A Conceptual Analysis of Grade Span Configurations for 6-8 and K-8 Public Schools

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ABSTRACT

In this extensive review of the literature, we addressed the topic of grade span configurations and academic achievement as they relate to adolescents. We examined the historical trends of school organization to provide a context for understanding policies and decisions regarding grade span configurations. We also analyzed early studies regarding nonacademic student indicators and grade spans as background for more recent academic investigations. Two major school reform movements were discussed because of their prominence in the history of grade span configurations. Moreover, international, national, and state assessment data were explored regarding adolescent proficiency and student growth over the past 20 years. Finally, we outlined the two major theories (i.e., school transition and instructional environment) that have framed the grade span configuration debate from its inception

Keywords:

INTRODUCTION

In this article, literature related to grade span configurations and academic achievement pertaining to adolescent students was reviewed. The historical trends of school organization were examined to understand the social and pragmatic roots underlying policies and decisions that have been made regarding grade span configurations. Early studies pertaining to nonacademic student indicators and grade spans were also analyzed to provide context for later academic studies. Details regarding two major school reform movements were also provided, given the prominence of those two initiatives in the history of the topic. In addition, data related to international, national, and state assessments were explored to gauge adolescent proficiency and student growth over the past 20 years, and studies related to academic achievement and grade spans were analyzed. Finally, two theories are outlined that have framed the grade span configuration debate from its inception, namely school transition and instructional environment.

Early Schools in America

At the onset of compulsory public education in the United States, rural schools were primarily one-room structures containing all grade levels, whereas urban schools tended to divide students into primary (i.e., 8-year, Grades 1-8) and secondary (i.e., 4-year, Grades 9-12) schools (Schafer, 2010). In some cases, a six year-six year (grades 1-6 and 7-12) model was implemented because it provided for a more natural transition of adolescents into the workforce following the sixth grade (Elovitz, 2007). However, such early deviations were rare, and the division of primary and secondary education into eight-year elementary and four-year high schools was the principal configuration for American public schools throughout the 19th century (Manning, 2000).

One of the first calls to restructure public education's two-tier system came in the late 1800s. Harvard University president Charles Eliot and his peers on the National Education Association's Committee of Ten on Secondary Schools Studies argued that the later years of primary schools were wasted, and could be better utilized by introducing college

preparatory courses to students at an earlier age (National Education Association [NEA], 1894). The committee advocated for secondary education to begin in the seventh grade rather than the ninth, in order to provide gifted and college-bound students a better opportunity to reach their full potential as early as possible. In a report published 5 years after the committee's commission, the NEA (1899) declared that "the seventh grade, rather than ninth, [was] the natural turning point in [a] pupil's life ... and demand[ed] new methods and wiser direction" (p. 10).

Around this same time, new ideas began emerging that recognized adolescence as a distinct phase of life, with defining characteristics and unique social needs (Angus, Mirel, & Vinovskis, 1988; Commission on the Reorganization of Secondary Education, 1918; Juvonen et al., 2004). Hall (1905), a prominent psychologist during this period, argued that when students reached puberty distinct developmental needs arose and had to be addressed. In regard to schooling, he observed:

> The pupil in the age of spontaneous variation which at no period of life is so great ... suffers from mental ennui and dyspepsia, and this is why so many and an increasing number refuse some of the best prepared courses. (p. 509)

Hall would advocate for a separate transitional period for students that would ease their move from an eight-year primary school to the more demanding environment of the high school.

In addition to Eliot's call for academic rigor at an earlier age, and the recognition of puberty's roll in adolescence, many other factors played a significant role in the reorganization of public education's two-tier system. An influx of immigrants into elementary urban schools resulted in overcrowding and soaring drop-out rates in the later grades (Angus et al., 1988; Juvonen et al., 2004), new child labor laws instituted in the early 20th century meant more students would be staying in school longer as opposed to working in the factories, (which exacerbated the overcrowding problem) (Elovitz, 2007), and, finally, industrialists called for an earlier secondary experience for students in the hopes that it would inject more high school graduates into the factory workforce (Juvonen et al., 2004). For all of these reasons, at the turn of the 20th century, a new three-tier model emerged that moved upper grade students out of the primary school and into junior high schools (Cook et al., 2008).

Although difficult to establish precisely when and where the first junior high school was established in the United States, it is generally accepted that the first schools began appearing around 1910 (Juvonen et al., 2004). These new schools, which typically housed Grades 7-9, were designed to expose students "to a high school-like environment without the trauma of placing them in the same building as older teenagers" (Bedard & Do, 2005, p. 660). Shortly after the debut of the junior high school, policy makers quickly realized that the new three-tier model was cost-effective, solved problems of over-crowding, and offered advanced students a more rigorous curriculum. However, Otto (1931) commented that the efficacy of the new model to general student learning had not been examined.

Expansion of the junior high school model was rapid. In the 1920s, four of five high school graduates had attended a 8-year primary school followed by a 4-year high school, and by 1960, four of five graduates reported attending an elementary school, a 3-year junior high and a 3-year senior high (Alexander & McEwin, 1989; Elovitz, 2007). However, the fast ascent of the junior high school did not occur without criticism. From the very beginning, concerns arose regarding whether the new model was appropriately addressing any of the needs of early adolescents (Hansen & Hearn, 1971). Cuban (1992) contended that the junior high schools too closely mirrored the high schools they were designed to transition to in "curriculum, instruction, organization, teacher attitudes toward subject matter, and extracurricular activities" (p. 242), offering little or no consideration to the distinct developmental issues related to pubescent teens. From 1920 to 1960 dissatisfaction with the junior high school grew substantially (Cuban, 1992; Hansen & Hearn, 1971; Schafer, 2010; Weiss & Kipnes, 2006).

The Rise of the Middle School

The junior high schools that had spread rapidly across the United States did not fit the increasingly popular view that young teens had unique social, psychological, intellectual, and emotional needs that required a different kind of education than that provided by either elementary or high schools (Schafer, 2010). As a result, Gruhn and Douglass (1956) advocated setting new goals for junior high schools that included (a) the exploration of student's interests and abilities, (b) differentiated instruction based on students' backgrounds and aptitudes, and (c) providing socialization experiences that would offer guidance in decision-making. In addition, Alexander and Williams (1965) called for

organizational structures that would foster social ties between teachers and students while utilizing the strengths of teachers with different specialties. However, despite the theoretical rhetoric calling for change, junior high schools remained the same, "with ... emphasis on content rather than exploration, departmentalization rather than integration, and an adherence to rigid schedule" (Brough, 1995, p. 38).

Despite growing dissatisfaction with junior high schools, in the 1960s, policy makers began making a general call for the inclusion of sixth-grade students into the junior high school model (Bedard & Do, 2005). Part of the reason lay with the maturation process, and Tanner's (1962) observation that young teens were reaching puberty earlier than their counterparts in the 1900s. Eichorn (1966) argued, rehashing the preliminary argument from decades earlier, that a middle school model including the sixth grade would serve as a bridge to help students make the transition from the classrooms of elementary schools to the departments and class periods of high schools. However, the primary reason for inclusion of the sixth grade into a new middle school model seems to have been based more in organizational and structural limitations rather than taking the needs of adolescent students into consideration.

In the 1960s, secondary school enrollments were declining whereas elementary school enrollments were exploding because of large birth cohorts following the war and the popularity of early childhood education (Juvonen et al., 2004). According to Alexander (1984), the resulting shortage of space at the elementary level caused the sixth grade to be pushed out into the junior high level. A 1967 survey of middle school principals gave credence to this hypothesis when the respondents stated that the most frequent reason for establishing middle schools had to do with relieving overcrowded conditions in elementary schools (Alexander & George, 1981).

Primarily as a result of enrollment pressures brought on by societal factors and encouraged by idealistic educators, scholars, and intermediate school reformers, middle schools (containing Grades 6-8 and 6-9) developed in different pockets across the United States (Eichorn, 1984; Weiss & Kipnes, 2006). As before, researchers examining the efficacy of the new model concluded that "no research with significant findings to substantiate one organizational pattern over another," was present and remarked that "all [grade span organization] lack[ed] a validating research base" (Martin, 1974, p. 7). In spite of this deficiency, however, middle schools rapidly replaced junior high schools in the 1960s and 1970s, and became the dominant intermediate structure by the 1990s (Herman, 2004; Mizell, 2005; Paglin & Fager, 1997). Similar to the establishment of junior high schools in the early 1900s, criticism of the newly formed middle schools began shortly after their creation (Elovitz, 2007). In light of the fact that the underlying cause of the reorganization was driven by pragmatic reasons, as opposed to ideological calls for reform, the newly configured schools possessed many of the unfavorable characteristics of the junior high schools that came before them (Cuban, 1992), and led some persons to claim that the "changes were restricted largely to the names of the schools and the grades they contained" (MacIver & Epstein, 1993, p. 835).

