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Influence of Gender and Age on the Performance of a PBIS program: Quantitative Analysis of Secondary Data from A Midwestern Suburban Public Middle School

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by

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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 here or elsewhere.

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Abstract

The Positive Behavioral Intervention and Support, or PBIS, represented the new trend in dealing with problem behavior in educational settings. The concepts of Gender and Age intertwined with many social, ethnic, and cultural attributes, which affected students' behaviors in group settings such as school. The resolve of this study resided in the investigation of the effects of gender and age (grade level) on the effectiveness of a PBIS program. In addition, the study reviewed the relative quality of validity among the components used in the PBIS program. The data used in this study originated from a PBIS program implemented at a Suburban Middle School located in the Midwest of the United States. The components of the PBIS program implemented included Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The study examined each component based on its activities. Each component involved specific activities, which promoted, encouraged, and sustained the success of its related component. The findings of the study included three categories. Among these categories gender effect on the components, age effect on the components, and differences in quality of validity among the components represented the targets of the investigation.

The findings of this study revealed no gender effect on Safety, openness to diversity, and respect (to self and to others). However, the study showed a gender effect on academic achievement for the seventh graders while revealing no gender effect academically for sixth and eighth graders. In addition, the study demonstrated no age effect on safety and respect (to self and to others). While the study revealed no age effect on openness to diversity among seventh and eighth graders, it showed an age effect on openness to diversity for the sixth graders. Furthermore, the study findings suggested an

age effect on academic achievement among all grade levels. The investigation revealed that the safety and respect (to self and to others) represented poorly designed, developed, and implemented components of PBIS. In addition, it demonstrated that openness to diversity required community involvement and monitoring. Furthermore, the study suggested that administrators and teaching staff modeled and applied the principles and concept of Positive Behavior Support, in order to increase student academic achievement.

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Chapter One: Introduction

Background of the Study

In the two and a half decades previous to this writing, a new approach to dealing with students' extreme behaviors emerged as a promising solution to creating an educational environment which produced a conducive teaching and learning climate. The punitive and one-size-fits-all approach advocated by the zero-tolerance policies around the country failed to address the root cause of students' extreme negative behaviors. The new approach, which provided relatively positive results represented the Positive Behavior Intervention and Support (PBIS).

PBIS involved two major sciences, the science of Positive Psychology and the science of Applied Behavior Analysis. The science of Positive Psychology dealt with optimizing processes that led to increasing and/or maximizing the outcome of the operations of institutions (Gable & Haidt, 2005). The science of Applied Behavior Analysis focused on developing assessments and intervention strategies that produced behavior change (Carr et al., 2002).

Human societal organizations were structured, mostly based on gender and age. In society, such as in the United States where individual liberty and self-identity prevailed, conflicts arose between individual freedom and the social structure. As of this writing, the institution of marriage often involved regulations based on gender specification. Research showed that gender classification remained complex and the female and male labeling was misleading (Hekma & Herdt, 1994). In addition to gender, societal structures involved the developmental stage represented by the concept of age in most human societies, and was well justified by research (Parsons, 1942).

Gender and age attribute engendered sets of societal behavior expectations for children from infancy to adulthood. The social behavior expectation based on gender resulted from the nurturing of children according to cultural and social norms, as well as other norms based on specific group beliefs (Eagly, 2013). The concept of gender identity that categorized gender into male and female, created conflicts between children and societal institutions, such as teaching and learning organizations (Rankin & Beemyn, 2012). Age-based social structures or grouping resulted from understanding the developmental stages of the human species. Each of these developmental stages displayed behavior based on the cognitive and physical development of children (Piaget, 1964).

Designing and implementing a PBIS program required not only an understanding of attributes associated with children's developmental stages, but also an analysis of the psychological and biological definition of the gender of children. This study investigated the influence of gender and age on secondary data collected during the implementation of a PBIS program referred to as SOAR (Safe, Openness, Achievement, and Respect) at a Mid-Western Public Suburban Middle School. The study examined whether the gender and the age (grade level) of students affected the performance of the PBIS program.

Statement of the Problem

This study explored the potential impact of student gender and age on the activities designed to support the effective implementation of a PBIS program at Mid-Western Public Middle School. The underlying implication of the research revealed the inadequacies of the activities linked to PBIS program as related to student gender and age (grade level).

Purpose of the Study

The purpose of this study resided in the examination of the influence of the gender and the age (grade level) of the student on the performance of a PBIS program. The investigation utilized a secondary database generated by a PBIS (SOAR) program implemented at a Midwestern Suburban Public Middle School. The PBIS program included four components: Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). More specifically, the study used statistical instruments to evaluate the relationship between the gender and age (grade level) of the student to each component of the SOAR program. The results of this investigation may provide professional educators information in designing and implementing relevant and effective PBIS programs in school settings, which possessed similar characteristics with suburban Midwestern public middle schools.

Importance of the Study (Rationale)

The rationale of this study resided in the quest to find a meaningful effect of gender and age (grade level) of students on the effectiveness of a PBIS program. The literature review revealed an abundance of studies on gender development, on children's Cognitive Development (Bussey, & Bandura, 1999; Butler, 2011; Fischer, 1980; Perret-Clermont,1980; Piaget, 1964), and on Positive Behavior Support (PBS) (Carr et al., 2002; Sugai, & Horner, 2002; Sugai, & Simonsen, 2012). However, the literature review showed that few studies investigated these three important fields of social research simultaneously in order to find a cause-and-effect relationship among them. The challenges and the complexity of this study resided in the nature of the variables under consideration. Gender, age, and PBIS programs represented complex socio-cultural and

biological variables. According to the literature review, gender and age represented socio-culturally and biologically influenced variables (Busey & Bandura, 1999) while PBIS involved the science of Positive Psychology (Seligman & Csilkszentmihalyi, 2000a) and Applied Behavior Analysis.

The uniqueness of this research illustrated the convergence of these three fields of social research, in order to maximizing the positive behavior of students, the student academic achievement, and minimize the negative and disruptive behaviors of students. The hypotheses tested in this study, examined whether gender and age (grade level) affected the design and implementation of the PBIS program that promoted Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). Important elements of this study included, the parameterization of variables related to gender, age (grade level), and PBIS, the formulation of hypotheses, and the statistical tools used in the investigation. The commonality of these three fields of study (Positive Psychology, Applied Behavior Analysis, and Positive Behavioral Intervention and Support) included the socio-cultural environment where the hypotheses were tested.

Previous gender identity studies were conclusive. Research by sociologist Bem (1981) showed that children's sex-typing resulted from a systemic brainwashing to process information based on a gender schema. Early studies by Kagen (1964) and Kohlberg (1966) referred to the gender schema as a prescriptive standard or a guide of self-esteem, which became its hostage and forced the child to regulate his or her behavior to conform to the socio-cultural definitions of male and female (Bem, 1981). Later, studies by psychologists Martin and Ruble (2004) on the cognitive theory of gender development demonstrated that children's knowledge about the identity of their gender

had behavioral consequences. The biological theory of gender development was expressed through the role and behavior of gender in the species reproduction process (Bussey & Bandura, 1999). These studies provided the evidence of an existing gender-behavior expectation based on socio-cultural norms. Cognitive developmental theories by Piaget (1955) and Vygotsky (1978) illustrated the basis of research on learning stages and related cognitive behavior (Kail & Cavanaugh, 2007). Previous studies on PBIS only demonstrated the effectiveness of the PBIS framework at the school-wide level (Sugai & Simonsen, 2012).

The significance of this research resides in the identification, or the lack thereof, of gender and age (grade level) traits in the database generated by a PBIS program. More specifically, this research investigated whether gender and age affected the design and implementation of a PBIS program. This study may provide educational leaders new informational tools and educational resources to manage teaching and learning environments. For educational researchers, this research may provide new research in the area of students' behaviors in a controlled environment, such as schools and instructional institutions. In conclusion, the rationale of this study was to add to the educational body of knowledge and information about gender and age (grade level) as socio-cultural variables and their importance or lack thereof, in designing and implementing PBIS programs.

Research Questions and Hypotheses

The following nine hypotheses guided the research project. They fell into four sections. Each of the four sections, Safety, Openness to Diversity, Academic

Achievement, and Respect (to Self and to Others), included both gender and age implications. The ninth hypothesis involved the PBIS implication.

H1: Safety was Age (grade level) dependent. The research hypothesis H1 related to Safety answered the question of whether significant differences between the response to Safety of sixth graders, seventh graders, and eighth graders existed.

H2: Openness to Diversity was Age (grade level) dependent. The research hypothesis H2 related to Openness to Diversity answered the question of whether significant differences between openness to Diversity of sixth graders, seventh graders, and eighth graders existed.

H3: Academic Achievement was Age (grade level) dependent. The research hypothesis H3 related to Academic Achievement. answered the question of whether significant differences between Academic Achievement of sixth graders, seventh graders, and eighth graders existed.

H4: Respect (to Self and to Others) was Age (grade level) dependent. The research hypothesis H4 related to Respect (to Self and to Others) answered the question of whether significant differences between Respect (to Self and to Others) of sixth graders, seventh graders, and eighth graders existed.

H5: Safety was Gender dependent. The research hypothesis H5 related to Safety answered the question of whether significant differences between Safety among male and female students for each grade level existed.

H6: Openness to Diversity was Gender dependent. The research hypothesis H6 related to Openness to diversity answered the question of whether significant differences

between Openness to Diversity among male and female students at each grade level existed.

H7: Academic Achievement was Gender dependent. The research hypothesis H7 related to Academic Achievement answered the question of whether significant differences between Academic Achievement among male and female students at each grade level existed.

H8: Respect (to Self and to Others) was Gender dependent. The research hypothesis H8 related to Respect (to Self and to Others) answered the question of whether significant differences between Respect (to Self and to Others) among male and female students at each grade level existed.

H9: Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The research hypothesis H9 compared the performance of the components (Safety, Openness to Diversities, Academic Achievement, and Respect (to Self and to Others)) in the effectiveness of the PBIS.

Limitations

The biases in this study resulted from the Researcher's childhood environment, which included a highly structured society, as well as strong beliefs in the traditional concept of gender classification in male and female. Moreover, the weakness of some of the parameters used to quantify Safety, Openness to Diversity, and Respect represented a remediable, but significant limitation.

Delimitation of the Study

This study used secondary data collected without any intervention or input from the researcher. The school where the data was collected was once the working environment of the researcher as a facility assistant and/or substitute teacher.

Assumption

The general assumption of gender and age based societal behavior expectations prevailed in the society.

Definition of Terms

Achievement: The fulfillment of academic goals. According to Murphy (2009), achievement represented the achievement gap in learning and attainment outcomes between groups of students.

Gender: Female or male status assigned to a student based on societal and cultural norms (Butler, 1990).

Openness: State of mind willing to share teaching and learning environment. Tan, Ai-Girl (2007) defined openness using Buddhism and stated that it was through understanding of relatedness of individuals, nature, and the world that we developed a universal sense of compassion, justice, and understanding.

Positive Behavior Intervention Support: PBIS stood for Positive Behavior Intervention and Support. Sugai et al. (1999) defined PBIS as a framework to encourage the adoption and implementation of evidence-based interventions to achieve academically and behaviorally important outcomes for all students.

Respect: Perceived positive behavior toward others in an educational setting. According to Giesinger (2012), respect was a moral dimension of education.

Safe: Secure and protective teaching and learning environment. According to Barton (2009), safe schools had teaching and support staff with positive relationships and effective methods of communicating with their students, adults in the building, and parents/guardians.

Safe Openness Achievement Respect: SOAR was an acronym, which stood for Safe, Openness, Achievement, and Respect. It was a PBIS program designed and implemented in a Midwestern suburban public middle school.

Summary

The study of the effectiveness of a PBIS program relied on its origination, and remained resourceful. The fields of Positive Psychology and Applied Behavior Analysis contributed to the development of PBIS through Positive Behavior Support (PBS). Both the purpose and the rationale of this study were anchored in belief of positive reinforcement, reward, and acknowledgment of positive behavior. In fact, the relevancy of gender and age in determining the efficacy of a PBIS program represented the object of this study. SOAR stood for Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The SOAR program was a PBIS program that reinforced and rewarded (1) students' response to safety protocols in the school building; (2) students' openness to diversity; (3) students' academic achievement, and (4) students' self-respect and students' respect toward others. This represented a purely statistical study. The study used the data produced by the SOAR program.

Chapter Two: The Literature Review

Introduction

This literature review provides the theoretical basis and a review of the prior research in the fields of Positive Psychology, Applied Behavior Analysis, Gender Development, Cognitive Development, and Positive Behavior Support. These five fields of research described and explained the historical journey and development of Positive Behavior Intervention and Support (PBIS).

Overview

PBIS evolved into a field of research in its own right; however, its design, development, and implementation still relied heavily on the then-current development of the five relevant fields of research cited earlier, Positive Psychology, Applied Behavior Analysis, Gender Development, Cognitive Development, and Positive Behavior Support. Educational professionals were challenged by the behavioral and mental health issues and problems of students in their schools and classrooms. The urgency to address these issues and problems effectively required new tools and approaches. This study subscribed to the belief that PBIS was anchored in these five fields of research and therefore, reviewed the major research and studies that led to the development of PBIS. The chronological order of this literature review starts with Positive Psychology, which focused on and explained the importance of positivity as a human trait that needed to be reinforced and maintained (Seligman & Csilkszentmihalyi, 2000b). The discussion of the field of Positive Psychology is followed by Applied Behavior Analysis, which explained theories, tools and methodologies to analyze behavior of socially importance (Skinner, 1953). The field of Gender and Cognitive Development follows the Applied Behavior Analysis, which

explained the theories and evolution of sex-typed behavior and cognitive development for school age children (Bussey & Bandura, 1999). The field of Positive Behavior Support followed the field of Gender and Cognitive Development, and provided the ground work for the field of Positive Behavior Support and Intervention. Chapter Two also addresses the Intervention aspect of PBIS through review of literature on safety, openness to diversity, achievement (academic and behavioral), and respect in Mid-Western Suburban Middle Schools.

Positive Psychology

According to Seligman and Csikszentmihalyi (2014), the history of Positive Psychology began with the early works of scientists such as James (1897), Rogers (1951), Maslow (1954, 1962), Jahoda (1958), Erikson (1963, 1982), Vaillant (1977), Deci and Ryan (1985), as well as Ryff and Singer (1996). James (1897) argued early on that emotions were driven by social impulses, which suggested a correlation between positive emotions and social behaviors. Rogers (1951) defended the client-centered approach in the field of psychology, and he argued that the personality change in the individual was a direct consequence of the community acceptance of the individual. Maslow (1954, 1962) introduced, described, and explained the concept of the positive view of self. He argued that the concept of a positive view of self, provided an adequacy to deal effectively with life. According to Jahoda (1958), positive mental health was society, community, or culture-specific and included individual characteristics, such as attitude toward oneself, self-actualization, integration or individual relation to reality, autonomy of mind and action, adequate conception of reality as well as total mastery of the physical, social, and cultural environment. Erikson (1963, 1982) described and

explained the three processes of human existence, which included the somatic, ego, and societal processes. These processes provided goals and objectives in assessing the individual; the somatic process involved the studies of individual human complex life, the ego process involved the study of the individual minds, and the social process involved the study of social aggregates (Erikson, 1963, 1982). According to Vaillant (1977), mental health was a reflection of the ego. He also believed that adaptation and self-reliance were intrinsic human traits. However, Vaillant (1977) argued adaptation was based on one's concept of the terms life offered. Ryan and Deci (2000) argued that the individual, social, and cultural environments were important to fostering human self-motivation, personal growth, and behavior of social importance. Ryff and Singer (1996) demonstrated that positive psychology included six dimensions, such as self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.

The philosophy of Positive Psychology was rooted in the belief that understanding, promoting, and reinforcing people-positive experience was a proactive and preventive therapy for human general health (Seligman and Csikszentmihalyi, 2000a). Froh (2004) described the field of psychology as the study and analysis of human positive experiences, such as love, happiness, joy of living, and courage. Seligman and Csilksentmihalyi (2014) suggested that positive psychology was a complement to our knowledge of human suffering, weakness, and disorder. The advocates of positive psychology argued that the concept of positive psychology made the practice of psychology a more complete and balanced scientific understanding of the human experience. Cameron, Dutton, and Quinn (2003), Easterbrook (2003), Gardner,

Csikszentmihalyi, and Damon (2001), Kahneman, Diener, and Schwarz (1999), Murray (2003), and Vaillant (1977) all believed that positive psychology increased our understanding of the way positive emotion, positive character traits, and institutions evolved. For Peterson and Park (2003) what made life most worth living resided in the value of the term positive psychology. The job description of psychologists included encouraging and nurturing positive emotion, positive character traits, and institutions for creating a practice of making people lastingly happier (Seligman & Csikszentmihalyi, 2000a). Positive psychology provided a framework to study the condition and process that supported the flourishing or maximum functioning of individuals, groups, and institutions (Gable & Haidt, 2005).

The field of Positive Psychology was defined at three levels (Seligman & Csilksentmihalyi, 2014). These three levels included the subjective level, which described and explained the understanding of the source of well-being, contentment, satisfaction, hope, optimism, and happiness. The individual level described and explained the understanding of the capacity for love and vocation, courage, interpersonal skills, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. Finally, the group level described and explained the understanding of responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (Gillham & Seligman, 1999; Seligman & Csikszentmihalyi, 2000a).

The subjective level of positive psychology resided in the nature of youngsters (William, 2004). According to William (2004), every child possessed the drive to explore, the competency to solve problems, and the capacity to contribute greatly to the community. Researchers, such as Seligman (2002) and Ed, Suh, Lucas, and Smith (1999)

acknowledged, explained and demonstrated the existence of an inner desire in each youngster to well-being, hope, optimism, and happiness. The mission of positive psychology at the subjective level was to analyze, understand, and foster environmental and social factors that permitted individual, community, and society to improve (Seligman & Csikszentmihalyi, 2000a).

The individual level of positive psychology dealt with analyzing, promoting, and reinforcing positive personal traits, such as resilience, courage, perseverance, and interpersonal skills (Seligman, 2002; Snyder, & Lopez, 2009). According to Seligman (2004), a positive mood increased creativity, tolerance, constructiveness, and generosity. Positive emotions such as joy, interest, pride, love, and contentment required less effort (Ellsworth & Smith, 1988) and supported a safe and familiar environment (Izard, 1977) and needed to be capitalized, prioritized, and valued (Fredrickson, 2000). According to Fredrickson (2000) these emotions broadened youngsters' momentary positive behavior repertoires and forged their personally sustained resources including physical, intellectual, social, and psychological resources.

The group level of positive psychology focused on the action of the community in promoting virtues and institutions that encouraged youngsters to good citizenship, civility, responsibility, tolerance, and work ethic (Gillham & Seligman, 1999; Seligman & Csikszentmihalyi, 2000a). Gillham and Seligman (1999) suggested the society and/or community be involved in teaching and building in youngsters' virtues that included among other things, creativity, hope, moral judgement, forgiveness, and courage. Eccles and Gootman (2002) acknowledged the complexity of adolescence and argued the

importance of the community participation in providing guidance and positive directions to youngsters.

The field of Positive Psychology opened new research opportunities to address human issues, problems of personally and /or things deemed socially important. This section of the literature review provides the psychological approaches to define new directions in the study of human existence. Seligman and Csikszentmihalyi (2014) argued that the field of Positive Psychology merged with Applied Behavior Analysis as it attempted to describe and explain the complexity of human behavior. The description, definition and/or explanation of positive psychology provides a research framework from which PBIS evolved

Applied Behavior Analysis

Similarly, to the field of Positive Psychology, the field of Applied Behavior Analysis (ABA) had a young history as a field of study and research in its own right (Skinner, 1953). The early works of scientists such as Skinner (1953), Sidman (1960), Millenson (1967), Baer, Wolf, and Risley (1968), Kazdin (1977a, 1977b), Bandura (1977), Deitz (1978), Hayes (1978), and Birnbrauer (1979) in the field of ABA provided behavioral analysis researchers the scientific foundation of their studies. Michael (1993), Cooper, Heron, and Heward (2007), and Landrum and Kauffman (2006), as well as Cipani and Schock (2010), developed instructional and clinical methodologies to analyze, design and implement therapies and training for behavior analysis professionals. This section of the literature review addresses the applicability of the concept of positive psychology presented earlier using scientifically founded principles. The complexity of human behavior (Skinner, 1953) rendered the field of ABA as multidimensional, for

behaviors were not only intrinsic, but also environmental and environmental history related (Skinner, 1953).

Sidman (1960) argued that ABA was a single subject-based research. For Sidman (1960), functional behavior described the relation of the single subject with the immediate environmental variables. Baer et al. (1968) explained that the specificity of ABA resided in solving problems of social importance rather than those convenient for study. ABA focused not only on behavior changes and its quantification, but also on the functional analysis that led to accomplishing the change (Baer et al., 1968). Seven (7) dimensions, together, defined the ABA (Baer et al., 1968).

The seven dimensions included the applied dimension, the behavioral dimension, the analytic dimension, the technological dimension, the conceptually systematic dimension, the effective dimension, and the generalization dimension (Baer et al. 1968). Each of these dimensions provided a specificity to the field of ABA. For example, the specificity of the applied dimension resided in the nature and the importance of the behavior and the treatment to the subject under study (Baer et al. 1968) as well as the society in general. Compared to the applied dimension, the behavioral dimension untangled the complexity of human behavior (Skinner, 1953) using pragmatic approaches (Wahler & Fox, 1981) with reliable, tested, and scientifically-sound instruments to measure, record, and parametrize observable physical events related to the target behavior (Baer et al, 1968). While the applied and behavioral dimensions provided an extrinsic approach of ABA, the analytic dimension established the correlational function that behaviors satisfied (Skinner, 1953) for it to exist. Indeed, according to Kazdin (1977a), Functional Assessment (FASS) of the target behavior established an explainable

and describable relationship between behavior and both the immediate and historical environment of the subject under study.

Compared to the three previous dimensions of ABA, the technological dimension provided a collection of well-described and replicable procedures, methodologies, and behavioral applications (Baer et al. 1968) to behavior analysis professionals in the treatment of target behavior. The elements of the technological dimension used principles (Baer et al. 1968), such as self-efficacy principles (Bandura, 1978), the Well-Established Motivation Principle (Millenson, 1967), and scientific principles and methodologies (Hayes, 1978). While these principles provided a scientific pedestal to the Technological dimension of ABA, they also conferred to ABA the concept systematic nature of the field (Baer et al. 1968). Indeed, ABA was a discipline made of a body of technologies (Deitz, 1978), knowledge (Birnbrauer, 1979), and empirical experiments (Bandura, 1978) based on relevant principles (Baer et al, 1968). The Efficacy dimension of the ABA provided a measurement of the success of treatment of the target behavior (Bandura, 1978). According to Baer et al (1968), the Efficacy dimension was of practical importance, because the success of treatment was defined only when the behavior alteration was of social importance. Finally, the Generality dimension of ABA was as complex as the Behavioral dimensions (Baer et al., 1968) because it depended on time, environment, and type of target behavior (Baer et al., 1968).

Establishing/Abolishing Operation. These seven dimensions of ABA were further developed into a complete profession that included educational training, regulatory ethical code of conduct, clinical and non-clinical therapeutic treatments, and continued research field. The study to which this literature review was related was

centered on Positive Behavioral Intervention and Support. Behavioral intervention necessitated a thorough understanding of behavior modification procedures and methodologies. These procedures and methodologies were designed and constructed based on the common sense psychology, which argued that behaviors other than reflexes were driven by knowledge and motivation (Michael, 1993). However, according to Michael (1993) behaviors were not only forged through environmental events and variables, operations, stimuli, stimulus conditions, but also by the consequences and the reinforcement history of the target behavior. These antecedent manipulations were introduced by Keller and Schoenfeld (1950), Millenson (1967) and Michael (1993), who referred to that concept as Establishing Operation (EO) for an increase in the effectiveness or Abolishing Operation (AO) for a decrease in the effectiveness of operant consequences. Establishing/Abolishing Operations acquired through evolutional history of the subject, known as 'unlearned' or Unconditioned Establishing/Abolishing Operation, was as responsible to the target behavior as the 'learned' or Conditioned Establishing/Abolishing Operation (Michael, 1993).

Motivating Operation. While Establishing/Abolishing Operation identified and described environmental events affecting the effectiveness of the operant consequences of target behaviors (Laraway, Snycerski, Michael, & Poling, 2003), the concept of Motivating Operation (MO) provided instrumental tools to better predict, describe, control, and understand behavior (Laraway et al., 2003). MOs included not only the concept of Establishing/Abolishing Operations, but also specific motivating variables that altered the effectiveness of operant consequences (Laraway et al., 2003). In fact, MOs were referred to as applications of setting events (O'Reilly, Sigafoos, Lancioni, Ripoll,

Lang, Chan, & Langthorne, 2008), and there was an overwhelming consensus among Applied Behaviors Analysts on the effectiveness of MOs to the treatment of behavioral problems (Laraway et al., 2003; Luiselli, 2006; McGill, 1999; Wilder & Carr, 1998).

According to Skinner (1953), MO included deprivation, satiation, and aversive stimulation. The importance of the concept of MO resided in its ability for setting events in which the reinforcement contingencies increased or decreased the occurrence of a target behavior based on the degree of motivation manifested in the operant consequences (Langthorne & McGill, 2009). Even though MOs (EO or AO) and discriminative stimulus (S^D) were antecedents, MO and S^D were different (Langthorne & McGill, 2009). According to Langthorne and McGill (2009) S^D dealt with the presence or non-presence of the operant consequences in the past, while MOs dealt with the value-added of the presence or non-presence of the operant consequences. The power of MO as an application for intervention in behavior treatment derived from knowing how events acquired their value-altering affects (McGill, 1999; Sundberg, 1993).

MOs became critical tools used to define, develop, and interpret behavioral assessments of target behavior (Iwata et al., 1994b; Worsdell, Iwata, Conners, Kahng, & Thompson, 2000; Laraway et al., 2003). Behavior analysts relied heavily on tools such as Functional Communication Training (FCT) (Durand, 1990), Functional (Experimental) Analysis (FEA) and Functional Behavior Assessment (FBA) (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991) to evaluate and treat behaviors of socially importance (Baer et al 1968). FCT, FEA, and FBA used procedures, methodologies, and applications derived from the concept of MO (Langthorne & McGill, 2009). In complement to FCT, FBA and FEA, MO allowed behavior analysts to apply choice-making and preference assessments

(Hagopian, Long, & Rush, 2004; McAdam, Klatt, Koffarnus, Dicesare, Solberg, & Welch, 2005) and examined the interference and/or the interaction between biological conditions, such as health variables and genetic syndromes, and operant consequences and/or behaviors (Carr & Blakeley-Smith, 2006; Kennedy & Meyer, 1996; O'Reilly, Lacey, & Lancioni, 2000). Among all the evidence of the importance of MO presented in this literature review, those of Iwata et al. (1994b), Worsdell, Iwata, Conners, Kahng, and Thompson (2000), and Michael (1982, 1993, 2000, 2007) provided convincing and compelling arguments for using MO concepts in the development and implementation of procedures, methodologies, and clinical or non-clinical instruments to address students with a history of disruptive behavior (Dunlap et al., 1991).

This literature review is based on a study dealing with creating Positive Behavioral Intervention and Support (PBIS) in educational setting. The study used MOs as the underlying concept used to support, explain, and predict behavior in educational settings, because MOs provided the value-altering and the behavior-altering effect on the effectiveness of the stimulus (Laraway et al., 2003). The study also used MOs to recommend areas of application of FCT, FBA, and FEA procedures, methodologies, and interventions in order to create a positive behavior in the school community. The choice of MOs to address behavior of social importance (Baer et al 1968) in an educational setting required further explanation of the concept and elements of MOs. Consequently, MOs used as a part of a three-term contingency (O'Reilly, Lang, Davis, Rispoli, Machalicek, Sigafoos, & Carr, 2009), or as a part of one-term contingency (Sidman, 2000) provided evidence of its efficacy in defining, measuring, and applying treatment to address behavior of social importance (Langthorne & McGill, 2009). While the three-

term contingency, as described by Michael (1993), included Motivation Operations (EO or AO), behavior (response), and operant consequences (reinforcement or punishment) and the four-term contingency included MO (EO or AO), discriminative stimulus (S^D), behavior (response), and operant consequences (reinforcement or punishment) (Michael, 1993,). The standard three-term contingency by Skinner (1953) included discriminative stimulus (S^D), behavior (response) and operant consequences (reinforcement or punishment).

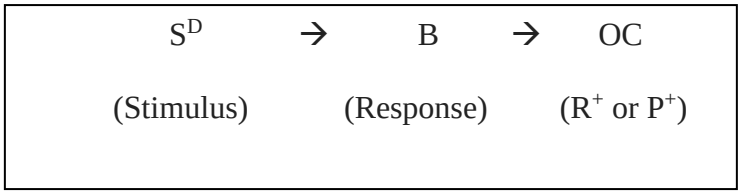

Figure 1. Three-term Contingency (Skinner, 1953)

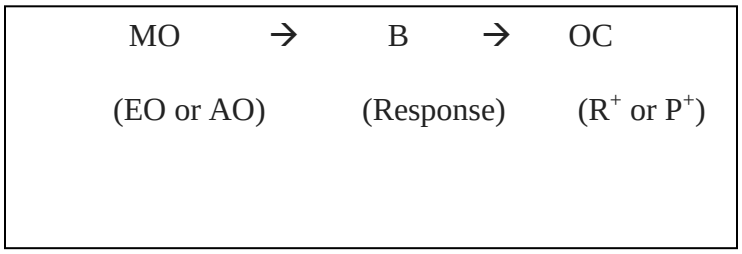

Figure 2. Three-term Contingency (Michael, 1993; Sundberg, 2013)

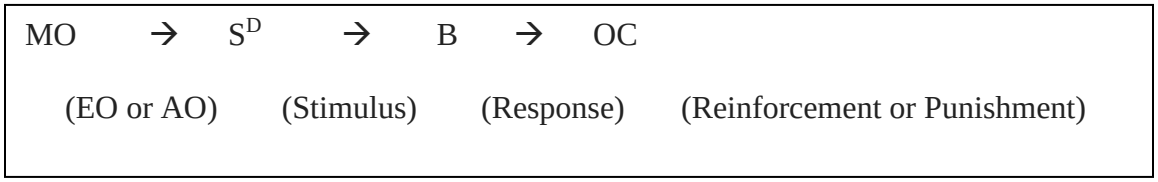

Figure 3. Four-term Contingency (Michael, 1993; Sundberg, 2013)

According to Michael (1993), and Laraway, Snycerski, Michael, and Poling (2003) the motivating variable manifested in the discriminative stimulus (S^D) had a strong altering-effect on the effectiveness S^D so that S^D transformed into a MO.

