The Influence of Cognitive Autonomy and Learning Environments on Student Academic Performance: An investigation of the relationships between levels of cognitive autonomy, aspects of school learning environments and academic performance at the ninth-grade level

by

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ABSTRACT

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Students transitioning from middle school to high school often experience academic difficulty in the ninth grade. The discontinuance between the two systems gives rise to the need for students to adapt to new academic environments. Academic failure or success is a predictor of high school graduation. Research reveals the personal characteristics of students influence their successful adaptation to this transition and that the academic achievement of students depends upon the design of the learning environment.

This goal of this study was to examine whether the student characteristic of cognitive autonomy showed correlation to academic achievement during the ninth grade. This study also examined the relationships of non-cognitive characteristics of students to academic achievement. A sample of 458 ninth-grade students in a suburban high school participated in this study. The student participants were representative of a diverse community, allowing for the personal non-cognitive measures of students to include ethnicity, language proficiency, and gender.

Methodology included administration of a survey to the ninth-grade student population at the selected school. We entered the resulting survey data and demographic information into a statistical program, and academic information for each student was obtained from the school's student information database. Using a variety of statistical analyses, we disaggregated the data and examined for patterns giving indications of the relevance of student characteristics to their academic achievement. Specifically outlined in this study are the mean values of disaggregated data and correlations between cognitive characteristics, non-cognitive characteristics, the learning environment, and student academic achievement.

The results of the study indicated the characteristic of cognitive autonomy to have minimal influence on student academic achievement while non-cognitive characteristics of students showed stronger correlation to academic performance. The resulting implications from

this study centered on improving teacher understanding of student characteristics and the resulting need to alter instructional practices. Further implications arise for district and site leaders and center on school structure, staff development, and budget considerations. While centered on the ninth-grade transition point, the implications from this study can be scaled to include further aspects of the high school system.

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you. You began this journey with me, and I know you are here in spirit at its completion. I hold you deep in my heart and this accomplishment is in your honor. I will always love you.

CHAPTER I: INTRODUCTION

This study seeks to explore the phenomenon of transition from middle to high school and investigate how student characteristics during this transition influence ninth-grade academic achievement and student persistence in high school. Our purpose is to understand how the specific characteristic of cognitive autonomy, non-cognitive characteristics, and the school-learning environment interact with each other to influence academic achievement. We anticipated that the knowledge gained from this study would illustrate discontinuance between school practices and the developmental stages of the students, thereby informing the understanding of high school administrators and teachers.

A school-student disconnect is dropping out of high school. Despite the implementation of programs to assist students, poor graduation rates and the academic achievement gap persist.

Nature of the Study

The phenomenon of transition significantly influenced this study, and we consider the understanding of transitions to be a foundational piece for this study. Adaptation to the transition from middle to high school influences student success in the ninth-grade year. We note the critical factor is the student's ability to adapt to the transition (Berliner, 1993; Mizelle; Schlossberg, 1981). The characteristics of the individual students greatly affect their adaptability. This study will focus on the characteristics of cognitive autonomy, non-cognitive factors influencing student academic achievement, and the school-learning environment.

The following questions will help us to understand the interrelationship of the student characteristics and the learning environment as they relate to academic achievement:

1. Is there an association between cognitive autonomy and successful adaptation to high school as demonstrated by student academic performance?

2. Is there a relationship between cognitive and non-cognitive factors as applied to student academic achievement?

3. Is there any association between cognitive autonomy or non-cognitive factors and other student characteristics, such as gender, ethnicity, or length of time in the school district?

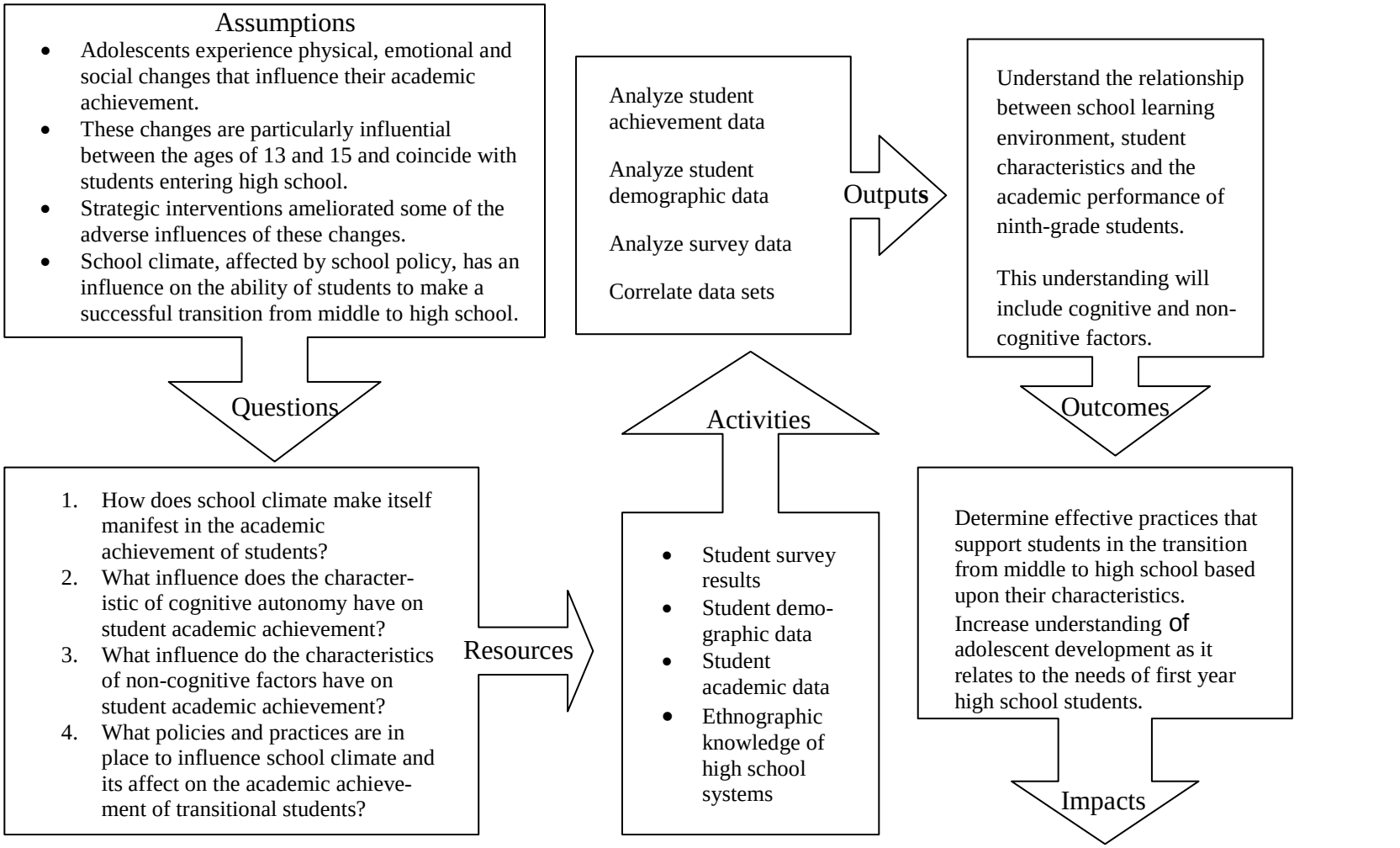
4. If the associations above are determined to exist, what are the implications for school learning environments?