The Middle School Concept

Despite repeated calls, going as far back as the late 19th century, for intermediate school reform based on the emerging and ever growing body of research concerning the needs of adolescents (Alexander & Williams, 1965; Gruhn & Douglass, 1956; Hall, 1905; NEA, 1894, 1899; Otto, 1931), it was not until the 1980s that the educational community, as a whole, came together to launch a nationwide movement for middle school transformation. Comprehensively summing up the problems of the middle school, which had its origins in the junior high schools of the early 1900s, and which had proliferated for 20 years since their creation in the 1960s, Alexander and George (1981) wrote:

> The concept of a bridging school is not enough ... because children of middle school age have their unique characteristics and needs which cannot be subordinated to the impact of the elementary school nor to the demands of the high school. An effective middle school must not only build upon the program on earlier childhood and anticipate the program of secondary education to follow, but it must be directly concerned with the here-and-now problems and interests of its students. Furthermore, the middle school should not be envisioned as a passive link in the chain of education below the college and university, but rather as a dynamic force in improving education. (p. 2)

This newly organized middle school movement focused its attention on the "volatile mismatch ... between the organization and curriculum of middle grades schools, and the intellectual, emotional, and interpersonal needs of young adolescents" (Carnegie Council on Adolescent Development, 1989, p. 32). Comprising the views of educational leaders, psychologists, school administrators, and teachers, a new Middle School Concept was proposed as the solution to the

woes of intermediate education in public schools. In 1985, the National Association of Secondary School Principals (NASSP) published An Agenda for Excellence at the Middle Level, detailing the primary components of the Middle School Concept, including (a) altering the culture and climate of the school to support excellence and achievement rather than intellectual conformity and mediocrity; (b) providing opportunities for students to achieve and excel in a number of domains, including the arts, athletics, academics, crafts; (c) creating a caring, supportive atmosphere that tolerates and welcomes a wide angle of student diversity; (d) establishing student advisement programs that would assure each student regular, compassionate, and supportive counsel from a concerned adult; (e) fostering sensitivity to the needs of the physical, intellectual, emotional, and social conditions of students; (f) creating opportunities for students to explore their aptitudes, interests, and special talents and to develop an accurate and positive self-concept; (g) instituting a curriculum that balances skills for continued learning with content coverage which may be outdated before it is used; and (h) relating curriculum content to the immediate concerns of the young adolescent, assuring its utility outside the classroom (pp. 2-11).

From the 1980s to the present, the Middle School Concept dominated the educational landscape in terms of espousing the best instructional and organizational practices for adolescents (Erb, 2006; George, 1999; National Middle School Association [NMSA], 2003). Shortly after Alexander and George (1981) rallied against the notion of the middle school as a mere stepping stone to high school, a huge volume of position papers and professional development sessions were produced that focused on successful pedagogy, leadership, and instructional strategies at the middle school level (Offenburg, 2001). During the course of this 30-year movement, the Middle School Concept was refined and expanded, ultimately coming together in one solid and unified philosophy regarding best practices for middle schools (Carnegie Council on Adolescent Development, 1989; NASSP, 1985; NMSA, 2003; Schafer, 2010; Tucker & Codding, 1999). Even though middle schools had been in operation since the 1960s, and were continuing many of the negative high school practices of the junior high schools that preceded them, proponents of the Middle School Concept argued that the middle school grade span configurations (i.e., 6-8, 6-9) were ideal for such best practices as team teaching, mixed level classrooms, and small learning communities (Epstein & MacIver, 1990; Hough, 2005; Lee & Smith, 1993; Midgley, 1993; Offenberg, 2001). All that was required to achieve results was successful implementation.

By 2002, the National Forum to Accelerate Middle Grades Reform had recognized eight different middle school reform models, aligned to the principles of the Middle School Concept, that were being used across the country. In addition, by 2003, as the standards and accountability movement was coming to full fruition following the NCLB Act of 2001 (U.S. Department of Education), national middle school organizations, representing both teachers and administrators, were advocating the philosophy of the Middle School Concept (Juvonen et al., 2004). However, even as the middle school movement was enjoying near universal acceptance, beginning in the 1980s and leading right up to the present, a large volume of studies started appearing that, though inconclusive at first, would eventually call the overall effectiveness of middle schools into question.

The Effectiveness of the Middle School

As the Middle School Concept was gaining universal acceptance, a number of studies started appearing in educational journals across the country that sought to determine the effectiveness of middle schools. These early studies were few and far between at first, but would grow in frequency and depth from the late 1980s to the present (Juvonen et al., 2004). Lacking an appropriate comparison group, student variables between elementary and middle schools were examined. Eventually, the methodology would shift, and comparisons would be made between middle schools and the large number of K-8 schools, also known as “elemiddle” schools (Hough, 2005, p. 10), that existed in districts that had not converted to the three-tier model. These K-8 schools only accounted for 7-9% of the school configurations containing adolescent students from the 1980s until the late 1990s, but provided the best indication of the natural progression of students unencumbered by a transition to middle school (NCES, 2011a).

Initially, researchers did not look at nationwide or statewide standardized student achievement as a dependent variable, primarily because national testing would not begin until the 1990s, and state standardized testing was not mandated until the passage of the NCLB Act. However, other student indicators such as grades, social-emotional well being, attendance, and public perceptions were explored in depth from the 1980s to the present. What follows is a brief summary of the findings of these studies in relation to the student indicators previously mentioned.

Grades/Grade Point Averages

In one of the first landmark studies concerning grades, Finkelstein (1913) concluded that “marks constitute[d] a very real and very strong inducement to work” and were “accepted [by students] as real and fairly exact measurements

of ability or of performance" (p. 6). Given their importance as external motivators of student achievement (Butler, 2011), grades and grading practices in the middle schools were examined in early studies in which middle schools were compared to elementary schools, and K-8 schools shortly thereafter.

A number of researchers observed in early studies that individual grades and overall GPA were far lower in middle schools than in elementary schools (Eccles et al., 1991; Simmons & Blyth, 1987). In examining the grading practices between the two types of schools, Eccles and Midgley (1989) observed that middle school teachers typically graded more rigorously than did their elementary counterparts. Given the middle school's close association with the academic model of the high school, like the junior high schools that preceded them (Cuban, 1992)—a model that involves multiple teachers focused on individual subject matter and discipline, as opposed to the elementary model that typically involves one teacher who emphasizes the growth and formation of the whole child (Whitley, Lupart, & Beran, 2007)—the discrepancy between the two, and the resulting decline in student marks, should not have been surprising. However, the more stringent grading practices in the middle school, though perhaps more reflective of actual ability, did have a negative effect on academic self-perception (Murdock, Anderman, & Hodge, 2000), making students less optimistic about their future success in school. Anderman (2002) also observed that declining grades in the middle school were closely associated with student depression and an increase in discipline problems, two issues discussed later in this article.

When examining the actual differences in grades and overall GPA between middle schools and K-8 schools, the research is far less conclusive. Offenburg (2001) compared the grades of students in middle schools to the grades of students in K-8 schools in Philadelphia and established that grades in K-8 schools were significantly higher than grades in middle schools. Offenburg noted that the difference was, on average, one tenth of a letter grade higher per class (or 0.1 in terms of GPA). However, effect sizes were not reported, making it difficult to determine the relevance of these findings. In a similar study, Abella (2005) noted that sixth-grade students had higher GPAs in K-8 schools when compared to middle schools. However, the differences in GPA between the two school settings diminished over the course of 3 years, and by the time the cohort of sixth-grade students examined in the study had transitioned to high school, the increases were completely gone. Finally, in one of the most comprehensive studies comparing 6-8 to K-8 schools, Weiss and Kipnes (2006) examined longitudinal data in Philadelphia Public Schools from the mid 1990s and commented that no significant differences were present between the two school configurations with regard to average grades or course failures.

Overall, the sharp contrast that exists between elementary and middle schools in terms of grading practices and student grades was not as pronounced and definitive when examined between middle and K-8 schools. One possible explanation for these findings could be the fact that most K-8 schools offer a more departmentalized model of instruction beginning in the sixth grade, a model which essentially mirrors the one employed by middle schools, minus the effects of transition from one school to another (Becker, 1987; Brown, 2004; Wihry et al., 1992). Though grades and GPA have been shown to be an inconclusive differentiator in direct comparisons of K-8 to middle schools, other indicators of student success have yielded more stark comparisons.