According to Langthorne and McGill (2009), FCT, FBA, and FEA using the three-term or the four-term contingency, as defined by Michael (1993), provided far more positive responses in addressing students with problem behavior. The two properties of MO (value-altering effect and behavior-altering effect) both operated on the effectiveness of the stimulus. The behavior-altering effect of the MO applied typically to the frequency of target behavior (Langthorne &McGill, 2009), although Michael (2007) argued that it applied also to response latency, magnitude, and relative frequency of the target behavior. A consensus on the definition and explanation of the concept of MO led behavior researchers, such as Michael (1993), Laraway et al. (2003), and Langthorne and McGill (2009), to identify two major types of Motivating Operations. These two types of MO included Unconditioned Motivating Operation (UMO) and Conditioned Motivating Operation (CMO) (Laraway et al., 2003; Langthorne & McGill, 2009; Michael, 1993).

Unconditioned Motivating Operation. In educational settings, as in any other settings dealing with humans (organisms), certain events in children's environments acquired their value-altering and behavior-altering effects from the children's evolutionary history (Langthorne & McGill, 2009). These were referred to as 'unlearned' or Unconditioned Motivating Operations (UMO). For example, trust, beliefs and values systems, and cultural attributes and attitudes were forged as result of the evocative and abative effect of UMOs (Laraway, Snycerski, Olson, Becker, & Poling, 2014). In order to address some of the behavior's issues and problems of social importance, it was important to identify and examine evocative and abative effects of UMOs of the school community in general, and of students in particular.

UMOs encompassed both Unconditioned Establishing Operation (UEO) and Unconditioned Abolishing Operation (UAO) (Laraway et al., 2014). According to Langthorne and McGill (2009), the direct manipulation of UMOs significantly affected human behavior; consequently, its application in the design and development process of any PBIS program was potentially beneficial (McGill, 1999). For example, McGill (1999) argued that providing a good quality of life addressed problem behavior by modifying the UMO of an individual. The two well-known forms of UMOs were deprivation and satiation (Langthorne & McGill, 2009). According to Langthorne and McGill (2009), while deprivation exerted an evocative effect on the target behavior associated with past operant consequence, satiation abated the same target behavior by decreasing or abolishing the value associated with the past operant consequences. The rationale behind the use of MOs as defined and explained by Michael (1993), Langthorne and McGill (2009), and Laraway et al. (2003) in developing of a comprehensive PBIS system resided in the large amount and the complexity of UMOs every stakeholder carried (Laraway et al., 2014) in any diverse educational system such, as the site used in this study.

Conditioned Motivating Operations. Unlike UMOs, Conditioned Motivating Operation (CMOs) referred to value-altering and behavior-altering effects acquired by antecedent events from a subject's learning history (Langthorne & McGill, 2009; Laraway et al. 2014). According to DiClemente and Hantula (2000) and Hantula, DiClemente, and Rajala (2001), the strength of CMO resided in its ability to manipulate emotion and stimulate desire. The prevalence of CMOs in the ABA resided in the easy manipulation of CMOs such as Operant Conditioning (OC), Responding Conditioning

(RC), and Verbal Operant (VO) in order to achieve target behavior modification (Kazdin, 2012; Schlinger, 2008, Skinner, 1951; Skinner, 1957; Skinner, 1984;). OC, RC, and VO described antecedents which greatly influenced behavior (Kazdin, 2012). Kazdin (2012), classified antecedents into three categories, Prompts, Setting Events, and Discriminative Stimuli. While prompts were easily describable and obvious, such as modeling, gestures, guidance, cues, and instructions (Kazdin, 2012; MacDuff, Krantz, & McClannahan, 2001), setting events represented contextual environmental factors affecting behavior (Kazdin, 2012), and discriminative stimuli, also referred to as stimulus control, presented more complexity and involved antecedents, behaviors, and consequences in order for discriminative stimuli to control behavior (Kazdin, 2012). Prompts, setting events, and discriminative stimulus were used in any combination in operant conditioning, respondent conditioning, and verbal operant (Kazdin, 2012).

A general consensus resulted in defining operant conditioning as a learning process that established the effectiveness of the relationship between antecedents, behavior, and consequences (Kazdin, 2012; Skinner, 1951). According to Skinner (1951) the effectiveness resided in the speed and the frequency of the immediate operant consequence following the target behavior. Operant conditioning began as a two-term contingency that included behavior and consequences (reinforcement or punishment) (Skinner, 1951).

B	→	C
(Behavior)		(Reinforcement or Punishment)

Figure 4. Two –Term contingency (Skinner, 1951)

Operant conditioning evolved into a three-term contingency when an antecedent was established and conditioned by the operant consequences to become a discriminative stimulus (Skinner, 1957). The three-term contingency included antecedent (discriminative stimulus, S^D), behavior (response), and consequences (reinforcement or punishment).

A → B → C		
(Discriminative Stimulus)	(Response)	(Reinforcement or Punishment)

Figure 5. Three-Term Contingency (Skinner, 1957)

While operant conditioning represented mostly the direct effects of extrinsic factors, such as the environment on the subject's behavior, respondent conditioning represented the effect of intrinsic factors including emotion that were already reinforced by environments (Donohoe, & Vegas, 2011). Respondent conditioning, also referred to as Pavlovian or Classical Conditioning and represented the learned repertoire of discriminative stimuli, behavior, and consequences relationship during an individual's lifetime (Skinner, 1984). Like operant conditioning, respondent conditioning also represented a three-term contingency. However, respondent conditioning was more receptive to Motivation Operation, therefore evolved easily toward the four-term Contingency.

MO → A → B → C

Figure 6. Four-Term Contingency (Sundberg, 2013)

Verbal operant represented antecedents reinforced through the mediation of others (Skinner, 2014). These antecedents elicited verbal behavior. Compared to operant

conditioning and respondent conditioning, verbal operant always involved a speaker and an audience (Skinner, 2014). According to Skinner (2014), verbal operant included mand operant, tasks operant, echoic operant, intra or inter verbal, textual operant, and transcriptive operant. Depending on the type of verbal operant, the contingency between antecedents, behavior, and consequences became complex and multi-dimensional, ranging from, three-term to more than four-term contingency (Eikeseth, & Smith, 2013).

The Operant Conditioning (OC), Respondent Conditioning (RC), and Verbal Operant (VO) represented domains in which CMOs operated in order to alter the effectiveness of the operant consequences of behavior of social importance (Sundberg, 2013). Research showed that Neutral Antecedent (NA) events became CMOs when paired with an UMO, another CMO, or a particular type of operant consequences (reinforcement or punishment) (Langthorne & McGill, 2009). According to Michael (1993), CMOs were grouped into three categories, which included Surrogate Conditioned Motivating Operation (CMO-S), Reflexive Conditioned Motivating Operation (CMO-R), and Transitive Conditioned Motivating Operations (CMO-T). OC, RC, and VO were all reflected in each of these categories of CMOs as the day-to-day human behaviors were subjected to the function control of some kind of aversive stimulation (Sundberg, 2013).

Surrogate Conditioned Motivating Operation. The Surrogate Conditioned Motivating Operation (CMO-S) referred to NS that acquired its value-altering or behavior-altering effect by its repeating or continuing association with UMO or another CMO (Michael, 1993). CMO-S became fully operational CMO that independently influenced the effectiveness of the operant consequence of the associated Motivating Operation (Michael, 1993). As compared to the studies by Calvin, Bicknell, and Sperling

(1953) as well as Durlach, Elliman, and Roger (2002), the example of a school building (neutral stimulus) became a CMO-S. Students engaged in communication using a smart phone that required a reliable, secure, and free network (CMO). By repeatedly and continuously pairing the school building with a reliable, secure, and free network (CMO), the school building became a Surrogate Conditioned Motivating Operation (CMO-S) as it established the reinforcing value of a reliable, secure, and free network and evoked behavior related to a reliable, secure, and free network. This behavior indirectly increased students' attendance. The concept of CMO-S gave a functional explanation of the interaction between operant conditioning and respondent conditioning, which needed more research and investigation (Fagerstrøm, Foxall, & Arntzen, 2010).

Reflexive Conditioned Motivating Operation. Like CMO-S, CMO-R represented NS, which acquired value-altering or behavior-altering effect and became CMO independently. Unlike CMO-S, CMO-R affected the value of its own effect and not the value of another stimulus (Langthorne & McGill, 2009), and had a direct correlation with the improvement or worsening of an individual's condition (Michael, 1993), as well as established its own termination of operant consequences (Fagerstrøm et al., 2010). In the case of its correlation with the improvement of condition, CMO-R set events (punished) to abate and suppress behavior linked to termination, and reversely in the case of its correlation with the worsening of condition, CMO-R set events (reinforced) to evoke and encourage behavior linked to termination (Fagerstrøm et al., 2010).

According to Michael (1993), CMO-R represented a 'promise' or a 'treat' CMO. In other words, the onset of CMO-R altered the value of its own removal or presence as

the operant consequence, and also modified the behavior linked to these operant consequences (Langthorne & McGill, 2009). A parallel example to the studies or examples of Carr, Newsom, and Binkoff (1980), Lovaas (1981, 2003), Alhadeff (1982), Michael (1993, 2000), Langthorne and McGill (2009) and Fagerstrøm, Foxall, and Arntzen (2010), a student being late to school (NS) followed by a lunch detention became a CMO-R. Being late to school became a CMO-R as it set the event to reinforce behavior that terminated being late to school. Being late terminated being late or (A = A). The concept of CMO-R explained with clarity the difference between aversive motivators and discriminative stimuli (Michael, 1993).

Transitive Conditioned Motivating Operations. While CMO-S transformed a NS into the associated UMO or another CMO and CMO-R acted to alter the value of its own operant consequences (Langthorne & McGill, 2009), CMO-T represented a relationship of a NS with the correlation between another stimulus and its operant consequences (Michael, 1993). According to Sundberg (2004), CMO-T described or represented a reinforcer of stimuli and events. To express it more simply, CMO-T represented a need or needs necessary to produce or accomplish an action and the need or needs became operant consequences and evoked behavior that supported the action (Langthorne & McGill, 2009). Michael (1988) described CMO-T conditioning effect as interrupted chain effect or block access. CMO-T prevailed more in verbal operant such as mand, and was commonly used in everyday life (Sundberg, 2013). A parallel example to the studies or examples of Hart and Risley (1975), Call, Wacker, Ringdahl, and Boelter (2005), and Langthorne and McGill (2009), the sight of an adult in the school building reinforced the safety feeling in a student within his or her immediate environment and

reinforced the need of the student in the school building. Sight of an adult became CMO-T as it altered the relation between needing to be in the school building to wanting to be in the school building and safety (assuming adults provided safety in the past).

CMO-S, CMO-R, and CMO-T represented the many forms of CMO, and UMO and CMO formed together MO. MO represented sets of influences over operant contingency and provide an explanation of human behavior (Langthorne & McGill, 2009). The importance of this section of the literature review was embedded within its use in Functional Analysis (FA) and Functional Behavior Assessment (FBA). FA and FBA were used to design, develop, and implement PBIS in educational setting. FASS and FBA provided practical tools to define, measure, and assess behavior. According to Cooper et al. (2007):

Functional Analysis. Hanley, Iwata, and McCord (2003) defined and described Functional Analysis (FA) as methodology focused on identifying variables responsible for the occurrence of behavior of social relevance. FA identified contingencies, which maintained behavior, such as operant consequences (OC), discriminative stimuli (S^D), and MOs (Hanley, Iwata, & McCord, 2003). FA from the point of view of behavior analysis differed from its definition in disciplines such as math, physics, and biology, for it conveyed the relationship between behavior and environment (function) or the purpose the behavior served for the individual (Hanley et al. 2003). According to Pelios, Morren, Tesch, and Axelrod (1999), FA represented an improvement over past treatment of target behavior and provided the foundation for the development of positive reinforcement-based treatment over the use of punishment of target behavior. FA methodologies became a comprehensive approach to analyze, assess and treat in applied setting behavior

of social relevance (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994a; Carr, & Durand, 1985).

The methodology of FA included pretreatment assessment, direct observation and measurement, and manipulation of environmental variables (Hanley et al. 2003). The pretreatment assessment allowed the behavior analysts to establish a direct or indirect relation between environmental variables and the rate of occurrence of the target behavior. It also enabled behavior analysts to discard any studies that did demonstrate functional relations between behavior and the immediate environmental variables. The direct observation and measurement permitted the collection of reliable data including frequency, magnitude, topography, duration, stimulus parameters (antecedent and consequences), and motivating operations. The manipulation represented setting a limitation on the type and number of variables involved in the study, it included processes used to identify, parametrize, quantify, and qualify the variables associated with the target behavior, and established the number of dimensions related to the subject and the setting (Hanley et al. 2003).

The difficulty of FA resided in the size of data available to estimate variables and functional relationship of the target behavior, the conflictual data from different assessment methods, and a variation in validity with the quality of data (Haynes, Leisen, & Blaine, 1997). Every component of FA reflected subjective estimations and probabilistic hypotheses; however, the strength of its methodology resided in the multiplicity of the source of data, assessment methods, and empirical research (Haynes et al., 1997). FA found its suitability within the analysis of behavior in an applied setting because of its dynamism (varying over time) (Agras et al., 1994; Bandura, 1982; Hillson

& Kuiper, 1994; Nesselroade & Boker, 1994; and Timberlake & Farmer-Dougan, 1991), conditionality (varying validity across domains) (Haynes et al., 1997), reciprocity (bidirectional causal relation) (Bandura, 1981; Haynes, 1992), and differentiation in the level of specificity (multiple behaviors cases) (Haynes et al., 1997). The FA within the context of this study, provided instructional guidance and tools design, develop, implement and monitor a PBIS.

Functional Behavior Assessment. The behavior research community and professionals defined and described Functional Behavior Assessment (FBA) as a variety of procedures designed and developed to uncover with certainty the purposes or reasons of behavior of social importance (Cipani, & Schock, 2010; Cooper, Heron, & Heward, 2007). While FA represented a process involving professional behavior analysts, the social and environmental conditions, and the subject, FBA represented a process involving a team that included professional behavior analysts, professionals working with subjects (counselor, social worker, health and mental health professionals, and teachers), administrators, parents, guardians, caregivers, social and environmental conditions, and the subject (Cipani, & Schock, 2010).

The Individuals with Disabilities Education Act (IDEA) of 1997 required the use of FBA in public education whenever a student displayed a socially important behavior. FBA led to effective interventions in behavior modification by providing procedures to identify operant behavior contingencies that needed to be altered. The purpose of these interventions was to prevent problem behavior and their reinforcement, and provided ways and means to identify alternative replacement behaviors (Cooper et al., 2007). The principles of FBA came from the science of Behaviorism, which included FEA and ABA

(Gresham, Watson, & Skinner, 2001b), as well as descriptive analysis and indirect assessment (Cooper et al., 2007). According to Sugai, Horner, Dunlap, et al. (2000), FBA used the principles of behaviorism as guiding resources for the design, development, implementation, and monitoring of PBISs that reflected relevancy, effectiveness, and efficiency. Cipani and Schock (2010) indicated that the process of an effective FBA required expenses, such as time, effort, and money. The development and implementation of an effective FBA included five steps (Cipani, & Schock, 2010; Cooper et al., 2007). These steps included (1) Setting or determining the baseline measurement of observable socially important behavior, (2) Functional (experimental) assessment, (3) Performing a discrepancy analysis, (4) Review previous treatment, and (5) Review health and medical record (Cipani, & Schock, 2010; Cooper et al., 2007).

The First Step of Functional Behavior Analysis

The first step in the FBA process assessed and delineated the scope and type of the intervention, and the extent of the socially important behavior. According to Cipani and Schock (2010), this step represented a comprehensive functional behavioral assessment. The determination of the extent of the socially important behavior preceded the determination of the scope and type of intervention. Behavior scientists recommended the use of descriptive (direct) observation tools and interview (indirect) tools to gather data in order to size up the dimension as well as the scope and type of the intervention (Cipani & Schock 2010; Gresham et al., 2001b). The effective definition and description of the socially important behavior required specificity (Cipani & Schock, 2010). Cipani and Schock (2010) suggested two methods of measurement, the incidental method and the spatial method. The incidental method of gathering data provided a

description and/or definition of specific social and environmental conditions in which incidents related to the target behavior occurred. It involved parametrization of variables related to specific antecedents, operant consequences, and discriminative stimuli affecting the socially important behavior (Cipani and Schock, 2010). The spatial method provided time and space of the occurrence of the socially important behavior.

While the incident method involved indirect acquisition of data, such as interviews, historical/archival records, checklists, and rating scale, the spatial method required a direct or descriptive systematic behavioral observation of the target behavior in naturalistic settings (Gresham et al.,2001b). The spatial method involved the use of tools such an A-B-C recording form to record variables such as frequency, duration, latency, inter-response time, intensity, percentage of occurrence, and physical traces of behavior (Alberto & Troutman, 2006; Gresham, 1985; Gresham & Noell, 1999); Martin, & Pear, 2015; and Miltenberger, 2011). This step established the baseline measurement of the problem behavior in terms of concrete, reliable, verifiable, and parametrized data.

The Second Step of Functional Behavior Analysis

The second step in the FBA process represented mainly the many steps of FEA, which included standardized protocols to identify, alter, and manipulate contingencies affecting the target behavior using a single object experimental design (Horner, 1994; O'Neil, Horner, Albin, Storey, & Sprague, 1997; Witt, Daly, & Noell, 2000). The characteristics of data used in FASS included quality, reliability, and validity. The outcome of the FASS led to three step procedures, which included (1) formulation of behavioral hypotheses, (2) construction of competing behavior pathway models, and (3) comprehensive intervention plans based on (1) and (2) (Sprague, Sugai, & Walker, 1998).

The second step in the FBA process represented the conceptualization of the function of the target behavior (Gresham, & Noell, 1999).

The Third Step of Functional Behavior Analysis

The third step in the FBA process included conducting a performance discrepancy analysis. The performance discrepancy analysis verified the level of tolerance of the target behavior before and after the intervention. Before the intervention was implemented, the discrepancy analysis indicated the urgency, the importance, and the relevancy of the target behavior to the subject and the community at large. After the intervention, the discrepancy analysis estimated the deviation of the target behavior from the norm. According to research, an objective discrepancy analysis used the Normative Comparison Method (Kazdin, 1977b; Matson, Esveldt, Dawson, & Kazdin, 1983). According Cipani and Schock (2010), this method enabled the identification in quantifiable and measurable terms, the norms of a behavior under specific social and environmental conditions. The third step in the process of FBA represented the qualification of the previous three steps, and determined the validity of the purpose of the FBA.

The Fourth Step of Functional Behavior Analysis

The fourth step in the FBA process included an analysis of historical records related to data type, data collection, treatment, treatment design, and intervention strategies (Cipani & Schock, 2010). This step provided guiding informational resources to effectively assess the problem behavior. One of the important factors of this step was to highlight ineffective, inadequate, and unsuccessful techniques used. According to Cipani and Schock (2010), this step also revealed deficiencies in sustainability of

previous treatment. The fourth step of FBA expanded the FBA process to include previous team, clinic, and professionals, therefore making the process more comprehensive.

The Fifth Step of Functional Behavior Analysis

The fifth step in the FBA process included reviewing historical record related to the development, topography, pattern, and product of the target behavior. According to Bailey and Pyles (1989), this step enabled the identification of any the relationship between side effects, treatment, and the target behavior. Like the discrepancy analysis, this process expanded the FBA team to include the professional opinions of other experts who established treatment protocols for the target behavior (Cipani & Schock, 2010). The relevancy for this step resided in its ability to reveal possible links between the target behavior and its physiology, metabolism, systematic or systematic relation with the social and environmental condition, and physical characteristics.

These five steps, as described by Cipani and Schock (2010) represented an example of a comprehensive and effective FBA process. All FBA processes included a monitoring system for quality control of the treatment. A major component of the FBA was the application and respect of core ethical principles, which include Do No Harm, Respect Autonomy, Benefit Other, Being Just, Being Truthful, Accord Dignity, Treating Other with Care and Compassion, and Pursuit of Excellence (Bailey & Burch, 2006). The importance and relevancy of the FBA led the Federal Government to request through IDEA (1997), application of FBA for any student emitting any socially important behavior.

Summary. The road for school reform in the United States, as far as community, stakeholders, and student behavior were concerned, needed to go through ABA and Positive Psychology. So far, these two field of research provided new approaches to address behavior consequences related teaching and learning. Positive Psychology provided evidences that cultivating and promoting positive characteristic traits within the community prevented development of problem behavior (Seligman and Csikszentmihalyi, 2000b). ABA provided methodologies to address and change effectively behavior of social importance into the direction that provided full and positive participation of subject and the community in pursuit of better life (Baer et al., 1968). ABA represented mostly the intervention and support components of PBIS programs.

Positive Behavior Support

Positive Behavior Support (PBS) was an applied science derived from the principles of positive psychology and ABA, and well expanded into others research fields, such as systems analysis, ecological psychology, environmental psychology, and community psychology (Carr et al., 2002). According to Carr, Horner et al. (1999), Koegel, Koegel, and Dunlap (1996), PBS represented an educational methodology that aimed at changing an individual's behavior and mindset repertoire in the direction that improved and enhanced his or her quality of life, and minimized his or her behavior not considered socially important. Although PBS used the concept of stimulus-response, reinforcing, and consequence (Chance, 1998; Miltenberger, 1997), its general concept utilized social and cognitive strategies to change behavior in a desirable direction (Carr, 1997; Iwata et al., 1994a). The relevancy of PBS in the educational system resided in Carr's statement, "Science tells us how we can change things, but values tell us what is

worth changing" (1996, pp. 263-270). At the time of this writing, PBS had evolved into an independent educational research field with its own priorities (Carr, 1997). While PBS's approach rejected methods of enforcing discipline that the community found dehumanizing or degrading (Horner et al., 1990), it enhanced personal dignity and provided opportunities for choice and the pursuit of happiness through an improved quality of life (Carr et al., 2002). The specificity of PBS included the following characteristics, Comprehensive Lifestyle Change and Quality of life, Life Span Perspective, Ecological Validity, Stakeholder Participation, Social Validity, System Change and Multi-Component Intervention, Emphasis on Prevention, Flexibility with Respect to Scientific practices, and Multiple theoretical perspectives (Carr et al. 2002).

Comprehensive Lifestyle Change and Quality of Life

PBS provided methodologies and strategies to achieve a comprehensive lifestyle change and quality of life for all stakeholders (Carr et al. 2002). According to Sugai, Horner, Dunlap, et al. (2000), PBS focused on achieving broad change in any organization, such as school, which facilitated positive outcomes for every member of the school community. PBS also addressed challenging behavior through meaningful lifestyle and cultural changes with the collaboration of community leaders (Carr et al. 2002). These lifestyle and cultural changes included improvement of social relationship and personal satisfaction, employment and self-determination, recreation and leisure, and community adjustment and integration (Hughes, Hwang, Kim, Eisenman, & Killian, 1995). The success of PBS included measurable improvements in family life of members of the community, high employment rates in the community, an increase of social relationships and integration among all members of community, improvement of personal

satisfactions for all stakeholders, and a decrease and de-emphasis on problem behavior within the community (Risley,1996; Ruef, Turnbull, Turnbull, & Poston,1999; Turnbull & Ruef, 1997). The activities of PBS focused on enhancing lifestyle and improving quality of life rather than reducing problem behavior (Carr et al., 2002).

Life Span Perspective. Another specific characteristic of PBS included the commitment of all stakeholder to achieve a meaningful lifestyle and cultural change within the community. PBS required effort, time, and commitment from all stakeholders to set measurable, achievable, and sustainable targets that produced meaningful lifestyle and cultural changes (Nickels, 1996; Turnbull &Turnbull, 1999). PBS intervention represented a never-ending process that changed and evolved throughout time and different stages of any organization such as educational institutions, and required adjustments and modifications (Turnbull, 1988; Vandercook, York, & Forest, 1989). According to Carr et al. (2002), a comprehensive PBS never ended and its process spanned over the life of the organization.

Ecological Validity. Among the critical features of PBS, ecological validity represented the relationship between the environmental contexts, in which the organization evolved. The PBS approach dealt with quality of life issues and problems in natural community context (Carr et al. 2002) and was concerned deeply about finding solutions to problem behavior in real-life settings (Dunlap, Fox, Vaughn, Bucy, & Clarke, 1997; Meyer & Evans, 1993) rather than in clinical or laboratory settings. Internal validity, which represented mostly cause and effect relationship (Carr et al. 2002), represented an important tool to treat specific problem behaviors (Carr, Horner et al., 1999). The PBS approach utilized both Internal and ecological validity in order to

achieve true naturalist, measurable, achievable, and sustainable meaningful quality lifestyle and cultural changes (Carr et al. 2002).

Stakeholder Participation. Compared to other research fields such as Positive Psychology and ABA, PBS described stakeholders as active participants, collaborators, and partners in designing and defining the vision, methods and success criteria of PBS implementation (Carr et al. 2002). Policy-makers called for strong collaboration among professionals, researchers, and stakeholders (Lloyd, Weintraub, & Safer, 1997; Malouf & Schiller, 1995) when dealing with issues/problems deemed socially important. The importance of the participation of stakeholders as collaborator and partner rather than aides, resided in four provisions (Carr et al., 2002). These four provisions included the quality of the assessment of the issues/problems, the relevancy of the intervention, the practical aspect of the intervention (Albin et al.,1996), and the impact of PBS strategies in enhancing the general quality of life and personal satisfaction of every member of the community (Carr et al., 2002).

Social Validity. Social Validity of PBS intervention included five factors that determined the success of the implementation of PBS. First, these factors involved the practicality of its strategies in terms of their applicability to every participant. Second, they required the desirability of its outcome as they met the community aspiration. Third, they entailed the goodness of fit as its methods satisfied stakeholders for their contextual appropriateness. Fourth, they necessitated the subjective effectiveness of its implementation concerning the issues/problems of socially importance by stakeholders. Finally, these factors called for the subjective effectiveness of its impact on the quality of life and personal satisfaction of every member of the organization and its community

(Carr et al., 2002). Social Validity ensured that PBS provided social and cultural benefits to the organization and the community. Many researchers, such as Dennis, Williams, Giangreco, and Cloninger (1993), Hughes, Hwang, Kim, Eisenman, & Killian (1995), Risley (1996), Sands, Kozleski, and Goodwin (1991), Schalock (1990, 1996), and Turnbull and Turnbull (1999) described social validity as an essential element in any strategies intended to improve the quality of life and personal satisfaction of members of the community.

System Change and Multi-Component Intervention

Another critical feature of PBS involved the status and nature of the systemic environment in which the organization and the members of the community interacted. PBS included systemic overhaul in order to find and rectify areas of deficiencies and incompetence of the system that did not enable changes consistent with the vision and mission of the organization and the community (Carr et al. 2002). Horner and Carr (1997) acknowledged that a comprehensive approach of multicomponent intervention represented an important dimension of PBS. These multicomponent interventions included systemic and individual behavioral changes and modifications. PBS relied heavily on the multicomponent intervention for systemic change and for ensuring a quantifiable, achievable, and sustainable lifestyle and cultural changes for both the organization and every member of the community (Carr et al., 2002; Clarke, Dunlap, & Vaughn, 1999; Sailor, 1996; Kemp & Carr,1995; Carr, Levin et al., 1999).

Emphasis on prevention. Among many approaches to dealing with problem behavior in the social and cultural context, PBS provided a proactive solution and de-emphasized aversive, reactive, and crisis-driven strategies (Carr, Robinson, & Palumbo,

1990). The emphasis on the prevention feature of PBS came from IDEA (1997), which prioritized prevention and early intervention for professionals dealing with challenging behaviors (Carr et al., 2002). PBS practiced preventive and proactive strategies through its communicative competence techniques (Carr & Durand, 1985) and self-management skills of every member of the organization and the community (Gardner, Cole, Berry, & Nowinski, 1983; Koegel, Koegel, Hurley, & Frea, 1992). Another practice of PBS that promoted, encouraged, and cultivated proactive skill building included environmental design (Carr et al., 2002). Specific elements of environment design incorporated opportunities for choice making (Dunlap et al., 1994), operant antecedent, and reinforcer alteration (Horner, Day, & Day, 1997), as well as curricula adaptation (Dunlap et al., 1991). The emphasis on prevention features of PBS entailed systemic variables, such as staff development, provision of incentives, resource allocation, and action plans (Carr et al. 2002).

Flexibility with Respect to Scientific Practices

Scientific practices required methodologies that involved data from direct observation (Baer et al., 1987), and yet the demonstration of causality, correlational analyses, naturalistic observations, and case studies provided important results (Risley, 1999). PBS advocated and used methodologies that included direct observation in a controlled environment, as well as qualitative data, rating, interviews, questionnaires, logs and self-reports (Schwartz & Olswang, 1996). According to Carr et al. (2002) pragmatism and data validity guided the methodology used in scientific investigations, allowing for a great deal of flexibility in the scientific practices. Many issues/problems requiring investigations and intervention involved atypical settings, such as institutions,

communities, and complex naturalistic environments. Consequently, PBS adopted a flexible methodological approach for its scientific investigations and intervention through multicomponent research strategies (Carr, Horner et al., 1999; Horner et al., 1996; Vaughn, Dunlap, Fox, Clarke, & Bucy, 1997). However, PBS insisted that the systematic data source evaluated, guided, and determined the validity of the intervention (Carr et al. 2002).