Theoretical Framework and Logic Model

The notion of theoretical pluralism is emerging in the field of education (Griffiths, 1997; Hoy, 1996) due to the vast scale and complexity of the system. Multiple theories allow for a more complete examination of a problem. When using multiple theories, identification of the problem occurs first; we then follow with the selection of theories that address the problem. Situated within three theoretical areas this study takes inspiration from: transition theory, stage environment-fit theory, and critical theory. The following page displays a model illustrating this logic, Figure 1.

Transition is effectively described as a staged process that covers the passing from one condition or environment to another. Bridges helps to further clarify the process of navigating transition by advancing a three-phase model. Phase one involves letting go of the old ways; phase two is an in-between phase where the old is gone but the new has yet to arrive; and finally phase three signals the completion of the transition process and emergence into new purpose and identity (Bridges, 2003). As previously detailed successful adaptation to the new condition or environment is essential in the process and characteristics of the individual will influence adaptation (Schlossberg, 1981; Turner, 2007).

Figure 1: Minimizing the academic difficulties of first-year high school students



Stage-environment fit theory contends that the high school environment does not match the needs of ninth-grade students and their current stage of adolescent development. An individual's ability to adapt to an environment is highly dependent upon the "interrelationships between the characteristics of the person and the characteristics of the environment" (Mowbray, 1980). This theory advocates meeting the needs of transitional students through changing the environment of schools. First proposed by Eccles et al. this theory draws upon the tenets of person-environment fit theory and proposes that, at a time when adolescents developmentally need more autonomy and more support from adults, the school system becomes more restrictive in its regimens and requirements. At the same time, parents and other significant adults seem to surrender academic control and critical academic decisions to the students (Falbo, 2001; Legters, 2001). This mismatch contributes to the lack of academic success experienced by some students at this transition. Stage-environment fit theory underscores the relevance of the development of student cognitive autonomy to the school learning environment.

Critical theory addresses the institutional factors contributing to or detracting from student academic success. Critical Theory maintains that existing practices and structures of schools impede the academic success of some students because of the students' characteristics. "A critical theory of organization tries to deconstruct social reality to demonstrate how modern organizations serve the dominant economic and political interest" (Hoy, 1996). Using this theory provides a lens to examine existing organizational practices that constrain the successful adaptation of students because of their characteristics. The intent is to determine those practices that enhance or clearly detract from the successful adaptation in the transition from middle to high school. Critical Theory underscores the relevance of non-cognitive factors within the school-learning environment to student academic achievement.

Rooted in the juncture of these three theories, this study emerges from a pragmatist perspective. Typically associated with mixed methods research, the pragmatist seeks to find "what works" and then to use that information to inform practice (Creswell, 2003; Creswell & Plano Clark, 2007). In his description of the four worldviews used in research, Creswell gives the following characteristics as associates of pragmatism:

1. Consequences of actions
2. Problem centered
3. Pluralistic
4. Real-world practice oriented

These characteristics of a pragmatic lens align as follows to the problem presented:

1. If school leaders do not understand the phenomenon of transition, they cannot structure their organizations in such a way as to facilitate the successful transition of students.

2. Persistence in school can be negatively impacted if students are not successful at this juncture.

3. In order to ameliorate the negative influences on students in transition, there must be an understanding of not only the transition phenomenon but of adolescent development in relationship to the organizational environment as viewed through a critical theory lens.

4. From this pluralistic view, we can identify effective practices.

Theories and research are useful tools to solve the problems of a dynamic practice. As new knowledge and evidence emerges, theories are rendered more or less useful, and we as practitioners must adjust our focus, methods, and strategies. Hoy eloquently illustrates this notion in the following analogy.

> …we are like sailors who must repair a rotting ship at sea. We trust all but the weakest timber, which we must replace. The knowledge that the timbers we trust today will be replaced tomorrow because they are also rotten in no way suggests that our trust has been misplaced. (Hoy, 1996)

Assumptions

The results of the review of the literature, the researcher's background in school leadership, and the high dropout rate for high school students inform the following assumptions. There is a disconnection between the needs of ninth-grade students as they transition into high school. Currently high schools have not considered the cognitive autonomy characteristic of students to help guide their educational practices. While there has been considerable focus on closing the academic achievement gap, we have not fully and specifically considered the notion of non-cognitive factors as they relate to the learning environment.

The following premises support these primary assumptions:

Premise 1: First-year high school students face particular difficulties in adapting to the transition from middle to high school.

Premise 2: Some of these difficulties will adversely influence/affect student academic achievement.

Premise 3: The school-learning environment will also influence student academic achievement.

Premise 4: Some of the factors that might influence the ability of students to successfully make the transition from middle to high school include:

a. The difficulty students face in learning to become autonomous learners.

b. Teacher responsiveness to the difficulties students face in learning how to become autonomous learners,

c. School policies toward entry-level students,

d. Academic expectations (i.e. rigor of academic programs),

e. School climate (school safety, school demographics, school culture, staff mobility, school prestige, community demographics),

f. Student characteristics such as race, ethnicity, language, income, student mobility,

g. Community definitions of educational success.

