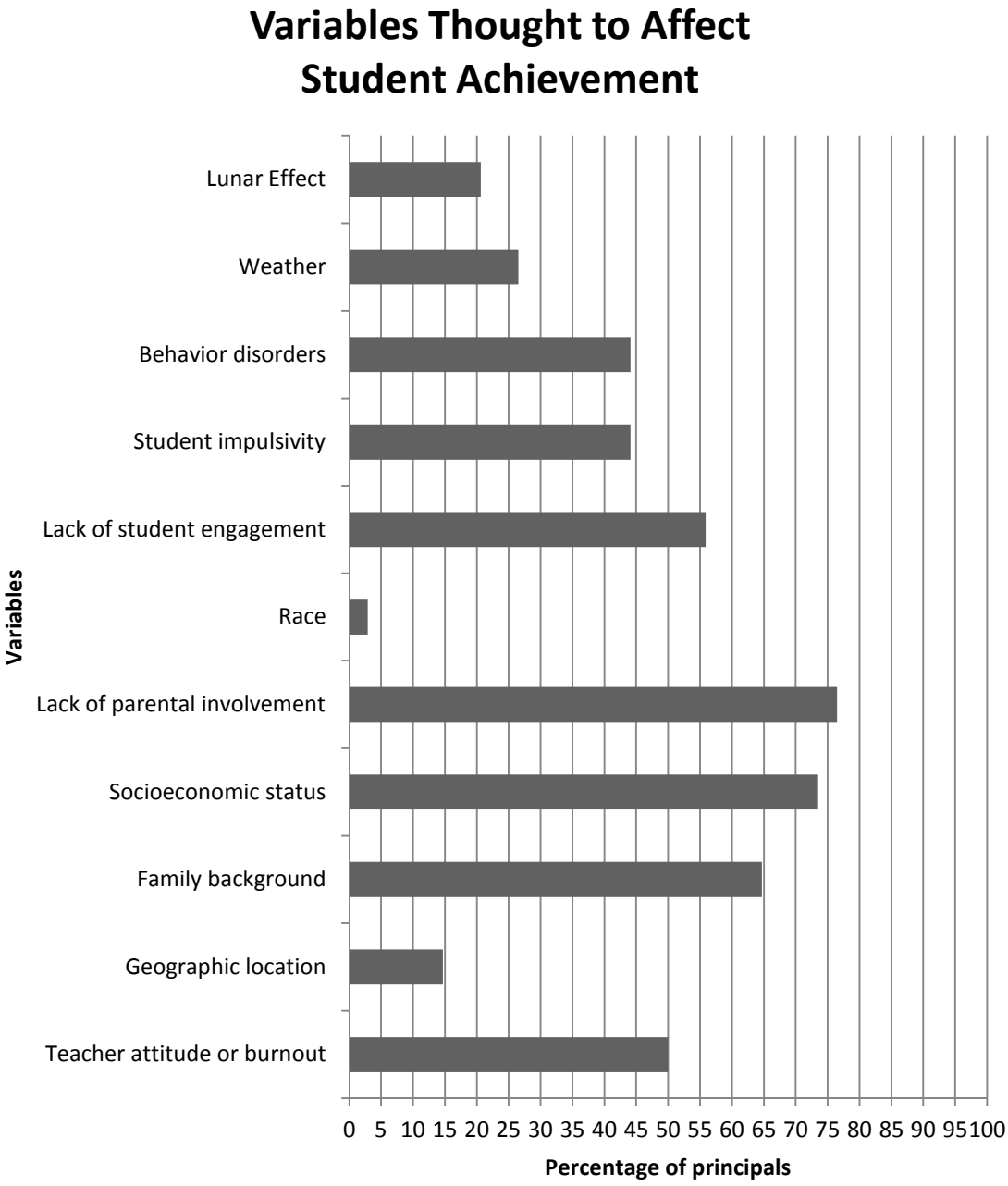

Figure 17. Percentage of variables thought to affect student achievement.

Summary

After the data were analyzed, the hypothesis for research question number 1 was deemed incorrect. Likewise, research question number 2 resulted in failing to reject the null hypothesis. A survey of local elementary principals showed 33 out of 34 respondents feel student behavior is impacted by changes in the weather. In addition, 18 principals blame lunar phases for changes in student behavior.

Chapter Five provided an overview of the study. A review of study findings was presented. Conclusions for each research question were discussed. Chapter Five also included implications for educational practice and addressed any questions that were raised during research. Recommendations for possible future related research were offered. Finally, the chapter reviewed and summarized the study elements, findings, and conclusions.

Chapter Five: Summary and Conclusions

Student achievement is of utmost importance in education. However, achievement is affected by many factors, student behavior being one of the most severe. According to Vallaire-Thomas et al. (2011), "the influx of disruptive behaviors is causing quite a stir throughout classrooms in America" (p. 224). Basch (2011) recognized classroom disruptions as severe impediments to learning. This study examined measures school districts are utilizing to combat achievement obstacles. The potential relationship between weather, specifically barometric pressure, and the lunar cycle and whether a direct correlation exists with student behavior and discipline issues were also examined.

The study consisted of quantitative data. These data were gathered and analyzed on student discipline, barometric pressure readings, and the lunar cycle. Three school years' data, 2009-2010, 2010-2011, and 2011-2012, were examined. In addition, Missouri elementary principals were surveyed in an effort to identify current measures being taken to combat any obstacles to student achievement.

Findings

Three research questions were examined. The first research question was posed to examine the relationship between weather changes, specifically barometric pressure, and elementary student behavior. Barometric pressure readings were charted for each day of the school year. The mean pressure readings were found to be 30.01 mbar, 30.01 mbar, and 30.05 mbar for each of the three school years. Student disciplinary referrals were also charted. The average number of referrals for each year was 5.55, 5.54, and 6.77 respectively.