Social-Emotional Well Being

In the late 19th century educational researchers and psychologists began advocating for educational reform that acknowledged and took into account the social-emotional well being of middle-grade students (Hall, 1905; NEA, 1894, 1899). Despite the fact that early proponents of junior high schools (and middle schools decades later) believed that that moving to a three-tier model would provide a school climate more conducive to the development of adolescents (Weiss & Kipnes, 2006) and act as a transitional bridge between elementary and high schools (Eichorn, 1966), little consideration was actually given to the social-emotional needs of these students in the organization of these new schools (MacIver & Epstein, 1993). Junior high and middle schools sprouted up across the country primarily as a result of shifting enrollments and overcrowding in elementary schools (Juvonen et al., 2004). Lacking a comprehensive and universally accepted reform model for adolescent education, which would not appear until 70 years after the first junior high school opened its doors, the newly established junior high and middle schools simply adopted the practices of high schools in regard to academic structure and discipline management (Cuban, 1992). Researchers following the middle school movement of the 1980s would focus the majority of their attention on the effects that mirroring middle schools after high schools would have on the social-emotional needs of adolescents (Elovitz, 2007).

In a study that pre-dated the Middle School Concept, Blyth, Simmons, and Bush (1978) observed that boys in junior high schools did not experience the same levels of growth in the self-esteem during the adolescent years that students in a K-8 school setting did, and that girls actually showed a decline. In a similar study 3 years later, Blyth et al. (1981) attributed significant differences in attitudes and behaviors between junior high school and K-8 students to the organizational structure of the school itself, namely, the presence or absence of younger students on the campus. In the years that followed Blyth et al.'s initial studies, numerous researchers would document lower levels of self-esteem among students in junior high schools, and later middle schools, when compared to students in K-8 schools (Anderman, 2002; Eccles et al., 1991; Reddy et al., 2003; Simmons & Blyth, 1987; Weiss & Kipnes, 2006).

In one of the more noteworthy early studies, Simmons and Blyth (1987) examined sixth- and seventh-grade students' ability to adapt to developmental tasks in K-6 schools (followed by a transition to a junior high school) compared to K-8 schools. Though the focus of their study was adaptation in various academic settings, the researchers observed that student self-worth, which in this case was strongly associated the students' perceptions of belonging to either the oldest or youngest cohort on a campus, was a significant factor. More specifically, students in cohorts that were at the bottom of a campus' grade span configuration had significantly lower levels of self-esteem than students at higher levels, though effect sizes were not provided. Observing that the junior high schools provided a far more impersonal environment than K-8 schools, Simmons and Blyth (1987) commented that transitioning from a smaller elementary school to larger impersonal junior high school had "a negative impact on the early adolescent child" (p. 226). Later researchers (e.g., Cook et al., 2008) would also comment on the negative social-emotional effects of resetting sixth-grade students back to the bottom rung of the social ladder in the three-tier middle school model. Related to social stratification in adolescents, Anderman (2002) observed that students in K-8 schools felt a greater sense of belonging when compared to middle school students.

In one of the most comprehensive studies of middle school effectiveness, Weiss and Kipnes (2006), using comparative sampling and multilevel modeling, examined longitudinal data from Philadelphia Public Schools in relation to 6-8 and K-8 schools. The data, from the 1995-1996 school year, consisted of eight student success indicators: average grades, course failures, attendance, disciplinary incidents, student safety, student threats, student satisfaction, and student self-worth. Of the eight variables examined, only two variables exhibited a statistical difference. More specifically, the researchers observed that middle school students had significantly lower levels of self-esteem and perceived their school environment as significantly more threatening than students who attended K-8 schools, though effect sizes were not reported for either finding.

In regard to Weiss and Kipnes's (2006) second observation pertaining to safety, Astor, Meyer, and Pitner (2001) also established that sixth graders in middle schools were much more likely than sixth graders in elementary schools to perceive multiple and specific threats in their school environments. Also, Anderman (2002) noted that students who attended middle schools were more likely than students in K-8 schools to report feeling victimized, or to perceive their school as being unsafe. Finally, Cook et al. (2008) stated that sixth-grade students in middle schools were twice as likely to be cited for discipline infractions as sixth graders in a K-6 school setting. In addition, they observed that middle school students continued to exhibit higher rates of discipline infractions through the ninth grade. However, whether or not this last observation was the result of an actual increase in negative student behavior, or just the result of more students being cited for misbehavior due to an organizational structure that emphasizes rigid discipline (like the high schools they essentially model) has not been determined (Whitley et al., 2007).

Of all of the nonstandardized academic indicators examined from the late 1980s to the present, the research pertaining to the social-emotional well being of adolescents offers the strongest, most well documented case against junior high and middle school configurations as being the most appropriate organizational structure for adolescent students. Students "are lost before the educators even realize they were there" (Bateman & Karr-Kidwell, 1995, p. 29) and do not feel like they have a support system at the institution level on which they can rely (Eccles & Midgley, 1989; Murdock et al., 2000; Seidman, Allen, Aber, Mitchell, & Feinman, 1994). The studies pertaining to the social-emotional well being of adolescents naturally raised questions associated with student levels of motivation and desire to attend school.

Attendance

Poor attendance and high drop-out rates among adolescents have been reported since the inception of junior high schools, and were among the primary reasons for the emergence of the middle school in the late 1960s (Juvonen et al., 2004). Coupled with increasing enrollments at elementary schools, demands for space at the elementary level necessitated the inclusion of sixth-grade students into the junior high school model (Alexander, 1984; Alexander & George, 1981). Though attendance was included as a factor in evaluating middle school effectiveness, primarily because of its association with student motivation, the research in which attendance rates between middle schools and K-8 schools were compared has not yielded a conclusive difference over time.

Researchers comparing attendance in middle schools to K-8 schools indicated a preference for the latter for instilling motivation in students to attend school. Alexander (1984) described higher attendance rates and more favorable attitudes toward school in seventh- and eighth-grade students in K-8 schools than in their counterparts in junior high school. Franklin and Glascock (1996) also observed higher attendance rates and lower incidents of expulsions and suspensions when comparing K-8 schools to middle schools. Finally, Abella (2005) examined student indicators in both settings and observed that students in K-8 schools had higher rates of attendance and fewer suspensions. However, in all of the studies mentioned above, statistical controls were not present in making comparisons between middle schools and K-8 schools, and effect sizes were not provided. Also, in the case of Abella, the study was based solely on a pilot program in Miami-Dade County which consisted of five K-8 schools, and no attempts were made to control for variables which could have had a far greater effect on attendance than grade span organizations (e.g., SES, school size).

In their rigorous comprehensive study of middle school effectiveness, Weiss and Kipnes (2006), using sound comparative methods, documented the lack of significant difference in attendance rates between middle schools and K-8 schools. Additionally, Offenburg's (2001) study of middle school effectiveness, which included multiple measures of student success and controlled for SES and school size, detailed no statistical differences in regard to attendance or credits earned. When comparing the earlier studies, which lacked proper statistical modeling and controls, with later studies that were sounder in their design examining attendance as an indicator of middle school effectiveness has not demonstrated a decisive conclusion one way or another.

Perceptions of Adolescent School Settings

Adolescent students in the United States have a lower perception of their peer culture at school than students in most other nations around the world (Juvonen et al., 2004). Middle grade students report that their classmates are not "kind, helpful, [or] accepting" of each other and "do not enjoy one another's company" (p. 56). Though the views expressed above were not limited to students enrolled in middle schools, the majority of adolescent students in the United States were in that configuration at the time of the survey (NCES, 2011a). Understanding the history of adolescent education in the United States, the connection between preference for school organization based on pragmatic factors, as opposed to research pertaining to the developmental needs of students, and resulting global student perceptions is easy to comprehend (Juvonen et al., 2004).

In one of the first studies pertaining to students' perception of their school setting, Otto (1931) conducted a survey of student attitudes in relation to departmentalized teaching (common associated with the middle and high school model of instructional delivery) versus homeroom based teaching (where one teacher teaches his/her class in all subjects) (McPartland, Coldiron, & Braddock, 1987). In his findings, Otto concluded that students preferred departmentalized teaching when their teachers were easy and took into account their overall coursework load, and opposed it when their teachers were difficult and impersonal. As junior high and middle schools have evolved from the early 1900s, researchers have reported that students perceive their teachers in these settings as difficult and unsupportive (Anderman, 2002; Murdock et al., 2000; Seidman et al., 1994). In addition, since the advent of the NCLB Act, the academic rigor at the middle school level has only increased (Byrnes & Ruby, 2007; Schafer, 2010). Middle school students in the last 30 years have detailed numerous negative perceptions of their school environment including (a) infrequent contact with teachers, (b) unsupportive teachers, (c) receiving large and unmanageable quantities of work, and (d) being held to higher academic standards in middle schools as opposed to elementary configurations (including K-8 configurations) (Eccles & Midgley, 1989; Murdock et al., 2000; Seidman et al., 1994). Given the perceived emphasis on academic rigor that these observations seem to imply, it is interesting to note that middle school students were reporting that they were not being prepared to succeed in future academic endeavors (Bottoms & Timberlake,

2008).