Premise 5: The stage or level of adolescent development influences the student's ability make a successful transition from middle to high school.

Premise 6: School site leadership directly influences the school-learning environment.

Limitations

The limitations of this study are rooted in the fact that one site is studied. We do not intend to imply the data collected from this site will be representative of all high schools, but we do believe the findings will help educators understand the notions of cognitive and non-cognitive factors, as well as their relationship to the learning environment and student academic performance. The study of one school allowed for a deep analysis of the students and their academic performance during their ninth-grade year.

Additional qualitative data gathered from student interviews would further enhance this study. We believe the additional data would further clarify the reasoning behind some of the student responses to the survey questions and give greater insight to understanding the nature of the non-cognitive factors influencing student academic achievement.

Significance of the Study

The graduation rates of students in the state and nation are currently unacceptable. We know that 29% of students are failing to earn a high school diploma, and when disaggregated, this number rises to 45% for Latino and African American students. We have also understood from the research that the failure to earn a high school diploma can be predicted by examining student academic performance during the ninth-grade transitional year of high school. Students who fail two or more core academic courses are at greater risk of dropping out of school. In addition to the poor graduation rates, the achievement gap persists.

The phenomenon of transition will be further discussed in the literature review, as will adolescent development in terms of student cognitive autonomy. These concepts, tied together with an understanding of school learning environments and non-cognitive factors, will help us understand the implications of data presented from the findings. The notion of transition, school learning environment, and the factoring of adolescent development into the student academic achievement are relevant and timely to educational practice. Understanding the importance of student characteristics as they relate to the transition to high school and the learning environment will also help to address factors contributing to the achievement gap.

This study will lead to implications for re-structuring the learning environment; it also includes implications for re-structuring pedagogical practices. Also linked to educational leadership, the research presented in this study can serve to assist leaders in structuring the organization of high schools and in providing staff development for teachers serving ninth-grade students.

Each of the subsequent chapters will provide a lens for understanding how cognitive and non-cognitive factors influence student academic achievement. Chapter II is a comprehensive literature review that expands upon the concepts presented in this introduction and further includes literature detailing school structures designed to improve student achievement during the ninth grade.

In Chapter III, we review the methods used to conduct this study. Chapter III also includes data that reveal a clear picture of the school and survey population. Rationales for certain structures of this study are presented here as well.

Chapters IV and v present the findings from analysis of the data and interpretations of those findings. Finally, in Chapter VI we summarize the findings and present our conclusions and recommendations.

CHAPTER II: REVIEW OF THE LITERATURE

The Problem

Currently, in the United States, the failure of students to persist in high school has led to 29%of students failing to earn a high school diploma. Disaggregated data reveals that for minority, economically disadvantaged, and second language learners, the percentage increases to 45% (Kaufman, 2004; Rumberger, 2008; C. C. Swanson, Duncan, 2003b; Zvoch, 2006b). Failure to obtain a high school diploma has far-reaching consequences for students. Diminished earning potential, poor health, early child bearing, and the likelihood of imprisonment all have a direct correlation to the failure to earn a high school diploma (Laird, 2006; Reimer & Smink, 2005; Rumberger, 2008).

Successful transition to high school has emerged as a prime area of focus for educators. The literature reveals a resulting tendency for students to drop out of school if the transition is not successful (Alspaugh, 1998a; Barber & Olsen, 2004; Berliner, 1993; Felner, 1982; French, 2000; Hammond *et al.*, 2007; Legters, 2001; Zvoch, 2006b). Impetus for this heightened focus is in part due to the requirement to comply with the No Child Left Behind (NCLB) Act of 2001. Review of NCLB shows that states are required to monitor the academic progress of students and ensure they meet minimum levels of academic proficiency. This requirement includes reporting graduation rates and using them to determine adequate yearly progress (AYP) towards academic goals set by NCLB. While NCLB is concerned with the graduation rates of all students, four subgroups are monitored independently of the whole, and schools are held accountable for their progress. The four subgroups include economically disadvantaged students, African American and Hispanic ethnic groups, students with disabilities, and second-language learners. NCLB also mandates the use of graduation rates as one indicator of compliance with the law. Methods of calculating the graduation rate are required to be "valid and reliable," yet across the United States there is lack of consistency in calculation methods (Kaufman, 2004; Orfield, 2004; Reyes, 1991; Somers, 2004; WestEd, 2004).

By the year 2019, all California high schools will be required to achieve a graduation rate of 90 percent for all students or at minimum to show adequate progress towards that goal (California Department of Education CDE, 2010a; California Department of Education CDE, 2010b). Knowing that student mobility rates may influence graduation calculations, California has implemented a statewide student identification process that tracks enrollment even as students move from school to school within the state. As this system matures over the next few years, graduation data regarding cohorts of students will become more accurate and reliable (*No child left behind act: Education could do more to help states better define graduation rates and improve knowledge about intervention strategies. Report to congressional requesters. Gao-05-879*, 2005; Rumberger, 2005, 2008; Shaul, 2005).

The overall graduation rate in California is approximately 70%. Once disaggregated, disparity is revealed for African-American, Hispanic, second-language learners, and

economically disadvantaged students (Zvoch, 2006a). In terms of rates, 56% of African American students and 60% of Hispanic students graduate after four years of high school. This is in contrast to 78%of White students and 83% of Asian American students.

The failure of ethnic minority students, second-language learners, and economically disadvantaged students to achieve at levels comparable to White and Asian students has resulted in much discourse on matters of equity (Reimer & Smink, 2005; Seastrom, 2006). We apply the term *at-risk* to ethnic minority and economically disadvantaged students. The literature shows the largest populations of at-risk students are clustered in urban settings and that they are at greatest risk of failure to complete high school (Reimer & Smink, 2005). Swanson (2005) found the ten largest districts in California to have minority populations greater than 73%. Districts in the sampling included to Los Angeles, San Diego, Long Beach, Oakland, San Francisco, and Fresno. Heightening the concern for educators is the knowledge that the population of ethnic minority students continues to increase. According to the National Center for Educational Statistics, in 1972 racial or ethnic minority students comprised 22 % of the student population; in 2004 that number had risen to 43%.