A correlation coefficient was calculated for each year's data. For 2009-2010, the coefficient was 0.0165. For 2010-2011, the coefficient was -0.1079 and -0.0494 for 2011-2012. Since each of the correlation coefficients were relatively close to 0, it was determined there was not a significant relationship between student discipline referrals and barometric pressure. Therefore, the null hypothesis, H_0, failed to be rejected.

Research Question Two was posed to examine the possible relationship between the phases of the moon and student behavior. The full and new moons were charted along with the discipline referral counts by date for each of the three school years. Again, correlation coefficients were calculated for each school year. The correlation coefficient was -0.0415 for 2009-2010, -0.1565 for 2010-2011, and -0.1138 for 2011-2012. Each of these correlation coefficients was relatively close to 0, signifying a lack of relationship between student discipline referrals and the lunar cycle. H□, the null hypothesis, failed to be rejected, signifying no significant correlation between the phases of the moon and student discipline referrals.

The final research question was created to explore measures school districts are utilizing to combat potential obstacles to student achievement. Responses were gathered from 34 principals. Ninety-seven percent felt student behavior is impacted by changes in barometric pressure. Only 52.9% of respondents felt student behavior is affected by a full or new moon phase. The survey also inquired about how districts are currently combating obstacles to student achievement. Classroom management and/or proactive discipline were reported by 97.1% of respondents as the most common strategy. Appendix C shows all responses to the electronic survey.

Conclusions

There was no significant relationship found between weather, specifically barometric pressure, and student referrals. Therefore, the null hypothesis for Research Question One failed to be rejected. However, only the mean barometric pressure reading for the day was examined. Perhaps this conclusion would be different if the daily change in pressure was examined and whether or not the change occurred rapidly.

Likewise, with regard to Research Question Two, there was no significant relationship identified between the lunar phases and student discipline referrals. Again, the null hypothesis was not rejected. Educators agree students will rise to expectations. This includes behavioral expectations. University of Washington Faculty (n.d.) reported, "popular legend has it that the full moon brings out the worst in people: more violence, more suicides, more accidents, more aggression" (p. 1). Perhaps the full moon's impact educators recognize in their students' behavior is actually a result of adult expectations.

Research Question Three involved asking what measures school districts are currently utilizing to combat potential weather and lunar-related obstacles to student achievement. An overwhelming number, 97.1%, named classroom management and/or proactive discipline as the top strategy used. This finding signified the importance of teacher training and attitude with regard to managing classrooms and proactively dealing with discipline before it occurs. Tate (2007) suggested, "proactive classroom managers anticipate and prepare for the avoidance of behavior problems" (p. xvii). It seems classroom management is crucial, no matter the obstacle.

Implications for Practice

Although research showed there is statistically no significant relationship between weather changes, specifically barometric pressure and student behavior resulting in discipline referrals, according to the principals surveyed, 97% feel there is a strong connection. When something is so widely believed and accepted, perception becomes reality. Students live up to teacher expectations. If educators expect students to behave negatively, they more than likely will. So, because the majority of educators believed that weather changes affect their students' behavior, the belief must be accepted and educators should decide how to best address it.

According to Basch (2011), "violence and aggressive behavior, once considered a criminal justice problem, is now recognized as an appropriate and important focus of the education and public health systems" (p. 624). As professionals, educators should recognize the importance of preventing student misbehavior in the interest of academic achievement. Costello (2009) reported, "only one of three [principals] believed that their teachers were very well or moderately well prepared for maintaining classroom order" (p. 1). Proactive discipline, classroom management, and behavioral management strategies should be taught and required in an effort to combat any conscious or unconscious reactions to changes in the weather. In addition, if at all possible, educators should be educated and informed on the misconceptions of the impact of weather on student behavior.

Prior to this study, it was more widely believed by educators that lunar phases had more of an impact on student behavior. However, after studying survey results, that is not the case. Only 52.9% of principals felt student behavior is impacted by the phases

of the moon. Likewise, when asked about variables they felt affect achievement, the Lunar Effect ranked second to the lowest. At 20.6%, the Lunar Effect was followed only by Race, at 2.9%. According to research conducted for the literature review, many other industries, such as health care and veterinary medicine, attributed negative behavior to changes in the moon (Grant, 2008).

Recommendations for Future Research

According to Hudley et al. (2007), "physical aggression is seen as a major problem in schools, both in the classroom and on the playground by students, parents, and teachers as well as the public at large" (p.254). No matter the cause of student aggression or misbehavior, academic achievement is negatively impacted in some way with each occurrence. Sadly, negative behavior is increasing in intensity and becoming more prevalent in schools across the nation (Lambert, 2013).

Before educators can concentrate on ways to increase achievement, they need to examine strategies to prevent undesirable behaviors. Perhaps additional studies related to professional development with regards to classroom management would be beneficial. As stated previously, Tate (2007) believed effective instructors employ classroom management strategies, preventing problems from occurring. Therefore, the more that is known about what affects children and their behavior, the better prepared and more proactive educators can be in dealing with student discipline.

Gender awareness and professional development on the differences in educating males verses females should be explored. Costello (2009) reported, "by incorporating gender awareness in instruction, principals, teachers, and students will experience the numerous benefits that accrue when discipline referrals are reduced and

learning is increased" (p. 2). In addition to classroom management and gender-aware training, there also needs to be more research and training conducted on recognizing behavioral or conduct disorders in the academic setting.

Education is vastly different today than in years past. Educational classrooms are as diverse as society and culture (Friend & Pope, 2005). Early intervention is crucial for students afflicted with one of these disorders. According to Anderson et al. (2012), "teachers play central roles in reporting symptoms, advising parents to seek assessment, and assisting children with ADHD to achieve academically and socially" (p. 511). Therefore, educators must be provided adequate professional development related to recognizing symptoms and proactively dealing with these symptoms in the classroom environment.