Multiple Theoretical Perspectives

PBS relied heavily on the theories and principles of ABA and Positive Psychology; however, its evolution into an independent field of research included research fields, such as system analysis, ecological psychology, environmental psychology, and community psychology (Carr et al. 2002). The multi-cultural nature and the complexity of the American society, and the importance of cultural variables (Matsumoto, 1996) directed PBS to incorporate within its resources for intervention the research fields of cultural psychology, anthropology, and sociology. The blending of these fields of research led to the three dominant principles among PBS professionals. The first principle acknowledged and held accountable systemic and contextual deficiencies for the source of societal problem behavior (Carr et al., 2002). The second principle affirmed that changes required reallocation of resources, involved support and collaboration, and necessitated a commonality of vision and mission philosophy (Dunlap et al., 2000; Knoster, Villa, & Thousand, 2000; Sailor, 1996). The third principle described a persistent and chronic adaptive interface between the individual competence and the environmental context (Albin et al., 1996) as a dominant factor in the then-current situation. The multiple theoretical perspectives together with systemic

consideration, community-based collaboration, and multicultural assessment input provided PBS important tools to address societal problem behaviors (Carr et al. 2002)

Summary. The nine critical features proffered PBS the status of leading changes in assessment practices, intervention strategies, training, and implementation of behavior modification (Carr et al. 2002). The relevancy of PBS in the current study resided in all its nine critical features. The general concept of PBIS came from the principles and philosophy of PBS. This literature review represents the theoretical background and justification of a PBIS program referred to as Safety, Openness, Achievement, and Respect (SOAR).

Gender and Cognitive Development

Gender development. Compared to Positive Psychology, which represented a philosophy in addressing behavior issues, and ABA, which represented a methodology in addressing behavior problems, Gender Development and Cognitive Development represented the biological, social, and cultural origin of behavior. Gender, age and education were the objects of social debates and tribulations as early as organized education systems existed. Every human socio-cultural activity was organized based on the principle of the differences between male and female (Bem, 1981). Bem (1981) argued that gender-based behaviors were reinforced by established social and cultural gender schema. According to Kagan (1964) and Kohlberg (1966), gender schema represented a socially, culturally, and invading prescriptive behavior guide for children and adults alike. Children's evolutionary history, which set events for UMO (Langthorne & McGill, 2009), was deeply rooted in the appropriate repertoire established by gender schema (Bem, 1981). According to Bussey and Bandura (1999), "Human differentiation

on the basis of gender is a fundamental phenomenon that affects virtually every aspect of people's daily lives" (p. 676). Organized education system, as a socio-cultural structure was not spared from the issues of gender difference.

Gender schema. Bem described gender schema as "a cognitive structure, a network of associations that organized and guided an individual's perception" (1981, p. 355). The cognitive availability of the gender schema guided every single operant behavior of members of socio-cultural group (Nisbett & Ross, 1980; Tversky & Kahneman, 1973, 1975). Within the context of gender schema (gender theory), researchers such as Bussey and Bandura (1999) explained gender roles in society from psychological, socio-structural, and biological determining factors.

The psychological determinant of the gender schema derived from Freud (1962) and Kohlberg (1966)'s psychological theories of gender, which emphasized the intra-psychic processes governing gender development (Bussey & Bandura, 1999). The sociological theories of gender theory developed by Berger, Rosenholtz and Zelditch (1980), Eagly (1987), and Epstein (1988) focused on socio-structural factors of gender role. The third and final theory of gender development was developed by Buss (1995) and Trivers (1972), using biological concepts of gender development, which was based on the biological roles of gender (males and females) in reproduction. These three determinants were molded into a gender schema that guided social and cultural attributes, expectations, and behavior. According to Bussey and Bandura (1999), the consequences of the gender schema included among others, the establishment of gender constancy, which fostered gender irreversibility belief, identity, attitudes, and behaviors that supported these

conceptions. Among those was sex-typing, and according to Bem (1981), children associated the content of the social and cultural gender schema with their own sex.

Gender role. Sex-typing represented event settings that produced or expected a set of behaviors associated with the society's gender schema (Bem, 1981). The gender roles in societies had set rules and regulations on how boys and girls should be educated. According to Bem (1981), "All societies allocate adult roles on the basis of sex and anticipate this allocation in the socialization of their children" (p.354). In many cultures, boys and girls were expected to (1) acquire sex-specific skills, (2) to possess or to learn sex-specific self-concepts and personality attributes, and (3) to be masculine or feminine as determined by cultural norms (Barry, Bacon, & Child, 1957). The complexity of human species (Skinner, 1953) required deep studies in all developmental aspects of human life. According to Worthman (2010) research studies of human development involved core anthropological issues and concerns regarding human diversity. One aspect of cultural diversity in human development was the age at which children commenced organized education (school). In western culture, such as in Missouri (United States), parents or legal guardians must enroll their children in a teaching and learning institution from the age of seven (Mo. Rev. Stat. §167.031, 2011).

Gender-based behavior expectation. In the context of Western culture, children attended organized education with an evolutionary story and behavior repertoire heavily influenced by the gender schema. The evolutionary story and behavior repertoire set events for UMOs (Langthorne & McGill, 2009), and provided guidance for any behavior modification process. The principles and theories of gender development suggested that some aggressive behaviors from boys were a result of operant consequence of UMOs

from gender schema and other socio-cultural roles (Eagly, & Steffen, 1986). The importance of the knowledge of gender development provided guidance for Establishing Operations or Abolishing Operations (Keller & Schoenfeld,1950; Michael, 1993; Millenson, 1967) used in the FBA process. Consequently, its place in this literature review became evident. More importantly, this study reviewed student SOAR data based on gender and cognitive development. The gender development reinforced cognitive development through the concept of gender constancy (Kohlberg, 1966).

Cognitive development and age. While gender development theories entangled gender schema (Nisbett & Ross, 1980; Tversky & Kahneman, 1973, 1975), cognitive development theories provided a sequential and synchronic behavioral and cognitive evolution of children (Fischer, 1980). Researchers acknowledged that cognitive development occurred not only continuously but also by levels (Bjorklund, 1997; Bjorklund & Green, 1992; Locke, 1968; Perry, 1997; Piaget, 1964). Many organized education systems mirrored learning stages theories proposed by scientists such as Piaget (1964), Flavell (1971), and Fisher (1980). The prerequisite of children to be educated within an organized educational system served two fundamental functions of different nature. First, an organized education system provided a controlled environment for the child's physical, emotional, and psychological growth (Zins, Bloodworth, Weissberg, & Walberg, 2004). Second, it exposed the child to cognitive challenges, discoveries, and logics in order to intrigue the child in living (Bandura, 1993). The importance of these two functions and other economic factors made organized education mandatory for all children up to the age of eighteen (Eckstein & Zilcha,1994; Kurland,1972). The age range for children's education was based on cognitive development theories.

Stage/level theory of cognitive development. The stages or levels in cognitive developmental theories suggested that children's learning behaviors and dispositions were age-dependent (Piaget, 1964). Perry's (1997) theory of Cognitive Development Schema included in addition to the stage/levels, the concept of ethics and trust in the cognitive development of children and young adults. Many organized educational systems were designed based on age-related classes. These age-related classes, although not directly aligned to theoretical stage/levels of cognitive development, provided important information nonetheless on the cognitive development dimension of children. Consequently, the development of curricula, teaching strategies and methodologies, and programs to enhance the effectiveness of children's education, required an understanding of the laws and principles of these cognitive development theories.

Piaget's (1964) Cognitive Development Theory included four broad stages. These included the sensorimotor stage, preoperational stage, concrete operations stage, and formal operations stage. Each stage of Piaget's Cognitive Development Theory associated to a set of behavior indicators that impacted the educational curriculum, strategies and methodologies, and non-scholastic programs, such as PBIS and others. This study reviewed the academic and social behavior of children in Piaget's Concrete Operation stage. According to Piaget (1964), the Concrete Operation stage allowed children to compare and contrast concrete and physical objects. This stage was also referred to as logical and rational cognitive development of the child (Ginsburg & Opper, 1988). The importance of the Concrete Operation stage to this study required further analysis and review of its tenants. The logical and rational cognitive development stage of children included three sub-stages (Feldman, 2004). Among these were the recursive

sub-stage, the turning-point sub-stage, and the consolidation of the Concrete Operation stage (Feldman, 2004). These three sub-stages mirrored children's cognitive behaviors throughout the middle school ages.

The recursive sub-stage molded the child's logical cognitive development within a social and cultural context. It allowed children to classify, categorize, and discriminate according to variety of differences (Cole & Cole, 1996). In this sub-stage, children developed the capability to solve complex and challenging logical, transitive, and reversible relation-based problems (Feldman, 2004). While the recursive sub-stage dealt with the child's capability to solve more figurative and sophisticated problems within a socio-cultural context, the turning-point sub-stage dealt with the child's sense of empowerment, superiority, and confidence (Feldman, 2004).

The turning-point sub-stage allowed the children to create their own visions of reality based on their mastery of the elements of the recursive sub-stage (Feldman, 1994; Feldman & Fowler, 1997a, 1997b). According to Feldman (2004), in this sub-stage children displayed behaviors related to their newly-discovered sense of empowerment and consciousness for concrete operation. Compared to the recursive and turning-point sub-stages, the consolidation of the concrete operations sub-stage represented children's maturation and mastering of the concrete operation (Feldman, 2004). It allowed a child to acquire a strong belief in self to address any challenges, oppose any socio-cultural contingencies outside his or her logical capabilities, and form a distorted vision of his or her immediate environment (Bringuier, 1980; Elkind, 1970; Feldman, 2004; Piaget, 1972).

At the end of the concrete operations stage, children adjusted, adapted, and/or revised their visions and/or conceptions of their immediate environment to the most socio-culturally acceptable of the community (Bringuier, 1980; Feldman, 2004). The skill set related to concrete operations stage included behaviors not elicited by a stimulus (Fischer, 1980). However, according to Hunt (1969) and Aebli (1979) these operant contingencies depended on the children and the environmental stimuli.

Age and Cognitive Development

The description of the concrete operations stage provided evidences of the age-dependency in the child cognitive development scheme. Studies, such as those of Baltes, Baltes, and Reinert (1970), Burleson (1984), and Casey, Giedd, and Thomas (2000) also demonstrated a strong correlation between children's cognitive development and age. The link between the cognitive development and age of the children provided a limiting expectation and framework in which to design age-appropriate school curricula, activities, and programs. The Cognitive Development Theory, also referred to as Skill Theory (Fischer, 1980) explained children's ability to grasp complex relations among elements within their immediate environments and react accordingly (Piaget 1936/1952; Piaget & Inhelder, 1966/1969).

Positive Behavioral Intervention and Support

Positive Behavioral Intervention and Support (PBIS) augmented but did not replace the activities and purposes of PBS. Like Positive Psychology, ABA, and Positive Behavior Support, PBIS rose from the concerns revealed by IDEA (1977, 1999) (Sugai, & Simonsen, 2012). However, unlike these research fields, PBIS required the participation and collaboration of both political and community leaders (Sugai, & Horner,

2006). Sugai et al. (2000) defined and described PBIS as a comprehensive framework in which all stakeholders collaborated in designing an effective, equitable, measurable, and sustainable educational system. The common philosophy of effective PBISs included framework, continuum process, research-based and evidence-based practices, community-valued and supported behavior expectation, and stakeholder and community collaboration (Sugai et al. 2000; Sugai & Horner, 2009; McKevitt, & Braaksma, 2008; Sugai, & Simonsen, 2012). The interconnection between these structures, formed a proactive and preventive model, which included a multi-tier prevention model (RTI) (Horner, & Sugai, 2015) and community and stakeholders' participation. The priority of PBIS included the growth of the community as a whole, and the increase of individual satisfaction. According to the Office of Special Education Programs (OSEP, 2004), effective PBIS required five critical core features. These included (1) the establishment of clear and consistent expectation for all stakeholders, (2) the teaching of these expectations to all stakeholders, (3) the acknowledgement of expected behaviors using positive reinforcement technique, (4) the establishment of a clear and consistent response system to behavioral expectation violation, and (5) the development of an evaluative system using data and scientific method. These five critical features of PBIS related to PBIS as a framework, PBIS as a continuum process, PBIS as research-based and evidence-based practices, PBIS as a community-valued and supported behavior expectation, and PBIS as a stakeholders and community collaboration.

PBIS as a framework. As a framework, PBIS emphasized the systemic structure of the educational organization, the community, and all the stakeholders (Horner & Sugai, 2015). In terms of educational organization, PBIS framework focused on student

outcomes, intervention, Response-to-Intervention, and monitoring (Horner & Sugai, 2015; Sugai & Horner, 2006). Student outcomes included academic and social achievement (Sugai, & Simonsen, 2012), individual and small groups of students with a specific deficiency (McKevitt, & Braaksma, 2008), and the quality and importance of the educational and social values (McIntosh, Filter, Bennett, Ryan, & Sugai, 2010; McIntosh, Flannery, Sugai, Braun, & Cochrane, 2008). The interventions included only research and evidence-based practices from scientifically proven methodologies (Eber, Sugai, Smith, & Scott, 2002; Lewis & Sugai, 1999). Response-to-Intervention involved on-going behavior support practices (Sugai & Horner, 2009), progress and implementation monitoring (McKevitt, & Braaksma, 2008), and team-based decision-making practices (Sugai, Horner, Fixsen, & Blase, 2010). The monitoring of student outcomes included effective, efficient, and relevant data collection, analysis, recommendation and reevaluation (Lewis-Palmer, Sugai, & Larson, 1999). The focus of the PBIS framework on the student outcomes remained the priority of PBIS.

In terms of community systemic organization, PBIS established reciprocal communication networks, social, health and family support, and promoted lifestyle and cultural changes (Hughes et al., 1995). The reciprocal communication networks allowed full participation of the community, the educational organization, and all stakeholders in the decision-making processes for both the community and the educational organization (Cohen, McCabe, Michelli, & Pickeral, 2009; Sugai & Horner, 2006). The social, health and family support strategies of PBIS created and promoted positive, safe, and ethical relationships within the school community (Cohen et al., 2009). The lifestyle and cultural change strategies of PBIS targeted the improvement of social and personal

satisfaction, employment and self-determination, recreation and leisure, and community adjustment and integration (Hughes et al., 1995).

In terms of the stakeholders' systemic organization, PBIS cultivated and promoted structures that ensured safety, relationships (Cohen et al., 2009), and diversity integration (Vincent, Randall, Cartledge, Tobin, & Swain-Bradway, 2011) among all stakeholders. The safety system of PBIS included both physical and socio-emotional safety of all stakeholders. Physical safety strategies included crisis management procedures, clear and non-ambiguous rules and regulations, clear, consistent and equitable violation responses, common attitudes toward violence, and non-threatening school and community environments (Cohen et al., 2009). The socio-emotional safety programs of PBIS included development and implementation of policies that (1) ensured positive attitudes toward individual differences, (2) promoted positive and peaceful conflict resolution, and (3) created and promoted a belief system based mutual respect among stakeholders (Cohen et al., 2009).

PBIS promoted and supported relationships building among all stakeholders (Carr et al. 2002; Cohen et al. 2009). These relationships fostered respect for diversity and collaboration among stakeholders, and moral, ethical openness, and connectedness among stakeholders (Cohen et al., 2009). Diversity (diversity of mind, beliefs, ethnicity, culture, opinion, and self), teaching, promotion, and encouragement among stakeholders led to the improvement of the quality of life in the community (Hughes, Witherspoon, Rivas-Drake, & West-Bey, 2009; Quintana & Vera, 1999; Smith, Levine, Smith, Dumas, & Prinz, 2009; Thomas, Townsend, & Belgrave, 2003). According to research, within educational context, diversity remained an important factor on student behavior

(Bandura, 2002; Delpit, 1992; Noguera, 2003) and an effective source of strength and enrichment for all (Monroe, 2005, 2009).

Collaboration as a behavior process that made relationships more resilient (Nkhata, Breen, & Freimund, 2008) involved all stakeholders in the decision-making process. Collaboration advanced and improved common and individual interests within the community (Ostrom 1998, Cousins 2002). The prevalence of morality, ethics, openness, and connectedness among all stakeholders created a positive climate within the community (Cohen et al., 2009). As a result, the community became the optimal source for social, emotional, and academic improvement (Blum, McNeely, & Rinehart, 2002; Osterman, 2000) and support.

The structure of diversity integration, in terms of stakeholders' systemic organization, required provision for advocacy and implementation of linguistic, cultural, and ethnical diversity within the school community (Vincent et al., 2011). In many underprivileged communities, the educational system represented a separate, unequal, and 'upper-class' socio-cultural entity (Anyon, 1980, 1981, 2008; Powell, Farrar, & Cohen, 1985) and was often referred to as 'the way out of the community.' However, educational research argued that successful educational systems shared common values with the school community (Bellah, Tipton, Swidler, & Sullivan, 1985; Bryk & Driscoll, 1988; Hallinger and Murphy, 1986; Lightfoot, 1984). Although PBIS emphasized school culture where all stakeholders shared common language and held to the same behavioral expectation (Horner, Sugai, Lewis-Palmer, & Todd, 2001), understanding cultural responsiveness provided an adaptive behavioral support tool for accommodation (Vincent et al., 2011). Linguistic, cultural, and ethnic diversity effects on educational

organizations originated from theoretical principles, which argued that complex cultural contexts guided the laws of human behavior (Bandura, 2002). Consequently, stakeholders' behavior reflected a linguistic, culturally, and ethnically diverse environment (Delpit, 1992; Noguera, 2003), and diversity among stakeholders represented a positive resource and source of enrichment for all (Monroe, 2005, 2009; Vincent et al., 2011).

Successful PBIS required these systemic changes in order to establish a comprehensive framework that included all stakeholders. In addition, these changes required achievability, measurability, and sustainability of the systemic structures. Moreover, PBIS as a framework engaged and required a commitment from all stakeholders; therefore, it needed time and effort from the educational organization, the community, and all stakeholders (Greenberg, Weissberg, O'Brien, Fredericks, Resnik, & Elias, 2003). Finally, PBIS as a framework represented a lifetime commitment to behavioral changes in the direction that improved community and increased individual satisfaction.

PBIS as a continuum. While PBIS as a framework described the mindset of all stakeholders regarding the PBIS efforts, PBIS as a continuum related to continuous belief, support, and commitment of all stakeholders to the success of PBIS. PBIS as a continuum required a lifetime commitment and dedication to PBIS efforts from the educational organization, the community, and all the stakeholders, as well as from the scientific community. According to Sugai and Horner (2009) PBIS established a continuum of behavior support practices and systems, which included the Universal Behavior Screening (UBS), the Implementation Phase Inventory (IPI) or Progress and

Implementation Fidelity Monitoring (PIFM), the Team-based Decision Making (TDM) rules and procedures, and the Community Participation (CP) (Sugai & Simonsen, 2012). Moreover, the continuum of behavior support practices and systems involved continuous training, professional development, logistic support, and funding from the community leadership (Sugai et al., 2010). These practices and systems improved not only the prosocial behavior for all stakeholders, but also the academic and behavioral achievement of all students (Sugai & Simonsen, 2012).

Universal Behavior Screening. The UBS, in the context of PBIS, referred to proactive strategies to identify sources of problem behavior of social importance (Hawken, Vincent, & Schumann, 2008; Walker, Cheney, Stage, & Blum, 2005). It also represented a systemic approach among all stakeholders to discern emotional and behavioral disorders (Burke, Davis, Lee, Hagan-Burke, Kwok, & Sugai, 2012). In many school settings, the UBS involved the use of Office Discipline Referral records (ODRs) to design, implement and monitor behavior interventions and responses to intervention (Sugai, Sprague, Horner, & Walker, 2000). In addition, UBS utilized a behavior rating instrument (Walker et al., 2005) such as the Systematic Screening for Behavioral Disorders (SSBD; Walker & Severson, 1990) or the BASC2 - Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2008). Today however, many UBSs utilized the PBIS Behavioral Expectations Checklists (BEC) in order to improve prosocial behavior and reduce problem behavior (Sugai & Horner, 2006). The BEC included prosocial behavior defined within the context of the community language and standards of expected behavior. Compared to other behavior screening tools, the BEC represented an individualized, cost-effective, and criterion-based screening tool that

singled out individuals not meeting their behavioral expectation (Burke et al., 2012). Consequently, compared to SSBD and BESS, the BEC represented the most commonly-used tool in the large-scale deployment of PBIS (Sugai & Horner, 2006).

***Implementation Phase Inventory*.** The Progress and Implementation Fidelity Monitoring (PIFM) represented the assessment of both the performance and the degree of implementation of each component of PBIS (Bradshaw, Debnam, Koth, & Leaf, 2009). Bradshaw, Barrett, and Bloom (2004) called the PIFM, in the context of PBIS, as the Implementation Phase Inventory (IPI). The common core to each component of PBIS, revealed positive preventive support strategies and systems. These support strategies and systems involved training and teaching of acceptable social behaviors to all stakeholders (Bradshaw et al., 2009). Research indicated that a greater implementation fidelity improved educational outcomes (Bradshaw, Koth, Bevans, Ialongo, & Leaf, 2008; Horner, Sugai, Todd, & Lewis-Palmer, 2005; Nelson, Martella, & Marchand-Martella, 2002; Taylor-Greene et al., 1997). The monitoring process of fidelity provided data that allowed necessary systemic modification and adjustment to secure and retain high progress and implementation fidelity (Bradshaw et al., 2009). According to Bradshaw et al. (2009), the process utilized two of the commonly used tools, which included School-Wide Evaluation Tool (SET; Sugai, Lewis-Palmer, Todd, & Horner, 2001) and Team Implementation Checklist (TIC; Sugai, Todd, & Horner, 2001). SET and TIC represented monitoring tools to assess progress and implementation fidelity for school site only, while PBIS required also the monitoring of progress and implementation fidelity within the community and among all stakeholders (Bradshaw et al., 2009).

Because of the limitations of SET and TIC, effective PBIS utilized the IPI tool. The IPI represented a more comprehensive tool that utilized the data gathered by SET, TIC, and/or other tools for large-scale evaluation of PBIS (Bradshaw et al., 2009). IPI originated from the Maryland Statewide Initiative in order to record the specific steps of PBIS implementation. According to Velicer, Prochaska, Fava, Norman, and Redding (1998), IPI drew on the Stages of Change trans-theoretical model proposed by Prochaska and DiClemente (1982). It included questions regarding critical components of PBIS. These questions dealt with the preparation, initiation, implementation, and maintenance phases of PBIS. According to Bradshaw et al. (2009), the scoring of IPI used numbers such as zero (0) for not accomplished, one (1) for partially accomplished, and two (2) for fully accomplished. The overall score of IPI ranged from 0% to 100%, which represented the average of all the IPI scores from PBIS's critical components. Any component of PBIS scoring below 80% required a review and adjustment. According to Bradshaw et al. (2009), effective PBIS required at least two (2) IPI scorings per year. As of this writing, IPI represented an effective, efficient, consistent, and reliable monitoring tool of PBIS, despite its moderate interrater reliability, moderate validity alignment with the SET and TIC, and some bias limitations (Bradshaw et al., 2009).

Team-based Decision Making

PBIS as a continuum, required dedicated and committed individuals to prepare, initiate, implement, and maintain its cores components over the life of the organization and the community. The importance of teaming resided in its definition. OSEP (2004) described teaming as a collective effort guided by a common priority with cohesion, integration, and diversity to accomplish systemic changes and implementation process.

Researchers suggested that every team involved in PBIS efforts, included leaders and four (4) to eight (8) dedicated individuals who believed in behavioral changes using the principles of Positive Psychology, ABA, and PBS (Sugai, Horner, Lewis-Palmer, & Todd 2005). The PBIS team included and represented the expertise related to the issues/problems within the organization community (Iverson, 2002; McKevitt, & Braaksma, 2008). Although the members and leadership of the team changed over time, PBIS as a continuum required that the mission and priority of the team remained the same. The diversity of experts in teams provided diverse quality view points in the decision-making process. Consequently, the PBIS team decision-making and collaboration produced reliable and competent outcomes (McKevitt & Braaksma, 2008). According to McKevitt and Braaksma (2008), PBIS teams provided leadership for the PBIS efforts within the organization and the community. This leadership involved the need assessment for the organization and the community, the identification and classification of prosocial expectations, the development and implementation of professional developments, and the evaluation of the effectiveness of PBIS efforts. In addition, PBIS teams used an action plan to maintain the ongoing PBIS efforts by dealing with issues/problems of sustainability, reporting to the stakeholders, and identifying, obtaining, and allocating necessary resources for the work of PBIS (McKevitt, & Braaksma, 2008).

Community participation. PBIS as a continuum required continuous participation and support from the organization community and all stakeholders. The community provided resources and remained updated on the activities of the PBIS team. The resources provided by the community included expertise, logistics, and financial

support. The community's participation in the PBIS efforts within both the organization and the community remained a lifelong and dedicated commitment. According to Carr et al. (2002), community and stakeholder involvement in the PBIS efforts represented an important contribution to the successful implementation of PBIS. Esler, Godber, and Christenson (2002) indicated that, as families, businesses, and offices in the community participated in the PBIS efforts, they started applying its concepts and principles within their own settings. The continuum of behavior support practices and systems described through UBS, IPI, TDM, and CP, demonstrated a consistency of PBIS with the Response-To-Intervention (RTI) approach (Sugai & Horner, 2009).

PBIS as a continuum restored and emphasized the concept of community responsibility, pride, and direction. It provided evidence of the community and stakeholders' interest in the educational organization. Both PBIS as a framework and PBIS as a continuum required the total commitment of the school leadership, the school community leaders, and stakeholders. Consequently, this rendered PBIS more community and stakeholder-involved than other social science field of research.

PBIS as research and evidence-based practice. Unlike PBIS as a framework and PBIS as a continuum process, PBIS as research and evidence-based practice related to the scientific methodologies used within the critical core features of PBIS. Examples of methodologies included SET, TIC, IPI, Behavior Education Program (BEP; Crone, Horner, & Hawken, 2004), and Functional Behavior Assessment (FBA). These tools used scientific methods to gather, analyze, and interpret data that allowed the PBIS team to make good decisions (Carr et al., 2002; Lewis & Sugai, 1999; OSEP, 2004).

SET (Sugai et al., 2001) represented a research instrument used to measure and evaluate the level of implementation of critical features of PBIS (Horner et al., 2004). SET measured and collected data on the implementation level in seven areas, which included: (1) Behavioral expectation checklist, (2) Behavioral expectation teaching, (3) Systematic response to expectation violation, (4) Monitoring of behavioral expectation, (5) community support procedures, (6) Behavioral expectation reinforcement, and (7) all stakeholders support procedures (McKevitt & Braaksma, 2008). Researchers suggested that a score of 80% from each of these seven measurements indicated an effective implementation of PBIS (Horner et al., 2004). The results of SET provided important information to the PBIS team to identify and address weaknesses in areas and also to monitor the PBIS efforts over time (McKevitt & Braaksma, 2008).

TIC (Sugai, Horner, & Lewis-Palmer, 2001) represented another research tool to measure the level of implementation of PBIS critical features. While SET evaluated the level of implementation from the data reflecting the effort of all stakeholders, TIC measured the same parameter from the data reflecting the effort of the PBIS team. McKevitt and Braaksma (2008), suggested that TIC be performed once per quarter. TIC relied mostly on the team's action plan and rated every step in the action plan as completed, in progress, and not started. The percentage of steps accomplished determined the level of implementation of the corresponding critical feature of PBIS. Sugai et al. (2005) suggested that 80% of step completion indicated successful implementation of the corresponding PBIS critical feature. The PBIS team reviewed and adjusted the action plan in order to address the steps not started and in progress.

A comprehensive evaluation system such as IPI (Bradshaw, Barrett, & Bloom, 2004) determined the impact of PBIS on all stakeholders' behaviors. For example, an analysis of the ORD provided trends, patterns, and location of students' behaviors. Other examples of data IPI used to measure the successful implementation of PBIS, included student attendance rate, suspension, expulsion, dropout rate, and academic achievement (McKevitt & Braaksma, 2008). Researchers indicated that successful implementation of PBIS increased academic achievement (McIntosh, Chard, Boland, & Horner, 2006; Sugai et al., 2005).

BEP and FBA methodologies related to intervention for small groups and individuals respectively, who demonstrated recurring and chronic anti-social behavior. BEP provided more support, training, and teaching of prosocial skills, anger management, problem-solving skills and friendship-making skills (McKevitt & Braaksma, 2008). BEP required regular and frequent positive reinforcement and support from adults in the community to those who needed help. Individuals who displayed chronic disruptive and anti-social behavior required application of FBA as required by IDEA (1977, 1999). FBA required a certified behavior analyst to collect and analyze data in order to determine the underlying function of the target behavior. The results and recommendations of the behavior analyst allowed the PBIS team to develop a behavior support plan, which included modifications of settings and antecedents of the problem behavior, development and teaching of replacement behavior, development and implementation of positive reinforcement strategies, and application of strategies and procedures to reduce problem behavior (McKevitt & Braaksma, 2008). Researchers demonstrated that these elements of the behavior support plan helped the individual to

become successful in educational organizations (Crone & Horner, 2003; O'Neill et al., 1997). In addition, both BEP and FBA required continuous monitoring in order to determine their effectiveness, and subsequently, their readjustment, modification, suspension, or termination.

PBIS as a research and evidence-based practice ensured changes that improved the quality of life in the community and the personal satisfaction of all stakeholders. In addition, PBIS as evidence-based practices demonstrated successful prevention of problem behavior in educational settings (McKevitt & Braaksma, 2008). PBIS as a research-based practice used the concepts and principles of ABA during the application of FBA, the concepts and principles of statistical analysis during the application of SET, TIC, and IPI, and the concepts and principles of PBS during the application of BEP. Abundant scientific literatures supported the effectiveness of the practices of critical features of PBIS for establishing safety, openness, respect (Metzler, Biglan, Rusby, & Sprague, 2001; Dwyer, Osher, & Hoffman, 2000; Mayer, 1995; Nelson, Martella, & Galand, 1998) and academic success within educational organizations (Biglan, 1995; Gottfredson, 1997; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Loeber, 1990). PBIS utilized the findings of the science of human behavior to address the issues/problems behavior in the community (Carnine, 1997; Gilbert, 1978; Gilbert & Gilbert, 1992; Horner, 2003; Zins & Ponte, 1990).