In 2008, Bottoms and Timberlake conducted a survey of middle school students in Atlanta, and examined their perceptions related to academic preparedness. The results of that survey were that only 39% of middle school students believed they were not being prepared with the necessary reading skills for college preparatory high school courses. Additionally, 49% reported being unprepared in writing, 57% reported being unprepared in mathematics, and 60% reported being unprepared in science. In 1999, a TIMSS survey revealed that 86% of eighth-grade students in the United States indicated that they worked from worksheets or textbooks on their own almost always or pretty often during mathematics lessons, significantly higher than the international average of 59% (NCES, 1999). Though TIMSS results were not disaggregated by grade span configurations, in 2000 83% of all adolescent students were in either middle or junior high school configurations (NCES, 2011a).

From the point of view of parents, the K-8 school seems to be the clear favorite in terms of school structure. In numerous studies that have included perception surveys, parents have indicated that K-8 schools provide a stronger sense of community and improve the relationship between themselves and teachers than traditional middle schools (Herman, 2004; Pardini, 2002; Offenburg, 2001; Yakimowski & Connolly, 2001). In addition, parents have commented that the longer grade spans of K-8 schools provide their families a more uniform schooling experience (Pardini, 2002), and are typically closer to their homes, reducing travel to multiple schools (Herman, 2004; Mizell, 2005). Finally, Abella (2005) surveyed parents who had recently transitioned from traditional middle schools to K-8 schools as a part of Miami-Dade County Public Schools pilot program. In that survey, parents overwhelming preferred the K-8 structure to the traditional middle school model from which they had transferred. However, when the perceptual focus shifted from students and parents to school administrators, including administrators in K-8 schools, the overwhelming preference for K-8 schools was dramatically different.

In 2004, McEwin et al. conducted a national survey of K-8 and 6-8 administrators to determine which academic model they believed was most appropriate for adolescents. They observed that the majority of the administrators favored the middle school as "the best organizational structure for young adolescents" (p. 1). Only 16% of the 101 K-8 principals surveyed favored K-8 schools, whereas 84% favored the 5-8 or 6-8 configurations. The reasons they gave for their preference of the middle school model over the K-8 school setting included (a) the fact that the physical, intellectual, and social needs of adolescents were different from the needs of students in elementary grades, and a separate school structure is better suited to address them rather than trying to tackle them in a mixed elementary/middle K-8 school; (b) elementary and middle school teachers utilize different educational practices that are easier to foster and monitor a split two-tier model; and (c) the K-8 structure is less likely to help adolescent students prepare for the transition to high school. The perceptions of the surveyed administrators mirrored the concepts espoused by the Middle School Movement (NMSA, 2003), though it has been generally acknowledged that the majority of middle schools have not correctly implemented this model today, a topic discussed in detail later in this article (Elovitz, 2007; Lounsbury, 2009; Wormeli, 2006).

When perceptions are taken together as a whole, no clear grade span configuration emerges as the universal favorite. Certainly students and parents seemed to favor the K-8 school setting for reasons related to student support and community, whereas school administrators, including those administrators in charge of K-8 schools, believed that middle schools were the most appropriate setting for adolescents. As with the topics of grades/GPA and attendance, examining perceptions “does not provide definitive answers to the myriad possible questions about grade span, [and] the questions have never gone away” (Paglin & Fager, 1997, p. 1).

Student Achievement in The Middle Grades

Early researchers attempting to determine the effectiveness of middle schools seldom focused on standardized student achievement in relation to grade span organizations (Coladarci & Hancock, 2002; Hough, 2003; Klump, 2006; Renchler, 2002; Wihry et al., 1992). Hough (2003) noted that of the more than 3,700 studies pertaining to middle schools that had been published at that time, few researchers attempted to examine the connection between student achievement and grade span configurations, and the ones who did infrequently used statistically controlled variables (Klump, 2006). The primary reason for this early deficiency in the research lay in the fact that state standardized testing was not mandated until the passage of the NCLB Act. However, prior to the NCLB Act, standardized test results at the

national level indicated that middle grade students were not living up their potential in terms of academic achievement (Juvonen et al., 2004).

In 1990, the federal government began administering the NAEP to large samples of students in Grades 4, 8, and 12 (NCES, 2001b). Since its first administration in 1990, the NAEP has become the largest nationally representative and continuous assessment of student aptitude and progress in the United States (NCES, 2001b). Assessments given in the NAEP program are standardized and administered periodically in a variety of subjects, using essentially the same content from year to year, with only carefully documented changes (NCES, 2001b). Though NAEP results are not provided for individual students and schools, the assessments have come to represent general academic achievement and are included in the Department of Education's National Report Card (NCES, 2001b).

Eighth grade results from the first administration of the NAEP were bleak. In 1990 only 15% of tested students obtained scores classifying them as proficient in mathematics, and in 1992 (the first year it was given), only 29% were proficient in reading (NCES, 2011c, 2011d). In the ensuing 10 years of the program, the majority of eighth-grade students taking the NAEP would fail to reach proficient levels of achievement in mathematics, reading, and science (Juvonen et al., 2004). In fact, in 1998 and 2000, only approximately one third of eighth-grade students attained proficiency in mathematics (26%), reading (32%), and science (32%) (NCES, 2009, 2011c, 2011d). The disparity between academic expectations and actual student results was even more pronounced when examining results by minority groups (Beaton et al., 1996; Juvonen et al., 2004; Schmidt, McKnight, Jakwerth, Cogan, & Houang, 1999). Results from the 1998 and 2000 NAEP administrations referenced above indicated that African American and Hispanic populations failed to reach higher than 15% proficient as a group on any subject area tested (Juvonen et al., 2004).

Five years after the federal government launched the NAEP program, the TIMSS program began with the purpose of comparing fourth- and eighth-grade student achievement in mathematics and science around the world (NCES, 1999). Unlike the NAEP, which was designed to measure academic progress against standards set by the NAGB of the United States, assessments given under the TIMSS program used a framework designed by multiple content experts, education professionals, and measurement specialists from countries around the world (NCES, 1999). After two administrations of the TIMSS, with participants in 34 countries, it was becoming apparent that eighth-grade students in the United States were not only deficient in meeting proficiency standards set by the nation, but were falling significantly behind on the international level as well (NCES, 1999)

In 1999, eighth grade results on the TIMSS assessments in mathematics were only slightly above the average international scale score of 500 (with a mean scale score of 502), ranking the United States 19th out of the 34 participating countries (NCES, 1999). In addition, 14 other countries scored significantly higher than the United States in mathematics including Singapore, Korea, China, Japan, Hungary, Canada, Russia, and Australia. On the science assessments, the results were only slightly better. As with mathematics, eighth-grade students scored only slightly above the average international scale score of 500 (with a mean scale score of 515), ranking the United States 18th (NCES, 1999). In addition, 14 other countries scored significantly higher than the United States in science, including many of the same countries that had scored higher in mathematics.

In 2000, the Program for International Student Assessment (PISA) began an additional standardized testing program at the international level to compare 15-year-old students (the point where most students internationally are near the end of compulsory education) in various countries in the areas of mathematics, reading, and science (Organisation for Economic Co-operation and Development [OCED], 2003). The United States, together with 43 other countries, participated in the new assessment program and administered tests to a national sample of students. The results from the assessments revealed that the United States, though third among participating countries in per capita gross domestic product, had below average mean scores in mathematics (ranked 20th) and science (ranked 15th), and only slightly above average mean scores in reading (ranked 16th) (OCED, 2003). Though the assessments were given to 15-year-old students (typically during their sophomore year in high school), critics of the scores were quick to point out that academic achievement in the United States began declining sharply during the adolescent years (Juvonen et al., 2004).