Summary

Student achievement is the main focus of any educational institution. However, many obstacles to increasing or even maintaining achievement exist and flourish. Two such potential obstacles, weather and the phases of the moon were identified and examined. More specifically, this quantitative study examined two separate independent variables, barometric pressure and the lunar phases, and one dependent variable, student behavior.

The stated purpose of this study was to examine disciplinary student referral data in order to find a statistically significant predictor of student classroom behavior. The predictor could then be used proactively, in an effort to prevent educational disruptions, therefore reducing the necessity of discipline and increasing the time spent on raising achievement. In other words, this study was designed to determine the

relationship between elementary student discipline referrals and weather condition changes or lunar phases and to identify any current measures school districts are using to combat these or additional obstacles to student achievement.

The data were gathered from a rural Missouri elementary school and encompassed three school years, 2009 through 2012. The data consisted of discipline referrals on students from kindergarten through fourth grade. These data were then analyzed, by date, and compared with barometric pressure readings and lunar phases, specifically a full or new moon. In addition, an electronic survey was distributed to gather data from elementary principals in Missouri. The main purpose of the survey was to identify perceived obstacles to student achievement and measures being taken to combat these obstacles.

Based on statistical calculations, there was not a significant correlation between changes in barometric pressure and student discipline referrals. Likewise, it was also determined there was not a significant correlation between the lunar phases and student discipline referrals. Both null hypotheses failed to be rejected. However, human opinion differs. According to the survey respondents, 97.1% felt student behavior is impacted by weather. Although not nearly as high, a majority, 52.9%, felt student behavior is affected by the phases of the moon. Sadly, principals rated lack of parental involvement as the greatest variable affecting student achievement at their respective schools.

Survey respondents were asked how they combat student misbehavior at their schools. Every principal but one named classroom management and proactive discipline. Respondents also said they try to increase student engagement and motivation and increase parental involvement in an effort to prevent disruption.

Through this research, it has become evident that creating a positive, nurturing learning environment is probably the single most important factor on student achievement. According to Holtzapple et al. (2011):

> A positive school culture is dependent upon a number of parameters that include developing a safe, caring environment, establishing rules that hold all school members to a high standard of behavior, and building healthy relationships that create a professional culture and increase student connectedness. (p. 72)

The SEDL (2007) reported "while schools cannot control all the influences that impinge on a young person's sense of safety and well-being, classrooms and schools that build an atmosphere of trust and intellectual safety will enhance learning" (p. 2). Therefore, school leaders must be adamant with regards to culture development and demand high expectations from all school staff.

Theoretically, "in a perfect world, all children would arrive at school with workable academic and social operating systems, ready to be fine-tuned by a positive school experience" (Jensen, 2011, p. 4). Educators know this is far from the truth. However, educators are still charged with preparing students for life in a constantly changing world. Therefore, every effort must be made to ensure students are given every chance possible to succeed and achieve, no matter the cost.

Appendix A

INFORMED CONSENT FOR PARTICIPATION IN RESEARCH ACTIVITIES

"The Relationship Between Weather and Lunar Changes on Student Achievement and Measures School Districts Utilize to Combat Potential Impact"

Principal Investigator: Kendra Stuart

Telephone: 417-545-1395 E-mail: kss533@lindenwood.edu

1. You are invited to participate in a research study conducted by Kendra Stuart under the guidance of Dr. Sherry Devore. The purpose of this research is to examine disciplinary student data in order to find a statistically significant predictor of student classroom behavior which could then be used proactively in an effort to prevent educational disruptions; therefore, reducing the incidence of discipline.

2. a) Your participation will involve:

   Completing the electronic survey (SurveyMonkey) regarding student behavior and discipline sent to you via electronic mail. Upon the submission of the completed survey, no other participation will be required.

   b) The amount of time involved in your participation will be approximately 10 minutes, and you will receive no compensation for your time. Approximately 100 subjects will be involved in this research.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about student behavior and discipline.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study and the information collected will remain in the possession of the investigator in a safe location.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Kendra Stuart (417-545-1395), or the Supervising Faculty, Dr. Sherry DeVore (417-881-0009). You may also ask questions of or state

concerns regarding your participation to the Lindenwood Institutional Review Board (IRB) through contacting Dr. Jann Weitzel, Vice President for Academic Affairs, at 636-949-4846.

I have read this consent form and have been given the opportunity to ask questions. I may retain a copy for my records. I consent to my participation in the research described above.

By completing the survey, you acknowledge your consent to participate in this study.

<hyperlink to survey>

Appendix B

IRB Approval

Please note that Lindenwood University Institutional Review Board has taken the following action on IRBNet:

Project Title: [424482-1] The Relationship Between Weather and Lunar Changes on Student Achievement and Measures School Districts Utilize to Combat Potential Impact
Principal Investigator: Kendra Stuart

Submission Type: New Project
Date Submitted: February 10, 2013

Action: APPROVED
Effective Date: April 8, 2013
Review Type: Expedited Review

Should you have any questions you may contact Beth Kania-Gosche at bkania-gosche@lindenwood.edu.