PBIS as a community-valued and supported behavior expectation. Researchers indicated that an Educational Organization Development Plan, such as School Development Plan (SDP) that included community in the decision-making structure and process of school, improved student's achievement (Haynes, Emmons, &

Woodruff, 1998). In addition, Sheldon (2003) suggested that partnerships between educational organizations and the community improved student academic achievement. Within that context, the PBIS Team engaged and collaborated with the leadership of the community in the development of all critical features of PBIS. Esler, Godber, and Christenson (2002) indicated that these collaborations produced better outcomes for all stakeholders. PBIS provided opportunities to directly teach stakeholders and students prosocial skills and positively reinforce the practice of these skills within the community and the educational organization (Gresham, Sugai, & Horner, 2001a; Walker et al., 2005). Communities remained major contributors to successful implementation of PBIS (Carr et al. 2002) and represented useful resources to the PBIS Team (McKevitt & Braaksma, 2008). According to McKevitt and Braaksma (2008), these resources included not only logistics and financial support but more importantly diverse cultural perspectives, ethical, ethnic, and religious values, and belief systems. These perspectives, values, and belief systems represented the priority within each critical feature of PBIS.

The diversity and complexity of the American student body (Sugai et al., 1999) required a continuous monitoring of these perspectives, values, and belief systems in order to design and provide adequate behavioral support for all students (Vincent et al., 2011). Successful implementation of PBIS suggested that the PBIS Team reported to and sought recommendation from community leaders annually in order to ensure continuous support from keys stakeholders (McKevitt & Braaksma, 2008). Moreover, it recommended that the BEC used by the PBIS Team included behaviors that reflected the standards of behavior within the community (Burke et al., 2012; (McKevitt & Braaksma,

2008). Consequently, PBIS remained a community valued and supported system of support strategies that enhanced the lifestyle in the community and improved individual satisfaction.

PBIS as a Stakeholder and community commonality. While PBIS as a community valued and supported behavior expectation related to the shared values, perspectives, and belief system between community, stakeholders, and the educational organization, PBIS as a stakeholder and community commonality associated with the purpose, goals, and priority of PBIS as related to the success of the educational organization. PBIS established a common culture in which all stakeholders abided by the same behavioral standards (Center on PBIS, 2005; Horner, Sugai, Lewis-Palmer, & Todd, 2001; Sugai & Horner, 2002; Sugai, Horner, Dunlap et al., 2000; Sugai, Horner & Gresham, 2002; Walker et al., 1996). The commonality of the stakeholders and community included those behavioral standards, respect for diversity, equitable access to educational resources, and successful educational outcomes for all stakeholders. The commonality of the educational outcome for all stakeholders guided the willingness to provide logistics, financial support, and motivational support to the PBIS Team.

PBIS as a framework guided the design and implementation of policies, regulations, and rules that promoted positive behavior support among all stakeholders. PBIS as a continuum related to the commitment of all stakeholders to a lifelong effort in the support of the PBIS efforts. PBIS as Research and evidence-based practices outlined the use of scientifically proven methodologies to address issues/problems of socially important behavior. PBIS as a community-valued and supported behavior expectation communicated the overlapping of behavioral expectation within the educational

organization and the community. Finally, PBIS as a stakeholder and community commonality related to the uniqueness of the educational outcome for all stakeholders. These five dimensions of PBIS taken together represented a systemic approach to addressing the challenging and yet solvable behavioral issues/problem within educational organizations.

PBIS (SOAR) and gender and age relationships. This literature review revealed scientific knowledge in terms of assessment, treatment, and evaluation of behavioral related issues/problems in educational setting. However, practices seemed to support the lack of usage of this scientific knowledge. A combination of principles from Positive Psychology and ABA, intertwined with of the concept of PBS and PBIS, followed by an understanding of children's gender and cognitive development, provided to educational, communal, and political leadership an intervention and positive support policy tool to ensure academic, civic, and ethical achievement for all stakeholders. Within that context, this study intended to assess the relationship of student gender (male/female) and age (grade level) to each element of a 'light' PBIS called SOAR, implemented at a suburban Midwestern middle school. SOAR embodied a set of behaviors and a mindset that determined the school climate, the community socio-cultural and ethical characteristics, and all stakeholder behavior expectation. This study utilized secondary data from previous school years during which the application of SOAR effected behavior within the educational organization.

Summary

This literature review provided the theoretical and prior fundamental research in the fields of Positive Psychology, ABA, Gender Development, Cognitive Development,

Positive Behavior Support, and Positive Behavior Intervention and Support (PBIS). These six fields of research described the historical development of societal implication in communal behavioral response. In addition, this literature review provided the proof of the existence of a body of scientific works related to the topic of this dissertation.

Chapter Three: Methodology

Introduction

This chapter explains the methodology used to answer the research questions and test the hypotheses. It also provides the parametrization of variables used in this study. The study used students' performance data from school-years 2012-2013, 2013-2014, and 2014-2015 for a Mid-Western suburban public middle school. The chapter gives the rationale and the purpose of each research question as it related to gender and age impact on the performance of a Positive Behavioral Interventions and Supports (PBIS) program demonstrated in the students' performance data.

The Research Site

The school district from which the data were collected was adjacent to a large urban school district. The school district had five elementary-schools (K to 5), one middle school (grades 6 to 8), and one high school (grades 9 to 12). The middle school where the data were collected had an average of six hundred students per school year. According to Public School Review (2016), 87% of the student body was African American (para.2), 9% were White (para. 2), 3% were Hispanic (para. 2), and 1% were Asian (para. 2). The teacher-student ratio was about 14:1 over the previous five school-years. About 73% of the student body was eligible for free and reduced lunch (para. 2). The student male-to-female ratio in the school was about even, on average, per school year. The history of PBIS in the district spanned over five years. The structure of the PBIS was consistent across the district; however, each school developed, designed, and implemented its own PBIS slogan and expectation from students, staff, parents, and stakeholders.

Developing the Intervention

The SOAR program represented the PBIS slogan and expectations designed to create a positive, safe, and educational environment in the middle school. The four components of the SOAR program included Safety, Openness to Diversity, Achievement, and Respect to self and others. These components were implemented simultaneously and evaluated independently from each other. The safety component of the program was implemented through a series of logistic improvements and a FBA for all students, staff, and visitors in the building. The FBA and FA led to the development of a series of reinforcement and punishment prompts to increase safe behavior for students, staff, and visitors in the building. The safety improvement in the building included installation of more cameras and lighting in the hallways, staircases, and corners. A conscientious effort had been made to verify the location of every student, staff, and visitor by the administration at any given time.

The openness to diversity was implemented through the development and implementation of a multicultural theme in the school building. Behavior analysis techniques were used to reinforce behavior that promoted diversity in all aspects and acceptance of others, and/or discouraged behaviors that promoted division among students, staff, and visitors in the building. The theme was also included in the curriculum of various areas, such as social studies, foreign language, and music. A series of posters were displayed in the hall with slogans advocating diversity of opinion, race, ethnicity, religion, gender-appropriateness, and national origin. Teachers and administrators were encouraged to display posters that promoted not only good citizenship, but also openness to diversity.

The achievement component had two parts, achievement in academic performance and achievement in behavior. The rigor and accountability were built into each curriculum and the responsibility of academic achievement was shared among all stakeholders including students, staff, parents/guardians, and community leaders. New classroom schedules were designed to include the teaching of behavior skills, conflict resolution skills, and character development to students. Every adult in the building was expected to model these skills daily and in all of his or her actions or activities.

The respect to self and others component was implemented through reinforcement and negative consequences as the students interacted among themselves and with adults in the building. Respect to self and others was also taught, encouraged, valued, rewarded, and acknowledged whenever students or a group of students displayed respectful behavior. Many aspects of the respect to self and others component involved parental participation, such as rewarding parents for good parental skills and encouraging parents/guardian to seek help for parenting through the guidance and counselor offices in the school building.

Parametrization of Variables

The variables involved in this study included measurement of safety, measurement of openness to diversity, measurement of academic achievement, and the measurement of respect (to self and to others). The measurement of these variables displayed students' behaviors as related to Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). Students' behavior satisfied a function related to the individual student (Adams, 1965; Locke, 1968; Maslow, 1954; Vroom, 1964), the student's environment (Skinner, 1953) or both the individual student

and the student's environment (Lewin, 1951). This study used the model based on Skinner's (1953) principles to parametrize the variables. The safety component determined the measurement of students' observable and measurable behaviors related to safety in the school building. The general assumption suggested that a safe school improved attendance. Although researchers stated that a safe school increased academic achievement (Marchant, Paulson, & Rothlisberg, 2001; Stephens, 1998), the students'attendance provided observable and measurable data to access the safety component in this study. Consequently, the study used students' attendance (Att.) records as a parameter to measure the safety component. The openness to diversity represented the acceptance of diversity that students displayed. In the context of this study, diversity included diversity of opinion, cultural diversity, religious diversity, ethnic diversity, socio-economic diversity, and diversity of national origin. Although many other variables affected openness to diversity, the student's interest in foreign language characterized an indication of diversity acceptance. Consequently, an increase in level of interest in foreign language as reflected in the students' foreign language grades, demonstrated at least an openness-to-diversity behavior. The study used the Foreign Language (FL) grade of students as a parameter to access the openness to diversity component.

The academic achievement represented the students' overall academic performance. The students' Grade Point Average (GPA) depicted a good academic assessment of students. As a result, the study used the students' GPA as the parameter to measure the academic achievement. The students' citizenship grades provided a description of the general behavior of students in the school building (classroom,

hallways, cafeteria, and playgrounds). Although this parameter included teacher subjectivity, the yearly citizenship grade represented the average of all the citizenship grades from different teachers. As a result, the study used the citizenship (CTZ) grade of students as the measurement of the respect (to self and to others).

Data Collection and Analysis Procedures

During the 2012-2013 school-year, 2013-2014 school-year, and 2014-2015 school year a PBIS program was implemented at the school site of this study. The PBIS program had four major themes that included Safety, Openness to Diversity, Achievement (academic and behavior), and Respect to self and others. A variety of activities and school programs inside and outside the classroom were implemented over these three school-years. The student performance data for these three school-years formed the secondary database used in this study. The study used a random systematic sampling method to select 100 students among the sixth graders from the 2012-2013 school year (Group I), 100 students among the seventh graders from the 2013-2014 school year (Group II), and 100 students among the eight graders from the 2014-2015 school year (Group III). Among each group, a sub-group of 31 boys and 31 girls was selected using the random systematic sampling method.

Every student in each group was characterized by her or his end-of-the-year attendance record (safety), foreign language grade (openness to diversity), grade point average (achievement), and citizenship grade (respect to self and others).

Safety parameter and attendance variable. The safety parameter was determined by the attendance variable. The attendance (Att) variable was defined as the

ratio of the total student's end-of-the-year number of absences (SNA) over the total number of allowable absence for students in the school calendar (TNAAS).

$$\text{Att} = \frac{\text{SNA}}{\text{TNAAS}}$$

Figure 7. Calculation of the end-of-the-year attendance ratio.

Table 1. *The Qualification of Attendance*

Att Variables	Qualification	Safety Behavior Emitted
Att < 0.10	Perfect	High (Safe and Secure)
0.10 ≤ Att < 0.40	Good	Average (Basic Safety)
0.40 ≤ Att < 0.60	Bad	Poor (Need improvement)
0.60 ≤ Att < 1.0	Worse	Unsafe School
1.0 < Att	---	Unsafe and Threatening

Openness to diversity parameter and foreign language variable. The openness to diversity parameter was determined by the student's end-of-the year foreign language grade. The FL variable was measured by the Spanish/French language end-of-the-year grade recorded directly from the database for every selected student.

Table 2. *The Qualification of FL*

FL Variables	Qualification Level of Interest	Openness to Diversity Behavior emitted
FL < 0.60	Low	Not open to Diversity
0.60 ≤ FL < 0.70	Average	Somewhat open to Diversity
0.70 ≤ FL < 0.80	High	Open to Diversity
0.80 ≤ FL < 0.90	Very High	Very Open to Diversity

Achievement parameter and GPA variable. The achievement parameter was determined by the student's end-of-the-year Grade Point Average. The GPA variable (GPA) was directed recorded from the database for every selected student.

Table 3. *The Qualification of GPA*

GPA Variables	Qualification	Achievement
GPA < 0.60	Low	Poor
0.60 ≤ GPA < 0.70	Average	Basic
0.70 ≤ GPA < 0.80	High	Good
0.80 ≤ GPA < 0.90	Very High	Excellent

Respect to self and others parameter and Citizenship variable. The Respect to self and others parameter was determined by the Citizenship variable. The Citizenship variable (CTZ) was directly recorded from the database for every selected student.

Table 4. *The Qualification of CTZ*

CTZ Variables	Qualification	Respect (to self and others) Behavior Emitted
1	Very High	Outstanding/Honorable
2	High	Good
3	Medium High	Satisfactory
4	Low	Need Improvement
5	Poor	Unsatisfactory

Description of respect to self and others behavior. The student who demonstrated 'outstanding/honorable behavior,' always contributed to the class and school learning environment in positive ways, always followed directions, class rules, and/or school policies, always treated people with respect, always was on task, always was on time, and was always prepared for class. This behavior also included being

consistently respectful to others, self, properties, and learning, and consistently responsible for his or her actions.

The student who demonstrated ‘good’ behavior, contributed to the class and school learning environment in positive ways typically only when asked, almost always was prepared for class and on task. He or she often followed directions, class rules, and/or school policies, and often treated people with respect. The good behavior attitude also included generally respecting others, self, properties and learning, and generally accepting responsibility.

The student who displayed ‘satisfactory’ behavior sometimes contributed to the class learning environment in positive ways, sometimes was prepared for class and was on task. He or she usually followed directions, class rules, and/or school policies, and usually treated people with respect. The satisfactory behavior also included occasionally disrespecting others, self, properties and learning, and was a student who occasionally did not accept responsibility.

The student who demonstrated ‘needs improvement’ behavior, seldom contributed to the class learning environment in positive ways even when asked, was not often prepared for class and on task. He or she rarely followed directions, class rules, and/or school policies, and rarely treated people with respect. Often the needs-improvement behavior included disrespecting peers, teachers, and/or adults in the school building, and usually included harassing, teasing, and/or making fun of others and refusing to accept responsibility for his or her actions.

The student who displayed ‘unsatisfactory’ behavior, never contributed to the class learning environment in positive ways, even when asked, never prepared for class,

and was not on task. He or she did not follow directions, class rules, and/or school policies, and did not treat people with respect. The unsatisfactory behavior also included disrespecting peers, teachers, and/or adults in the school building, and often included harassing, teasing, and/or making fun of others. Furthermore, students who emitted this behavior were involved in cheating, consistently disrespected self, property, and learning, and always refused to accept responsibility for their actions.

Research Questions and Null Hypotheses

This study sought to provide answers to the research questions suggested by the research title though nine selected hypotheses.

Null hypothesis 1. The first null hypothesis (NH1) stated that there was no difference in safety parameters between the class-groups (sixth graders, seventh graders, and eighth graders). The study tested null sub-hypotheses between pairings of the three groups. The study used the *z*-test for difference in means of attendance for each of the pairings. The three null sub-hypotheses included there was no difference in students' safety based on attendance means between Group I and Group II, (2) there was no difference in students' safety based on attendance means between Group I and Group III, and there was no difference in students' safety based on attendance means between Group II and Group III.

Group I and Group II. H_0: There was no difference in students' safety between Group I and Group II, measured by attendance means.

Group I and Group III. H_0: There was no difference in students' safety between Group I and Group III, measured by attendance means.

Group II and Group III. H_0: There was no difference in students' safety between Group II and Group III, measured by attendance means.

The result of the test of null hypothesis H1 was determined by the results of the test of each sub-hypothesis.

Null hypothesis 2. The second null hypothesis (H2) stated that there was no difference in openness to diversity parameter between the class-groups (sixth graders, seventh graders, and eighth graders). The study tested null sub-hypotheses between pairings of the three groups. The study used the *z*-test for difference in means of FL for each of the pairings. The three null sub-hypotheses included (1) there was no difference in students' openness to diversity based on FL means between Group I and Group II, (2) there was no difference in students' openness to diversity based on FL means between Group I and Group III, and there was no difference in students' openness to diversity based on FL means between Group II and Group III.

Group I and Group II. H_0: There was no difference in students' openness to diversity between Group I and Group II measured by foreign language means.

Group I and Group III. H_0: There was no difference in students' openness to diversity between Group I and Group III measured by foreign language means.

Group II and Group III. H_0: There was no difference in students' openness to diversity between Group II and Group III measured by foreign language means.

Null hypothesis 3. The third null hypothesis (H3) stated that there was no difference in achievement parameter between the class-groups (sixth graders, seventh graders, and eighth graders). The study tested null sub-hypotheses between pairings of the three groups. The study used the *z*-test for difference in means of GPA for each of

the pairings. The three null sub-hypotheses included (1) there was no difference in students' achievement based on GPA means between Group I and Group II, (2) there was no difference in students' achievement based on GPA means between Group I and Group III, and there was no difference in students' achievement based on GPA means between Group II and Group III.

Group I and Group II. H_0: There was no difference in students' achievement between Group I and Group II, measured by student achievement represented by grade point average.

Group I and Group III. H_0: There was no difference in students' achievement between Group I and Group III, measured by student achievement represented by grade point average.

Group II and Group III. H_0: There was no difference in students' achievement between Group II and Group III, measured by student achievement represented by grade point average.

The result of the test of null hypothesis H3 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 4. The fourth null hypothesis (H4) stated that there was no difference in respect to self and others parameter between the class-groups (sixth graders, seventh graders, and eighth graders). The study tested sub-hypotheses between pairings of the three groups. The study used the *z*-test for difference in means of CTZ to test each set of paired groups. The three null sub-hypotheses included (1) there was no difference in students' respect to self and others based on CTZ means between Group I and Group II, (2) there was no difference in students' respect to self and others based on CTZ means

between Group I and Group III, and there was no difference in students' respect to self and others based on CTZ means between Group II and Group III.

Group I and Group II. H_0: There was no difference in students' respect to self and others between Group I and Group II, measured by the citizenship grade.

Group I and Group III. H_0: There was no difference in students' respect to self and others between Group I and Group III, measured by the citizenship grade.

Group II and Group III. H_0: There was no difference in students' respect to self and others between Group II and Group III, measured by the citizenship grade.

The result of the test of hypothesis H4 was determined by the results of the test of each null sub-hypothesis.

The previous four hypotheses tested how the students' age (grade level) affected each element of the SOAR program in the selected learning institution. The next four hypotheses tested how the students' gender impact each element of the SOAR program at a Mid-Western Suburban Middle school.

Null hypothesis 5. The fifth null hypothesis (H5) stated that there was no difference in safety parameter between female and male students in each group (sixth graders, seventh graders, and eighth graders). The study used the *z*-test for difference in means to test three null sub-hypotheses based on the attendance (Att) variable. These three null sub-hypotheses included (1) there was no difference in students' safety based on attendance means between female and male in Group I, (2) there was no difference in students' safety based on attendance means between female and male in Group II, and there was no difference in students' safety based on attendance means between female and male in Group III.

Group I (sixth graders). H_0: There was no difference in students' safety between female and male among sixth graders, measured by attendance means.

Group II (seventh graders). H_0: There was no difference in students' safety between female and male among seventh graders, measured by attendance means.

Group III (eighth graders). H_0: There was no difference in students' safety between female and male among eighth graders, measured by attendance means.

The result of the test of null hypothesis H5 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 6. The sixth null hypothesis (H6) stated that there was no difference in openness to diversity parameter between female and male student in each group (sixth graders, seventh graders, and eighth graders). The study used the *z*-test for difference in means to test three null sub-hypotheses based on the foreign language (FL) variable. These three null sub-hypotheses included (1) there was no difference in students' openness to diversity based on FL means between female and male in Group I, (2) there was no difference in students' openness to diversity based on FL means between female and male in Group II, and there was no difference in students' openness to diversity based on FL means between female and male in Group III.

Group I (sixth graders). H_0: There was no difference in students' openness to diversity between female and male among sixth graders, measured by foreign language means.

Group II (seventh graders). H_0: There was no difference in students' openness to diversity between female and male among seventh graders, measured by foreign language means.

Group III (eighth graders). H_0: There was no difference in students' openness to diversity between female and male among eighth graders.

The result of the test of null hypothesis H6 was determined by the results of the test of each sub-hypothesis, measured by foreign language means.

Null hypothesis 7. The seventh null hypothesis (H7) stated that there was no difference in achievement parameter between female and male students in each group (sixth graders, seventh graders, and eighth graders). The study used the *z*-test for difference in means to test three null sub-hypotheses based on the students' GPA variable. These three null sub-hypotheses included (1) there was no difference in students' achievement based on GPA means between female and male in Group I, (2) there was no difference in students' achievement based on GPA means between female and male in Group II, and there was no difference in students' achievement based on GPA means between female and male in Group III.

Group I (sixth graders). H_0: There was no difference in students' achievement between female and male among sixth graders, measured by student achievement represented by grade point average.

Group II (seventh graders). H_0: There was no difference in students' achievement between female and male among seventh graders, measured by student achievement represented by grade point average.

Group III (eighth graders). H_0: There was no difference in students' achievement between female and male among eighth graders, measured by student achievement represented by grade point average.

The result of the test of null hypothesis H7 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 8. The eight hypothesis (H8) stated that there was no difference in respect to self and others parameter between female and male student in each group (sixth graders, seventh graders, and eighth graders). The study used the *z*-test for difference in means to test three null sub-hypotheses based on the students' annual citizenship grade (CTZ) variable. These three null sub-hypotheses included (1) there was no difference in students' respect to self and others based on CTZ means between female and male in Group I, (2) there was no difference in students' respect to self and others based on CTZ means between female and male in Group II, and there was no difference in students' respect to self and others based on CTZ means between female and male in Group III.

Group I (sixth graders). H_0: There was no difference in students' respect to self and others between female and male among sixth graders, measured by the citizenship grade.

Group II (seventh graders). H_0: There was no difference in students' respect to self and others between female and male among seventh graders, measured by the citizenship grade.

Group III (eighth graders). H_0: There was no difference in students' respect to self and others between female and male among eighth graders, measured by the citizenship grade.

The result of the test of null hypothesis H8 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 9. The last null hypothesis (H9) tested the difference in variance between each element of SOAR program among the students in Group III (eighth graders). The study used the analysis of variance (*ANOVA*) to test the difference between the safety parameter based on attendance variable, openness to diversity parameter, based on FL variable, achievement parameter based on GPA variable, and respect to self and others parameter based on CTZ variable.

Participants (Student social economics)

The participants involved in this study were not active respondents in the research; however, their demonstrated behaviors were, as secondary data. The socio-economic status of the majority of the students at the middle school was similar to those receiving free and reduce lunch status, as defined by the Federal government. The students' behaviors were measured through their performances in the school building. Among those performances were students' attendance, foreign language study, academic achievement, and citizenship. The attendance performance defined the safety parameter of the SOAR program. The foreign language performance defined the openness to diversity parameter of the SOAR program. The academic performance defined the achievement parameter of the SOAR program. And the citizenship performance defined the respect to self and others parameter of the SOAR program.

Summary

The methodology used to answer the research questions included a description of the type of data, the parametrization, and the type of statistical tests used. The data used in the study represented the secondary database that included 300 students' records. These records included the students' gender, age (grade level), attendance records,

foreign language grade, grade point average, and citizenship grades. The database expanded over three consecutive school years (2012-2013, 2013-2014, and 2014-2015) during which the SOAR program was implemented. The study selected data for 100 students randomly from the database for the sixth graders from the 2012-2013 school year roster (Group I), 100 students randomly among the database for the seventh graders from the 2013-2014 school year roster (Group II), and 100 students randomly among the database for the eighth graders from the 2014-2015 school year roster (Group III). The study used the statistical *z*-test for difference in means and the Analysis of Variances (*ANOVA*) to test the null hypotheses and answer the research questions.

Chapter Four: Results

Introduction

This study investigated nine null hypotheses. These nine null hypotheses represented three categories. The first category included the investigation of gender impact on the components of PBIS, such as Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The first category contained four null sub-hypotheses that probed the effect of gender on each component of the PBIS (Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others)). In addition, the second category included the investigation of age (grade level) impact on the components of PBIS, such as Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The second category also involved the examination of the influence of students' age on each of those components of the PBIS. Moreover, the third category included the investigation of the difference between the impacts of those same components of the PBIS.

The null sub-hypotheses utilized the statistical tool of a *z*-test for difference in means to analyze the effect of gender and age (grade level) on the components of the PBIS (Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others)). In addition, the ninth null hypothesis utilized the statistical tool of Analysis of Variance (*ANOVA*) to accomplish a comparative investigation of difference between variance of the means of the parameters related to Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The secondary data used in this study were obtained after the implementation of Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others) components of a PBIS over

three consecutive school years in a Middle Western Suburban Middle school in the United States.

Null Hypotheses

Each null hypothesis sought a difference with respect to three class groups (sixth graders, seventh graders, and eighth graders). The study tested null sub-hypotheses between pairings of the three groups.

Null hypothesis 1. The first null hypothesis (NH1) stated that there was no difference in safety parameters between the class-groups.

Group I and Group II. H_0: There was no difference in students' safety between Group I and Group II, measured by attendance means.

Group I and Group III. H_0: There was no difference in students' safety between Group I and Group III, measured by attendance means.

Group II and Group III. H_0: There was no difference in students' safety between Group II and Group III, measured by attendance means.

The result of the test of null hypothesis H1 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 2. The second null hypothesis (H2) stated that there was no difference in openness to diversity parameter between the class-groups.

Group I and Group II. H_0: There was no difference in students' openness to diversity between Group I and Group II measured by foreign language means.

Group I and Group III. H_0: There was no difference in students' openness to diversity between Group I and Group III measured by foreign language means.

Group II and Group III. H_0: There was no difference in students' openness to diversity between Group II and Group III measured by foreign language means.

Null hypothesis 3. The third null hypothesis (H3) stated that there was no difference in achievement parameter between the class-groups.

Group I and Group II. H_0: There was no difference in students' achievement between Group I and Group II, measured by student achievement represented by grade point average.

Group I and Group III. H_0: There was no difference in students' achievement between Group I and Group III, measured by student achievement represented by grade point average.

Group II and Group III. H_0: There was no difference in students' achievement between Group II and Group III, measured by student achievement represented by grade point average.

The result of the test of null hypothesis H3 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 4. The fourth null hypothesis (H4) stated that there was no difference in respect to self and others parameter between the class-groups.

Group I and Group II. H_0: There was no difference in students' respect to self and others between Group I and Group II, measured by the citizenship grade.

Group I and Group III. H_0: There was no difference in students' respect to self and others between Group I and Group III, measured by the citizenship grade.

Group II and Group III. H_0: There was no difference in students' respect to self and others between Group II and Group III, measured by the citizenship grade.

The result of the test of hypothesis H4 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 5. The fifth null hypothesis (H5) stated that there was no difference in safety parameter between female and male students in each group.

Group I (sixth graders). H_0: There was no difference in students' safety between female and male among sixth graders, measured by attendance means.

Group II (seventh graders). H_0: There was no difference in students' safety between female and male among seventh graders, measured by attendance means.

Group III (eighth graders). H_0: There was no difference in students' safety between female and male among eighth graders, measured by attendance means.

The result of the test of null hypothesis H5 was determined by the results of the test of each null sub-hypothesis.

Null hypothesis 6. The sixth null hypothesis (H6) stated that there was no difference in openness to diversity parameter between female and male student in each group.

Group I (sixth graders). H_0: There was no difference in students' openness to diversity between female and male among sixth graders, measured by foreign language means.

Group II (seventh graders). H_0: There was no difference in students' openness to diversity between female and male among seventh graders, measured by foreign language means.

Group III (eighth graders). H_0: There was no difference in students' openness to diversity between female and male among eighth graders.

Null hypothesis 7. The seventh null hypothesis (H7) stated that there was no difference in achievement parameter between female and male students in each group.

Group I (sixth graders). H_0: There was no difference in students' achievement between female and male among sixth graders, measured by student achievement represented by grade point average.

Group II (seventh graders). H_0: There was no difference in students' achievement between female and male among seventh graders, measured by student achievement represented by grade point average.

Group III (eighth graders). H_0: There was no difference in students' achievement between female and male among eighth graders, measured by student achievement represented by grade point average.

Null hypothesis 8. The eight hypothesis (H8) stated that there was no difference in respect to self and others parameter between female and male student in each group.

Group I (sixth graders). H_0: There was no difference in students' respect to self and others between female and male among sixth graders, measured by the citizenship grade.

Group II (seventh graders). H_0: There was no difference in students' respect to self and others between female and male among seventh graders, measured by the citizenship grade.

Group III (eighth graders). H_0: There was no difference in students' respect to self and others between female and male among eighth graders, measured by the citizenship grade.

Null hypothesis 9. The last null hypothesis (H9) tested the difference in variance between each element of SOAR program among the students in Group III (eighth graders).

Research Questions: Tests and Results

The research questions, the hypotheses, and the results in this study, dealt with analysis of gender and age (grade level) effects on a PBIS program. The PBIS included four major components. These four major components involved Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). While the students' attendance records accessed the safety component, the foreign language and the grade point average evaluated respectively the openness to diversity and the academic achievement components. In addition, the citizenship grade examined the respect (to self and to others) component. First, the study examined the gender effect on Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). Second, Category I evaluated the age (grade level) effect on the same components in the same order. Finally, the study analyzed the difference between each component in terms of its qualitative validity.

Gender Effect

The gender effect reflected the difference of performance between female and male students in each age group. The design of components of an effective PBIS required an analysis of important factors such as social, ethno-cultural, and economic antecedents (Sugai et al., 1999). Sex-typing or gender schema reinforced gender based behavior (Bem, 1981; Kohlberg, 1966). This section of the study analyzed the gender behavioral influence on each component of the PBIS

Safety. The fifth research question in this study dealt with the investigation of the gender effect on the safety component at different ages (grade levels), based on students' attendance records. The hypothesis (H5) represented the fifth research question. The null hypothesis stated that there was no difference in safety parameters between female and male students in each age group. Every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. The null hypothesis included three null sub-hypotheses.

Females and males in Age Group I (sixth graders). The first null sub-hypothesis of the null hypothesis (H5) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter (attendance (Att)) among the sixth grade students (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was a gender (female and male) effect on the safety parameter among the sixth graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$).

Table 5. *Z-test for Difference in Means of the Attendance Variable between Female and Male Students in Sixth grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	0.388	0.34
St. Deviation	0.225956	0.210713
Z-Test Value	1.099	
Two-tail (+/-) Critical Value (Z)	1.960	

The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between female and male students in sixth grade (Age Group I). Table 5 contains the results of the *z*-test for difference in means of the attendance variable between female and male students in sixth grade. According to Table 5, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter among the sixth graders.