Graduation rates are of concern as since studies show that students who fail to earn a high school diploma are faced with negative impacts on their futures. These factors include lower earning potential, increased likelihood of imprisonment, and a higher correlation to poor health and early child bearing; high school dropouts are twice as likely as high school graduates to become parents (Laird, 2006; Reimer & Smink, 2005). African Americans who did not earn a high school diploma earned average wages of $16,201 in 2003, Latinos earned $18,349, White students earned $19,110 and Asian Americans earned $19,558. With a high school diploma, earnings for these same populations increased to $23,777, $23,472, $28,708 and $25,704 respectively. Of those incarcerated in state prisons, 75% did not complete high school; the same is true for 57% of those in federal prisons.

Improving graduation rates for all students is a national focus and operates in concert with increasing student academic achievement (California Department of Education CDE, 2010a; Legters, 2001; C. B. Swanson, 2004). As previously noted, each district and school must meet goals that prove adequate yearly progress towards established performance indicators of student achievement. High school graduation is the culmination of successful programs.

The transition from middle to high school has been one area of focus in the effort to improve graduation rates. Transition to high school from middle school involves many changes for students: the size of the school, the rigors of the curriculum, learning a new campus, and a more impersonal environment. All of these factors influence academic achievement (Hughes, Copley & Baker, 2005). Studies show that, if students are unable to successfully adapt to this transition and subsequently earn two or more F's in core classes during the ninth grade, they are at increased risk for dropping out of school (Legters &Kerr, 2001; Mizelle, 1999). Given the importance of academic success during the ninth grade on graduation rates, research presented here will focus on school environments, the phenomenon of transition, and adolescent cognitive development specific to autonomy as they relate to ninth-grade students.

Methodology

A systemic search of literature, conducted through the ERIC Data Base, Wilson Web, Sage Publications, ProQuest, and Internet websites, informs the content of this literature review. Keywords included the following: adolescent development, at-risk students, cognitive autonomy, drop out/graduation rates, freshmen, freshman academy, high school, ninth grade, school climate, and transition. This selection of keywords allowed for narrowing of the literature search. It also facilitated a focused search on student needs during the ninth grade and interventions that may improve academic success during that year.

Definition of Terms

At-risk Student: Students who are at risk, either in small groups or entire ninth-grade populations, exhibited the following characteristics: ethnic minority students, economically disadvantaged students, second-language learners, and students achieving below their White and Asian peers on standardized test. The overall dropout rate for students classified as at-risk was documented as high as 47% (Seastrom, 2006; C. B. Swanson, 2004). At-risk students also experienced higher failure rates in core courses during the ninth grade.

Cognitive Autonomy: The ability of an individual to think independently of others and to make decisions

Drop-out/Graduation Rates: From the increased interest in defining the term *graduation*, guidelines are emerging that standardize graduation calculation methods and terminology related to the term *high school graduate* (Shaul, 2005; C. Swanson, Chaplin, D., 2003a). Initially in accordance with NCLB, 12 states were using a nationally standardized definition, now an additional 18 states have implemented the use of this definition (Shaul, 2005). For the purposes of this paper, the standardized definition of high school graduates will be used: students who began in ninth grade and graduated after four years of high school with a diploma (Rumberger, 2005). Students who earn Graduate Equivalency Diplomas (GEDs) and certificates of completion are not included in the term high school graduate. Students who are enrolled in high school in the ninth grade yet are no longer enrolled when the cohort reaches the twelfth grade are classified as high school dropouts.

Non-Cognitive Factors: Non-cognitive factors are those items that cannot be measured by tests and academic assessment. They are traits such as motivation, belief systems, and academic skills. Non-cognitive factors may influence student academic achievement.

Freshman: Students enrolled in the ninth grade of a high school encompassing grades nine through twelve.

Freshman Academies: Freshman academies are defined throughout the literature as grouping ninth grade students either on a campus of their own or using the school with-in a school concept, such as placing freshman in an area of the school dedicated exclusively to freshman. In fewer studies, academies consisted of groups of ninth-grade students identified as at-risk and assigned to a team of teachers dedicated to focusing on their needs. Freshman academies may also include small learning communities within the school.

School Climate: The social and professional factors that influence student academic achievement; Tied closely to non-cognitive factors, school climate encompasses the guiding philosophy of the school

Transition: The movement from one set of circumstances or conditions to another: For the purposes of this study transition shall refer to the movement from primary education, kindergarten to eighth grade, to the system of secondary education, ninth grade through twelfth grade.

Literature Review: Research suggests that experiencing less change between school levels is associated with smaller declines in academic attitudes and behavior (Causey & Dubow, 1993). Felner and his colleagues (1982) examined this idea by manipulating the amount of change that students experienced during the transition to high school. Students, whose secondary school classrooms were organized and structured to more closely resemble that of their primary school classrooms, were found to have increased academic performance. The students also held more positive perceptions of themselves and the school than students who experienced an unsupported transition between the primary and secondary environments. The long-term impact of the differences in these groups' transitional experiences is compelling. The evidence rises from the graduation rates of each group. Ultimately, students who experienced support during their transition to the secondary environment showed a dropout rate of 21% rate. This was in comparison to a dropout rate of 43% for those who experienced the transition with no support (Felner et al., 1982).

This review will focus on understanding the phenomenon of transition and the role of student characteristics in successfully navigating the transition from middle to high school. It will also examine a variety of programs designed to improve school learning environments and therefore, student achievement during the ninth-grade transitional year. Finally, the review explores the development of student cognitive autonomy, as a characteristic of students at the entry to secondary schooling. The literature will show that the characteristic of cognitive autonomy is linked to program components shown to influence successful adaptation to transition during the ninth grade.