Thank you,
The IRBNet Support Team

Appendix C

Electronic Survey Results:

Elementary Student Behavior and Discipline

1. Which grade levels are you responsible for?
    a. Kindergarten 82.4%
    b. 1st 82.4%
    c. 2nd 79.4%
    d. 3rd 79.4%
    e. 4th 76.5%
    f. 5th 55.9%
    g. 6th 38.2%
2. Approximately how many students attend your school?
    a. Under 250 33.3%
    b. 250-500 27.3%
    c. 501-750 30.3%
    d. 751+ 9.1%
3. What is the highest level of education you have completed?
    a. Bachelor's 0.0%
    b. Master's 32.4%
    c. Specialist 55.9%
    d. Doctorate 11.8%

4. How many years have you been an administrator?

    a. First year 0.0%

    b. Two – five years 38.2%

    c. Six – ten years 29.4%

    d. Eleven + years 32.4%

5. What variables do you feel affect student achievement at your school?

    a. Lack of classroom management 52.9%

    b. Teacher attitude or burnout 50.0%

    c. Geographic location 14.7%

    d. Family background 64.7%

    e. Socioeconomic status 73.5%

    f. Lack of parental involvement 76.5%

    g. Race 2.9%

    h. Lack of student engagement 55.9%

    i. Student impulsivity 44.1%

    j. Behavior disorders 44.1%

    k. Weather 26.5%

    l. Lunar Effect 20.6%

6. What strategies are you using to combat student misbehavior?

    a. Classroom management/proactive discipline 97.1%

    b. Early detection of childhood disorders 61.8%

    c. Early intervention for behavior issues 76.5%

d. Increase student engagement/motivation 88.2%

e. Increase parental involvement 82.4%

f. Changes in the classroom arrangement 55.9%

g. Involving music in the classroom 11.8%

h. Using calming colors in the classroom 11.8%

i. Appropriate classroom lighting 17.6%

7. Do you feel student behavior is impacted by weather? If so, how?

a. Yes 97.1%

b. No 2.9%

Comments:

• I believe sudden changes in the barometric pressure or even the expectation of snow can have a major effect on student behavior, especially younger students.

• We see an escalation in unstructured environments when the weather is due to change.

• Weather changes are often signaled by a change in student and adult behavior.

• When there is a weather change coming, students act differently. They are more energetic.

• Recognizable patterns related to barometric pressure.

• They tend to get excited when there is a noticeable change in weather.

• Sometimes it appears that student behavior becomes more noticeable right before a major weather change. Usually see more activity or unusual behaviors.

• It seems to be. Children appear to be louder and have more movement when there are major changes in the weather or severe storms.

• Weather that does not allow for outdoor activities prevents students from releasing their natural abundance of energy. This energy then is often expressed in inappropriate ways, affecting classroom instruction and behavior management.

• Snow or rain and kids can't get out and burn off energy.

• It can affect the mood of students and how they act.

• We see more impulsive behaviors. Students are louder and more active.

• When there are shifts in the weather pattern, students become a little more unsettled and unruly.

• We almost always have more discipline referrals if the weather is drastically changing (cold/warm front). The activity and noise level of the students is also increased on these days (in the cafeteria, gym, etc.).

• Rise in the barometer, major changes in the weather create a buzz.

• Weather changes, fronts moving in—students are louder, and more active.

• The overall "feel" of the building is energized when a change of weather or a full moon is approaching.

• Children are more restless.

• Some students are scared of thunderstorms, rain, tornadoes.

• I really can't explain why behavior changes with the weather but students tend to be more restless when the weather is severe

• Students tend to be more on edge when a significant change in the weather is approaching. It seems that this requires teachers to spend additional time monitoring and correcting small behaviors (talking, not walking in line, fidgeting in seats, etc.). This

additional time spent on small behaviors, translates into time that is not spent on engaging instruction.

• Snow days break up routines that take time to establish. Any weather changes i.e. hot to cold or cold to hot seem to impact students overall. Holidays and long weekends tend to cause change in students.

• Changes in weather such as pressure change seem to make a difference in behavior.

• Several days of poor weather—students cannot go out for recess and we begin to see an increase in distracting behaviors.

• Students seem to be more hyper and act out more when there is a weather change.

• I have noticed increased behavior with shifts in the weather.

• Barometric pressure

• You can always tell when the weather is changing, students' actions are more disruptive.

• Often times when weather is about to change, our referrals tend to increase, especially in autistic children.

•We see changes in our students on the spectrum usually with frontal systems.

• Students are distracted by snow or heavy rains. Dark clouds seem to heighten anxiety in some students.

• This is not as evident during instructional times, but seems to be a variable in unstructured situations such as recess, lunch room, etc.

• When the weather is unstable the children become more unstable, also.

8. In your opinion, is student behavior affected by the phases of the moon?

    a. Yes 52.9%

    b. No 47.1%

    Comments:

• I do not follow the moon phases well enough to make the possible correlation.

• I really am not sure of this.

• Too many other variables.

• Behavior also seems to be affected by a full moon.

• I'm not really sure how to explain. I just know that I can tell you it is a full moon with 90% accuracy by my students' behaviors on any given day.

• This is purely subjective but when the moon is full it seems the students are more active and classroom management becomes more challenging.

• I notice the behavior of students as well as adults' change, especially when there is a full moon.

• I personally don't feel that all students are affected by phases of the moon but I have 2 in my building right now that I know what kind of day they will have based on the full moon.

• Children are more restless.

• I watch the moon phases and have for years and I believe that people in general, not just students, ten to behave differently during full moons.

• No real data only a feeling.

• In primary age children we sometimes see increased hyperactivity.

• Everything is connected and the Bible talks about it.

• Especially during full moon phase

• Seems to…could by myth.

• Students seem to be more hyper when there is a full moon.

• I've heard teachers say "it's a full moon" when we've had a bad day – but it could also be a coincidence.

• I don't think it's as noticeable as when the weather changes because the behavior tends to build over a longer time period.

References

Adelman, H., & Taylor, L. (2010). Mental health in schools: Engaging learners, preventing problems, and improving schools. *Contemporary School Psychology, 16,* 163-166.

Adelman, H. S., & Taylor, L. (2012). Mental health in schools: Moving in new directions. *Contemporary School Psychology, 16,* 9-18.