This lack of academic proficiency in the middle grades is the crux of the grade span configuration debate (Byrnes & Ruby, 2007). Even prior to the advent of the NCLB Act, the middle grades were identified as the turning point in a

student's career where academic achievement sharply declined (Bateman & Karr-Kidwell, 1995; Tucker & Codding, 1998). Given the fact that, in 2000, 53% of middle grades students were in a 6-8 school configuration, and 83% were in middle and junior high school configurations combined, the grade span configurations of these schools were targeted as the culprit (Bateman & Karr-Kidwell, 1995; NCES, 2011a; Tucker & Codding, 1998). Bateman and Karr-Kidwell (1995) declared middle schools a "floundering ground" (p. 29), and Tucker and Codding (1998) of the National Center on Education and the Economy called them "the wasteland of our primary and secondary landscape" (p. 153). The abysmal performance of middle grades students also raised questions about the middle school movement and the Middle School Concept of the 1980s, and what it had actually accomplished in the 20 years since its inception.

Student Achievement and the Middle School Concept

Despite the best efforts of the middle school movement, and the comprehensive volume of best practices that resulted from it, middle schools continued to struggle to produce adequate academic results for their students, leading to the perception that they were a dead zone between elementary and high school education (Tucker & Codding, 1998). According to advocates of the Middle School Concept, the root cause of the disconnect between theory and results lay in implementation (Lounsbury, 2009). By the time the principles of the Middle School Concept were fully flushed out in the 1980s, middle schools had already been in operation for 20 years. Despite early optimism in the 1960s that the newly configured middle schools would address the unique academic needs of adolescents (Alexander & Williams, 1965; Gruhn & Douglass, 1956), the reality was that from the 1960s to the 1980s middle schools had accomplished very little in terms of changing the educational practices that had dominated the junior high schools that preceded them (Calhoun, 1983).

Despite the prominence of the middle school movement, the lack of a federal or state mandate for the reforms the movement proposed meant that adoption was voluntary (Lounsbury, 2009). As a result, the recommended instructional practices and organizational changes were slow to catch on, and, as some authors have argued, have only recently been implemented in earnest (Elovitz, 2007; Lounsbury, 2009). As Lounsbury (2009) noted, critics of middle schools often failed to differentiate between middle schools and the Middle School Concept, assuming that all middle schools were "operating in ways that reflected the advocacy of its proponents" (p. 2). As a result, critics were more likely to blame the organizational structure of the schools, as opposed to the individual instructional practices of each school, as the cause of poor student performance (Midgley, 1993; Cuban, 1992; Juvonen et al., 2004).

Research into Student Achievement and Grade Span Configurations Pre-Nclb

In one of the first great studies in which academic achievement and grade span organizations were examined, Becker (1987), representing the Center for Research on Elementary and Middle Schools at Johns Hopkins University, studied the impact of organizational patterns on sixth-grade student achievement. Using a random sample of 8,000 students (out of approximately 30,000) in 330 schools in Pennsylvania, he compared K-6 schools to 6-8 schools using results from the Pennsylvania Education Quality Assessment (EQA). To control for SES, Becker used a "background index" score which included SES, race, and "residential instability" (p. 8) as a control element. This index score essentially represented wealth, with higher scores denoting greater affluence than lower scores. In addition, he examined schools' instructional practices, levels of departmentalization, and ability grouping practices as sub-categories of their grade span configurations.

In his multivariate analysis of sixth-grade achievement on Pennsylvania's EQA, Becker (1987) documented a significant difference in achievement scores in the five subject areas tested favoring the K-6 elementary schools. However, Becker observed that the advantage of the elementary configuration decreased as students' wealth index scores increased. More specifically, sixth-grade students with low wealth index scores performed much better in the elementary setting than in the middle school setting. However, sixth-grade students with high wealth index scores actually performed slightly better in the middle school setting. Students with wealth index scores that were somewhere in the middle showed better results in the elementary setting, though the gains were only about one half as a great as students with low wealth index scores. Effect sizes for the significant differences between grade spans were not established, making it difficult to determine the relevance of these findings. Finally, Becker observed that between-class ability grouping worked well for students who had high wealth index scores, whereas within-class ability grouping was preferable for students with low wealth index scores.

In 1992, Wihry et al. examined four grade span classifications in relation to eighth grade performance on the Maine Educational Assessment, an assessment in which student proficiency in mathematics, reading, science, social studies, writing, and humanities is assessed. Wihry et al. classified 163 schools based on their grade span configurations into elementary, middle, junior high, and junior/senior high schools categories. In conducting their analysis, the researchers controlled for SES, teachers' salaries, instructional expenditures, per-pupil expenditures, school size, pupil-staff ratio, post-baccalaureate education, and average teacher experience. Using a multiple regression, Wihry et al. (1992) observed that SES and average teacher experience were two large predictors of eighth-grade student achievement, whereas school size and pupil staff ratio were not statistically significant predictors.

In regard to academic achievement, Wihry et al. (1992) determined that the grade span configuration of the school influenced eighth-grade student achievement, even after SES and various school and teacher attributes were taken into account. More specifically, eighth-grade student achievement was better in the elementary school setting across the board, and significantly better when compared to the junior high and junior/senior high school categories. Wihry et al. (1992) concluded that the elementary setting appeared to be the most favorable location for eighth-grade students in Maine, resulting in achievement advantages ranging from one third to a full standard deviation over other grade span configurations. However, similar to Becker (1987), effect sizes were not reported.

Four years later, Franklin and Glascock (1996) examined the effects of grade span configurations on student performance in rural schools across Louisiana. Using several different state and national tests, the researchers controlled for SES and school size. In addition, Franklin and Glascock used a student persistence index as an additional control for each school by grade. Student persistence was defined by the researchers as "those activities that indicate the holding power of a school ... [such as] attendance, suspensions, expulsions, and dropouts" (p. 10). In their analysis, Franklin and Glascock stated that students in grades six and seven in elementary configurations (K-6, K-7, and K-12) showed significantly higher achievement results on three separate academic assessments in reading and mathematics than students in middle or junior high schools (6-8 and 7-9). Effect sizes, however, were not reported.

In Connecticut, Tucker and Andrada (1997) analyzed the academic achievement of sixth graders in K-6, 6-8, and K-8 settings using the Connecticut Mastery Test. No controls were implemented to account for independent variables such as SES or school size. Using a multivariate analysis of covariance, the researchers established that students who were at the upper end of an elementary grade span configuration (e.g., sixth graders in a K-6 setting) performed better than did students in the lower grades of a secondary configuration (e.g., sixth graders in a 6-8 setting). Reported effect sizes were extremely small ($d < 0.09$ in all cases where findings were statistically significant) (Cohen, 1988). Based on the performance of certain Title I schools in their study, Tucker and Andrada concluded that schools that expected to be held accountable for student results (as the Title 1 schools in their pre-NCLB study were) produced better student results than those schools that were not held accountable.

Finally, in the one of the last significant pre-NCLB studies of grade span configurations, Offenberg (2001) examined eighth-grade student achievement between middle schools and K-8 schools using the students' ninth grade achievement data the year following their promotion to high school. The study involved 42 middle schools and 43 K-8 schools and controlled for SES and school size. In his findings, Offenburg stated that students from the K-8 schools had statistically significantly higher levels of achievement in mathematics, reading, and science on the Stanford Achievement Test, Version 9 (SAT9), than did students from middle schools. However, effect sizes were not provided.

Though most all of the early researchers examining the relationship between grade span configurations and academic achievement seemed to favor elementary or K-8 school configurations, the non-reporting of effect sizes in most all of these studies, a trend in educational research at the time (Hough, 2003), makes it difficult to determine the extent of the findings. In the one case where effect sizes were reported, the magnitude of the difference was so small as to be insignificant (Tucker & Andrada, 1997). Delineated in Table 1 the results of the research into student achievement and grade span configurations prior to the NCLB Act of 2001.

Table 1. Summary of Research into Student Achievement and Grade Span Configurations Prior to the NCLB Act of 2001

Study	Controlled Variables	Significant Findings	Setting Favored	Effect Size
Becker (1987)	Yes	Yes	K-6	Not reported
Wihry et al. (1992)	Yes	Yes	K-8	Not reported
Franklin & Glascock (1996)	Yes	Yes	K-6, K-7, K-8	Not reported
Tucker & Andrada (1997)	No	Yes	K-6, K-8	Small
Offenburg (2001)	Yes	Yes	K-8	Not reported

As the accountability movement would come to full fruition following the NCLB Act, researchers and policy makers would call for more sound research into this area to determine which grade span configuration, if any, would be the most optimal for adolescent achievement (Hough, 2003).