Females and males in Age Group II (seventh graders). The second null sub-hypothesis of the null hypothesis (NH5) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter (attendance (Att)) among the seventh-grade students (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was a gender (female and male) effect on the safety parameter among the seventh graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between female and male students in seventh grade (Age Group II). Table 6 contains the results of the *z*-test for difference in means of the attendance variable between female and male student in seventh grade. According to Table 6, at a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter among the seventh graders. Similarly, to the sixth-grade group, the data showed no gender influence on safety based on the attendance records.

Table 6. *Z-test for Difference in Means of the Attendance Variable between Female and Male Students in Seventh Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	0.342	0.346
St. Deviation	0.220082	0.245935
Z-Test Value	-0.086	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group III (eight graders). The third null sub-hypothesis of the null hypothesis (NH5) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter (attendance (Att)) among the eighth-grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the safety parameter among the eighth-grade students (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between female and male students in eighth grade (Age Group III). Table 7 contains the results of the *z*-test for difference in means of the attendance variable between female and male students in eighth grade. According to Table 7, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the safety parameter among the eighth graders. Equivalently to sixth grade and seventh grade students, the data suggested that there was no gender

(female and male) effect on safety, based on student attendance records among eighth grade students.

Table 7. *Z-test for Difference in Means of the Attendance Variable between Female and Male Students in Eighth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	0.36	0.318
St. Deviation	0.242487	0.221531
Z-Test Value	0.904	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of *z*-test for gender on safety component. According to Table 5, Table 6, and Table 7, there was sufficient evidence to claim that there was no gender effect on the safety parameter among each age group (sixth grade, seventh grade, and eighth grade).

Table 8. *Summary of Z-tests for Difference in Means of the Safety Parameter between Female and Male Students in Each Age Group.*

Z values	Sixth Graders	Seventh Graders	Eighth Graders
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	1.099	-0.086	0.904
Results	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)

Table 8 summarizes the three *z*-tests for difference in means. The summary Table 8 reveals that the null hypothesis (H5) held true. In conclusion, within 95% level of

confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was no gender (female and male) effect on the safety among each age group (sixth grade, seventh grade, and eighth grade) based on students' attendance records.

Openness to diversity. The sixth research question in this study dealt with the investigation of the gender effect on the openness to diversity component at different ages (grade levels), based on the students' foreign language grades. The hypothesis (H6) represented the sixth research question. The null hypothesis (NH6) stated that there was no difference in openness to diversity between female and male students in each age group. Similarly, to null hypothesis (NH5), every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. Moreover, the null hypothesis (NH6) also included three null sub-hypotheses.

Females and males in Age Group I (sixth graders). The first null sub-hypothesis of the null hypothesis (NH6) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter (foreign language grade (FL)) among the sixth-grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the openness to diversity parameter (FL) among the sixth graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the foreign language variable between female and male students in sixth grade (Age Group I). Table 9 contains the results of the *z*-test for difference in means of the foreign language variable between female and male students in sixth grade.

According to Table 9, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter among the sixth graders.

Table 9. *Z-test for Difference in Means of the Foreign Language Grade Variable between Female and Male Students in Sixth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	70.1	68.86
St. Deviation	16.83241	16.69612
Z-Test Value	0.370	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group II (seventh graders). The second null sub-hypothesis of the null hypothesis (NH6) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter (foreign language grade (FL)) among the seventh-grade students (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was a gender (female and male) effect on the openness to diversity parameter (FL) among the seventh graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the foreign language grade variable (FL) between female and male students in seventh grade (Age Group II). Table 10 shows the results of the *z*-test for difference in means of the foreign language grade variable (FL) between female and male

students in seventh grade. According to Table 10, with a 95% level of confidence (α = 0.05) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter among the seventh graders. Similarly, to the sixth-grade group, the data showed no gender influence on the openness to diversity based on the foreign language grade records.

Table 10. *Z-test for Difference in Means of the Foreign Language Grade Variable between Female and Male Students in Seventh Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	62.96	65.58
St. Deviation	15.72509	15.24741
Z-Test Value	-0.846	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group III (eighth graders). The third null sub-hypothesis of the null hypothesis (H6) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter (foreign language grade (FL)) among the eighth-grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the openness to diversity parameter (FL) among the eighth-grade students (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence (α = 0.05). The study used the statistical tool of *z*-test for difference in means of the foreign language grade variable (FL) between female and male students in eighth grade (Age Group III). Table 11 contains the results

of the *z*-test for difference in means of the foreign language grade variable (FL) between female and male students in eighth grade. According to Table 11, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the openness to diversity parameter among the eighth graders. Equivalently to sixth grade and seventh grade students, the data suggested that there was no gender (female and male) effect on openness to diversity, based on student foreign language grade records, among eighth grade students.

Table 11. *Z-test for Difference in Means of the Foreign Language Grade Variable between Female and Male Students in Eighth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	64.44	61.5
St. Deviation	17.27676	20.38063
Z-Test Value	0.778	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of z-test for gender on openness to diversity component. According to Table 9, Table 10, and Table 11, there was sufficient evidence to claim that there was no gender effect on the openness to diversity parameter (foreign language grade) among each age group (sixth grade, seventh grade, and eighth grade). Table 12 summarizes the three *z*-tests for difference in means. The summary Table 12 reveals that the null hypothesis (NH6) held true. In conclusion, with a 95% level of confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was no gender (female and male) effect

on the openness to diversity among each age group (sixth grade, seventh grade, and eighth grade) based on students' foreign language grade records.

Table 12. *Summary of Z-tests for Difference in Means of the Openness to Diversity Parameter (Foreign Language Grade) between Female and Male in Each Age Group.*

Z values	Sixth Graders	Seventh Graders	Eighth Graders
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	0.370	-0.846	0.778
Results	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)

Academic achievement. The seventh research question in this study dealt with the investigation of the gender effect on the academic achievement component at different ages (grade levels), based on the students' grade point averages. The hypothesis (H7) represented the seventh research question. The null hypothesis (NH7) stated that there was no difference in academic achievement between female and male students in each age group. Similar to null hypotheses (NH5) and (NH6), every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. Moreover, the null hypothesis (NH7) also included three null sub-hypotheses.

Females and males in Age Group I (sixth graders). The first null sub-hypothesis of the null hypothesis (NH7) stated that there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement parameter (grade point average (GPA)) among the sixth grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on

the academic achievement parameter (GPA) among the sixth graders (Age Group I) Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the academic achievement variable (GPA) between female and male students in sixth grade (Age Group I). Table 13 contains the results of the *z*-test for difference in means of the academic achievement variable between female and male students in sixth grade. According to Table 13, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement parameter among the sixth graders.

Table 13. *Z-test for Difference in Means of the Academic Achievement Variable between Female and Male Students in Sixth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	64.94	63.54
St. Deviation	20.46598	15.69103
Z-Test Value	0.384	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group II (seventh graders). The second null sub-hypothesis of the null hypothesis (H7) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement parameter (grade point average (GPA)) among the seventh-grade students (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was a gender (female

and male) effect on the academic achievement parameter (GPA) among the seventh graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of grade point average variable (GPA) between female and male students in seventh grade (Age Group II). Table 14 shows the results of the *z*-test for difference in means of the GPA between female and male students in seventh grade. According to Table 14, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was a gender (female and male) effect on the academic achievement parameter among the seventh graders. Unlike the sixth grade group, the data showed a gender influence on the academic achievement based on the grade point average records, in support of the Alternate hypothesis.

Table 14. *Z-test for Difference in Means of the Grade Point Average Variable between Female and Male Students in Seventh Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	72.1	65.78
St. Deviation	15.27383	15.20301
Z-Test Value	2.074	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group III (eighth graders). The third null sub-hypothesis of the hypothesis (NH7) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement

parameter (grade point average (GPA)) among the eighth-grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the academic achievement parameter (GPA) among the eighth-grade students (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the between female and male students in eighth grade (Age Group III). Table 15 contains the results of the *z*-test for difference in means of the academic achievement grade variable between female and male students in eighth grade. According to Table 15, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement parameter among the eighth graders. Similarly, to sixth grade students and unlike seventh grade students, the data suggested that there was no gender (female and male) effect on academic achievement based on student grade point average records, among eighth grade students.

Table 15. *Z-test for Difference in Means of the Grade Point Average Variable between Female and Male Students in Eighth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	79.64	77.08
St. Deviation	9.188602	6.575226
Z-Test Value	1.602	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of z-test for gender on academic achievement component.

According to Table 13 and Table 15, there was sufficient evidence to claim that there was no gender effect on the academic achievement parameter (grade point average) among Age Group I and Age Group III (sixth grade and eighth grade). However, according to Table 14, there was sufficient evidence to claim that there was a gender effect on the academic achievement parameter (grade point average) among the Age Group II (seventh grade). Table 16 summarizes the three *z*-tests for difference in means. The summary Table 16 reveals that the null hypothesis (NH7) held true only for Age Group I and Age Group III. The null hypothesis (NH7) did not hold true for Age Group II.

Table 16. *Summary of Z-tests for Difference in Means of the Academic Achievement Parameter between Female and Male in Each Age Group.*

Z values	Sixth Graders	Seventh Graders	Eighth Graders
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	0.384	2.074	1.602
Results	Failed to reject the Null (H_0)	Rejected the Null (H_0)	Failed to reject the Null (H_0)

In conclusion, with a 95% level of confidence ($\alpha = 0.05$), on one hand there was sufficient evidence to claim that there was no gender (female and male) effect on the academic achievement among sixth grade and eighth grade students based on students' grade point average records. On the other, there was also enough evidence to claim that there was gender (female and male) effect on the academic achievement among seventh grade students based on grade point average records.

Respect (to self and to others). The eighth research question in this study dealt with the investigation of the gender effect on the respect (to self and to others) component at different ages (grade levels), based on the students' citizenship grades. The hypothesis (H8) represented the eighth research question. The null hypothesis (NH8) stated that there was no difference in respect (to self and to others) between female and male students in each age group based on citizenship grades. Similarly, to null hypotheses (NH5), (NH6), and (NH7) every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. Moreover, the null hypothesis (NH8) included also three null sub-hypotheses.

Females and males in Age Group I (sixth graders). The first null sub-hypothesis of the null hypothesis (NH8) stated that there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) parameter (citizenship (CTZ)) among the sixth graders students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the respect (to self and to others) parameter (CTZ) among the sixth graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the citizenship variable (CTZ) between female and male students in sixth grade (Age Group I). Table 17 contains the results of the *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between female and male students in sixth grade. According to Table 17, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient

evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) among the sixth graders.

Table 17. *Z-test for Difference in Means of the Respect (to Self and to Others) Grade Variable between Female and Male Students in Sixth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	2.56	2.12
St. Deviation	1.358823	1.124989
Z-Test Value	1.764	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group II (seventh graders). The second null sub-hypothesis of the null hypothesis (NH8) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) parameter (citizenship grade (CTZ)) among the seventh-grade students (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was a gender (female and male) effect on the respect (to self and to others) parameter (CTZ) among the seventh graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of citizenship grade variable (CTZ) between female and male students in seventh grade (Age Group II). Table 18 shows the results of the *z*-test for difference in means of the citizenship grade variable (CTZ) between female and male students in seventh grade. According to Table 18, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently,

there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) parameter among the seventh graders. Like the sixth-grade group, the data showed no gender influence on the respect (to self and to others) based on the citizenship grade records

Table 18. *Z-test for Difference in Means of the Citizenship Grade Variable between Female and Male Students in Seventh Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	2.42	2.16
St. Deviation	15.27383	15.20301
Z-Test Value	1.154	
Two-tail (+/-) Critical Value (Z)	1.960	

Females and males in Age Group III (eight graders). The third null sub-hypothesis of the null hypothesis (NH8) expressed that there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) parameter (citizenship grade (CTZ)) among the eighth grade students (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was a gender (female and male) effect on the respect (to self and to others) parameter (CTZ) among the eighth-grade students (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the citizenship grade variable (CTZ) between female and male students in eighth grade (Age Group III). Table 19 contains the results of the *z*-test for difference in means of the respect (to self and to others) variable

(CTZ) between female and male students in eighth grade. According to Table 19, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self and to others) parameter among the eighth graders. Similarly, to sixth and seventh grade students, the data suggested that there was no gender (female and male) effect on respect (to self and to others) based on student citizenship grade records, among eighth grade students.

Table 19. *Z-test for Difference in Means of the Citizenship Grade Variable between Female and Male Students in Eighth Grade.*

Genders	Female	Male
Sample Size	50	50
Sample Mean	2.18	2.22
St. Deviation	1.107971	1.136486
Z-Test Value	-0.178	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of z-test for gender on respect (to self and to others) component.

According to Table 17, Table 18, and Table 19, there was sufficient evidence to claim that there was no gender effect on the respect (to self and to others) parameter (citizenship grade) among Age Group I, Age Group II, and Age Group III (sixth grade, seventh grade, and eighth grade). Table 20 summarizes the three *z*-tests for difference in means. The summary Table 20 reveals that the null hypothesis (NH8) held true for each age group. In conclusion, with a 95% level of confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was no gender (female and male) effect on the respect (to self

and to others) among sixth grade, seventh grade, and eighth grade students based on students' citizenship grade records.

Table 20. *Summary of Z-tests for Difference in Means of the Respect (to Self and to Others) Parameter (Citizenship Grade) between Female and Male in Each Age Group.*

Z values	Sixth Graders	Seventh Graders	Eighth Graders
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	1.764	1.154	-0.178
Results	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)

Qualitative Reflection on the Tests and Results of Gender Effect

The gender effect, as tested by the *z*-test for difference in means, demonstrated variance in students' performance on different parameters (attendance for safety, foreign language grade for openness to diversity, grade point average for academic achievement, and citizenship grade for respect (to self and to others).

Table 21. *Summary of Gender Effect on Components per Age Group with a 95% Level of Confidence ($\alpha = 0.05$).*

PBIS Components	Safety	Openness to Diversity	Academic Achievement	Respect (to Self and to others)
Age Group I (sixth grade)	None	None	None	None
Age Group II (seventh grade)	None	None	Gender Effect	None
Age Group III (eighth grade)	None	None	None	None

As Table 21 indicates, among only the seventh graders and in only the academic achievement parameter, was there a gender effect on the academic achievement component of the PBIS.

Age (Grade Level) Effect

The age effect (grade level) depicted the difference of performance between age groups (sixth grade, seventh grade, and eighth grade). The development of an effective PBIS involved factors such as cognitive development and social group affiliation (Baer et al., 1968; Bijou & Baer, 1978; Schwartz, 1989; Skinner, 1953; Wolery, Bailey, & Sugai, 1988). Researchers demonstrated that cognitive development represented a stage or level-based processes (Piaget, 1964; Piaget, & Cook, 1952). According to Piaget (1964), each cognitive development stage or level displayed a set of measurable behaviors. This section of the study analyzed the age (grade level) behavioral influence on each component of the PBIS.

Safety. The first research question in this study dealt with the investigation of the age (grade level) effect on the safety component, based on students' attendance records. The hypothesis (H1) represented the first research question. The null hypothesis (NH1) stated that there was no age effect on the safety parameter between each set of paired age groups (Age Group I and Age Group II, Age Group I and Age Group III, and Age Group II and Age Group III). Every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. The null hypothesis (NH1) included three null sub-hypotheses.

Age Group I and Age Group II. The first null sub-hypothesis of the null hypothesis (NH1) expressed that there was sufficient evidence to claim that there was no age effect on the safety parameter (attendance (Att)) among the sixth and seventh graders (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the safety parameter (Att) among the sixth and seventh graders (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between Age Group I (sixth graders) and Age Group II (seventh graders). Table 22 contains the results of the *z*-test for difference in means of the attendance variable (Att) between Age Group I (sixth graders) and Age Group II (seventh graders). According to Table 22, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no age effect on the safety parameter among sixth and seventh graders, based on the attendance records.

Table 22. *Z-test for Difference in Means of the Attendance Variable between Age Group I (Sixth Graders) and Age Group II (Seventh Graders).*

Age	Age Group I (sixth grade)	Age Group II (seventh grade)
Sample Size	100	100
Sample Mean	0.364	0.344
St. Deviation	0.219782	0.233375
Z-Test Value	0.624	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group I and Age Group III. The second null sub-hypothesis of the null hypothesis (NH1) expressed that there was sufficient evidence to claim that there was no age effect on the safety parameter (attendance (Att)) between Age Group I (sixth graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the safety parameter (Att) between Age Group I (sixth graders) and Age Group III (eighth graders) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between Age Group I (sixth graders) and Age Group III (eighth graders). Table 23 contains the results of the *z*-test for difference in means of the attendance variable (Att) between Age Group I (sixth graders) and Age Group III (eighth graders). According to Table 23, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0).

Table 23. *Z-test for Difference in Means of the Attendance Variable between Age Group I (Sixth Graders) and Age Group III (Eight Graders).*

Age	Age Group I (sixth grade)	Age Group III (eighth grade)
Sample Size	100	100
Sample Mean	0.364	0.339
St. Deviation	0.219782	0.233193
Z-Test Value	0.780	
Two-tail (+/-) Critical Value (Z)	1.960	

Consequently, there was sufficient evidence to claim that there was no age effect on the safety parameter among sixth and eighth graders. Like sixth and seventh graders,

the data showed no age influence on safety based on the attendance records among sixth and eighth graders.

Age Group II and Age Group III. The third null sub-hypothesis of the null hypothesis (NH1) expressed that there was sufficient evidence to claim that there was no age effect on the safety parameter (attendance (Att)) between Age Group II (seventh graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was an age effect on the safety parameter (Att) between Age Group II (seventh graders) and Age Group III (eighth graders) (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the attendance variable (Att) between Age Group II (seventh graders) and Age Group III (eighth graders). Table 24 contains the results of the *z*-test for difference in means of the attendance variable (Att) between Age Group II (seventh graders) and Age Group III (eighth graders). According to Table 24, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0).

Table 24. *Z-test for Difference in Means of the Attendance Variable between Age Group II (Seventh Graders) and Age Group III (Eighth Graders).*

Age	Age Group II (seventh grade)	Age Group III (eighth grader)
Sample Size	100	100
Sample Mean	0.344	0.339
St. Deviation	0.233375	0.233193
Z-Test Value	0.152	
Two-tail (+/-) Critical Value (Z)	1.960	

Consequently, there was sufficient evidence to claim that there was no age effect on the safety parameter among seventh and eighth graders. Like sixth and seventh graders, and among sixth and eighth graders, the data in Table 24 suggests that there was no age effect on safety based on student attendance records among seventh and eighth graders.

Summary of z-test for age effect on safety component. According to Table 22, Table 23, and Table 24, there was sufficient evidence to claim that there was no age effect on the safety parameter (attendance) among students. Table 25 summarizes the three *z*-tests for difference in means. The summary Table 25 reveals that the null hypothesis (NH1) held true. In conclusion, with a 95% level of confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was no age effect on the safety among the students based on students' attendance records.

Table 25. *Hypothesis (H1): Summary of Z-tests for Difference in Means of the Safety Parameter (Attendance) among Each Set of Paired Age Groups of Students.*

Z values	Age Group I and Age Group II	Age Group I and Age Group III	Age Group II and Age Group III
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	0.624	0.780	0.152
Results	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)

Openness to diversity. The second research question in this study dealt with the investigation of the age (grade level) effect on the openness to diversity component, based on students' foreign language grade. The hypothesis (H2) represented the second research question. The null hypothesis (NH2) stated that there was no age effect on the

openness to diversity parameter between each set of paired age groups (Age Group I and Age Group II, Age Group I and Age Group III, and Age Group II and Age Group III). Every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. The null hypothesis (NH2) included three null sub-hypotheses.

Age Group I and Age Group II. The first null sub-hypothesis of the null hypothesis (NH2) expressed that there was sufficient evidence to claim that there was no age effect on the openness to diversity parameter (foreign language grade (FL)) between Age Group I (sixth grade) and Age Group II (seventh grade) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the openness to diversity parameter (FL) between Age Group I (sixth grade) and Age Group II (seventh grade) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the openness to diversity variable (FL) between Age Group I (sixth graders) and Age Group II (seventh graders).

Table 26 contains the results of the *z*-test for difference in means of the openness to diversity variable (FL) between Age Group I (sixth graders) and Age Group II (seventh graders). According to Table 26, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was an age effect on the openness to diversity parameter among sixth and seventh graders, based on the foreign language grade records.

Table 26. *Z-test for Difference in Means of the Foreign Language Grade Variable between Age Group I (Sixth Graders) and Age Group II (Seventh Graders).*

Age	Age Group I (sixth grade)	Age Group II (seventh grade)
Sample Size	100	100
Sample Mean	69.48	64.27
St. Deviation	16.77586	15.54339
Z-Test Value	2.278	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group I and Age Group III. The second null sub-hypothesis of the null hypothesis (NH2) expressed that there was sufficient evidence to claim that there was no age effect on the openness to diversity parameter (foreign language (FL)) between Age Group I (sixth graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the openness to diversity parameter (FL) between Age Group I (sixth graders) and Age Group III (eighth graders) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the openness to diversity variable (FL) between Age Group I (sixth graders) and Age Group III (eighth graders). Table 27 contains the results of the *z*-test for difference in means of the openness to diversity variable (FL) between Age Group I (sixth graders) and Age Group III (eighth graders). According to Table 27, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means rejected the Null (H_0). Consequently, there was sufficient evidence

to claim that there was an age effect on the openness to diversity parameter among sixth and eighth graders. Like sixth and seventh graders, the data showed an age influence on openness to diversity based on the foreign language grade records among sixth and eighth graders.

Table 27. *Z-test for Difference in Means of the Openness to Diversity Variable between Age Group I (Sixth Graders) and Age Group III (Eight Graders).*

Age	Age Group I (sixth grade)	Age Group III (eighth grade)
Sample Size	100	100
Sample Mean	69.48	62.97
St. Deviation	16.77586	18.94965
Z-Test Value	2.572	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group II and Age Group III. The third null sub-hypothesis of the null hypothesis (NH2) expressed that there was sufficient evidence to claim that there was no age effect on the openness to diversity parameter (foreign language grade (FL)) between Age Group II (seventh graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was an age effect on the openness to diversity parameter (FL) between Age Group II (seventh graders) and Age Group III (eighth graders) (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the openness to diversity variable (FL) between Age Group II (seventh graders) and Age Group III (eighth graders). Table 28 contains the results of the *z*-test for difference in means of the openness to diversity variable (FL)

between Age Group II (seventh graders) and Age Group III (eighth graders). According to Table 28, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no age effect on the openness to diversity parameter among seventh and eighth graders. Unlike sixth and seventh graders, and among sixth and eighth graders, the data in Table 28 suggests that there was no age effect on openness to diversity based on student foreign language grade records among seventh and eighth graders.

Table 28. *Z-test for Difference in Means of the Openness to Diversity Variable between Age Group II (Seventh Graders) and Age Group III (Eighth Graders).*

Age	Age Group II (seventh grade)	Age Group III (eighth grader)
Sample Size	100	100
Sample Mean	64.27	62.97
St. Deviation	15.54339	18.94965
Z-Test Value	0.530	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of z-test for age effect on openness to diversity component. According to Table 26 and Table 27, there was sufficient evidence to claim that there was an age effect on the openness to diversity parameter (FL) between sixth and seventh graders, and between sixth and eighth graders. However, Table 28 suggests that there was sufficient evidence to claim that there was no age effect on the openness to diversity parameter (FL) between seventh and eighth graders. Table 29 summarizes the three *z*-tests for difference in means. The summary Table 29 reveals that the null hypothesis (NH2) held true only between Age Group II and Age Group III. In conclusion, with a 95% level of

confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was an age effect on the openness to diversity between sixth and seventh graders and between sixth and eighth graders. With the same level of confidence, there was no age effect on the openness to diversity among seventh and eighth graders based on the foreign language grade records.

Table 29. *Hypothesis (H2): Summary of Z-tests for Difference in Means of the Openness to Diversity Parameter (Foreign Language) among Each Set of Paired Age Groups of Students.*

Z values	Age Group I and Age Group II	Age Group I and Age Group III	Age Group II and Age Group III
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	2.278	2.572	0.530
Results	Rejected the Null (H_0)	Rejected the Null (H_0)	Failed to reject the Null (H_0)

Academic achievement. The third research question in this study dealt with the investigation of the age (grade level) effect on the academic achievement component, based on students' grade point average. The hypothesis (H3) represented the third research question. The null hypothesis (NH3) stated that there was no age effect on the academic achievement parameter between each set of paired age groups (Age Group I and Age Group II, Age Group I and Age Group III, and Age Group II and Age Group III). Every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. The null hypothesis (H3) included three null sub-hypotheses.

Age Group I and Age Group II. The first null sub-hypothesis of the null hypothesis (NH3) expressed that there was sufficient evidence to claim that there was no age effect on the academic achievement parameter (grade point average (GPA)) between Age Group I (sixth grade) and Age Group II (seventh grade) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) between Age Group I (sixth grade) and Age Group II (seventh grade) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the academic achievement variable (GPA) between Age Group I (sixth graders) and Age Group II (seventh graders). Table 30 contains the results of the *z*-test for difference in means of the academic achievement variable (GPA) between Age Group I (sixth graders) and Age Group II (seventh graders).

Table 30. *Z-test for Difference in Means of the Academic Achievement Variable between Age Group I (Sixth Graders) and Age Group II (Seventh Graders).*

Age	Age Group I (sixth grade)	Age Group II (seventh grade)
Sample Size	100	100
Sample Mean	64.24	68.94
St. Deviation	18.2489	15.56266
Z-Test Value	-1.960	
Two-tail (+/-) Critical Value (Z)	1.960	

According to Table 30, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means narrowly rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) between sixth and seventh graders, based on the grade point average records.

Age Group I and Age Group III. The second null sub-hypothesis of the null hypothesis (NH3) expressed that there was sufficient evidence to claim that there was no age effect on the academic achievement parameter (grade point average (GPA)) between Age Group I (sixth graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) between Age Group I (sixth graders) and Age Group III (eighth graders) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the academic achievement variable (GPA) between Age Group I (sixth graders) and Age Group III (eighth graders). Table 31 contains the results of the *z*-test for difference in means of the academic achievement variable (GPA) between Age Group I (sixth graders) and Age Group III (eighth graders).

According to Table 31, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) among sixth and eighth graders. Unlike sixth and seventh graders, the data showed an age influence on academic achievement based on the grade point average records for sixth and eighth graders.

Table 31. *Z-test for Difference in Means of the Academic Achievement Variable between Age Group I (Sixth Graders) and Age Group III (Eighth Graders).*

Age	Age Group I (sixth grade)	Age Group III (eighth grade)
Sample Size	100	100
Sample Mean	64.24	78.36
St. Deviation	18.2489	8.091378
Z-Test Value	-7.073	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group II and Age Group III. The third null sub-hypothesis of the null hypothesis (NH3) expressed that there was sufficient evidence to claim that there was no age effect on the academic achievement parameter (grade point average (GPA)) between Age Group II (seventh graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) between Age Group II (seventh graders) and Age Group III (eighth graders) (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the academic achievement variable (GPA) between Age Group II (seventh graders) and Age Group III (eighth graders). Table 32 contains the results of the *z*-test for difference in means of the academic achievement variable (GPA) between Age Group II (seventh graders) and Age Group III (eighth graders). According to Table 32, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was an age effect on the academic achievement parameter

(GPA) between seventh and eighth graders. Like sixth and seventh graders, and among sixth and eighth graders, the data in Table 32 suggests that there was an age effect on academic achievement based on student grade point average records between the seventh and eighth graders.

Table 32. *Z-test for Difference in Means of the Academic Achievement Variable between Age Group II (Seventh Graders) and Age Group III (Eighth Graders).*

Age	Age Group II (seventh grade)	Age Group III (eighth grader)
Sample Size	100	100
Sample Mean	68.94	78.36
St. Deviation	15.56266	8.091378
Z-Test Value	-5.370	
Two-tail (+/-) Critical Value (Z)	1.960	

Summary of z-test for age effect on academic achievement component.

According to Table 30, Table 31, and Table 32 there was sufficient evidence to claim that there was an age effect on the academic achievement parameter (GPA) between all grade levels. Table 33 summarizes the three z-tests for difference in means.

The summary Table 33 reveals that the null hypothesis (NH3) failed to hold true between all grade levels. In conclusion, with a 95% level of confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was an age effect on the academic achievement between sixth, seventh, and eighth graders based on the grade point average records.

Table 33. *Hypothesis (H3): Summary of Z-tests for Difference in Means of the Academic Achievement Parameter (Grade Point Average) among Each Set of Paired Age Groups of Students.*

Z values	Age Group I and Age Group II	Age Group I and Age Group III	Age Group II and Age Group III
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	-1.960	-7.073	-5.370
Results	Rejected (barely) the Null (H_0)	Rejected the Null (H_0)	Rejected the Null (H_0)

Respect (to self and to others). The fourth research question in this study dealt with the investigation of the age (grade level) effect on the respect (to self and to others) component, based on students' citizenship grades. The hypothesis (H4) represented the fourth research question. The null hypothesis (H4) stated that there was no age effect on the respect (to self and to others) parameter between each set of paired age groups (Age Group I and Age Group II, Age Group I and Age Group III, and Age Group II and Age Group III). Every age group represented a grade level. The sixth grade represented Age Group I, the seventh grade represented Age Group II, and the eighth grade represented Age Group III. The null hypothesis (NH4) included three null sub-hypotheses.

Age Group I and Age Group II. The first null sub-hypothesis of the null hypothesis (NH4) expressed that there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (citizenship grade (CTZ)) between Age Group I (sixth grade) and Age Group II (seventh grade) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the respect (to self and to others) parameter (CTZ) between Age Group I (sixth grade) and

Age Group II (seventh grade) (Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the respect (to self and to others) parameter (CTZ) between Age Group I (sixth graders) and Age Group II (seventh graders). Table 34 contains the results of the *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between Age Group I (sixth graders) and Age Group II (seventh graders). According to Table 34, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (CTZ) between sixth and seventh graders, based on the citizenship grade records.