Ali, R., Hukamdad, D., Ghazi, S. R., Shahzad, S., & Khan, H. N. (2010). The impact of brain based learning on students' academic achievement. *Interdisciplinary Journal of Contemporary Research in Business, 2*(2), 542-556.

Alvarez, M. E., & Frey, A. J. (2012). Promoting academic success through student engagement. *Children & Schools, 34*(1), 1-2.

American Meteorological Society. (2011). *Glossary of meteorology*. Retrieved from http://amsglossary.allenpress.com/glossary

American School Counseling Association. (1998). *American school counseling association's position statement on character education*. Retrieved from http://www.schoolcounselor.org

Anderson, C. M., & Kincaid, D. (2005). Applying behavior analysis to school violence and discipline problems: Schoolwide positive behavior support. *The Behavior Analyst, 28,* 49-63.

Anderson, D. L., Watt, S. E., & Noble, W. (2012). Knowledge of attention deficit hyperactivity disorder (ADHD) and attitudes toward teaching children with ADHD: The role of teaching experience. *Psychology in the Schools, 49*(6), 511-525.

Ashdown, D. M., & Bernard, M. E. (2012). Can explicit instruction in social and emotional learning skills benefit the social-emotional development, well-being, and academic achievement of young children? *Early Childhood Education Journal, 39*, 397-405. doi: 10.1007/s10643-011-0481-x

Baker, M., & Johnston, P. (2011). The impact of socioeconomic status on high stakes testing reexamined. *Journal of Instructional Psychology, 37*(3), 193-199.

Balfanz, R. (2009). *Putting middle grades students on the graduation path*. (A Policy and Practice Brief). National Middle School Association, 2-14.

Ballard, K., & Bates, A. (2008). Making a connection between student achievement, teacher accountability, and quality classroom instruction. *The Qualitative Report, 13*(4), 560-580.

Barnett, D. (2012). A grounded theory for identifying students with emotional disturbance: Promising practices for assessment, intervention, and service delivery. *Contemporary School Psychology, 16*, 21-31.

Basch, C. E. (2011). Aggression and violence and the achievement gap among urban minority youth. *Journal of School Health, 81*(10*)*, 619-625.

BBC. (n.d.). *Nature's forecasters*. Retrieved from http://bbc.co.uk

Bernaus, M., & Gardner, R. C. (2008). Teacher motivation strategies, student perceptions, student motivation, and English achievement. *The Modern Language Journal, 92*, 387-401.

Bluman, A. G. (2011). *Elementary statistics: A step by step approach* (8th ed.). New York, NY: McGraw-Hill.

Bower, H. A., & Griffin, D. (2011). Can the Epstein model of parental involvement work in a high-minority, high-poverty elementary school? A case study. *Professional School Counseling, 15*(2), 77-87.

Bronikowski, A. M., & Altmann, J. (1996). Foraging in a variable environment: Weather patterns and the behavioral ecology of baboons. *Behavioral and Ecological Sociobiology, 39*, 11-25.

Brouwers, A., & Tomic, W. (1998). A longitudinal study of teacher burnout and perceived self-efficacy in classroom management. *Teaching and Teacher Education, 16*, 239-253. Retrieved from http://www.elsevier.com/locate/tate

Caselman, T. (2009). *Impulse control*. Chapin, SC: Youth Light, Inc.

Centers for Disease Control and Prevention. (2013). *Autism spectrum disorders*. Retrieved from http://www.cdc.gov/ncbddd/autism/data.html

Chafouleas, S. M., Volpe, R. J., Gresham, F. M., & Cook, C. R. (2010). School-based behavioral assessment within problem-solving models: Current status and future directions. *School Psychology Review, 39*(3), 343-349.

Chudler, E. (n.d.). *Moonstruck! Does the full moon influence behavior?* Retrieved from http://faculty.washington.edu/chudler/moon.html

College of Saint Mary. (n.d.). *Classroom management literature review*. Retrieved from http://csmstu01.csm.edu

Costello, B. (2009). Gender awareness: The key to reducing discipline referrals. *Principal*, 1-2.

Cowden, P. A. (2010). Social anxiety in children with disabilities. *Journal of Instructional Psychology, 37*(4), 301-305.

Crawford, B. G. (2004). *Managing the adolescent classroom: Lessons from outstanding teachers*. Thousand Oaks, CA: Corwin Press.

Croom, D. B., & Moore, G. E. (2003). Student misbehavior in agricultural education: A comparative study. *Journal of Agricultural Education, 44*(2), 14-26.

Dorn, M. (2006). *Weakfish: Bullying through the eyes of a child* (2nd ed.).

Eberly Center. (n.d.). *Address Problematic Student Behavior*. Retrieved from http://www.cmu.edu/teaching/designteach/teach/problemstudent.html

Ediger, M. (2009). Seven criteria for an effective classroom environment. *College Student Journal, 43*(4), 1370-1372. Retrieved from Education Full Text database.

Eklund, K., Renshaw, T. L., Dowdy, E., Jimerson, S. R., Hart, S. R., Jones, C. N., & Earhart, J. (2009). Early identification of behavioral and emotional problems in youth: Universal screening versus teacher-referral identification. *The California School Psychologist, 14*, 89-95.

Elias, M. (2013). The school-to-prison pipeline. *Teaching Tolerance, 43*, 39-40.

Espelage, D. L., Bosworth, K., & Simon, T. R. (2000). Examining the social context of bullying behaviors in early adolescence. *Journal of Counseling and Development*, 326-333.

Essa, E. L., Hilton, J. M., & Murray, C. I. (1990). The relationship between weather and preschoolers' behavior. *Children's Environments Quarterly, 7*(3), 32-36.