No Child Left Behind

The NCLB Act of 2001, Public Law 107-110, was signed into law on January 8, 2002 as an amendment to and reauthorization of the Elementary and Secondary Education Act of 1965 (ESEA) (U.S. Department of Education). One of the NCLB Act's four main goals was the assessment of all students using standardized instruments for the purpose of holding schools, districts, and states accountable for progress and for closing the achievement gap (U.S. Department of Education, 2004). The mandated testing of all students and public reporting of those results (disaggregated by various subpopulations) thrust the spotlight of accountability onto districts and schools across the nation. As a result, an incredible amount of emphasis was placed on test scores, and the desire to perform well on those assessments crept into the day-to-day activities of teachers and students (Byrnes & Ruby, 2007).

Suddenly, deficiencies in adolescent academic performance, which had been identified a decade prior to the NCLB Act, were a crisis that needed immediate remedy (Schafer, 2010). Reformers seeking a cure turned to research examining student achievement in regard to grade span configurations and located very few studies in which a statistical approach was employed to the issue that controlled for variables documented to play a large role in student achievement (e.g., SES, student mobility) (Byrnes & Ruby, 2007; Cook et al., 2008; Schafer, 2010). However, since the passage of the NCLB Act, new studies have emerged, comprised mostly of doctoral dissertations in which standardized state assessment data were analyzed in attempts to determine the effect of grade span configurations on academic achievement. These studies are examined in the following section.

Research Pertaınıng To Student Achıevement And Grade Span Confıguratıons Post-Nclb

In 2002, Connolly, Yakimowski-Srebnick, and Russo examined 2,871 students from Baltimore in grade span configurations of 6-8 and K-8. In regard to sixth-grade students, they determined that the K-8 setting had statistically significantly higher performance on standardized tests in the areas of mathematics, reading, and writing than did students in the 6-8 settings. However, effect sizes were not reported, making it difficult to determine the importance of their findings.

Four years later, Collins (2006), in a doctoral dissertation completed at East Carolina University, examined sixth-grade achievement scores in North Carolina schools, using the North Carolina End-of-Grade assessment as the instrument. Comparing 60 schools over 3 years, Collins compared the differences in mean reading and mathematics achievement scores for students in 6-8 middle schools compared to K-8 schools using a series of *t*-tests. Results were additionally disaggregated by four subgroups: Black, White, male, and female. In his findings, Collins reported that students in 6-8 middle schools who made a transition at the sixth-grade level showed statistically significantly lower mean reading and mathematics scores than did students who remained in a K-8 school. He also established that overall academic achievement was generally higher for all grade levels in a K-8 setting when compared to the 6-8 setting. However, differences in mean scale scores for the four subgroups examined did not consistently show statistical significance between school settings over time. For 2 of the 3 years, the data showed no statistically significant difference for any of the subgroups based on the configuration of the school they attended. Collins did not report any effect sizes for his significant findings, and did not attempt to control for any student variables in his study.

In the most comprehensive study on grade span configurations to date, Byrnes and Ruby (2007) compared student achievement between preexisting K-8 schools, emerging K-8 schools, and the 6-8 middle schools in Philadelphia. Examining longitudinal data over 5 years in 95 schools (involving 40,883 eighth-grade students), the researchers employed multilevel and hierarchical linear statistical models and controlled for the following variables: prior achievement, cohorting, teacher attendance, certification, average teacher experience, student-teacher ratios, average grade size, and region. Using the SAT9 as the instrument, and focusing on eighth-grade students, Byrnes and Ruby noted that the more established K-8 schools demonstrated higher levels of achievement than did middle schools. More specifically, normal curve equivalents in both mathematics and reading on the SAT9 were significantly higher in preexisting K-8 schools than in middle schools. Effect sizes, however, were small (d = 0.19 for mathematics and d = 0.11 for reading) (Cohen, 1988). In addition, the researchers ascertained that students at emerging K-8 schools had lower levels of achievement when compared to middle school students who were taught by less experienced teachers. Byrnes and Ruby speculated that emerging K-8 schools might require time in order for an instructional environment supporting best practices to flourish.

Byrnes and Ruby (2007) drew several stark conclusions from their research. Emphasizing the low effect sizes, and the fact that their models accounted for less than one half of the between-student variation in achievement, the researchers concluded that the K-8 school setting did not represent a “silver bullet” for raising adolescent achievement, and questioned whether or not the resources required to convert existing middle schools to the K-8 configuration was truly worthwhile (p. 132). Noting that a good deal of the unaccounted for variance resided in factors such as parental involvement and home environment (factors that schools and school administrators could not reasonably address) the researchers questioned the accountability movement in general, stating that "linking ... a school’s annual performance to [a] reward and punishment system might be the wrong method for reaching the right goals” (Byrnes & Ruby, 2007, p. 133).

In her dissertation from Fayetteville State University, Sanders-Smith (2009), similar to Collins 3 years before her, examined results on the North Carolina End-of-Grade assessment in 108 schools (81 middle schools and 27 K-8 schools) for the 2004-2005, 2005-2006, and 2006-2007 school years. Sanders-Smith compared results between middle and K-8 schools for all 3 years using a series of t-tests and reported no statistically significant differences in terms of academic achievement. However, one major drawback of the study was the fact that, although SES was identified in the methodology section as a well documented indicator of student success, no attempt was made to control for this variable in comparing schools (Sanders-Smith, 2009).

Watson (2009), in a doctoral dissertation completed at the University of Montana, examined student achievement between intermediate (5-8, 6-8, 7-8, or 7-9 grade configurations), elemiddle (schools containing both primary and middle grades—a definition that differs from Hough’s [2005] definition used in this study), and K-8 schools using the Montana Comprehensive Assessment System, Phase Two, a criterion referenced test. Test data were gathered from the 2004-2005 school year, and involved 11,690 students from 58 K-8 schools, 156 elemiddle schools, and 57 intermediate schools. Accounting for SES and school size, Watson used a factorial analysis of variance to compare student performance between schools and determined that grade span configuration did not play a statistically significant role in achievement results.

In her doctoral dissertation out of the University of Maryland, Fink (2010) analyzed the effect of grade span configuration between middle and K-8 schools in relation to student achievement and attendance. Using a multilevel statistical approach, which accounted for ethnicity and SES, Fink stated that scores on the Maryland State Assessment were statistically significantly higher for sixth-grade students in reading and mathematics in a K-8 school setting. For Grades 7 and 8, however, statistically significant differences were not reported. Though Fink noted that results were only slightly better in K-8 schools, effect sizes were not given.

Finally, in her doctoral dissertation, completed at the University of Central Florida, Schafer (2010) analyzed the achievement results of sixth-grade students on the 2009 Florida Comprehensive Assessment Test. Controlling for SES, results were compared between K-6, K-8, and 6-8 school configurations. In both mathematics and reading, the K-6 school configuration had statistically significantly higher scores over 6-8 schools, with mixed results between K-6 and K-8, and K-8 and 6-8 schools. However, Schafer did not report effect sizes for any of the comparisons made, making it difficult to determine the practical importance of her findings.

When analyzed collectively, research about the effects of grade span configuration on student achievement conducted after the passage of the NCLB Act has not pointed to an optimal organizational structure (Elovitz, 2007). In addition, the post-NCLB research, consisting mostly of doctoral dissertations in education colleges across the country, has been plagued by inconsistent research practices (e.g., the lack of controlling for student variables known to play a significant role in student achievement and the non-reporting of effect sizes). Summarized in Table 2 are the results of the research into student achievement and grade span configurations after the passage of the NCLB Act of 2001.

Table 2. Summary of Research into Student Achievement and Grade Span Configurations After the Passage of the NCLB Act of 2001

Study	Controlled Variables	Significant Findings	Setting Favored	Effect Size
Connolly et al. (2002)	No	Yes	K-8	Not reported
Collins (2006)	No	Yes	K-8	Not reported
Byrnes & Ruby (2007)	Yes	Yes	K-8	Small
Sanders-Smith (2009)	No	No		
Watson (2009)	Yes	No		
Fink (2010)	Yes	Mixed	K-8	Not reported
Schafer (2010)	Yes	Yes	K-6	Not reported

Middle School Achievement Post-Nclb

Though the age of accountability forced states, districts, and schools to go under the microscope of public scrutiny in terms of academic achievement, adolescent students continued to languish in regard to overall academic performance. Ten years after the NCLB Act was passed by Congress, results on the NAEP were somewhat better than in 2000, but still far below the desired levels sought in the NCLB legislation. More specifically, in 2011, only 35% of eighth graders scored in the proficient category on the mathematics assessment (up 9% from 2000) (NCES, 2001c) and only 34% scored in that same category on the reading assessment (up 2% from 1998) (NCES, 2001d). In addition, only 30% of eighth graders were proficient on the science assessment administered in 1998 (down 2% from 2000) (NCES, 2009). Although the results detailed above were specifically for the 2009 and 2011 NAEP administrations, overall results in mathematics and reading between 1998 and 2009 were similar (NCES, 2009, 2001c, 2001d). Internationally, achievement trends were not much better.