Table 34. *Z-test for Difference in Means of the Respect (to Self and to Others) Variable between Age Group I (Sixth Graders) and Age Group II (Seventh Graders).*

Age	Age Group I (sixth grade)	Age Group II (seventh grade)
Sample Size	100	100
Sample Mean	2.34	2.29
St. Deviation	1.266649	1.133975
Z-Test Value	0.294	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group I and Age Group III. The second null sub-hypothesis of the null hypothesis (NH4) expressed that there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (citizenship grade (CTZ))

between Age Group I (sixth graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). Moreover, there was sufficient evidence to claim that there was an age effect on the respect (to self and to others) parameter (CTZ) between Age Group I (sixth graders) and Age Group III (eighth graders) Alternative (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between Age Group I (sixth graders) and Age Group III (eight graders). Table 35 contains the results of the *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between Age Group I (sixth graders) and Age Group III (eighth graders). According to Table 35, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (CTZ) between sixth and eighth graders. Like sixth and seventh graders, the data showed no age influence on respect (to self and to others) based on the citizenship grade records for sixth and eighth graders.

Table 35. *Z-test for Difference in Means of the Respect (to Self and to Others) Variable between Age Group I (Sixth Graders) and Age Group III (Eighth Graders).*

Age	Age Group I (sixth grade)	Age Group III (eighth grade)
Sample Size	100	100
Sample Mean	2.34	2.2
St. Deviation	1.266649	1.122497
Z-Test Value	0.827	
Two-tail (+/-) Critical Value (Z)	1.960	

Age Group II and Age Group III. The third null sub-hypothesis of the null hypothesis (NH4) expressed that there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (citizenship grade (CTZ)) between Age Group II (seventh graders) and Age Group III (eighth graders) (Null (H_0): $\mu 1 = \mu 2$). In addition, there was sufficient evidence to claim that there was an age effect on the respect (to self and to others) parameter (CTZ) between Age Group II (seventh graders) and Age Group III (eight graders) (H_1): $\mu 1 \neq \mu 2$). Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). The study used the statistical tool of *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between Age Group II (seventh graders) and Age Group III (eighth graders). Table 36 contains the results of the *z*-test for difference in means of the respect (to self and to others) variable (CTZ) between Age Group II (seventh graders) and Age Group III (eighth graders).

Table 36. *Z-test for Difference in Means of the Respect (to Self and to Others) Variable between Age Group II (Seventh Graders) and Age Group III (Eighth Graders).*

Age	Age Group II (seventh grade)	Age Group III (eighth grader)
Sample Size	100	100
Sample Mean	2.29	2.2
St. Deviation	1.133975	1.122497
Z-Test Value	0.564	
Two-tail (+/-) Critical Value (Z)	1.960	

According to Table 36, with a 95% level of confidence ($\alpha = 0.05$) the *z*-test for difference in means failed to reject the Null (H_0). Consequently, there was sufficient

evidence to claim that there was no age effect on the respect (to self and to others) parameter (CTZ) between seventh and eighth graders. Like sixth and seventh graders, and among sixth and eighth graders, the data in Table 36 suggests that there was no age effect on respect (to self and to others) based on student citizenship grade records for the seventh and eighth graders.

Summary of z-test for age effect on Respect (to self and to others) component. According to Table 34, Table 35, and Table 36 there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) parameter (CTZ) among all grade levels. Table 37 summarizes the three *z*-tests for difference in means. The summary Table 37 reveals that the null hypothesis (NH4) held true between all grade levels. In conclusion, with a 95% level of confidence ($\alpha = 0.05$), there was sufficient evidence to claim that there was no age effect on the respect (to self and to others) between sixth, seventh, and eighth graders based on the citizenship grade records.

Table 37. *Hypothesis (H4): Summary of Z-tests for Difference in Means of the Respect (to Self and to Others) Parameter (Citizenship Grade) among Each Set of Paired Age Groups of Students.*

Z values	Age Group I and Age Group II	Age Group I and Age Group III	Age Group II and Age Group III
Critical	+/- 1.960	+/- 1.960	+/- 1.960
Tested	0.294	0.837	0.564
Results	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)	Failed to reject the Null (H_0)

Qualitative Reflection on Age Effect

The age effect, as tested by the *z*-test for difference in means, demonstrated variance in students' performance on different parameters (attendance for safety, foreign language grade for openness to diversity, grade point average for academic achievement, and citizenship grade for respect (to self and to others). As Table 38 indicates, age did not affect safety and respect (to self and to others) components among all students. In the case of openness to diversity, Table 38 shows age effect between sixth and seventh graders, and between sixth and eighth graders. However, it did not show age effect between seventh and eighth graders. Moreover, Table 38 shows age effect in the academic achievement component between sixth and seventh graders, between sixth and eighth graders, and between seventh and eighth graders.

Table 38. Summary of Age Effect on Components between Age Groups with a *95% Level of Confidence ($\alpha = 0.05$).*

PBIS Components	Safety	Openness to Diversity	Academic Achievement	Respect (to Self and to others)
Age Group I and Age Group II	None	Age Effect	Age Effect (barely)	None
Age Group I and Age Group III	None	Age Effect	Age Effect	None
Age Group II and Age Group III	None	None	Age Effect	None

Comparative of the Qualitative validity between Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others).

The ninth research question in this study dealt with the comparative investigation of the qualitative validity between the four components (Safety, Openness to Diversity,

Academic Achievement, and Respect (to Self and to others)) of the PBIS. The qualitative validity represented the level of realism and credibility of the measurement or depiction of the social elements or events involved in the study (Schwandt, 1997). This comparative investigation tested the qualitative validity of each component against the others. The hypothesis (H9) represented the ninth research question. The null hypothesis (NH9) stated that there was no qualitative validity difference between the Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others) parameters. Every age group represented a grade level. The Age Group I represented the sixth-grade students. The Age Group II represented the seventh-grade students. The Age Group III represented the eighth-grade students. The Age Group III constituted the most exposed age group to the supporting activities related to each component of the PBIS.

The Analysis of Variance test (*ANOVA*). The statistical tool, Analysis of Variance (*ANOVA*), tested the null hypothesis (NH9) using data from Age Group III (eighth grade students). The Null (H_0: $\mu_1 = \mu_2 = \mu_3 = \mu_4$) of the hypothesis (NH9) affirmed that there was no difference between the means of the parameters of each component of the PBIS.

The Alternative (H_1) stated that at least one mean of the parameters was different from the others. Both the Null (H_0) and the Alternative (H_1) were expressed with a 95% level of confidence ($\alpha = 0.05$). Table 39 and Table 40 shows the results of the *ANOVA* test. According to Table 39, the *ANOVA* test rejected the Null (H_0). Consequently, there was sufficient evidence to claim that there was at least one mean that was different from the others with a 95% level of confidence ($\alpha = 0.05$).

Table 39. *ANOVA-test of the Difference of Variance of the Means for the Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others) Parameters.*

Components	Safety	Openness to Diversity	Academic Achievement	Respect (to Self and to Others)
Sample Size	100	100	100	100
Sum	150	375	260	220
Sample Mean	1.5	3.75	2.6	2.2
Variances	1.848485	1.219697	0.727273	1.272727
St. Deviation	1.352775	1.098863	0.848528	1.122497
Group Mean	2.5125			
Critical F-Value	2.627441			
Tested F-Value	70.0284			

Table 40. *ANOVA Source Table.*

Source	Df	Sum of Squares	Mean Squared	F Value	P Value
Between Groups	3	266.1875	88.72917	70.0284	0.00000
Within Groups	396	501.75	1.267045		
Total	399	767.9375			

The Post Hoc test. The *ANOVA* test suggests that at least one mean was different from the others. The null hypothesis (NH9) did not hold true. However, the study needed to identify and classify the components based on the difference of the means. Table 41 shows the results of the Tukey test. According to Table 41, based on the yardstick (0.408604) the differences between each component were significant, except

the difference between the academic achievement component and the respect (to self and to others) component. Furthermore, Table 41 shows that the highest differences occurred between the openness to diversity component and the others. The lowest significant difference occurred between the safety component and the respect (to self and to others) component. Moreover, the Tukey test suggests that the difference between academic achievement and respect (to self and to others) was not significant enough. The Tukey test provided the evidences of the Alternative (H_1) of the hypothesis (H9).

Table 41. *Tukey Test Result.*

Components	Means	Different from Safety	Different from Openness to Diversity	Different from Academic Achievement
Safety	1.5			
Openness to Diversity	3.75	2.25		
Academic Achievement	2.6	1.1	1.15	
Respect (to Self and to Others)	2.2	0.7	1.55	0.4
St. Error	0.112563			
Q-Value	3.63			
Yardstick	0.408604			

Qualitative reflection on the qualitative validity between Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The Analysis of Variance (*ANOVA*) test revealed differences among the means of the parameters used in this study. In addition, the Tukey test affirmed that the highest differences occurred between the openness to diversity component and the safety, the academic achievement, and the respect (to self and to others) components respectively. In addition, the Tukey

test revealed a significant difference between the safety and the respect (to self and to others) components. Moreover, the Tukey test showed that the difference between academic achievement and respect (to self and to others) components was not significant.

General Qualitative Reflection on the Tests and Results

The Statistical tools used in this study represented a sample of the investigative tools social scientists used the most (Aiken, West, Faul, Erdfelder, Lang, & Buchner, 2007; Schmidt, 1996; Sechrest, & Reno, 1990). Both the *z*-test and *ANOVA* test represented the statistical significance testing (Schmidt, 1996). The use of data in the decision-making process remained the way to make effective decisions (Ragin, 2004; Spillane, 2012). However, the tools used to analyze the data required careful attention and scrutiny. The choice of the *z*-test and the *ANOVA* test reflected the general trend as of this writing in social applied research environment. The results of the *z*-tests for difference in means performed in this study provided the opportunity for the decision makers to review, modify, and implement new supporting activities for the components of the PBIS. The results of the *ANOVA* test allowed the decision makers to review, modify, and strengthen the quality of the components of the PBIS.

Summary

This study investigated nine hypotheses using the *z*-test for difference in means and the Analysis of Variance (*ANOVA*) tests. On one hand, the *z*-tests for difference in means investigated the gender effect and the age (grade level) effect on the parameters used in the study. On the other, the *ANOVA* test examined the qualitative validity differences between the parameters used in the study. The *z*-test and *ANOVA* tests represented the statistical significance testing (Schmidt, 1996) strategies most used in

social sciences research (Aiken et al., 1990; Faul et al., 2007; Schmidt, 1996). The results of the *z*-tests for difference in means and the *ANOVA* test represent the major part of Chapter Five for this study.

Chapter Five: Discussion and Reflection

Introduction

The following discussion and reflection on the results of this study and the supporting statistical tests included three major categories. These categories involved the gender implication, age implication, and PBIS implication. Each category addressed the interpretation of the data based on the statistical analysis. In addition, every category linked the data to a socially-expected behavior based on the literature review. Moreover, a PBIS implication utilized the gender and age implications to engage adjustment, modification, and/or improvement of the parameters of the study. The discussion and reflection on these three major categories represent the triangulation section of Chapter Five. A general reflection on the overall study follows the triangulation section. Two important recommendations follow the general reflection. These include recommendations to the study as to improve it and recommendations for future research in socially important factors in educational settings. A conclusion recapitulates the contents of this chapter

Hypotheses

The following nine hypotheses guided the research project. They fell into four sections. Each of the four sections, Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others), included both gender and age implications. The ninth hypothesis involved the PBIS implication.

H1: Safety was Age (grade level) dependent. The research hypothesis H1 related to Safety answered the question of whether significant differences between the response to Safety of sixth graders, seventh graders, and eighth graders existed.

H2: Openness to Diversity was Age (grade level) dependent. The research hypothesis H2 related to Openness to Diversity answered the question of whether significant differences between openness to Diversity of sixth graders, seventh graders, and eighth graders existed.

H3: Academic Achievement was Age (grade level) dependent. The research hypothesis H3 related to Academic Achievement. answered the question of whether significant differences between Academic Achievement of sixth graders, seventh graders, and eighth graders existed.

H4: Respect (to Self and to Others) was Age (grade level) dependent. The research hypothesis H4 related to Respect (to Self and to Others) answered the question of whether significant differences between Respect (to Self and to Others) of sixth graders, seventh graders, and eighth graders existed.

H5: Safety was Gender dependent. The research hypothesis H5 related to Safety answered the question of whether significant differences between Safety among male and female students for each grade level existed.

H6: Openness to Diversity was Gender dependent. The research hypothesis H6 related to Openness to diversity answered the question of whether significant differences between Openness to Diversity among male and female students at each grade level existed.

H7: Academic Achievement was Gender dependent. The research hypothesis H7 related to Academic Achievement answered the question of whether significant differences between Academic Achievement among male and female students at each grade level existed.

H8: Respect (to Self and to Others) was Gender dependent. The research hypothesis H8 related to Respect (to Self and to Others) answered the question of whether significant differences between Respect (to Self and to Others) among male and female students at each grade level existed.

H9: Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others). The research hypothesis H9 compared the performance of the components (Safety, Openness to Diversities, Academic Achievement, and Respect (to Self and to Others)) in the effectiveness of the PBIS.

Triangulation of Results (Presentation and Discussion of Results)

Gender Implication. Gender schema expected different behavior of social importance from female and male students (Bem, 1981; Kagan, 1964; Kohlberg, 1966). The gender effect on each component (Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others)) determined the variation of performance of the underlining parameters of each component based on the students' gender. Gender Implication analyzed the results of gender effect on safety parameter (attendance), openness to diversity parameter (foreign language grade), academic achievement parameter (GPA), and respect (to self and to others) parameter (citizenship grade).

***Gender Implication on safety*.** The gender effect on safety represented the variation of performance in attendance between female and male students among each age group. The statistical analysis of the data revealed no gender effect on safety based on the attendance among each age group. The safety component of the study represented both the school climate and the trust the adults in the building provided. Although the

statistical analysis used statistical significance testing (Schmidt, 1996) the attendance variable remained a dynamic and multi factor dependent parameter. Intuition suggested that attendance increased as safety improved. In Western societies, the gender schema expected both female and male students to attend school and reinforced any social behavior leading to improved attendance. Accordingly, the data analysis of the data showed that both female and male attendances presented no differences. The implication of these results suggested that no gender adaption involved in the design, development, and implementation of activities related to the safety component for all age groups

Gender Implication on openness to diversity. Similarly, to Gender Implication on safety, the statistical analysis of the data revealed no gender effect on openness to diversity based on foreign language grades. The openness to diversity component represented the respect and acceptance of diversity. The foreign language grade represented an outlier measurement for diversity, but nonetheless an important diversity parameter. In Western civilization, the gender schema encouraged diversity and supported social and ethical behavior that increased diversity for both female and male students equally. Consequently, the results of the analysis of the data aligned with the expectation of the gender schema. The implication of these results recommended that no gender adaption involved in the design, development, and implementation of activities related to the openness to diversity component for all age groups.

Gender Implication on academic achievement. The analysis of data revealed a mixed result in Gender Implication on academic achievement based on the GPA grade. The GPA represented the students' overall performance in all school work. It depicted the societal expectation from both female and male students. While the analysis revealed

no gender effect among Age Group I (sixth grader) and Age Group III (eighth grader), it showed a gender effect among Age Group II (seventh graders). Although, in Western societies, gender schema encouraged and reinforced social behaviors that increased academic achievement, it focused also on separation of responsibility and duties in the society (Berger, Rosenholtz, & Zelditch, 1980; Eagly, 1987; Epstein, 1988). The mixed result among each age group suggested an alignment of the result with the gender schema and gender role in the society. The implication of these results suggested that no gender adaption involved in the design, development, and implementation of activities related to the academic achievement for Age Group I and Age Group III. However, the results recommended a gender adaptation for Age Group II.

Gender Implication on respect (to self and to others). Similarly, to Gender Implication on safety and Gender Implication on openness to diversity, the statistical analysis of the data revealed no gender effect on respect (to self and to others) based on the citizenship grade. The respect (to self and to others) component represented ethical and responsible behavior of students. The citizenship grade depended on teacher objectivity. However, it provided a good description of students' ethical and responsible behaviors. In Western civilization, gender schema encouraged and promoted ethical and responsible behavior for both female and male youngsters. Consequently, the analysis agreed with the gender schema, as both female and male students presented no differences in respect (to self and to others). The implication of these results suggested that no gender adaption involved in the design, development, and implementation of activities related to the respect (to self and to others) for all age groups.

Summary. Gender Implication from the data analysis aligned with the gender schema. However, Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others) were subjected to societal, communal, and cultural factors. Although the data came from students' performance within the school building, these implications reflected the general behavior within the community. The interpretation of these results suggested that the design, development, and implementation of activities related to Safety, Openness to Diversity, and Respect (to Self and to Others) included no gender adaptation for any age group. However, the design, development, and implementation of activities related to academic achievement included gender adaptation for Age Group II, and no gender adaptation for Age Group I and Age Group III.

Age Implication. Cognitive Development theories predicted different behavior of social importance at different developmental stages (Bjorklund, 1997; Bjorklund & Green, 1992; Fischer, 1980; Perry, 1997; Piaget, 1964; Locke, 1968). In addition, the Cognitive Development theories suggested that Middle School-aged children operated in the Concrete Operation Stage (Piaget, 1964). At that stage, children developed the concept of ethics and trust (Perry, 1997), and logical and rational reasoning (Ginsburg & Opper, 1988). The age effect on each component (Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others)) determined the variation of performance on the underlining parameters of each component by students. The statistical analysis used the statistical significance testing (Schmidt, 1996) method. The Age Implication analyzed the results of age effect on Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others).

Age Implication on safety. The age effect on safety represented the variation of performance between different age groups. The statistical analysis of the data revealed no age effect on safety based on the attendance between each age group. The safety component of the study represented both the school climate and the trust provided by the adults in the school building. Intuition suggested that attendance increased as safety improved. The attendance variable remained a dynamic and multi factor dependent parameter. However, inside the school building students within the same Concrete Operational stage perceived the school climate and the trust of adults in the school as a part of the building process of the trust repertoire. Consequently, the analysis of the data agreed with the Cognition Development theories. The implication of these results suggested that no age group adaption involved in the design, development, and implementation of activities related to the safety component was needed.

Age Implication on openness to diversity. Unlike, the Age Implication on safety, the statistical analysis of the data revealed an age effect on openness to diversity based on foreign language grades between Age Group I and both Age Group II and Age Group III. Age Group I represented the youngest age group of the three age groups. The Concrete Operational stage (Piaget, 1964) included three sub-stages (Feldman, 2004). The first stage allowed children to notice diversity and exit their curiosity (Cole & Cole, 1996). The analysis of data agreed with the cognitive development theories as Age Group I belonged to the first sub-stage of the Concrete Operational stage. In addition, the data analysis showed no age effect between Age Group II and Age Group III. Roughly these two age groups represented the second and third sub-stages of the Concrete Operational stage. At the second sub-stage, children acquired a strong belief in self and formed a

distorted view of the immediate socio-cultural environment (Bringuier, 1980; Elkind, 1970; Feldman, 2004; Piaget, 1972). At the third sub-stage children corrected the vision to adapt to the most socio-culturally acceptable of the society (Bringuier, 1980; Feldman, 2004). The data analysis agreed with the Cognitive Development theories as both Age Group II and Age Group III focused more in building Self and adapting Self to the socio-cultural context. Consequently, the results of the analysis of the data based on the foreign languages grades, aligned with the tenants of the Cognitive Development theories. The implication of these results recommended that the design, development, and implementation of activities to promote and support openness to diversity, included age group adaption for Age Group I.

Age Implication on academic achievement. The analysis of data revealed an age effect on academic achievement based on the GPA grade. The GPA represented the student overall performance in all school works. In terms of academic achievement, the students in Middle school operated at different sub-stages of the Concrete Operational stage. The differences in performance in school works represented the differences in the three sub-stages of the Concrete Operational stage. Consequently, the data analysis aligned with the Cognitive Development theories. The implication of these results suggested that the design and implementation of activities to promote and encourage academic achievement included age group adaption for all level.

Age Implication on respect (to self and to others). Similarly, to the Age Implication on safety, the statistical analysis of the data revealed no age effect on respect (to self and to others) based on the citizenship grade. The respect (to self and to others) component represented ethical and responsible behavior of student. The citizenship

grade depended on teacher objectivity. However, it provided a good description of student ethical and responsible behavior. The Concrete Operation stage represented a repertoire-building process for children as children built repertoire for knowledge of diversity (Cole & Cole, 1996), acquired strong belief in Self (Bringuier, 1980; Elkind, 1970; Feldman, 2004; Piaget, 1972), and adapted societal concept (Bringuier, 1980; Feldman, 2004). Each age group operated in a different sub-stage of the Concrete Operational stage. However, the three age groups performed equally in the parameter related to the respect (to self and to others). This data analysis conformed to the finding of the Cognitive Development theories. The implication of these results advised not to include age group adaption in the design, development, and implementation of activities related to the respect (to self and to others) component.

Summary. The Age Implication on this study revealed no age effect on the safety and respect (to self and to others) components. However, the Age Implication demonstrated an age effect on openness to diversity for Age Group I and academic achievement for all age groups. All the results agreed with the Cognitive Development theories. The interpretation of these results suggested that the design, development, and implementation of activities related to safety and respect (to self and to others) included no age group adaptation. However, the design, development, and implementation of activities related to openness to diversity and academic achievement included age group adaptation.

PBIS Implication. PBIS represented a framework (Horner & Sugai, 2015), a continuum (Sugai & Horner 2009), a research and evidence based practice (Carr et al., 2002; Lewis & Sugai, 1999; OSEP, 2004), a community valued and supported behavior

expectation (Esler, Godber, & Christenson, 2002), and a stakeholder and community commonality standard (Center on PBIS, 2005; Horner, Sugai, Lewis-Palmer, & Todd, 2001; Sugai & Horner, 2002; Sugai, Horner, Dunlap et al., 2000; Sugai, Horner & Gresham, 2002; Walker et al., 1996). According to Sugai and Horner (2009), effective PBIS required a universal screening, continuous progress monitoring, a continuum of evidence-based practices, a team driven data-based decision-making processes, and an implementation fidelity evaluation. The design, development, and implementation of activities related to Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others) included these five core elements of PBIS. The PBIS Implication depicted not only the gender and age effect on these five core elements of PBIS, but also the gender and age effect variation among the Safety, Openness to Diversity, Academic Achievement, and the Respect (to Self and to Others) components. The statistical analysis of the data revealed a statistically significant difference between the students' performance in each component (Safety, Openness to Diversity, Academic Achievement, and Respect (to Self and to Others).

PBIS Implication on safety. The statistical analysis of the safety data revealed no gender and no age effect on safety based on the attendance parameter. The safety component of the study represented both the school climate and the trust the adults in the building provided. However, effective PBIS required extending school climate and the trust in the adults to the community and stakeholders. Although the design, development, and implementation of all activities related to promoting and improving safety in the school building required no gender and age group adaptation, these activities did not extend to the school community and to the stakeholders.

In addition, statistical analysis of the data revealed that the students' performance in safety differed significantly from their performance in openness to diversity, academic achievement, and respect (to self and to others). The data revealed that students performed far less well in safety than they performed in openness to diversity. In addition, their performance in safety stayed well below their academic (GPA) performance. Furthermore, the data showed that students achieved slightly less in safety than respect (to self and to others). Although, research suggested that an increase in attendance improved academic achievement (Durán-Narucki, 2008; Roby, 2004; Stanca, 2006) the fact that students performed better in academic achievement than in safety indicated the difference in the level of motivation and promotion activities for each component. Similarly, the motivation and promotion activities related to the respect (to self and to others) component were more effective than those related to safety. The students' performance in safety stayed below the average performance in all components. Consequently, the implication of these results advised extension of safety promotion and motivation activities to the school community and stakeholders. This extension included the involvement of the community leaders and stakeholders in the design, development, implementation, and monitoring of all safety activities in both inside and outside the school building. In addition, the PBIS Implication in safety suggested not to include gender and age group adaption in the design, development, and implementation of activities related to safety. Furthermore, the analysis of the data suggested adjustment, modification, and improvement of the quantity and quality of the activities related to motivating and promoting safety.

PBIS Implication on openness to diversity. The statistical analysis of the openness to diversity data revealed no gender effect on openness to diversity among all students. However, it showed an age effect on openness to diversity between sixth graders and both seventh and eighth graders. While the analysis of the data revealed no age effect on the openness to diversity between seventh and eighth graders, effective PBIS required community and stakeholder involvement in meeting the needs of all students regardless of socio-economic, cultural, ethnical, and religious background (Carr et al. 2002). Consequently, the activities related to the promotion of openness to diversity included no gender adaptation within both the community and the school building. The PBIS Implication suggested age adaptation (appropriate) activities for younger children with the collaboration of experts.

In addition, the analysis of openness to diversity data showed statistically significant differences in performance between the Openness to Diversity and Academic Achievement, Respect (to Self and to Others), and Safety. The data revealed that students performed better in openness to diversity than academically (academic achievement), respect (to self and to others), and safety. The data showed that the students' performance in openness to diversity stayed above the average performance in all components. Consequently, the PBIS Implication suggested a continued and constant monitoring of the activities related to openness to diversity.

PBIS Implication on academic achievement. The analysis of academic achievement data revealed no gender effect among sixth and eighth graders. However, it showed a gender effect among the seventh graders. Furthermore, the analysis of the academic achievement data proclaimed an age effect on students' academic performance.

The PBIS Implication required participation of experts in designing, developing, and implementing age-appropriate activities related to promoting and advocating academic achievement. For the seventh graders, PBIS Implication of these findings demanded gender-adapted activities to improve academic achievement.

In addition, the analysis of academic achievement data demonstrated no statistically significant difference in performance between academic achievement and respect (to self and to others). The data provided evidence that the students performed academically (GPA) above the average performance of all components. The data revealed that students performed better academically (GPA) than in safety. However, their academic performance (GPA) stayed below their performance in openness to diversity. Moreover, the data also suggested that the students performed as well academically as they performed in respect (to self and to others). The PBIS Implication of these results required the participation of the school leadership, the school staff, school community, and stakeholders in all activities related to improving the academic achievement for all students. Furthermore, the PBIS Implication suggested the provision of resources (logistic, financial, training, and support) to accomplish the mission and vision of the school.

PBIS Implication on respect (to self and to others). The statistical analysis of the respect (to self and to others) data revealed no gender and no age effects on the citizenship grade parameter, although, gender and age represented deeply ingrained socio-cultural elements (Bem, 1981), which affected every aspect of the population. However, the PBIS Implication of the data analysis findings demanded no gender and/or age-adapted activities related to the motivation and promotion of respect (to self and to

others) in the school building and the community. The citizenship grade represented the overall behavior of the student within a group setting. Effective PBIS required Functional Behavior Assessment (FBA) for anti-social behavior. The finding in this study, suggested no gender and/or age-adapted behavior assessment tools and/or strategies.

In addition, the statistical analysis of the respect (to self and to others) data showed that the students' behavioral performance (CTZ) remained below the average of all components. The data revealed that students performed better in respect (to self and to others) than safety. However, their performance in respect (to self and to others) remained less than their performance in openness to diversity. The data also suggested that the students performed identically in respect (to self and to others) and in academic achievement. The PBIS Implication of these findings required adjustment, modification, and improvement of the activities related to respect (to self and to others). These adjustments included extending the activities to the community and other stakeholders. The modification involved including the community in defining the cultural norms and ethics in the school building. The PBIS Implication to improve the respect (to self and to others) required school staff adoption of the principles and concepts of Positive Behavior Support (PBS).

Summary. The PBIS Implications, as a result of the statistical analysis of the data included no gender and no age-adapted activities for the safety and respect (to self and to others) components. While the PBIS Implications for openness to diversity demanded no gender adaptations for all students, it required age-adapted activities for sixth graders. In addition, the PBIS Implication for academic achievement, required age-adapted activities

for all grade levels. While the PBIS Implication for academic achievement required no gender-adapted activities among sixth and eighth graders, it prescribed gender-adapted activities for seventh graders.

The PBIS Implication as far as the development, the design and the implementation of the activities of each component prescribed a review of the design, the development, and mostly the implementation process of the activities related to the safety component. The analysis suggested that the review include the community leaders and stakeholders. It also recommended the promotion and motivation of the activities related to safety inside the school community and among stakeholders. Furthermore, the data analysis recommended an increase in interest from the school staff in promoting safety regardless of gender and age of students. Educational research suggested that building relationships and a culture of trust (Bryk, & Schneider, 2003; Hoffman, Sabo, Bliss, & Hoy, 1994; Moolenaar, & Sleegers, 2010) within the school building increased safety.

In addition, the data analysis proposed a continued monitoring of the activities related to the openness to diversity, and suggested that these activities be extended to the school community. Moreover, the study recommended that the teaching staff provide age-appropriate academic rewards, acknowledgement, and reinforcement. It also encouraged parental and community involvement in the academic activities of the students. Furthermore, the data analysis suggested sharing of resources, collaboration, use of data, and adoption of best practices for the teaching staff.

Finally, the PBIS Implication concerning the respect (to self and to others) as compared to the other components, suggested that the activities required adjustment, modification, and improvement. The increase of behaviors related to the respect (to self

and to others) demanded the participation of the school community and stakeholders in the design of its activities. The improvement of students' behavior related to respect (to self and to others) suggested that school staff modeled, practiced, and applied the principles and concepts of Positive Behavior Support at all times.

Summary. The PBIS Implication recommended no gender and no age-adapted activities related to both safety and respect (to self and to others) components. Although, the PBIS Implication required no gender-adapted activities for openness to diversity, it recommended age-appropriate activities for sixth grade students. In addition, the PBIS Implementation required no gender-adapted academic activities among sixth and eighth graders. However, it recommended gender-appropriate activities among seventh graders. Furthermore, the PBIS Implication suggested age-appropriate academic activities among all students.

The PBIS Implication revealed the need of a common effort from the education professionals, the community leadership, and the stakeholders. Effective PBIS suggested a belief system, a state of mind, and a continued effort based on the principles and concepts of Positive Behavior Support. Furthermore, the PBIS Implication recommended the five cores of PBIS (framework, continuum, research, and evidence-based practices, team-driven data-based decision-making process, and monitoring) be applied to the activities for each component. PBIS Implication as of the safety component in this study recommended a redesign, new implementation strategies, and an increase for its activities. As far as the openness to diversity, the PBIS Implication recommended monitoring and continued effort in its activities. In addition, the PBIS Implication suggested collaboration and the use of best practices in academic activities. Finally, the

PBIS Implication encouraged community and stakeholders' involvement in the definition and selection of the cultural and ethical norms. It also recommended an increase in the promotion and motivation of the activities related to respect (to self and to others) in both the school building and in the community.