Feuerborn, L. L., & Tyre, A. D. (2012). Establishing positive discipline policies in an urban elementary school. *Contemporary School Psychology, 16*, 47-58.

Ford, T., & Nikapota, A. (2000). Teachers' attitudes towards child mental health services. *Psychiatric Bulletin, 24*, 457-461.

Friend, M., & Pope, K. L. (2005). Creating schools in which all students can succeed. *Kappa Delta Pi Record*, 56-61.

Gavish, B., & Friedman, I. A. (2010). Novice teachers' experience of teaching: A dynamic aspect of burnout. *Social Psychology of Education, 13*, 141-167. doi:10.1007/s11218-009-9108-0

Graham, S. (n.d.). Bullying: A module for teachers. Retrieved from http://www.apa.org/education/k12/bullying.aspx

Grant, A. (2008). *Does a full moon actually affect people's behavior?* Retrieved from http://www.scienceline.org

Greene-Clemons, C., & Flood, C. T. (2013). Seven tips to effectively engage parents. *Principal, 92*(3), 46-47.

Holt, W. C. (2008). *An investigating of the life experiences and beliefs of teachers exhibiting Effective classroom management behaviors in diverse rural schools* (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3415937)

Holtzapple, C. K. (2011). Measuring behavioral outcomes associated with comprehensive character education programs: A practical approach to using fewer schools in school-randomized controlled trials while maintaining adequate statistical power. *Journal of Research in Character Education, 9*(1), 57-69.

Holtzapple, C. K., Griswold, J. S., Cirillo, K., Rosebrock, J., Nouza, N., & Berry, C. (2011). Implementation of a school-wide adolescent character education and prevention program. *Journal of Research in Character Education, 9*(1), 71-90.

Hudley, C., Graham, S., & Taylor, A. (2007). Reducing aggressive behavior and increasing motivation in school: The evolution of an intervention to strengthen school adjustment. *Educational Psychologist, 42*(4), 251-260.

Irvin, M. J. (2012). Role of student engagement in the resilience of African American adolescents from low-income rural communities. *Psychology in the Schools, 49*(2), 176-193.

Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research, 79*(1), 491-525. doi: 10.3102/003465430835693

Jensen, E. (1995). *Brain-based learning and teaching*. Thousand Oaks, CA: Corwin Press.

Jensen, E. (2011). *Different brains, different learners*. Thousand Oaks, CA: Corwin Press.

Jensen, E., & Dabney, M. (2000). *Learning smarter: The new science of teaching*. Thousand Oaks, CA: Corwin Press.

Kindelan, J. K. (2011). *Elementary school administrator training in the area of handling student discipline* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. DP19066)

Kokkinos, C. M., & Kipritsi, E. (2012). The relationship between bullying, victimization, trait emotional intelligence, self-efficacy and empathy among preadolescents. *Social Psychology of Education, 15*, 41-58. doi: 10.1007/s11218-011-9168-9

Kraemer, E., Davies, S. C., Arndt, K. J., & Hunley, S. (2012). A comparison of the mystery motivator and the get ‘em on task interventions for off-task behaviors. *Psychology in the Schools, 49*(2), 163-175.

Kratochwill, T. (2011). *Classroom Management*. Retrieved from http://www.apa.org/education/k12/classroom-mgmt.aspx

Kuhnle, C., Hofer, M., & Kilian, B. (2012). Self-control as predictor of school grades, life balance, and flow in adolescents. *British Journal of Educational Psychology, 82*(4), 533.

LaCour, M. M., & Tissington, L. D. (2011). Conflict resolution in the multicultural classroom. *Journal of Instructional Psychology, 38*(1), 8-10.

Lagace-Seguin, D. G., & D’Entremont, M. L. (2005). Weathering the preschool environment: Affect moderates the relations between meteorology and preschool behaviors. *Early Child Development and Care, 175(5),* 379-394. doi:10.1080/0300443042000270777

Lalonde, S. B. (2001). Sometimes a body just knows. *Weatherwise, 54*(5), 48-49.

Lambert, R. (2013). *Violence in U.S. K-12 schools, 1974-2013: Patterns in deadly incidents and mass threat.* Rural School and Community Trust, March 2013.

Lantieri, L. (2008). Nurturing inner calm in children. *Encounter, 21(3),* 32-37.

Leone, S. (2009). *The relationship between classroom climate variables and student achievement* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3393080)

Levine, D. M., & Stephan, D. F. (2010). *Even you can learn statistics* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Lewis, T. J., Sugai, G., & Colvin, G. (1998). Reducing problem behavior through a school-wide system of effective behavioral support: Investigation of a school-wide social skills training program and contextual interventions. *The School Psychology Review, 27*(3), 446-459. Retrieved from Education Full Text database.

Lippman, L., & Rivers, A. (2008). *Assessing school engagement: A guide for out-of-school time program practitioners*. (Research-to-Results Brief #2008-39). Washington, DC: Author.

Luiselli, J. K., Putnam, R. F., Handler, M. W., & Feinberg, A. B. (2005). Whole-school positive behavior support: Effects on student discipline problems and academic performance. *Educational Psychology, 25*(2-3), 183-198. doi: 10.1080/0144341042000301265

Mayo Clinic Staff. (2009). *Seasonal affective disorder (SAD).* Retrieved from http://www.mayoclinic.com

McCarthy, J. (2007). *Louder than words*. New York, NY: Dutton.

McCreary, M. L., Young, J. J., Jones, M. Y., Pasquariello, C. D., Fife, J. E., Grosz, E., … Desmangles, J. (2011). Project IMPPACT: A psycho-educational problem-solving intervention for children. *Journal of Instructional Psychology, 38*(2), 124-132.