Transition

Often viewed as an event: transition is the movement from one state of being to another. In reality, transition is the process of moving from “what is” to “what can or will be” (Cook-Sather, 2006). It is the existence between the two states of being where individuals struggle to adapt to new environments, new physical or emotional states of being, new social or cultural setting, or various combinations of these. The struggle inherent in transition allowed for Moos and Tsu (1976) to link to crisis theory and define transition as a “relatively short period of disequilibrium in which a person has to work out new ways of handling a problem.”
The notion of transition involving disequilibrium is echoed across the literature. Examples of this state of disequilibrium are present in many transitional situations. Nurses transitioning from school to work in the hospital setting, incarcerated youth transitioning from detention back to society, teachers transitioning from the credential program to classroom practice, students transitioning from one grade to another, and second-language learners transitioning to an

English-only academic setting (Alspaugh, 1998a; Ellerton & Gregor, 2003; Fu, 2004; Mora, 2002).

A career theory model that studied young adults transitioning from apprenticeships to careers detailed three distinct types of transition: anticipated transition, unanticipated transition, and non-event transition (Guichard & Lenz, 2005). Briefly, each was described as follows: anticipated transitions are those we know will occur, such as moving a residence or marriage; unanticipated transitions are just that, loss of a job, sudden death of a loved one or the winning of a lottery; and non-event transitions are those that failed to occur, such as earning a promotion.

In addition to the three types of transition (anticipated, unanticipated, and non-event), Guichard and Lenz (2005) propose the following idea. All people experiences transitions that change their "roles, relationships, routines and assumptions." Transitions take time to occur, and while in the process of transition a person's reaction to the transition is evolving. Individual reactions will vary in response to what may appear to be the same transitional situation. Finally, people may cope with one transition rather well while the next transition poses difficulty for them.

In her work regarding adult transitions, Schlossberg (1981) echoes these assumptions and adds the notion of adaptation to the concepts of transition stating, "Adaptation to transition is a process during which an individual moves from being totally preoccupied with the transition to integrating the transition into his or her life." Schlossberg cites examples of adaptation across different transitions, noting that in each example people progress through a series of stages as they adapt to their new set of circumstance. Examples include the following situations. People who are dying have stages they progress through from denial of a diagnosis to acceptance of their deaths. Mothers of premature children must progress through stages encompassing preparation for the possible death of the infant to recognition of the special needs of the infant and the necessity of bonding with the infant. Draft dodgers and deserters experience isolation and confusion as they experience new environments. In transitions with positive outcomes, individuals progress through stages, ultimately arriving at a point of assimilation into their new life circumstances (Bridges, 2003; Bullis & Yovanoff, 2006; Schlossberg, 1981).

The transition experience can produce positive or negative results for the individual involved. The ability to adapt to changes in the environment precipitates the positive or negative results for the individual. Levine (1976) posits that the balance of resources to deficits at the disposal of the individuals will influence their ability to successfully adapt during a transition. Here we see direct association with students moving from the primary to the secondary education system. We posit that adaptation results in academic success. We also note the relationship to the learning environment that is emerging now. Expansion upon this notion will be discussed later.

Across the various types of transitions uncovered in the literature, there is consistency in the resources that aid in adaptation to the disequilibrium created by transition. These protective factors include but are not limited to information, mentoring, familial support, institutional support, and preparation through the acquisition of skills required to operate in the new environment (Koizumi, 2000; Schlossberg, 1981). Koizumi uses the term *anchor points* in

describing resources. He notes that in a transition individuals hold on to anchor points as they develop their understanding of the new environment.

Education literature is rife with articles regarding points of transition as students progress through the system: pre-kindergarten to kindergarten, kindergarten to first grade, elementary school to middle school, middle school to high school, and high school to college or the work force (Alspaugh, 1998a; Berliner, 1993). Details in the literature center on potential negative outcomes as students navigate the transitions of the K-12 system. The negative outcomes all lead to one end: the failure of students to persist in the K-12 system and ultimately failure to earn a high school diploma. Although, there are many points of transition with the potential for negative outcomes, the transition from middle to high school is the focus of this study as it is critical to the successful acquisition of a high school diploma.

Multiple factors influence student transition from middle school to high school. Coinciding with their entrance into high school, students between the ages of 13 and 15 experience physical, cognitive, emotional, and social changes as part of their adolescent development (Cauley & Jovanovich, 2006). In addition, factors in the learning environment influence successful transition and are themselves the source of changes students must adapt to as they navigate this transition. The changes associated with the transition to the secondary environment include change of physical location, increased academic rigor, increased academic autonomy, and changes in school procedures. Students also experience a lack of congruence for the first time in the student population, further complicating their transition (French, 2000). These changes in environmental factors serve to compound those challenges presented by adolescent development (Barber & Olsen, 2004; Berliner, 1993; Legters, 2001). Indicators of a failure to successfully navigate the transition from one school to another include poor academic achievement, inappropriate classroom behavior, poor relations with peers, and lack of engagement in academic work (Barber & Olsen, 2004; Berliner, 1993; Rice, 2001; Smith, 1997; Zvoch, 2006b).

Characteristics of the individual will influence the successful adaptation to a transition (Schlossberg, 1981). Gender and race are among factors adding additional stressors to the transition from middle to high school. Research conducted by Akos and Galassi showed that girls experienced additional difficulty during the transitional period as a result of less connectedness to school (Akos & Galassi, 2004). Boys, on the other hand, felt more connected to school as they entered high school. Speculation exists that the ecology of high schools may be more amenable to boys because of the preponderance of extracurricular activities centered primarily on sports (Akos & Galassi, 2004).

Akos and Galassi found the influence of race on successful transition to high school rises from culture as a function of race affecting interactions with teachers and staff. Cultural identity and pressures have been demonstrated to influence academic achievement; these influences are particularly salient during the transitional period (Constantine, 2007). It is during this time that students are establishing identity as part of their adolescent development. This includes racial identity. In addition to the cultural causations, Hispanic and African American students are sometimes subject to parental expectations and familial responsibilities that conflict with those of the school. The familial expectations can force students to choose between academic achievement and familial loyalties.

Three key points emerge from transitional theorist (Turner, 2007a): transition involves leaving the old and emerging successfully into the new, transitions are navigated more successfully when there is a deliberate attempt to successfully navigate the transition, and a successful transition occurs when the challenges of the transition are understood and supports are in place to assist.