In 2007, 47 countries participated on the TIMSS assessments in mathematics and science (NCES, 2007). Similar to results 8 years earlier, eighth-grade students in the United States scored only slightly above the international average in mathematics (with a mean scale score of 508, an increase of six points from 1999) (NCES, 2007). Though scaled scores were only slightly better than in previous administrations, the United States' overall rank had improved from 19th to 9th, indicating that other nations had slipped in terms of overall achievement (NCES, 2007). However, of the five countries that scored significantly higher than the United States in 2007 (all of them located in Asia), all had higher average scale scores than the top performing country in 1999, indicating that the achievement gap between the highest performing countries and the lowest performing countries was expanding dramatically (NCES, 2007).

On the TIMSS's science assessments, the United States improved from an average scale score of 515 (in 1999) to 520 (in 2007), ranking 11th out of the 47 participating countries (an increase from 18th 8 years earlier) (NCES, 2007). However, unlike results in mathematics, of the 10 countries that ranked higher than the United States in science—all performing significantly better—none had broadened the achievement gap (NCES, 2007). In 2009, 65 countries participated in the international PISA assessment program (up from 41 countries in 2000) (OECD, 2010). Since the 2000 administration, the United States had not made any progress in closing the gap among the other participating countries. Results were that in mathematics scaled scores had declined six points since 2000, placing the United States 31st (OCED, 2010). In addition, scores in reading and science were only slightly above average, ranking the United States 16th and 23rd, respectively (OCED, 2010). Although the results detailed above were from the 2009 administration of the PISA, scores from the 2003 and 2006 administrations were similar in terms of progress and overall global rank (OCED, 2010).

Public criticisms against middle schools began after initial NAEP and TIMSS results were reported in the 1990s. Tucking and Codding (1998) summed up the sentiments of many at the time when they exclaimed that "caught between the warmth of a good elementary school and the academic seriousness of a good high school, middle school students

often get the least of both and the best of neither" (p. 153). However, after the advent of the NCLB Act and subsequent NAEP, TIMSS, and PISA results, criticisms of the middle school configuration escalated sharply. In 2007, Gaudet, a senior policy analyst at the Donahue Institute at the University of Massachusetts declared that "middle schools [were] the great disaster of the education system" (Jonas, 2007, p. E1). Others called middle schools the Bermuda Triangle of education (Juvonen et al., 2004), and the weak link in the public education system (Lounsbury, 2009). Yecke (2006), the former Chancellor of K-12 Public Schools for the Florida Department of Education, declared that "U.S. middle schools are where student academic achievement goes to die" (p. 20).

However, in addition to the limited and inconclusive post-NCLB studies pertaining to academic achievement and grade span configurations, it should be noted that the NAEP, TIMSS, and PISA assessments have never disaggregated results by school or grade span configuration (NCES, 2007, 2009, 2011c, 2011d; OCED, 2010). As a result, the majority of the criticisms leveled against middle schools in terms of academic achievement have been based on nothing more than guilt by association—given the fact that the majority of adolescent students happen to be in either middle or junior high school configurations at the time results were reported (Coladarci & Hancock, 2002; Elovitz, 2007; Hough, 2003; NCES, 2011a; Renchler, 2002; Weiss & Kipnes, 2006). Despite this fact, a perfect storm comprised of public criticism, poor academic performance across the board, and previous research establishing deficiencies in middle schools in regard to various social-emotion factors would lead to drastic action at state and local levels in an attempt to remedy the situation.

The K-8 School Reform Movement

The growing criticisms against middle schools, together with national and international assessment data and previous research into the social-emotional well being of middle school students, would eventually lead to a massive school reform movement seeking to make the K-8 school configuration the dominant setting for adolescent education. In several ways, the K-8 school setting had not gone away. As well as accounting for roughly 11% of the school configurations that contain adolescent students prior to the reform movement (NCES, 2011a), the K-8 school configuration has also remained a popular choice among private and parochial schools, as well as having a strong presence in several European countries (Herman, 2004). From 2000 to the present, states such as Massachusetts, Pennsylvania, Ohio, Tennessee, Oklahoma, Maryland, and New York began reorganizing a number of their middle schools into K-8 schools (Hough, 2005; Pardini, 2002; Reising, 2002). In addition to state-wide movements, a large number of public school districts in Cincinnati, Cleveland, Philadelphia, and Baltimore began undertaking massive conversions of their middle schools to the K-8 configuration (Pardini, 2002).

In spite of the rapid embrace of the K-8 school setting, many researchers were quick to point out that these school conversions were being undertaken without a sound research base, and that studies concerning academic achievement and grade span configurations had not produced a "silver bullet" for addressing the performance woes of middle grade students (Byrnes & Ruby, 2007, p. 132; Cook et al., 2008; Weiss & Kipnes, 2006; Wihry et al., 1992). Byrnes and Ruby (2007) observed further:

> While the existing research has been clear on what the advantages of K–8 schools over middle schools are and for what reasons they may exist, the actual amount of research that has been done is quite small considering how widely the policy of K–8 conversion is being adopted across the United States. (p. 107)

In many ways, the most recent research in which academic achievement has been compared between middle and K-8 schools has been an attempt to provide justification for a reform movement that has already taken place (Byrnes & Ruby, 2007; Fink, 2010). In an attempt to provide a clear understanding of the connection between academic achievement and grade span configurations, researchers have continued to call for additional studies (Byrnes & Ruby, 2007; Coladarci & Hancock, 2002; Combs et al., 2011; Cook et al., 2008; Educational Research Service, 2004; Hough, 2003; Klump, 2006; Renchler, 2002; Viadero, 2008).

Theoretical Frameworks

During the course of the grade span debate, two theoretical frameworks have been utilized. More specifically, school transition and instructional environment have been consistently used by policy-makers, researchers, and reformers to frame aspects of adolescent education pertaining to grade span configurations. Transitions are the changes students make when changing from grade to grade, teacher to teacher, and, for the purposes of this study, school to school (Anderman & Midgley, 1997). Instructional environment, on the other hand, seeks to classify grade span configurations in relation to their ability to produce the most conducive setting for fostering and sustaining best

practices in instructional delivery (McPartland et al., 1987).

Since the early 1900s, these two frameworks have served as the focal point for almost every researcher seeking to answer questions about the effectiveness of various grade span configurations, and the twin lenses through which all results have been discussed. Additionally, though both frameworks have remained constant in definition and understanding, their implications in relation to the debate surrounding middle schools have changed drastically over the course of time, representing a near 180 degree shift in perception for both frameworks. In the late 1800s, school transition was seen as the vehicle for providing students better opportunities in education, serving as a preparatory stepping stone to high school (Bedard & Do, 2005; Eichorn, 1966). Since that time, school transitions have come to represent the root cause for most of the negative outcomes associated with grade span research (Byrnes & Ruby, 2007). In similar fashion, proponents for the creation of junior high schools in the early 1900s, and middle schools 60 years later, would cite the grade span configurations of these schools as being the most optimal for producing an instructional environment in which the unique needs of adolescent students could be addressed (Epstein & MacIver, 1990; Hough, 2005; Lee & Smith, 1993; Midgley, 1993; Offenberg, 2001). However, researchers have indicated that just the opposite might be true (Byrnes & Ruby, 2007; Coladarci & Hancock, 2002; Hough, 2005; Offenberg, 2001; Yakimowski & Connolly, 2001). Both frameworks are discussed in more detail in the next section.

SCHOOL TRANSITION

Since the early 1900s, school transition has played a major role in the grade span configuration debate. In fact, grade span configurations have always been "inextricably linked" to school transitions "because grade spans dictate to a large degree when children will move between schools" (Burkam et al., 2007, p. 290). Although transitions occur within schools as students move from grade to grade and teacher and teacher, students face the most transitional effects when they move from school to school (Anderman & Midgley, 1997). These transitional effects include adjusting to new environments, buildings, faculties, routines, schedules, and instructional configurations (Combs et al., 2011). Although schedule changes and shifts in instructional configurations have been more commonly associated with transitions between the major tiers of the public education system (e.g., from elementary to middle school or from middle school to high school), these changes are present to a lesser degree when dealing with transitions within tiers (e.g., changing elementary schools).