Merriam-Webster. (2010). *Merriam-Webster online dictionary*. Retrieved from http://www.merriam-webster.com/dictionary

Merritt, E. G., Wanless, S. B., & Rimm-Kaufman, S. E., & Cameron, C. (2012). The contribution of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychology Review, 41*(2), 141-159.

Monroe, C. R. (2006). Misbehavior or misinterpretation? *Kappa Delta Pi Record, Summer*, *42*(4), 161-165.

Morris, L. T. (2010). *Brain-based learning and classroom practice: A study investigating instructional methodologies of urban school teachers* (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3398017)

Morse, A. B., Christenson, S. L., & Lehr, C. A. (2004). *School completion and student engagement: Information and strategies for parents*. Retrieved from http://www.nasponline.org/resources/principals/nasp_complparents.pdf

National Association of School Psychologists. (2004). *School completion and student engagement: Information and strategies for parents* [Brochure]. Bethesda, MD: Author.

National Center for Injury Prevention and Control. (2013). *Understanding School Violence*. Retrieved from http://www.cdc.gov/violenceprevention/pdf/School_Violence_Fact_Sheet-a.pdf

National Institute on Deafness and Other Communication Disorders. (2010). *Statistics on voice, speech, and language.* Retrieved from http://www.nidcd.nih.gov/health/statistics/Pages/vsl.aspx

National Library of Medicine. (2013). *Attention deficit hyperactivity disorder.* Retrieved from http://www.ncbi.nlm.nih.gov

Naval Meteorology and Oceanography Command. (n.d.). *Naval Oceanography Portal*. Retrieved from http://usno.navy.mil/USNO/astronomical-applications/data-services

Neal, R. D., & Colledge, M. (2000). The effect of the full moon on general practice consultation rates. *Family Practice, 17*(6), 472-474.

Nihart, T., Lersch, K. M., Sellers, C. S., & Mieczkowski, T. (2005). Kids, cops, parents and teachers: Exploring juvenile attitudes toward authority figures. *Western Criminology Review, 6*(1), 79-88.

Nunez, S., Perez, M. L., & Aguirre-Jaime, A. (2002). Moon cycles and violent behaviours: Myth or fact? *European Journal of Emergency Medicine, 9*(2), 127-130. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12131634.

O'Malley, M. D. (2009). Prevailing interventions to address peer victimization at school: A study of California school psychologists. *The California School Psychologist, 14*, 47-57.

Organisation for Economic Co-Operation and Development. (n.d.). *OECD Glossary of Statistical Terms*. Retrieved from http://stats.oecd.org/glossary/index.htm

Payne, R. K. (2005). *A framework for understanding poverty* (4th ed., Rev.). Highlands, TX: aha! Process, Inc.

Payne, R. K. (2006). *Working with students: Discipline strategies for the classroom.* Highlands, TX: aha! Process, Inc.

Phillips, V. I., & Cornell, D. G. (2012). Identifying victims of bullying: Use of counselor interviews to confirm peer nominations. *Professional School Counseling, 15*(3), 123-131.

Psychology Today. (n.d.). *What is dopamine*. Retrieved from www.psychologytoday.com/basics/dopamine

Raison, C. L., Klein, H. M., & Steckler, M. (1999). The moon and madness reconsidered. *Journal of Affective Disorders, 53*(1), 99-106. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10363673

Rappaport, N., & Minahan, J. (2013). Breaking the behavior code: How to help teachers make a difference with challenging student behavior. *Principal, 92*(3), 18-22

Regan, K. S. (2009). Improving the way we think about students with emotional and/or behavioral disorders. *Teaching Exceptional Children, 41*(5), 60-65.

Reglin, G., Akpo-Sanni, J., & Losike-Sedimo, N. (2010). The effect of a professional development classroom management model on at-risk elementary students' misbehaviors. *Education, 133*(1), 3-18.

Roach, J. (2004). *Full moon effect on behavior minimal, studies say*. Retrieved from http://news.nationalgeographic.com

Rogers, G. L. (2003). *The seven C's of thinking clearly*. Midvale, UT: ChoiceSkills, Inc.

Ross, K. S., Neeley, R. A., & Baggs, T. W. (2007). The relationship between discipline infractions and communication disorders in public school students. *Education, 128*(2), 202-210. Retrieved from Education Full Text database.

Rothon, C., Head, J., Klineberg, E., & Stansfeld, S. (2011). Can social support protect bullied adolescents from adverse outcomes? A prospective study on the effects of bullying on the educational achievement and mental health of adolescents at secondary schools in East London. *Journal of Adolescence, 34*(3), 579-588.

Rubie-Davies, C. M., Peterson, E., Irving, E., Widdowson, D., & Dixon, R. (2010). Expectations of achievement. *Research in Education, 83*(1), 36-53.

Rusby, J. C., Taylor, T. K., & Foster, E. M. (2007). A descriptive study of school discipline referrals in first grade. *Psychology Scholar, 44*(4), 333-350.

Safran, S. P., & Oswald, K. (2003). Positive behavior supports: Can schools reshape disciplinary practices? *Exceptional Children, 69*(3), 361-373.

Sanders, J. L., & Brizzolara, M. S. (1982). Relationships between weather and mood. *Journal of General Psychology, 107*, 155-156.

Schory, T. J., Piecznski, N., Nair, S., & El-Mallakh, R. S. (2003). Barometric pressure, emergency psychiatric visits, and violent acts. *Canada Journal of Psychiatry, 48*(9), 624-627.

Scrivner, C. M. (2009). *The relationship between student achievement and teacher attitude: A correlational study* (Doctoral Dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3351416)

Scuffy, C. (2011). *Belief in lunar effects* (Master's thesis, University of Minnesota Duluth). Retrieved from http://www.d.umn.edu

Sheldon, S. B., & Epstein, J. L. (2002). Improving student behavior and school discipline with family and community involvement. *Education and Urban Society, 35*, 4-26.