Historically, schools have addressed the transition from middle school to high school through a variety of activities or through the establishment of cohorts of freshman students, either as whole group or as small groups of "at risk" students. Documented activities to support transition include freshman orientation, mentoring, forming cohorts of at-risk students to provide additional support during the transition to high school, team teaching, and counseling (B. DaGiau, 1997a; Mizelle, 1999; J. Quint, Miller, C., Pastor, J., Cytron, R., 1999). These activities will be discussed in more detail later in this chapter.

Transition literature also revealed specific middle school interventions designed to assist students before their entrance into high school (Southern Regional Education Board, 2002). These activities included visits to the high school and opportunities to participate in summer programs, such as the preemptive Summer Algebra Academy facilitated by the University of California Office of the President. Hosted on high school campuses, this program serves to improve achievement in math and to assist student in their transition to high school. The Summer Academy operates on the premise that students who become familiar with their new campus and form a relationship with high school teachers will more successfully navigate the transition to high school.

Examination of studies discussed reveals the following regarding efforts to assist student in successful transition from middle to high school. Institutions tend to focus on small groups of students versus entire freshman class cohorts (Boykin, 2000; Holland, 2001; G. Hughes, 2005a; Lampert, 2005). Efforts that focus on entire cohorts use the separate campus model as the predominant strategy (Boykin, 2000; Hebert, 1999; Holland, 2001; G. Hughes, 2005a; Johnson, 1997; Lampert, 2005; Turner, 2007b). There is a tendency to classify entire populations of students as at-risk, based on their ethnic, linguistic, or economic background (Hebert, 1999; Johnson, 1997; Turner, 2007b). Throughout the literature, there is limited focus on schools implementing singular strategies, as well as limited focus on organizational structure or the learning environment as a construct to meet the needs of transitional students.

To further clarify the notion of transition, we use Schlossberg's Model for Analyzing Human Adaptation to Transition. Many of the studies reviewed are structured on the premises contain in Schlossberg's model and will be discussed in this section. Her model details the interrelationship of the transitional event to perceptions of the transition, characteristics of the pre- and post-transitional environments and characteristics of the individual. Assisting students with adaptation to transition is a critical area to address. With a focus on adaptation, we can consider how the characteristics of students influence their ability to adapt to a transition. The following formulate the premise upon which the model is built. "It is not the transition itself that is of primary importance, but rather how that transition fits with an individual's stage, situation, and style at the time of the transition" (Schlossberg, 1981). The factors affecting adaptation to transition must be mediated in order to assist individuals in the process. We present Schlossberg's model for adaptation to transition in Table 1

Table 1: Schlossberg's Model for Adaptation to Transition

Transition, an event resulting in: Change or assumption Change of social networks Growth or deterioration		
Perception of the Particular Transition	Characteristics of Pre- and Post- Transition Environments	Characteristics of the Individual
Role Change: gain or loss	Internal Support Systems	Psychosocial Competence
Affect: positive or negative	Intimate relationships	Sex (and Sex-Role Identification)
Source: internal or external	Family Unit	Age (and Life Stage)
Timing: on-time or off-time	Network of friends	State of Health
Onset: gradual or sudden	Institutional Support	Race/Ethnicity
Duration: permanent. temporary, or uncertain	Physical Setting	Socioeconomic Status
		Value Orientation
		Previous Experience with a transition of a similar nature
Adaptation		
Movement through phases following transition:		
Pervasiveness through reorganization depends on: 1. Balance of individual's resources and deficits 2. Differences in pre- and post-transition environments re. perception, supports, and individual		

A decline in student academic performance as students transition from school to school underscored the importance of observing cohorts over longer periods to determine which transition poses the greater risk to students (Barber & Olsen, 2004). The transition from elementary to middle school has greater negative influence over student achievement and has been studied more often than other transitions. Barber and Olsen studied student transitions over

a period of multiple years. Their study compared the effects of middle school transition to those of the high school transition for the cohort and found the two transitional periods to be similar in difficulty. The negative outcomes of the transition from eight to ninth grade were less than those of the transition from fifth to sixth grade were.

When considering the transition from middle school (MS) to high school (HS), students have previously experienced a similar transition from elementary to middle school. Studies reveal the transition from elementary to MS has similarities to that of the HS transition, and a student's adaptation to the MS transition will influence the adaptation to the HS transition. Even though more research exists regarding the MS transition, we know that high school transition presents its own long-term set of consequences if students fail to adapt.

Significantly, data from the study revealed the causal agents of decline in student performance were simultaneously similar and different at each stage. Characteristics of individuals in transition remain constant at both the middle school and high school transitional points. Students better tolerate transition at the high school level because it is the second such transition encountered by the student. Factors affected by adolescent development remained constant at both transition points and proved to have less influence on student adaptation to transition.

Progression through the stage of adolescence incorporates multiple personal transitions for students: physical changes of puberty, cognitive changes as the brain develops the ability to think in the abstract, and psychological changes as the concepts of self solidify and as social developments are influenced by these changes (Morris, A. and Steinberg, L. 2001). Added to these transitions are developmental characteristics associated with physical characteristics, including the individual's age, race, and gender. Also to be considered are socioeconomic standing, sexual orientation, and in particular any similar transition the individual has experienced before. Recall that a transition involves moving from one situation or state to another and that individuals will experience many transitions, some more or less influential. The characteristics of the individual, influences adaptation to the transition.

Even though success at the earlier MS transition is a predictor of a successful HS transition, failure to adapt at this point can result in the inability to earn a high school diploma. As previously noted, this consequence presents further challenges to students as they transition from high school to the adult environment. Conversely, the transition to high school also presents opportunity for the institution to intervene and provide anchor points for students to successfully navigate the transition. Research reveals the interventions must be predicated upon the needs of the students at this time in their development and upon student characteristics. In addition, the school environment must be tailored to meet the needs of the student.

Freshman Transition Programs

Literature reveals the transition from middle school, to high school to be a pivotal point for students. It is at this juncture that students are experiencing physical, emotional, social, and intellectual development (Pitts, 2005) while also adjusting to the differences in learning environment between middle school and high school. Students who do not successfully make the transition from middle to high school are at increased risk for poor academic performance in the

ninth grade. As we previously mentioned one indicator of poor academic performance means earning two or more F's in core classes. Poor achievement in the ninth grade is one measureable indicator shown to places students at greater risk of not graduating from high school. (B. J. DaGiau, 1997b).