From the early 1900s to the late 1970s, transitioning to a junior high or middle school was seen as a benefit to the student in their overall progression through the schooling system—preparing them for the rigors of high school (Bedard & Do, 2005; Eichorn, 1966). However, in the late 1970s, prior to the middle school movement, Feld et al. (1979) suggested that transitioning to new schools might not be entirely beneficial for students, and commented that early adolescent students experienced so much change that they could benefit from a secure, familiar school setting. Eight years later, Simmons and Blyth (1987) pointed out that middle grade students had to undergo two major transitions in their adolescent years: puberty and a change in schools. They suggested that if students only had to deal with one of those transitions, namely puberty, by remaining in a single school setting through their adolescent years, the reduced stress could lead to higher levels of student achievement, motivation, and self-esteem.

In the last two decades, numerous researchers studying various social-emotional aspects of grade span configurations would come to associate the negative outcomes they observed (such as lower self-esteem and increased behavioral problems) with school transition (Anderman & Midgley, 1997; Arcia, 2007; Bergquist et al., 2004; Cook et al., 2008; Cromwell, 1999; Kennedy, 1993; Malaspina & Rimm-Kaufman, 2008; Mendez & Knoff, 2003; Simmons et al., 1991; Weiss & Kipnes, 2006). In addition, researchers observed that negative social-emotional trends were more pronounced when students shifted from being the oldest members of their school community to being the youngest members, a common occurrence when elementary students transition to a middle school (Byrnes & Ruby, 2007). Reported declines in student confidence, leadership capabilities, and overall maturity levels would be tied back to the phenomena of social stratification, a by-product of school transition (Coladarci & Hancock, 2002; Herman, 2004; Simmons & Blyth, 1987; Yakimowski & Connolly, 2001).

In 2007, Whitley et al. stated that student transitions have "long been associated with a decline in academic performance" (p. 650). However, researchers examining academic achievement in relation to grade span configurations have yet to produce such a clear conclusion. Over time numerous researchers have hypothesized that declining

achievement in the middle grades could be traced to school transition (Alspaugh & Harting, 1995; Alspaugh, 1998; Byrnes & Ruby, 2007; Mizell, 2005); however, researchers have not firmly established that academic progress significantly differs between students who have undergone a school change during their adolescent years versus those students who have not undergone such a school change. In other words, declining academic achievement among adolescents has not been isolated to middle schools with any degree of certainty (where students typically make their first transition from elementary to middle school). As criticisms against middle schools have increased in light of unacceptable student progress on national and international assessments, proponents of the K-8 school reform movement began to cite the school transition framework as the foundation for their reform policies. In 2002, Byrd-Bennett, the CEO of Cleveland Schools, a district embarking on a massive K-8 reform program, remarked:

> Here we were, taking children at 10—at their most delicate—and ripping them from a stable school environment. Then we put them in a new school where they had to move from class to class, learning to deal with a series of other adults while they were still learning to deal with each other. (Pardini, 2002, p. 6)

Instructional Environment

The instructional environment of a school encompasses a large number of school characteristics and processes such as departmentalization, climate, curriculum, class size, grading practices, homework policies, teaching styles, and emphasis on testing and assessment (Wihry et al., 1992). McPartland et al. (1987), using national and state data, noted that grade span configurations play a large role in determining staffing, scheduling, and student grouping practices of a school. Summing up the primary differences in instructional practices between elementary and secondary schools across the country they observed:

> Elementary grades are much more likely to assign teachers to self-contained classes with heterogeneous student enrollments, in which within-class ability grouping is used to focus instruction in reading and sometimes in math to match individual student differences. At the other end of the continuum, secondary students are usually in departmentalized schools that establish separate tracks and/or classes in which enrollment is determined by students' measured academic performance, and in which between-class groupings usually remain static for the entire school term or school year. (p. 26)

Conceptually, middle schools should fall somewhere in the middle of this spectrum. In practice, however, middle schools have always been more closely aligned with high schools in organizational structure and instructional practice. They typically employ a school day that is segmented into several subject-specific periods, with teachers specializing in academic subject areas (Weiss & Kipnes, 2006). As a result, middle school teachers typically see many students every day for a short period of time, a structure that does not allow for much individualized student attention or personal student-teacher relationships (Weiss & Kipnes, 2006).

One of the key assumptions of the Middle School Concept was the belief that the grade span configuration of the middle school was ideal to foster an instructional environment that could better support team teaching, mixed level classrooms, and small learning communities (Epstein & MacIver, 1990; Hough, 2005; Lee & Smith, 1993; Midgley, 1993; Offenberg, 2001). However, 20 years after the rise of the middle school, researchers (e.g., Lounsbury, 2009; Wormeli, 2006) have indicated that the majority of middle schools across the nation had failed to institute many of these strategies. Lounsbury (2009) noted that even though middle schools were able to foster an instructional environment conducive to best practices, most instructional leaders at those schools had simply not chosen to do so. However, advocates of the middle school movement were quick to point out that in cases where middle schools had embraced the model, students flourished (Felner et al., 1997).

In response, policy makers began making the argument that the instructional environment the Middle School Concept espoused was not better suited to one particular grade span or another, but, rather, was indicative of an instructional climate that could be implemented in any school configuration (Wihry et al., 1992). Proponents of the Middle School Concept essentially agreed with this assertion in the 2000s, claiming that documented successes in K-8 school configurations were simply the result of those schools employing Middle School Concept recommendations (Borman, Hewes, Overman, & Brown, 2003; Wormeli, 2006). With the admission that academic and social-emotional success was more a product of sound instructional practices, as opposed to grade span configurations, the theoretical claim made by the middle school movement that middle schools were better suited to support those practices was questioned. In the 1990s, little evidence was available on whether or not the grade span configuration of a school made it more susceptible to fostering a particular instructional environment (Wihry et al., 1992). However, since the passage of the NCLB Act, and spurred further along by the K-8 school reform movement, a small number of studies have been

introduced that reinforce the idea that the K-8 school setting may be, in fact, more conducive to an instructional environment that supports best practices—a complete reversal of the initial claims of the middle school movement.

Researchers examining the staffing practices of middle schools observed that they were plagued by lower rates of retention, less experience, and lower rates of certification than at the elementary and high school levels (Jackson & Davis, 2000; McEwin et al., 1996; National Forum to Accelerate Middle Grades Reform, 2002). Though comparisons were not made between K-8 and middle schools, Erb (2006) noted that the problems associated with staffing at the middle school level negatively impacted their ability to foster a positive instructional environment. In addition, data related to school size detail that K-8 schools typically have fewer students in each grade-level than do middle schools (Byrnes & Ruby, 2007). After numerous researchers confirmed that strategies such as team teaching, professional learning communities, and mixed level classrooms were more commonly present in the K-8 school setting than in the middle school setting, researchers speculated that the smaller grade cohorts observed in K-8 schools were more conducive to such practices (Byrnes & Ruby, 2007; Coladarci & Hancock, 2002; Hough, 2005; Offenberg, 2001; Yakimowski & Connolly, 2001). Although more research needs to be conducted, early findings in relation to instructional environment seem to indicate that the organizational structure of the K-8 school is better suited to support the best practices put forward by the Middle School Concept. Because determining which instructional practices are being used by any given school in a large scale empirical study can be extremely difficult, academic achievement has become the surrogate indicator for a sound instructional environment (Byrnes & Ruby, 2007).

SUMMARY

The history of grade span configurations pertaining to adolescent students has been characterized as the "the longest-running debate in middle level educational research" (MacIver & Epstein, 1993, p. 520), and the "most extensive educational reform movement in the United States" (Lounsbury, 1991, p. 68). From the establishment of the first junior high school in the early 1900s to the reorganization of middle schools into K-8 schools in the 2000s, policy decisions pertaining to school organization appear to have been formulated more in regard to pragmatic and structural considerations than sound research. Even though negative outcomes related to various social-emotional variables have been firmly linked to middle schools in the body of research, the connection between middle schools and poor academic performance has yet to be established with any degree of certainty. What has been undeniable is the fact that adolescent students are not meeting society's academic expectations. Moreover, middle schools have taken the brunt of the criticism for results that reinforce that conclusion. In addition, the body of research pertaining to grade span configurations and their effect on academic performance is limited and riddled with inconsistent and flawed research practices. Finally, the history of grade span configurations in relation to adolescent education has seen the rise of two major reform movements (i.e., the initial conversion of K-8 schools in the early 1900s to junior high schools [and then to middle schools by the 1980s] and the K-8 School Reform Movement of the 2000s), and although the two major theoretical frameworks associated with this topic (i.e., School Transitions and Instructional Environments) have remained consistent in regard to definition and understanding, they have, at the same time, been used to justify both the creation and the dismantling of middle schools.

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