Personal Reflections

This study confirmed the complexity of human behavior. The process of understanding human behavior included fields of study such as Positive Psychology, ABA, Gender Development, and Cognitive Development. A mastery of these four fields of research provided the foundation of deconstructing the complexity of human behavior. The study included many unexpected research topics related to each field of study. Among these four research fields, the ABA represented the research field with the most ramifications for possible research topics as far as the study of human behavior was concerned. The ABA, although in its infancy (compared to other field of research) provided principles, theories and investigation tools to access and modify behavior. The research opportunities provided by the ABA field of research, included Antecedent, Reinforcement, Stimuli, Establishing Operation, Operant Conditioning, Respondent Conditioning, and Motivating Operation.

Gender and Cognitive development fields of research are important in terms of accessing and understanding human behavior and involved cultural, ethnical, and societal considerations. This study revealed a possible research opportunity for understanding the relationship between human behavior and cultural, ethnical and societal considerations. The research field of Psychology, although involved in many studies of the causes of human misbehavior, provided opportunities to research, increase, and sustain the sources

of positive behavior. At the time of this writing, Positive Psychology supplied research possibilities to understand the complexity of human behavior.

This study revealed tremendous resources PBIS provides to improving school and community, as well as the pursuit of happiness. The support provided by PBIS established a belief system, a mindset, and a trusting relationship among all stakeholders that led to the success of the educational system of the children and the improvement of the quality of life in the community. Some of the parameters used in this study remained weak but nonetheless represented a good description of the component they represented. Such parameters included the foreign language grade for openness to diversity and attendance for safety. The citizenship grade parameter used in the study of respect (to self and to others) remained subjective. These three components (openness to diversity, safety, and respect (to self and to others)) gave opportunities to improve their quality by adding other parameters, such as surveys, questionnaires, and interviews in their determination.

Recommendations to the Program

The recommendations to this study program include three major areas. These are the selection of parameters, the selection of the source of the data, and the depth of the study. This program could benefit tremendously from including other variables, such as survey, questionnaires, and interview results in defining components such as safety, openness to diversity, and respect (to self and to others). Although the acquisition of these variables requires extra resources (time, financial, and logistics), they enhance the quality of the related component.

In addition, the extension of the data sources both horizontally and vertically would provide more statistical validity to the results. The horizontal extension would include data sources from other middle schools. The vertical extension would include data over more than three school-years. Furthermore, the study benefited from the depth of research between gender and behavior and/or the depth of research between age and behavior. A study of the relationship between gender and behavior would provide the opportunity to deepen the investigation between these two socially affected variables. Similarly, a study of the relationship between age and behavior, would give the occasion to strengthen the investigation between these two variables. A separate study of the effect of gender or age on PBIS components would require the involvement of more variables to the definition of each component for the depth of relationship between gender and behavior or between age and behavior to be more fully explored.

Recommendations for Future Research

Effective PBIS required identification of variables that affected students' behaviors. Consequently, this study recommended Future Research to include the student socio-economic class, cultural background, and family structure type (single parent, divorced parents, foster parents, and traditional family) as variables. The socio-economic status, cultural background, and the family structure of students represented antecedents that affected students' behaviors. The study suggested extending the research to the effect of these social antecedents in designing, developing, and implementing of a PBIS program. Furthermore, the study recommended the extension of this study to include high school students within the same school district.

Conclusion

The above discussion and reflection on the results of the statistical tests revealed three major findings. These findings included gender implication, age implication, and PBIS implication. The gender implication suggested no gender effect on the safety, openness to diversity, and respect (to self and to others) components. While gender implication suggested no gender effect on academic achievement for sixth and eighth graders, it required gender-appropriate activities among seventh graders age groups.

In addition, the Age Implication showed no age effect on the safety and respect (to self and to others) components. However, it suggested age-appropriate activities for the openness to diversity component for sixth graders and for the academic achievement component for all students. Furthermore, the PBIS Implication suggested a review, redesign, and new implementation strategies for the safety component. The PBIS Implication recommended a continued monitoring of the activities related to the openness to diversity, and suggested extending these activities to the school community. Moreover, the PBIS Implementation proposed motivating incentives for academic achievement improvement. It also recommended parental and community involvement in the academic activities of the students. Furthermore, the PBIS Implication suggested sharing of resources, collaboration, use of data, and adoption of best practices among teachers and administrators. Finally, the PBIS implication recommended adjustment, modification, and improvement of the activities related to respect (to self and to others). It suggested that the school staff modeled, practiced, and applied the principles and concepts of Positive Behavior Support at all times.

A general reflection revealed the interest of the researcher to PBIS as related to improving schools. In order to improve the program, the study recommended adding variables from surveys, questionnaires, and interviews to defining components such as safety, openness to diversity, and respect (to self and to others) and deepening the study of the relationship among the research fields used in this study. The study recommended Future Research in socially important factors such as students' socio-economic status, cultural background, and family structure, which affected the design, development, and implementation of PBIS program in educational setting.

References

Adams, J. S. (1965). Inequity in social exchange, In: L. Berkowitz (Ed.) *Advances in experimental social psychology* (vol. 2, pp. 267-299) . New York, NY: Academic Press.

Aebli, H. (1979). Continuity-discontinuity from the perspective of Piagetian and post-Piagetian theory. Paper presented at the fifth meeting of the International Society for the Study of Behavioral Development, Lund, Sweden, June 1979.

Agras, W., Telch, C. E., Amow, B., Eldredge, K., Wilfley, D., Raeburn, S. D., . . . Marnell, M. (1994). Weight loss, cognitive-behavioral, and desipramine treatments in binge eating dis- order: An additive design. *Behavior Therapy*, *25*(2), 225.

Aiken, L. S., West, S. G., Sechrest, L., & Reno, R. R. (1990). Graduate training in statistics, methodology, and measurement in psychology: A survey of PhD programs in North America. *American Psychologist*, *45*(6), 721-734.

Alberto, P. A., & Troutman , A. (2006). *Applied behavior analysis for teachers* (9th ed.). Boulder, CO: Pearson.

Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual fit for behavior support plans. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp. 81–98). Baltimore, MD: Brookes.

Anyon, J. (1980). Social class and the hidden curriculum of work. *Journal of education*, *162*(1), 67-92.

Anyon, J. (1981). Social class and school knowledge. *Curriculum Inquiry*, *11*(1), 3-42.

Anyon, J. (2008). Social class and school knowledge. In Weis, L., *The way class works: Readings on schools, family and the economy* (pp. 189-209). New York, NY: Routledge.

Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91-97.

Baer, D., Wolf, M. M., & Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, 20(4), 313–327.

Bailey, J., & Burch, M. (2006). *Ethics for behavior analysts: A practical guide to the Behavior Analyst Certification Board guidelines for responsible conduct.* New York, NY: Routledge.

Bailey, J., & Pyles, D. M. (1989). Behavioral diagnostics. In E. Cipani (Ed.), *The treatment of severe behavior disorders: Behavior analysis approach* (vol. 13, pp. 85-107). Washington DC: American Association on Mental Retardation.

Baltes, P. B., Baltes, M. M., & & Reinert, G. (1970). The relationship between time of measurement and age in cognitive development of children: An application of cross-sectional sequences. *Human Development, 13*(4), 258-268.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191.

Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist, 33*(4), 344.

Bandura, A. (1981). In search of pure unidirectional determinants. *Behavior Therapy, 12*(1), 315-328.

Bandura, A. (1982). The psychology of chance encounters and life paths. *American Psychologist*, *37*(7), 747-755.

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, *28*(2), 117-148.

Bandura, A. (2002). Social cognitive theory in cultural context. Applied Psychology. *An International Review*, *151*(2), 269–290.

Barry III, H., Bacon, M. K., & Child, I. L. (1957). A cross-cultural survey of some sex differences in socialization. *The Journal of Abnormal and Social Psychology*, *55*(3), 327.

Barton, E. A. (2009). *Leadership strategies for safe schools*. Thousand Oaks, CA: Corwin Press.

Bellah, R., Tipton, S., Swidler, A., & Sullivan, W. (1985). *Habits of the heart: Individualism and commitment in American life.* New York, NY: Basic Books.

Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review*, *88*(4), 354.

Berger, J., Rosenholtz, S. J., & Zelditch, M. (1980). Status organizing processes. *Annual Review of Sociology*, *6*(1), 479-508.

Biglan, A. (1995). Translating what we know about the context of antisocial behavior in to a lower prevalence of such behavior. *Journal of Applied Behavior Analysis*, *28*,(4) 479–492.

Bijou, S. W., & Baer, D. M. (1978). *Behavior analysis of child development.* Englewood Cliffs, NJ: Prentice Hall.

Birnbrauer, J. S. (1979). Applied behavior analysis, service and the acquisition of knowledge. *The Behavior Analyst*, *2*(1), 15.

Bjorklund, D. F. (1997). The role of immaturity in human development. *Psychological Bulletin*, *122*(2), 153.

Bjorklund, D. F., & Green, B. L. (1992). The adaptive nature of cognitive immaturity. *American Psychologist*, *47*(1), 46.

Blum, R. W., McNeely, C. A., & Rinehart, P. M. (2002). *Improving the odds: The untapped power of schools to improve the health of teens.* Minneapolis, MN: University of Minnesota, Center for Adolescent Health and Development.

Bradshaw, C. P., Barrett, S., & Bloom, J. (2004). *The Implementation Phases Inventory (IPI).* Baltimore, MD: PBIS Maryland. Retrieved from http://www.pbismaryland.org/forms.htmTeam-based decision-making rules and procedures

Bradshaw, C. P., Debnam, K., Koth, C. W., & Leaf, P. (2009). Preliminary validation of the Implementation Phases Inventory for assessing fidelity of schoolwide positive behavior supports. *Journal of Positive Behavior Interventions*, *11*(3), 145-160.

Bradshaw, C. P., Koth, C. W., Bevans, K., Ialongo, N., & Leaf, P. J. (2008). The impact of school-wide positive behavioral interventions and supports (PBIS) on the organizational health of elementary schools. *School Psychology Quarterly*, 23(4), 462-473.

Bringuier, J. C. (1980). *Conversations with Jean Piaget.* Chicago, IL: University of Chicago Press.

Bryk, A. S., & Driscoll, M. E. (1988). *The high school as community: Contextual influences and consequences for students and teachers*. Madison, WI: National Center on Effective Secondary School

Bryk, A. S., & Schneider, B. (2003). Trust in schools: A core resource for school reform. *Education Leadership, 60*(6), 40-45.

Burke, M. D., Davis, J. L., Lee, Y. H., Hagan-Burke, S., Kwok, O. M., & Sugai, G. (2012). Universal screening for behavioral risk in elementary schools using SWPBS expectations. *Journal of Emotional and Behavioral Disorders*, *20*(1), 38-54.

Burleson, B. R. (1984). Age, social-cognitive development, and the use of comforting strategies. *Communications Monographs*, *51*(2), 140-153.

Buss, D. M. (1995). *Psychological sex differences: Origins through sexual selection. American Psychology, 50*(3),164-168;

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychology Review, 106(4),* 676.

Butler, J. (1990). *Gender trouble: Feminist theory, and psychoanalytic discourse*. New York, NY: Routledge

Butler, J. (2011). *Gender trouble: Feminism and the subversion of identity.* New York, NY: Routledge

Call, N. A., Wacker, D. P., Ringdahl, J. E., & Boelter, E. (2005). Combined antecedent variables as motivating operations within functional analyses. *Journal of Applied Behavior Analysis*, *38*(3), 385-389.

Calvin, J. S., Bicknell, E. A., & Sperling, D. (1953). Establishment of a conditioned drive based on the hunger drive. *Journal of Comparative and Physiological Psychology*, *46*(3), 173–175.

Carnine, D. (1997). Bridging the research-to-practice gap. *Exceptional Children*, *63*(4), *513–521*.

Carr, E. (1996). The transfiguration of behavior analysis:Strategies for survival. *Journal of Behavioral Education*, *6*(3), 263–270.

Carr, E. (1997). The evolution ofapplied behavior analysis into positive behavior support. *Journal of the Association for Persons with Severe Handicaps*, *22*(1), 208–209.

Carr, E. G., & Blakeley-Smith, A. (2006). Classroom intervention for illness-related problem behavior in children with developmental disabilities. *Behavior Modification*, *30*(6), 901–924.

Carr, E. G., Dunlap, G., Homer, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., & Fox, L. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Intervention, 4*(1), 4-16.

Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, *18*(2), 111–126.

Carr, E. G., Horner, R. H., Turnbull, A. P., Marquis, J., Magito-McLaughlin, D., McAtee, M. L., . . . Doolabh, A. (1999). *Positive behavior support for people with developmental disabilities: A research synthesis.* Washington, DC: American Association on Mental Retardation.

Carr, E., Levin, L., McConnachie, G., Carlson, J. I., Kemp, D. C., Smith, C. E., & Magito McLaughlin, D. (1999). Comprehensive multi situational intervention for problem

behavior in the community: Long-term maintenance and social validation. *Journal of Positive Behavior Interventions, 1*(1), 5–25.

Carr, E. G., Newsom, C. D., & Binkoff, J. A. (1980). Escape as a factor in the aggressive behavior of two retarded children. *Journal of Applied Behavior Analysis, 13*(1), 101-117.

Carr, E. G., Robinson, S., & Palumbo, L. W. (1990). The wrong issue: Aversive versus non aversive treatment; the right issue: Functional versus nonfunctional treatment. In A. C. Repp & N. N. Singh (Eds.), *Perspectives on the use of non-aversive and aversive interventions for persons. with developmental disabilities* (pp. 361-379). Sycamore, IL: Sycamore.

Casey, B. J., Giedd, J. N., & Thomas, K. M. (2000). Structural and functional brain development and its relation to cognitive development. *Biological Psychology, 54*(1), 241-257.

Center on PBIS. (2005). *School-wide positive behavior support: Implementers' blueprint and self-assessment.* Eugene, OR: University of Oregon.

Chance, P. (1998). *First course in applied behavior analysis*. Pacific Grove, CA: Brooks/Cole.

Cipani, E., & Schock, K. M. (2010). *Functional behavioral assessment, diagnosis, and treatment: A complete system for education and mental health settings*. London, UK: Springer Publishing Company.

Clarke, S., Dunlap, G., & Vaughn, B. (1999). Family-centered, assessment based intervention to improve behavior during an early morning routine. *Journal of Positive Behavior Interventions, 1*(4), 235–241.

Cohen, J., McCabe, L., Michelli, N. M., & Pickeral, T. (2009). School climate: Research, policy, practice, and teacher education. *Teachers College Record, 111*(1), 180-213.

Cousins, P. D. 2002. A conceptual model for managing long-term inter-organizational relationships. *European Journal of Purchasing and Supply Management, 8*(2):71–82.

Cole, M., & Cole, S. (1996). *The development of children* (2nd ed). New York, NY: W. H. Freeman.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis.* Boulder, CO: Pearson.

Crone, D. A., & Horner, R. H. (2003). *Building positive behavior support systems in schools: Functional behavioral assessment.* New York, NY: Guilford Press.

Crone, D. A., Horner, R. H., & Hawken, L. S. (2004). *Responding to problem behavior in schools: The Behavior Education Program.* New York, NY: Guilford Press.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum.

Deitz, S. M. (1978). Current status of applied behavior analysis: Science versus technology. *American Psychologist, 33*(9), 805.

Delpit, L. D. (1992). Education in a multicultural society: Our future's greatest challenge. *Journal of Negro Education, 61*(3), 237–249.

Dennis, R., Williams, W., Giangreco, M., & Cloninger, C. (1993). Quality of life as a context for planning and evaluation of services for people with disabilities. *Exceptional Children, 59*(6), *499–512.*

DiClemente, D. F., & Hantula, D. A. (2000). John Broadus Watson: I/O psychologist. *The Industrial Psychologist*, *37*(4), 47–55.

Donohoe, J. W., & Vegas, R. (2011). Respondent (Pavlovian) conditioning. In W. W. Fisher, C. C. Piazza, & H. S. Roane (Eds.), *Handbook of applied behavior analysis* (pp. 17-33). New York, NY: The Guilford Press.

Dunlap, G., dePerczel, M., Clarke, S., Wilson, D., Wright, S., White, R., & Gomez, A. (1994). Choice making and proactive behavioral support for students with emotional and behavioral challenges. *Journal of Applied Behavior Analysis*, *27*(3), 505–518.

Dunlap, G., Fox, L., Vaughn, B., Bucy, M., & Clarke, S. (1997). In quest of meaningful perspectives and outcomes: A response to five commentaries. *Journal of the Association for Persons with Severe Handicaps*, *22*(5), 221–223.

Dunlap, G., Hieneman, M., Knoster, T., Fox, L., Anderson, J., & Albin, R. W. (2000). Essential elements of in-service training in positive behavior support. *Journal of Positive Behavior Interventions*, *2*(1), 22–32.

Dunlap, G., Kern-Dunlap, L., Clarke, S., & Robbins, F. R. (1991). Functional assessment, curricular revision, and severe behavior problems. *Journal of Applied Behavior Analysis*, *24*(2), 387-397.

Durand, V. M. (1990). *Severe behavior problems: A functional communication training approach.* New York, NY: Guilford Press.

Durán-Narucki, V. (2008). School building condition, school attendance, and academic achievement in New York City public schools: A mediation model. *Journal of Environmental Psychology*, *28*(3), 278-286.

Durlach, P. J., Elliman, N. A., & Roger, P. J. (2002). Drinking while thirsty can lead to conditioned increases in consumption. *Appetite, 39*(2), 119–125. doi:10.1006/appe.2002.0493.

Dwyer, K. P., Osher, D., & Hoffman, C. C. (2000). Creating responsive schools: Contextualizing early warning, timely response. *Exceptional Children*, *66*(3), 347–365.

Eagly, A. H. (1987). *Sex differences in social behavior: A social role interpretation.* Hillsdale, NJ: Erlbaum.

Eagly, A. H. (2013). Sex differences in social behavior: A social-role interpretation. Abington, OX: *Psychology Press*.

Eagly, A. H., & Steffen, V. J. (1986). Gender and aggressive behavior. A meta-analytic review of the social psychological literature. *Psychological Bulletin, 100*(3), 309-330.

Eber, L., Sugai, G., Smith, C., & Scott, T. (2002). Wraparound and positive behavioral interventions and supports in the schools. *Journal of Emotional and Behavioral Disorders, 10*(3), 171-181.

Eccles, J., & Gootman, J. A. (2002). *Community programs to promote youth development*. Washington, DC: National Academies Press.

Eckstein, Z., & Zilcha, I. (1994). The effects of compulsory schooling on growth, income distribution and welfare. *Journal of Public Economics*, *54*(3), 339-359.

Ed, D., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276-302.

Eikeseth, S., & Smith, D. P. (2013). An analysis of verbal stimulus control in intraverbal behavior: implications for practice and applied research. *The Analysis of Verbal Behavior*, *29*(1), 125.

Elkind, D. (1970). *Children and adolescents; interpretive essays on Jean Piaget.* New York, NY: Oxford University Press.

Ellsworth, P. C., & Smith, C. A. (1988). Shades of joy: Patterns of appraisal differentiating pleasant emotions. *Cognition and Emotion*, *2*(4), 301–331.

Epstein, C. F. (1988). *Deceptive distinctions: Sex, gender, and the social order.* New Haven, CT: Yale University Press.

Erikson, E. (1963). *Childhood and society* (2nd ed.). New York, NY: Norton.

Erikson, E. (1982). *The life cycle completed*. New York, NY: Norton.

Esler, A. N., Godber, Y., & Christenson, S. L. (2002). *Best practices in supporting home-school collaboration.* In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology* (4th ed., pp. 389–411). Bethesda, MD: National Association of School Psychologist.

Fagerstrøm, A., Foxall, G. R., & Arntzen, E. (2010). Implications of motivating operations for the functional analysis of consumer choice. *Journal of Organizational Behavior Management*, *30*(2), 110-126.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*(2), 175-191.

Feldman, D. H. (1994). *Beyond universals in cognitive development* (2nd ed). Norwood, NJ: Ablex.

Feldman, D. H. (2004). Piaget's stages: The unfinished symphony of cognitive development. *New Ideas in Psychology, 22*(3), 175-231.

Feldman, D. H., & Fowler, R. C. (1997). The nature(s) of developmental change: Piaget, Vygotsky and the transition process. *New Ideas in Psychology*, *15*(3), 195–210.

Fischer, K. W. (1980). A theory of cognitive development: The control and construction of hierarchies of skills. *Psychological Review, 87*(6), 477.

Flavell, J. H. (1971). Stage-related properties of cognitive development. *Cognitive Psychology*, *2*(4), 421-453.

Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention & Treatment*, *3*(1), 1a.

Freud, S. (1962). *Three contributions to the theory of sex* (J. Strachey, Trans.). New York, NY: Nervous and mental disease. (Original work published1905).

Froh, J. J. (2004). The history of positive psychology: Truth be told. *NYS Psychologist 16*(3), 18-20.

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology? *Review of General Psychology*, *9*(2), 103–110. doi:10.1037/1089-2680.9.2.103

Gardner, W., Cole, C., Berry, D., & Nowinski, J. (1983). *Reduction of disruptive behaviors in mentally retarded adults: A self-management approach. Behavior Modification, 7*(1), 76–96.

Giesinger, J. (2012). Respect in education. *Journal of Philosophy of Education*, *46*(1), 100-112.

Gilbert, T. F. (1978). *Human competence: Engineering worthy performance.* New York, NY: McGraw-Hill.

Gilbert, T. F., & Gilbert, M. B. (1992). Potential contributions of performance science to education. *Journal of Applied Behavior Analysis*, *25*(1), 43–49.

Gillham, J. E., & Seligman, M. E. (1999). Footsteps on the road to positive psychology. *Behaviour Research and Therapy*, *37*(s1), 5163-5173.

Ginsburg, H., & Opper, S. (1988). *Piaget's theory of intellectual development.* Englewood Cliffs, NJ: Prentice-Hall.

Gottfredson, D. C. (1997). *School-based crime prevention.* In L. Sherman, D. Gottfredson, D. Mackenzie, J. Eck, P. Reuter, & S. Bushway (Eds.), *Preventing crime: What works, what doesn't, what's promising* (pp. 1–47). College Park, MD: Department of Criminology and Criminal Justice.

Greenberg, M. T., Weissberg, R. P., O'Brien, Z. J., Fredericks, L., Resnik, H., & Elias, M. J. (2003). Enhancing school-based prevention and youth development through coordinated social, emotional, and academic learning. *American Psychologist*, *58*(6-7), 466–474.

Gresham, F. M. (1985). Behavior disorder assessment: Conceptual, definitional, and practical. *School Psychology Review*, *14*(n.i.), 495-509.

Gresham, F. M., & Noell, G. H. (1999). Functional analysis assessment as a cornerstone for non-categorical special education. In D. Reachly, W. Tilly, & J. Grimes (Eds.), *Special education in transition: Functional assessment and non-categorical programming* (pp. 39-64). Des Moines, IA: Iowa Department of Education.

Gresham, F. M., Sugai, G., & Horner, R. H. (2001a). Interpreting outcomes of social skills training for students with high-incidence disabilities. *Exceptional Children, 67*(3), 331-344.

Gresham, F. M., Watson, T. S., & Skinner, C. H. (2001b). Functional behavioral assessment: Principles, procedures, and future direction. *School Psychology Review, 30*(2), 156-172.

Hagopian, L. P., Long, E. S., & Rush, K. S. (2004). Preference assessment procedures for individuals with developmental disabilities. *Behavior Modification, 28*(5), 668–677.

Hallinger, P., & Murphy, J. F. (1986, May). The social context of effective schools. *American Journal of Education, 94*(3), 328-355.

Hanley, G. P., Iwata, B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36*(2), 147-185.

Hantula, D. A., DiClemente, D. F., & Rajala, A. K. (2001). *Outside the box: The analysis of consumer behavior.* In L. Hayes, J. Austin, R. Houmanfar, & M. Clayton (Eds.), *Organizational change* (pp. 203–223). Reno, NV: Context Press.

Hart, B., & Risley, T. R. (1975). Incidental teaching of language in preschool. *Journal of Applied Behavior Analysis*, *8*(4), 411420.

Hawken, L. S., Vincent, C. G., & Schumann, J. (2008). Response to intervention for social behavior. *Journal of Emotional and Behavioral Disorders, 16*(4), 213–225.

Hawkins, J. D., Catalano, R. F., Kosterman, R., Abbott, R., & Hill, K. G. (1999). Preventing adolescent health risk behaviors by strengthening protection during childhood. *Archives of Pediatrics and Adolescent Medicine, 153*(3), 226–234.

Hayes, S. C. (1978). Theory and technology in behavior analysis. *The Behavior Analyst, 1*(1), 25.

Haynes, N. M., Emmons, C. L., & Woodruff, D. W. (1998). School development program effects: Linking implementation to outcomes. *Journal of Education for Students Placed at Risk, 3*(1),71–85.

Haynes, S. (1997). The behavioral assessment of adult disorders. In A. Goldstein & M. Hersen (Eds.), *Handbook of psychological assessment* (3rd ed., pp. 21-31). Elmsford, NY: Pergamon Press.

Haynes, S. N. (1992). *Models of causality in psychopathology: Toward synthetic, dynamic and nonlinear models of causality in psychopathology*. Needham Heights, MA: Allyn & Bacon.

Haynes, S. N., Leisen, M. B., & Blaine, D. D. (1997). Design of individualized behavioral treatment programs using functional analytic clinical case models. *Psychological Assessment, 9*(4), 334.

Hekma, G., & Herdt, G. (1994). *Third sex, third gender: Beyond sexual dimorphism in culture and history*. Brooklyn, NY: Zone Books.

Hillson, J. M., & Kuiper, N. A. (1994). A stress and coping model of child maltreatment. *Clinical Psychology Review, 14*(n.i.), 261-285.

Hoffman, J., Sabo, D., Bliss, J., & Hoy, W. (1994). Building a culture of trust. *Journal of school Leadership, 4*(5), 484-501.

Horner, R. H. (2003). Extending positive behavior support to whole schools: Sustainable implementation. Keynote address, First International Conference on Positive Behavior Support, Orlando, FL, March 27, 2003.

Horner, R. H. (1994). Functional assessment: Contributions and future directions. *Journal of Applied Behavior Analysis*, *27*(2), 401-404.

Horner, R. H., & Sugai, G. (2015). School-wide PBIS: An example of applied behavior analysis implemented at a scale of social importance. *Behavior Analysis in Practice*, *8*(1), 80-85.

Horner, R. H., Close, D., Fredericks, H. D., O'Neill, R. E., Albin, R., Sprague, J. R., . . . Heathfield, L. T. (1996). Supported living for people with profound disabilities and severe problem behaviors. In D. H. Lehr & F. Brown (Eds.), *People with disabilities who challenge the system* (pp. 209–240). Baltimore, MD: Brookes.

Horner, R. H., Day, H. M., & Day, J. (1997). Using neutralizing routines to reduce problem behaviors. *Journal of Applied Behavior Analysis*, *30*(4), 601– 614.

Horner, R. H., Sugai, G., Lewis-Palmer, T., & Todd, A. W. (2001). Teaching school-wide behavioral expectations. *Report on Emotional & Behavioral Disorders in Youth*, *1*(4), 77–79, 93-96.

Horner, R. H., Sugai, G., Todd, A. W., & Lewis-Palmer, T. (2005). School-wide positive behavior support. In L. Bambara & L. Kern (Eds.), *Individualized supports of students with problem behavior plans* (pp. 359–390). New York, NY: Guilford.

Horner, R. H., Todd, A. W., Lewis-Palmer, T., Irvin, L. K., Sugai, G., & Boland, J. B. (2004). The School-Wide Evaluation Tool (SET): A research instrument for assessing school-wide positive behavior support. *Journal of Positive Behavioral Interventions*, *6*(1), 3–12.

Hughes, C., Hwang, B., Kim, J. H., Eisenman, L. T., & Killian, D. J. (1995). Quality of life in applied research: A review and analysis of empirical measures. *American Journal on Mental Retardation*, *99*(6), 623–641.

Hughes, D., Witherspoon, D., Rivas-Drake, D., & West-Bey, N. (2009). Received ethnic-racial socialization messages and youths' academic and behavioral outcomes: Examining the mediating role of ethnic identity and self-esteem. *Cultural Diversity and Ethnic Minority Psychology*, *15*(2), 112–124.

Hunt, J. M. (1969). The impact and limitations of the giant of developmental psychology. In D. Elkind & J. H. Flavell (Eds.), *Studies in cognitive development* (pp. 3-66). London, UK: Oxford University Press.

Individuals with Disabilities Education Act. (1997). Amendments of 1997 (PL 105-17). 20 USC, Chapter 33, Sections1400 et seq. Retrieved from http://uscode.house. gov/view.xhtml?path=/prelim@title20/chapter33&edition=prelim

Iverson, A. M. (2002). Best practices in problem-solving team structure and process. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology* (4th ed., pp. 657–669). Bethesda, MD: National Association of School Psychologists.

Iwata, B. A., Dorsey , M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994a). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis, 27*(2), 197–209. (Reprinted from *Analysis and Intervention in Developmental Disabilities*, *2*, 3–20, 1982).

Iwata, B. A., Pace, G. M., Dorsey, M. F., Zarcone, J. R., Vollmer, T. R., & Smith, R. G. (1994b). The functions of self-injurious behavior: An experimental epidemiological analysis. *Journal of Applied Behavior Analysis*, *27*(2), 215–240.

Izard, C. E. (1977). *Human emotions*. New York, NY: Plenum Press.

Jahoda, M. (1958). *Current concepts of positive mental health*. New York, NY: Basic Books, Inc.

James, W. (1897). *The will to believe and other essays in popular philosophy*. New York, NY: Longmans, Green and Company.

Kagan, J. (1964). Acquisition and significance of sextyping and sex role identity. In M. L. Hoffman and L. W. Hoffman (Eds.), *Review of child development research* (vol. 1, pp. 137-167),. New York, NY: Russell Sage Foundation.

Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being. The foundations of Hedonic psychology.* . New York: NY: Sage.