The implementation of a freshman transition program is one strategy for improving academic achievement and reducing dropout rates (Kemple, 2005; J. Quint, Miller, C., Pastor, J., Cytron, R., 1999). Transition programs inherently seek to alter the learning environment to address non-cognitive characteristics of students. Emerging from the review of the literature are multiple types of freshman transition programs; K-8 schools, eighth- grade activities, summer transition programs, high school freshman academies, and small learning communities. All are examples of practices designed to improve eighth-grade student transition to high school.

In districts and schools reviewed, middle school activities— such as visits to the high school, parent information nights, and presentations to eighth grade students by high school counselors or administrators—had a positive impact on freshman transition. These activities help to address general knowledge concerns and apprehensions students have about their new school. The activities are conducted in the students' eighth-grade year and do not support students once they arrive at the high school as ninth-grade students. These strategies were implemented on a limited basis however, and not a common practice (Mizelle, 1999).

Summer remediation programs for eighth-grade students also proved to be effective. However, these programs served a limited number of students, often, small cohorts of 20 to 40 students. The focus of summer programs was often on math remediation or acceleration. Institutions like the University of California have instituted outreach programs to foster academic success as students enter high school. These programs offer academic challenges to students in a positive, uplifting environment versus a remediation program. Summer transition activities that involved a committee of parents, teachers, administrators, and students from both the eighth and the ninth grades enhanced the effectiveness of ninth-grade transition strategies. Students involved in these programs arrive on campus with connections to the facility and staff in place. Referring back to Koizumi, research shows that the summer program creates anchor points for students. The shortcoming of this strategy is the number of students served. (Chmelynski, 2003).

Significant research devoted to HS freshman academies reveals a relationship between creating a freshman academy and improving graduation rates for at-risk students. The main idea encompassed in the concept of freshman academies is the isolation of ninth-grade students, either on their own campus or in a particular section of the comprehensive high school campus. Through the process of isolation, other transitional strategies are more successfully implemented. Strategies such as teaming students, peer mentors, or tutoring, which focus on the particular needs of freshman students, are enhanced by the academy structure. Roderick (2006) concluded that the strategies employed in freshman academies are more successful in efforts to improve student graduation rates than those employed in intervention programs implemented in isolation before the ninth grade.

Researchers have explored the benefits of segregating freshman from the remaining student body and the ways this separation facilitates the implementation of additional strategies

that support freshman in transitional difficulties. As an essential component of the organizational structure of freshmen academies, these benefits are the leading topic in this review. The critical role of teachers in student instruction and support are considered next. This includes supporting students in their transition to high school through student-adult connections and the benefits of communications with parents. The review concludes with an investigation of freshman academy programs implemented in urban high schools. Here the literature reveals the success of different programs.

Structure

The location of freshmen academies is critical to their success. It is essential that the ninth-grade students separate from the rest of the student body (Fritzer, 1996; Holland, 2001; G. Hughes, 2005a; Lampert, 2005; Pitts, 2005). Two models emerged from the studies reviewed; the first model completely separates the entire freshman class from the remaining grades by placing them on their own campus or by using the "school with in a school" concept and assigning freshmen to a given section of the high school campus, either a wing or particular floor of the school. The second model selects cohorts of students identified as at risk by their under performance and creates an academy separating the students not only from the upper classmen of the school but also from the remaining ninth-grade students. This model involves one team of teachers and serves a limited number of students.

As previously stated, researchers recognize that students entering high school experience increased academic rigor and anonymity. They also experience a greater diversity of peers, increased behavioral standards, and increased responsibility for their individual academic progress within the system. Students must learn to navigate a new campus and new procedures. These changes cause feelings of uncertainty and coincide with physical and emotional changes that are occurring as well (Legters, 2001; Pitts, 2005). The segregation of the freshman provides a perceived reduction in the size of the high school campus, thus providing a sense of security for freshmen students.

In addition to the physical location of freshmen, either in their own wing or on their own campus, researchers identified the following intervention strategies as key components of ninth grade academies (G. Hughes, 2005a; Monahan, 1992; Stone, 2003): Teachers were organized in interdisciplinary teams, parental involvement, tutoring programs, and block scheduling. The smaller campus fosters these intervention strategies.

Two studies conducted by Kemple (2005) and Quint (2006) examined the implementation of teaming students. Students were scheduled with a core group of teachers and the teacher schedules arranged so they had a common planning period each day. Teaming allows teachers the opportunity to plan interdisciplinary instructional lessons targeting their students' interest. The common planning period provides opportunity for teachers to standardize expectations, identify areas of concern regarding students, and design intervention strategies. Teaming also affords students the opportunity to connect with adults and peers on campus. Scheduled together, cohorts of students share the same core teachers. The students become familiar with peers more rapidly through this scheduling design.

The two studies also attributed an increase in student attendance to teaming. In the Kemple study, attendance increased by 5.6%. The Quint study marked an increase of 1.2%, which was not significant. Teachers were better able to monitor student attendance because four to five teachers shared the same cohort. Meeting and discussing students resulted in more focus on attendance and behavior.

Along with improved attendance and behavior, there was an increase in the number of core courses passed. The Quint study noted a 4.3% increase in the number of courses passed while the Kemple study noted an increase of 30%. Both studies attributed success to the implementation of teaming. The Kemple analysis further points to an increase in students passing algebra (18%), and reading (8%), as support for an overall increase in the total credits earned. They do acknowledge that moving to a block schedule and thus providing students with the opportunity to earn more credits during a semester may have had an impact on their results. Block schedules differ from traditional schedules in the following way: The periods are usually 90 minutes instead of the traditional 58 minutes. In addition, students attend four classes per day instead of six. In this model, students are able to enroll in eight classes per year versus six; they earn extra credits because of the increase in courses completed.