Shemirani, S. M., Memarian, G. H., Naseri, S. P., Nejad, H. H., & Vaziri, V. (2011). Investigating the behaviors of the elementary school students in reference to factors associated with daylight. *Asian Social Science, 7*(3), 237-248.

Skiba, R. J., Peterson, R. L., & Williams, T. (1997). Office referrals and suspension: disciplinary intervention in middle schools. *Education and Treatment of Children, 20*, 295-315. Retrieved from Education Full Text database.

Skiba, R. J., & Peterson, R. L. (2000). School discipline at a crossroads: From zero tolerance to early response. *Exceptional Children, 66*(3), 335-346. Retrieved from Education Full Text database.

Skiba, R. J., & Rausch, M. K. (2006). Zero tolerance, suspension, and expulsion: Questions of equity and effectiveness. In C. Evertson & C. Weinstein (Eds.), *Handbook of classroom management: Research, practice, and contemporary issues* (pp. 1063-1089). Mahwah, NJ: Lawrence Erlbaum Associates.

Southwest Educational Development Laboratory. (2007). How can research on the brain inform education? *Classroom Compass, 3*(2), 1-6.

Sullivan, A. L., Klingbeil, D. A., & Van Norman, E. R. (2013). Beyond behavior: Multilevel analysis of the influence of sociodemographics and school characteristics on students' risk of suspension. *School Psychology Review, 42*(1), 99-114.

Tate, M. L. (2007). *Shouting won't grow dendrites.* Thousand Oaks, CA: Corwin Press.

Tidwell, A. K., Flannery, B., & Lewis-Palmer, T. (2003). A description of elementary classroom discipline referral patterns. *Preventing School Failure, 48*(1), 18-26. Retrieved from Education Full Text database.

Tomporowski, P. D., Davis, C. L., Miller, P. H., & Naglieri, J. A. (2008). Exercise and children's intelligence, cognition, and academic achievement. *Educational Psychological Review, 20*(2), 111-131. doi:10.1007/s10648-007-9057-0

Toothman, J. (n.d.). *Can animals predict the weather?* Retrieved from http://animals.howstuffworks.com

Townley, J. (1997). *Dynamic astrology*. Rochester, NY: Destiny Books.

Unite for Sight. (2013). *The importance of quality sample size*. Retrieved from www.uniteforsight.org/global-health-university

United States Census Bureau. (2012). *Current Population Survey (CPS), 2012 Annual Social And Economic Supplement (ASEC).* Retrieved from http://www.census.gov/hhesur

United States Department of Education. (2003). *What does 'strong character' mean? – Helping your child become a responsible citizen*. Retrieved from http://www2.ed.gov/parents/academic/help/citizen/part4.htm

University of Washington Faculty. (n.d.). *Neuroscience for kids*. Retrieved from http://faculty.washington.edu

Vallaire-Thomas, L., Hicks, J., & Growe, R. (2011). Solution-focused brief therapy: An interventional approach to improving negative student behaviors. *Journal of Instructional Psychology, 38*(4), 224-234.

VanBuskirk, S. E. (2011). *Relationships between meteorological variables and academic performance and behavior in children with autism* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3487543)

Vera, E. M., Vacek, K., Coyle, L. D., Stinson, J., Mull, M., Doud, K.,…Langrehr, K. J. (2011). An examination of culturally relevant stressors, coping, ethnic identity, and subjective well-being in urban, ethnic minority adolescents. *American School Counseling Association, 15*(2), 55-66.

Wachob, D. A. (2012). *Public school teachers' knowledge, perception, and implementation of brain-based learning practices* (Doctoral dissertation).

Wallace, J. M., Goodkind, S., Wallace, C. M., & Bachman, J. G. (2008). Racial, ethnic, and gender differences in school discipline among U.S. high school student: 1991-2005. *Negro Educational Review, 59*(1-2), 47-62.

Walther-Thomas, C., & Brownell, M. T. (2001). An interview with Nancy Waldron and James McLeskey: Helping schools include all learners. *Intervention in School and Clinic, 36(*3), 175-181.

Warner, S. A., & Myers, K. L. (2009). The creative classroom: The role of space and place toward facilitating creativity. *Technology Teacher, 69*(4), 28-34.

Warren, A. (2007). *The relationship between reported incidents of student discipline and student achievement across four eastern states*. (Doctoral Dissertation). Retrieved from http://scholar.lib.vt.edu/theses/available/etd-04252007-144250

Weather Underground, Inc. (1995). *Weather Underground*. Retrieved from http://wunderground.com

Williams, M. (2000). Models of character education: Perspectives and developmental issues. *Journal of Humanistic Counseling, Education and Development*, 32-40.

Williams, R. D., & Taylor, R. T. (2003). *Leading with character to improve student Achievement*. Chapel Hill, NC: Character Development Publishing.

Winterbottom, M., & Wilkins, A. (2009). Lighting and discomfort in the classroom. *Journal of Environmental Psychology, 29*, 63-75.

World Teachers Press. (2003). *Bullying: Identify, cope, prevent.* Rowley, MA: Didax, Inc.

Zimecki, M. (2006). *The lunar cycle: Effects on human and animal behavior and physiology*. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16407788

Vita

Kendra Stuart graduated Magna Cum Laude with a Bachelor of Science degree in Computer Information Systems from Missouri State University in 1993. In 2007, Kendra completed her Master's in Educational Administration at Lindenwood University. She went on to receive her Educational Administration Specialist Degree in 2010, also at Lindenwood.

Kendra taught four years in second grade and one year in middle school literature. She is currently in her fifth year as Assistant Principal at Forsyth Elementary, in Forsyth, Missouri.