Kail, R., & Cavanaugh, J. (2007). *Human development: A life-span view* (4th ed.). Belmond, CA: Wadsworth, Inc.

Kamphaus, R., & Reynolds, C. (2008). *BASC-2 Behavioral and Emotional Screening System.* Bloomington, MN: Pearson Assessments.

Kazdin, A. E. (1977a). Assessing the clinical or applied importance of behavior change through social validation. *Behavior Modification*, *1*(4), 427-452.

Kazdin, A. E. (1977b). *The token economy: A review and evaluation*. New York, NY: Plenum.

Kazdin, A. E. (2012). *Behavior modification in applied settings*. Long Grove, IL: Waveland Press.

Keller, F. S., & Schoenfeld, W. N. (1950). *Principles of psychology*. New York, NY: Appleton-Century-Crofts.

Kemp, D., & Carr, E. (1995). Reduction of severe problem behavior in community employment using a hypothesis-driven multicomponent intervention approach. *Journal of the Association for Persons with Severe Handicaps*, *20*(4), 229–247.

Kennedy, C. H., & Meyer, K. A. (1996). Sleep deprivation, allergy symptoms, and negatively reinforced problem behavior. *Journal of Applied Behavior Analysis*, *29*(1), 133–135.

Knoster, T. P., Villa, R. A., & Thousand, J. S. (2000). A framework for thinking about systems change. In R. A. Villa & J. S. Thousand (Eds.), *Restructuring for caring and effective education* (pp. 93–128). Baltimore, MD: Brookes.

Koegel, L. K., Koegel, R. L., & Dunlap, G. E. (1996). *Positive behavioral support: Including people with difficult behavior in the community.* Baltimore, MD: Paul H Brookes Publishing.

Koegel, L., Koegel, R., Hurley, C., & Frea, W. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis*, *25*(2), 341–353.

Kohlberg, L. A. (1966). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 82-173). Stanford, CA: Stanford University Press, .

Kurland, P. B. (1972). The Supreme Court, compulsory education, and the First Amendment's religion clauses. *West Virginia Law Review, 75*(3), 213-245.

Landrum, T. J., & Kauffman, J. M. (2006). Behavioral approaches to classroom management. In C. M. Evertson, C. S. Weinstein, *Handbook of classroom*

management: Research, practice, and contemporary issues (pp. 47-71). New York, NY: Routledge

Langthorne, P., & McGill, P. (2009). A tutorial on the concept of the motivating operation and its importance to application. *Behavior Analysis in Practice*, *2*(2), 22.

Laraway, S., Snycerski, S., Michael, J., & Poling, A. (2003). Motivating operations and terms to describe them: Some further refinements. *Journal of Applied Behavior Analysis*, *36*(3), 407-414.

Laraway, S., Snycerski, S., Olson, R., Becker, B., & Poling, A. (2014). The motivating operations concept: current status and critical response. *The Psychological Record*, *64*(3), 601-623.

Lewin, K. (1951). Field theory in social science In D. Cartwright, *Selected theoretical papers* (pp. 146-147). New York, NY: Harper & Brothers.

Lewis, T. J., & Sugai, G. (1999). Effective behavior support: A systems approach to proactive school-wide management. *Focus on Exceptional Children*, *31*(6), 1-24. .

Lewis-Palmer, T., Sugai, G., & Larson, S. (1999). Using data to guide decisions about program implementation and effectiveness. *Effective School Practices*, *17*(4), 4753.

Lightfoot, S. L. (1984). *The good high school.* New York, NY: Basic Books, Inc..

Lloyd, J., Weintraub, F., & Safer, N. (1997). A bridge between research and practice: Building consensus. *Exceptional Children*, *63*(4), 535–53.

Locke, E. A. (1968). Toward a theory of task motivation and incentives. *Organizational Behavior and Human Performance*, *3*(2), 157-189.

Loeber, R. (1990). Development and risk factors of juvenile antisocial behavior and delinquency. *Clinical Psychology Review, 10*(1), 1–41.

Lovaas, O. I. (1981). *Teaching developmentally disabled children: The ME book*. Austin, TX: PRO-ED.

Lovaas, O. I. (2003). *Teaching individuals with developmental delays: Basic intervention techniques*. Austin, TX: PRO-ED.

Luiselli, J. K. (2006). *Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings*. Baltimore, MD: Paul H. Brookes.

MacDuff, G. S., Krantz, P. J., & McClannahan, L. E. (2001). Prompts and prompt-fading strategies for people with autism. In C. Maurice, G. Green, & R. Foxx, *Making a difference: Behavioral intervention for autism* (pp. 37- 50). Austin, TX: PRO-ED

Marchant, G. J., Paulson, S. E., & Rothlisberg, B. A. (2001). Relations of middle school students' perceptions of family and school contexts with academic achievement. *Psychology in the Schools, 38*(6), 505-519.

Martin, C. L., & Ruble, D. (2004). Children's search for gender cues: Cognitive perspectives on gender development. *Current Directions in Psychological Science, 13*(2), 67-70.

Martin, G., & Pear, J. J. (2015). *Behavior modification: What it is and how to do it*. London, UK: Psychology Press.

Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper & Row.

Maslow, A. H. (1962). *Toward a psychology of being*. Princeton, NJ: Van Nostrand.

Matson, J. L., Esveldt-Dawson, K., & Kazdin, A. E. (1983). Validation of methods for assessingsocial skills in children. *Journal of Clinical Child & Adolescent Psychology*, *12*(2), 174-180.

Matsumoto, D. (1996). *Culture and psychology.* Pacific Grove, CA: Brooks/ Cole.

Mayer, G. (1995). Preventing antisocial behavior in the schools. *Journal of Applied Behavior Analysis*, *28*(4), 467–478.

McAdam, D. B., Klatt, K. P., Koffarnus, M., Dicesare, A., Solberg, K., & Welch, C. (2005). The effects of establishing operations on preferences for tangible items. *Journal of Applied Behavior Analysis*, *38*(1), 107–110.

McGill, P. (1999). Establishing operations: Implications for the assessment, treatment, and prevention of problem behavior. *Journal of Applied Behavior Analysis*, *32*(3), 393–418.

McIntosh, K., Chard, D. J., Boland, J. B., & Horner, R. H. (2006). Demonstration of combined efforts in school-wide academic and behavioral systems and incidence of reading and behavior challenges in early elementary grades. *Journal of Positive Behavioral Interventions*, *8*(3), 146–154.

McIntosh, K., Filter, K. J., Bennett, J., Ryan, C., & Sugai, G. (2010). Principles of sustainable prevention: Designing scale-up of school-wide positive behavior support to promote durable systems. *Psychology in the Schools*, *47*(1), 5-21.

McIntosh, K., Flannery, K. B., Sugai, G., Braun, D., & Cochrane, K. L. (2008). Relationships between academics and problem behavior in the transition from middle school to high school. *Journal of Positive Behavior Interventions*, *10*(4), 243255.

McKevitt, B. C., & Braaksma, A. D. (2008). Best practices in developing a positive behavior support system at the school level. In A. Thomas and J. Grimes (Eds), *Best practices in school psychology* (5th ed., pp. 735-747). Bethesda, MD: National Association of School Psychologists

Metzler, C. W., Biglan, A., Rusby, J. C., & Sprague, J. R. (2001). Evaluation of a comprehensive behavior management program to improve school-wide positive behavior support. *Education & Treatment of Children*, *24*(4), 448-479.

Meyer, L., & Evans, I. M. (1993). Science and practice in behavioral intervention: Meaningful outcomes, research validity, and usable knowledge. *Journal of the Association for Persons with Severe Handicaps*, *18*(4), 224–234.

Michael, J. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of the Experimental Analysis of Behavior*, *37*(1), 149-155.

Michael, J. (1988). Establishing operations and the mand. *The Analysis of Verbal Behavior*, *6*(n.i.), 3-9.

Michael, J. (1993). Establishing operations. *The Behavior Analyst*, *16*(2), 191–206. 217-221.

Michael, J. (2000). Implications and refinements of the establishing operation concept. *Journal of Applied Behavior Analysis*, *33*(4), 401 – 410.

Michael, J. (2007). Motivating operations. In J. O. Cooper, T. E. Heron & W. L. Heward (Eds.), *Applied behavior analysis* (2nd ed., pp. 374-391). Upper Saddle River, NJ: Merrill Prentice Hall.

Michael, J. L. (1993). *Concepts and principles of behavior analysis.* Kalamazoo, MI: Western Michigan University, Association for Behavior Analysis International.

Millenson, J. R. (1967). *Principles of behavioral analysis* . New York, NY: Macmillan.

Miltenberger, R. (1997). *Behavior modification: Principles and procedures.* Pacific Grove, CA: Brooks/Cole.

Miltenberger, R. G. (2011). *Behavior modification: Principles and procedures.* Boston, MA: Cengage Learning.

MO. REV. STAT.167.031. (2011). *Providing for compulsory attendance of children at school from 7 until 14 years of age.* Retrieved from http://www.moga.mo.gov/mostatutes/chapters/chapText167.html

Monroe, C. R. (2005). Why are "bad boys" always Black? Causes of disproportionality in school discipline and recommendations for change. *The Clearing House, 79*(1), 45–50.

Monroe, C. R. (2009). Teachers closing the discipline gap in an urban middle school. *Urban Education, 44*(3), 322–347.

Moolenaar, N. M., & Sleegers, P. J. (2010). Social networks, trust, and innovation. How social relationships support trust and innovative climates in Dutch schools. In A. J. Daly (Ed.), *Social network theory and educational change* (pp. 97-114). Cambridge, MA: Harvard Education Press.

Murphy, J. (2009). Closing achievement gaps: Lessons from the last 15 years. *Phi Delta Kappan, 91*(3), 8-12.

Nelson, J. R., Martella, R., & Galand, B. (1998). The effects of teaching school expectations and establishing a consistent consequence on formal office disciplinary actions. *Journal of Emotional and Behavioral Disorders, 6*(3), 153–161.

Nelson, J. R., Martella, R. M., & Marchand-Martella, N. (2002). Maximizing student learning: The effects of a comprehensive school-based program for preventing problem behaviors. *Journal of Emotional and Behavioral Disorders*, *10*(3), 136–148.

Nesselroade, J., & Boker, S. (1994). *Assessing constancy and change,* In T. E Heatherton & J. L. Weinberger (Eds.), *Can personality change?* (pp. 121-147). Washington, DC: American Psychological Association.

Nickels, C. (1996). A gift from Alex — The art of belonging: Strategies for academic and social inclusion. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp.123–144). Baltimore, MD: Brookes.

Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment.* Englewood Cliffs, NJ: Prentice Hall.

Nkhata, A., Breen, C., & Freimund, W. (2005). Resilient social relationships and collaboration in the management of social–ecological systems. *Ecology and Society*, *13*(1), 2.

Noguera, P. A. (2003). Schools, prisons, and social implications of punishment: Rethinking disciplinary practices. *Theory into Practic*, *42*(4), 341–350.

O'Neill, R. E., Horner, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior: A practical handbook* (2nd ed.). Pacific Grove, CA: Brooks/Cole.

O'Reilly, M. F., Lacey, C., & Lancioni, G. (2000). Assessment of the influence of background noise on escape-maintained problem behavior and pain behavior in a

child with Williams syndrome. *Journal of Applied Behavior Analysis, 30*(4), 511–514.

O'Reilly, M., Lang, R., Davis, T., Rispoli, M., Machalicek, W., Sigafoos, J., & Carr, J. (2009). A systematic examination of different parameters of presession exposure to tangible stimuli that maintain problem behavior. *Journal of Applied Behavior Analysis, 42*(4), 773-783.

O'Reilly, M. F., Sigafoos, J., Lancioni, G., Rispoli, M., Lang, R., Chan, J., & Langthorne, P. (2008). Manipulating the behavior-altering effect of the motivating operation: Examination of the influence on challenging behavior during leisure activities. *Research in Developmental Disabilities*, *29*(4), 333-340.

Office of Special Education Programs (OSEP), Center on Positive Behavioral Interventions and Supports. (2004). *School-wide positive behavior support implementers' blueprint and self-assessment.* Eugene, OR: University of Oregon.

Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research, 70*(3), 323–367.

Ostrom, E. (1998). A behavioral approach to the rational choice theory of collective action: presidential address, American Political Science Association, 1997. *American Political Science Review, 92*(1):1–22.

Parsons, T. (1942). Age and sex in the social structure of the United States. *American Sociological Review 7*(5), 604-615.

Pelios, L., Morren, J., Tesch, D., & Axelrod, S. (1999). The impact of functional analysis methodology on treatment choice for self-injurious and aggressive behavior. *Journal of Applied Behavior Analysis*, *32*(2), 185–195.

Perret-Clermont, A. N. (1980). *Social interaction and cognitive development in children*. New York, NY: Academic Press.

Perry, W. (1997). Cognitive and ethical growth: The making of meaning. In K. Arnold & C. King, *College student development and academic life*: Psychological, Intellectual, Social and Moral Issues (1st ed., pp. 48-116). New York, NY: Routledge.

Piaget, J. (1936/1952). *The origins of intelligence in children* (M. Cook, trans.). New York, NY: International Universities Press, 1952. .

Piaget, J. (1955). *The child's construction of reality.* New York, NY: Routledge & Kegan Paul Limited.

Piaget, J. (1964). Part I. Cognitive development in children: Piaget development and learning. *Journal of Research in Science Teaching, 2(3),* 176-186.

Piaget, J. (1972). Intellectual evolution from adolescence to adulthood. *Human Development, 15*(1),1–12.

Piaget, J., & Cook, M. (1952). *The origins of intelligence in children* (vol. 8, no.. 5, p. 18). New York, NY: International Universities Press.

Piaget, J., & Inhelder, B. (1966/1969). *The psychology of the child* (H. Weaver, trans.). New York, NY: Basic Books, 1969.

Powell, A. G., Farrar, E., & Cohen, D. K. (1985). *The shopping mall high school: Winners and losers in the educational marketplace*. New York, NY: Houghton Mifflin.

Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy toward a more integrative model of change. *Psychotherapy: Theory, Research and Practice, 19*(3), 276–287.

Quintana, S. M., & Vera, E. M. (1999). Mexican-American children's representations of ethnic prejudice. *Hispanic Journal of Behavioral Sciences, 21*(n.i.), 387–404.

Ragin, C. C. (2004). Turning the tables: How case-oriented research challenges variable-oriented research. In H. E. Brady and D. Collier (Eds.), *Rethinking social inquiry: Diverse tools, shared standards* (pp. 123 – 138). Lanham, MD: Rowman & Littlefield.

Rankin, S., & Beemyn, G. (2012). Beyond a binary: The lives of gender-nonconforming Youth. *About Campus, 17(4)*, 2-10.

Risley, T. (1996). Get a life! In L.K. Koegel, R.L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp.425–437). Baltimore, MD: Brookes.

Risley, T. R. (1999). Foreword: Positive behavioral support and applied behavior analysis. In E. G. Carr, R. H. Horner, A. P. Turnbull, J. G. Marquis, D. Magito-McLaughlin, M. L. McAtee, C. E. Smith, K. Anderson-Ryan, M. B. Ruef, & A. Doolabh, *Positive behavior support for people with disabilities: A research synthesis*. Washington, DC: American Association on Mental Retardation.

Roby, D. E. (2004). Research on school attendance and student achievement: A study of Ohio schools. *Educational Research Quarterly*, *28*(1), 3.

Rogers, C. R. (1951). *Client-centered therapy: Its current practice, implications, and theory.* Boston, MA: Houghton Mifflin.

Ruef, M. T., Turnbull, A. P., Turnbull, H. R., & Poston, D. J. (1999). Perspectives of five stakeholder groups: Challenging behavior of individuals with mental retardation and/or autism. *Journal of Positive Behavior Interventions*, *1*(1), 43–58.

Rutter, M., Maughan, B., Mortimore, P., & Ouston, J. (1979). *Fifteen thousand hours: Secondary schools and their effects on children.* Cambridge, MA: Harvard University Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68.

Ryff, C. D., & Singer, B. (1996). Psychological well-being: Meaning, measurement, and implications for psychotherapy research. *Psychotherapy and Psychosomatics*, *65*(1), 14–23.

Sailor, W. (1996). New structures and systems change for comprehensive positive behavioral support. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp. 163–206). Baltimore, MD: Brookes.

Sands, D., Kozleski, E., & Goodwin, L. (1991). Whose needs are we meeting? Results of a consumer satisfaction survey of persons with developmental disabilities in Colorado. *Research in Developmental Disabilities, 12*(3), 297–314.

Schalock, R. (1990). Conceptualization and measurement. In K. D. Keith & R. L. Shalock, *Quality of life* (pp. 105-117). Washington, DC: American Association on Mental Retardation.

Schlinger, H. D. (2008). Positive psychology: An introduction. *American Psychologist*, *55*(1), 5–14.

Schmidt, F. L. (1996). Statistical significance testing and cumulative knowledge in psychology: Implications for training of researchers, *Psychological Methods, 1*(2), 115-129.

Schwandt, T. (1997). *Qualitative inquiry: A dictionary of terms.* Thousand Oaks, CA: Sage.

Schwartz, B. (1989). *Psychology of learning and behavior* (3rd ed.). New York, NY: : W. W. Norton & Company.

Schwartz, I. S., & Olswang, L. B. (1996). Evaluating child behavior change in natural settings: Exploring alternative strategies for data collection. *Topics in Early Childhood Special Education*, *16*(n.i.), 82–101.

Seligman, M. E. (2002). Positive psychology, positive prevention, and positive therapy. In C. Snyder & S. Lopez (Eds). *Handbook of positive psychology* (pp. 3-12). New York, NY: Oxford Press.

Seligman, M. E. (2004). *Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment*. New York, NY: Simon and Schuster.

Seligman, M., & Csikszentmihalyi, M. (2000a). Positive psychology: An introduction. *American Psychologist*, *55*(1), 5-14.

Seligman, M. E., & Csikszentmihaly, M. (2000b). Special issue on happiness, excellence, and optimal human functioning. *American Psychologist*, *55*(1), 5-183.

Seligman, M. E., & Csikszentmihalyi, M. (2014). *Positive psychology: An introduction*. Netherlands: Springer

Sheldon, S. B. (2003). Linking school–family–community partnerships in urban elementary schools to student achievement on state tests. *The Urban Review, 35*(2), 149-165.

Sidman, M. (1960). Normal sources of pathological behavior. *Science,132*(3419), 61-68.

Sidman, M. (1960/1988). *Tactics of scientific research.* Cambridge, MA: Center for Behavioral, 1988.

Sidman, M. (2000). Equivalence relations and the reinforcement contingency. *Journal of the Experimental Analysis of Behavior, 74*(1), 127-146.

Skinner, B. F. (1951). *How to teach animals.* San Francisco, CA: Freeman.

Skinner, B. F. (1953). *Science and human behavior*. New York, NY: Simon and Schuster.

Skinner, B. F. (1957). *Verbal behavior.* New York, NY: Appleton-Century-Crofts.

Skinner, B. F. (1984). The evolution of behavior. *Journal of the experimental analysis of behavior, 41*(2), 217-221.

Skinner, B. F. (2014). *Verbal behavior.* Cambridge, MA: B.F. Skinner Foundation.

Smith, C. O., Levine, D. W., Smith, E. P., Dumas, J., & Prinz, R. J. (2009). A developmental perspective of the relationship of racial-ethnic identity to self-construct, achievement, and behavior in African-American children. *Cultural Diversity and Ethnic Minority Psychology, 15*(2), 145–157.

Snyder, C. R., & Lopez, S. J. (2009). *Oxford handbook of positive psychology.* New York, NY: Oxford University Press.

Spillane, J. P. (2012). Data in practice: Conceptualizing the data-based decision-making phenomena. *American Journal of Education, 118*(2), 113-141.

Sprague, J., Sugai, G., & Walker, H. (1998). *Antisocial behavior in schools*. In T. Watson & G. Steuart, *Handbook of child behavior therapy* (pp. 451-474). New York, NY: Springer.

Stanca, L. (2006). The effects of attendance on academic performance: Panel data evidence for introductory microeconomics. *The Journal of Economic Education*, *37*(3), 251-266.

Stephens, R. D. (1998). Safe school planning. In D. S. Elliott, B. A. Hamburg, & K. R. Williams, *Violence in American schools: A new perspective* (pp. 253-289). Cambridge, MA: Cambridge Press.

Sugai, G., & Horner, R. H. (2002). The evolution of discipline practices: School-wide positive behavior supports. In J. K. Luiselli & C. Diament (Eds.), *Behavior psychology in the schools: Innovations in evaluation, support, and consultation* (pp. 23–50). New York, NY: Haworth.

Sugai, G., & Horner, R. H. (2009). Responsiveness-to-intervention and school-wide positive behavior supports: Integration of multi-tiered approaches. *Exceptionality*, *17*(4), 223-237.

Sugai, G., & Horner, R. R. (2006). A promising approach for expanding and sustaining school-wide positive behavior support. *School Psychology Review*, *35*(2), and 245.

Sugai, G., Horner, R. H., Dunlap , G., Hieneman, M., Lewis, T. J., Nelson, C. M., Scott, T., Laiupsin, C., . . . Ruef, M. (2000). Applying positive behavior support and functional behavior assessment in schools. *Journal of Positive Behavior Interventions*, *2*(3), 131–143.

Sugai, G., Horner, R. H., Dunlap, G., Hieneman, M., Lewis, T. J., Nelson, C. M., Scott, T., Laiupsin, C., . . . Wilcox, B.. (1999). *Applying Positive Behavioral Support and Functional Behavioral Assessment in Schools. Technical Assistance Guide 1, Version 1.4. 3.* Washington, DC: Center on Positive Behavior Interventions and Support (OSEP)

Sugai, G., Horner, R. H., Fixsen, D. & Blase, K. (2010). Developing systems-level capacity for RtI implementation: Current efforts and future directions. In T. A.Glover & S. Vaughn (Eds.). *Response to intervention: Empowering all students to PBIS*: *A critical account of the science and practice* (pp. 286-309). New York, NY: Guilford.

Sugai, G., Horner, R. H., & Gresham, F. (2002). Behaviorally effective school environments. In M. R. Shinn, G. Stoner, & H. M. Walker (Eds.), *Interventions for academic and behavior problems: Preventive and remedial approaches* (pp. 315–350). Silver Spring, MD: National Association for School Psychologists.

Sugai, G., Horner, R. H., Lewis-Palmer, T., & Todd, A. (2005). *School-wide positive behavior support training manual.* Eugene, OR: University of Oregon. Educational and Community Supports,

Sugai, G., & Simonsen, B. (2012). *Positive behavioral interventions and supports: History, defining features, and misconceptions*. Washington, DC: Center for PBIS & Center for Positive Behavioral Interventions and Supports.

Sugai, G., Sprague, J. R., Horner, R. H., & Walker, H. M. (2000). Preventing school violence: The use of office discipline referrals to assess and monitor school-wide

discipline interventions. *Journal of Emotional and Behavioral Disorders*, *8*(2), 94–101.

Sundberg, M. L. (1993). The application of establishing operations. *The Behavior Analyst*, *16*(2), 211-214.

Sundberg, M. L. (2004). A behavioral analysis of motivation and its relation to mand training. In L. W. Williams (Ed.), *Development disabilities: Etiology, assessment, intervention, and integration* (pp. 199-220). Reno, NV: Context Press.

Sundberg, M. L. (2013). Thirty points about motivation from skinner's book verbal behavior. *The Analysis of Verbal Behavior*, *29*(1), 13.

Tan, A. G., & Wong, S. S. (2007). Constructive creativity in education. In A. G. Tan (Ed.), *Creativity: A handbook for teachers* (pp. 485-506). Hackensack, NJ: World Scientific Publishing Company

Taylor-Greene, S., Brown, D., Nelson, L., Longton, J., Gassman, T., Cohen, J., . . . H all, S. (1997). School-wide behavioral support: Starting the year off right. *Journal of Behavioral Education*, *7*(1), 99–112.

Thomas, D. E., Townsend, T. G., & Belgrave, F. Z. (2003). The influence of cultural and racial identification on the psychosocial adjustment of inner-city African-American children in school. *American Journal of Community Psychology*, *32*(3-4), 217–228.

Timberlake, W., & Farmer-Dougan, V. A. (1991). Reinforcement in applied settings: Figuring out ahead of time what will work? *Psychological Bulletin*, *110*(3), 379-391.

Trivers, R. L. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man 1871-1971* (pp. 136-172). Chicago. IL: Aldine.

Turnbull, A. (1988). The challenge of providing comprehensive support to families. *Education and Training in Mental Retardation, 23*(4), 261–272.

Turnbull, A. P., & Turnbull, H. (1999). Comprehensive lifestyle support for adults with challenging behavior: From rhetoric to reality. *Education and Training in Mental Retardation and Developmental Disabilities*, *34*(4), 373–394.

Turnbull, A., & Ruef, M. (1997). Family perspectives on inclusive lifestyle issues for people with problem behavior. *Exceptional Children*, *63*(2), 211–227.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology, 5*(2), 207-232.

Tversky, A., & Kahneman, D. (1975). Judgment under uncertainty: Heuristics and biases. In D. Wendt, C.Vlek, *Utility, probability, and human decision making* (pp. 141-162). Netherlands: Springer

Vaillant, G. E. (1977). *Adaptation to life.* Boston, MD: Little, Brown.

Vandercook, T., York, J., & Forest, M. (1989). The McGill action planning systems (MAPS): A strategy for building the vision. *Journal of the Association for Persons with Severe Handicaps*, *14*(3), 205–215.

Vaughn, B. J., Dunlap, G., Fox, L., Clarke, S., & Bucy, M. (1997). Parent professional partnership in behavioral support: A case study of community based intervention. *Journal of the Association for Persons with Severe Handicaps*, *22*(4), 185–197.

Velicer, W. F., Prochaska, J. O., Fava, J. L., Norman, G. J., & Redding, C. A. (1998). Smoking cessation and stress management: Applications of the trans theoretical model of behavior change. *Homeostasis, 38*(6), 216–233.

Vincent, C. G., Randall, C., Cartledge, G., Tobin, T. J., & Swain-Bradway, J. (2011). Toward a conceptual integration of cultural responsiveness and schoolwide positive behavior support. *Journal of Positive Behavior Interventions, 13*(4), 219-229.

Vroom, V. H. (1964). *Work and motivation.* New York, NY: John Wiley & Sons.

Vygotsky, L. (1978). Interaction between learning and development. *Interaction Between Learning and Development, 23*(3), 34-41.

Wahler, R. G., & Fox, J. J. (1981). Setting events in applied behavior analysis: Toward a conceptual and methodological expansion. *Journal of Applied Behavior Analysis, 14*(3), 327-338.

Walker, B., Cheney, D., Stage, S., & Blum, C. (2005). Schoolwide screening and positive behavior support: Identifying and supporting students at risk of school failure. *Journal of Positive Behavior Interventions, 7*(4), 194–204.

Walker, H. M., & Severson, H. (1990). *Systematic Screening of Behavior Disorders (SSBD): A multiple gating procedure.* Longmont, CO: Sopris West.

Walker, H. M., Horner, R. H., Sugai, G., Bullis, M., Sprague, J. R., Bricker, D., & Kaufman, M. J. (1996). Integrated approaches to preventing antisocial behavior patterns among school-age children and youth. *Journal of Emotional and Behavioral Disorders, 4*(4), 194–209.

Wilder, D., & Carr, J. (1998). Recent advances in the modification of establishing operations to reduce aberrant behavior. *Behavioral Interventions, 13*(1), 43–59.

William, D. (2004). What is positive youth development? . *Annals of the American Academy of Political and Social Science, 591*(98), 13-24.

Witt, J. C., Daly, E. M., & Noell, G. (2000). *Functional assessments: A step-by-step guide to solving academic and behavior problems.* Dallas, TX: Sopris West.

Wolery, M. R., Bailey, D. B., & Sugai, G. M. (1988). *Effective teaching: Principles and procedures of applied behavior analysis with exceptional students.* Boston. MA: Allyn & Bacon.

Worsdell, A. S., Iwata, B. A., Conners, J., Kahng, S., & Thompson, R. H. (2000). Relative influences of establishing operations and reinforcement contingencies on self-injurious behavior during functional analyses. *Journal of Applied Behavior Analysis, 33*(4), 451–461.

Worthman, C. M. (2010). The ecology of human development: Evolving models for cultural psychology. *Journal of Cross-Cultural Psychology, 41*(4), 546-562.

Zins, J. E., Bloodworth, M. R., Weissberg, R. P., & Walberg, H. J. (2004). *The scientific base linking social and emotional learning to school success. Building academic success on social and emotional learning: What does the research say*. New York, NY: Teachers College Press.

Zins, J. E., & Ponte, C. R. (1990). Best practices in school-based consultation. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology—II* (pp. 673–694). Washington, DC: National Association of School Psychologists.

Vitae

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I was born in Abidjan, Cote d'Ivoire (West Africa). I graduated from Lycée Technique d'Abidjan (a technical High School) in 1978 with a Baccalaureate serie E degree (Math, Science and Technology). Four years later, I graduated from Universite Nationale de Cote d'Ivoire (Abidjan University) with the Maitrise de Physique (Research Option), with emphasis on Nuclear Energy and Electronics.

In September 1983, I enrolled at Virginia Polytechnic Institute and S.U. (Virginia Tech). In June 1986, I graduated from Virginia Tech with a Master of Science degree in Physics. My Master of Science thesis was on material science, as it was applied to non-conventional energy resource. After my graduation from Virginia Tech, I attended many seminars and trainings. Among these, were seminars at International Center for Theoretical Physics (ICTP) in Trieste, Italy, United States Telecommunication Training Institute (USTTI), and National Cable Television Training Institute (NCTI). In 2012, I enrolled in the Master of Arts in education program at Lindenwood University in St Charles, Missouri. After the successful completion of Master of Arts in Education program at Lindenwood University, I enrolled the EdD program, which led to this dissertation.

In terms of employment, I led the Photovoltaic Research Center in Abidjan from 1987 to 1992. From 1992 to 1999 I ran many telecommunication-based business ventures, which were more or less successful. In 1999 I was recruited as the Physics teacher by the St. Louis Public School System. In 2012, I ended my employment with St.

Louis Public School and took employment with the School District of University City, where currently I am the chemistry teacher at University City High School.