Critical Role of the Teacher

The constructs of an academy facilitate improved student achievement through improved attendance and student behavior. There are also indications for improved home-to-school communication (J. Hughes, 2005b; Pitts, 2005; Janet Quint, 2006). Stone (2003) completed a study focused on teacher communication with parents in a large, urban, predominately minority, school system. Traditionally in high school, teacher-parent contacts result from behavior or academic difficulty. Within freshman academies, the teachers often tried to encourage parent participation. School-parent contact correlates to increased academic achievement. Increased parent involvement with homework and other activities are two factors contributing to the increase in achievement. Stone also noted that the size of the school affects accessibility to teachers. The freshman academy also reduces the size of the school for parents, and teaming of teachers increases accessibility.

Structuring teacher preparation time so that teams share a common prep permits collaboration. Planning interdisciplinary units, aligning curriculum to raise achievement on standardized tests, and collaboration geared towards raising the expectations of students are critical components of academies. The article “High School Change” notes that teachers who participated in the academy found their focus turned from student deficits to student capabilities, as well as ways to capitalize on the capabilities and increase expectations (Weinstein, 2002).

Bridgeland, 2006 echoes the importance of teachers in freshman academies and lists the following as critical to improving student achievement.

- Improving instructional techniques
- Aligning curriculum to state standards
- Assigning relevant and engaging work
- Improving communications between home and school

- Connecting students with at least one adult on campus

Quint (2006) identified career academies as the parent of small learning communities. The key construct in all subsequent forms of academies is the establishment of a smaller learning community. Career academies used school-within-a-school format to focus small cohorts of students on a particular career theme. Some schools established one or more career academies and were thus able to expand to the entire freshman class. This strategy did not yield significant results in improved student academic achievement. The benefits yielded were in improved employment rates (Quint). Career Academies are not widely noted in the literature as a freshman intervention strategy.

The First Things First program in Kansas City, Kansas, established groups of 350 students with core subjects and elective teachers. The group (including teachers) remained together through all four years of high school. This is not a widely implemented strategy in the literature. The Talent Development model established a freshmen academy and organized students around cores of team teachers. This was the most widely reflected practice throughout the literature. The Talent Development model showed improvement in English and math credits earned during the freshman year of 8% and 11% respectively when compared to similar schools that did not implement freshmen academies (Quint).

Referring once again to the two studies conducted under the auspices of the MDRC by Kemple and Quint, effective transition programs used a multi-pronged approach and implemented several strategies to achieve academic improvement. Freshman academies, tutoring programs, improved parent communication, block scheduling, teacher training, and improved curriculum are some examples of strategies implemented in the literature. Hertzog and Morgan found schools that implemented three or more transition strategies had lower attrition and drop out rates than those that implemented two or fewer transition strategies. Improvements are attributed to increases in attendance, decreases in disciplinary action, and improved academic achievement (Akos, 2004; Chmelynski, 2003).

Sustainability and scale emerged as critical factors in the success of ninth-grade academies. Districts that did not support academies in a multiple year continuum saw less success than those that provided ongoing support. Examples of support include funding, staff development, and release time for planning (Legters, 2001; Kemple, 2005). Successful academies experienced teacher buy-in and teacher participation in planning for the implementation of the programs.

As was previously noted, school sites that did not implement multiple strategies also experienced less success. Scale also became a critical factor in the overall success of transition programs. Some schools that implemented transition programs for select students were successful but were not able to bring their programs to scale and serve the entire ninth-grade population. This situation was attributed to lack of district support and lack of sustainability.

Data revealed throughout the literature was both qualitative and quantitative. Data sources included school records, surveys, student interviews, and school personnel interviews. Reviews of programs such as Capitol High Academy (G. Hughes, 2005a; J. L. McPartland,

Nettle; Jordan, Will; McDill, Edward L., 1996) provide data that compared control groups to academy students. Capitol High Academy consisted of 60 students, five teachers, one administrator, and one counselor. There was a control sample consisting of 65 students. Although many of the components required for an academy were present, success of the academy, as measured through such academic achievement and qualitative measures as interview and observations, was limited. The author cited a lack of teacher devotion to the project as one factor and the change of administration during the course of the year as another factor. As in the case of teacher commitment, the change in administration resulted in less leadership commitment. Ultimately through the course of the year, discipline concerns arose and impeded achievement.

Legters and Kerr studied all public high schools in Maryland using surveys. This study included 25 high-poverty schools and 113 non-high-poverty schools. An examination of the extent of implementation of transitional strategies in each school yielded the following results. High implementation resulted in greater ninth- to tenth-grade promotion rates. High poverty/ high minority schools that implemented and sustained freshman academies did not show as much improvement as some schools with limited implementation. High-poverty schools had more severe conditions to overcome. Further investigation may link to student characteristics and ways in which they were addressed or not addressed. According to Schlossberg's model, the characteristics of students do influence the success of transition programs.

Throughout the literature, the patterns of success and non-success repeat. Both the Keystone Program and High Schools that Work exhibited improved graduation rates and academic achievement (Southern Regional Education Board, 2002). Zvoch, 2006, examined 20,000 students in 11 districts, concluding that school organization and context are significant predictors of dropout outcomes. This leads to considerations regarding the importance of the learning environment Districts and schools implementing multiple strategies to address the needs and characteristics of students were more successful than those implementing less than three strategies. In addition to the implementation of multiple strategies, planning time, teacher commitment, and district support all clearly factored into the success of freshman transition programs (Cotterell, 1992; Hertzog, 1999; Legters, 2001).

Factors among the first steps in major reform efforts are building consensus among staff and increasing awareness of the needs of students as they transition from middle to high school. Carefully designed reform efforts provide teachers with encouragement and support. When schools allowed 14 months to two years of program planning, they saw a greater commitment from teachers. In addition to significant implementation planning, professional development enhances student outcome. Without professional development there is less emphasis on improving instructional practice. Even with a multi-pronged approach, without sufficient teacher commitment, professional development, and district support, reform efforts are not successful
.

The literature reveals multiple studies with significant quantitative and qualitative data to support their findings (Campbell, 2004; G. Hughes, 2005a; Legters, 2001; J. McPartland; J. Quint *et al.*, 1999; Reyes, 1991; Sellstrom & Bremberg, 2006; White, 1996). In summary the significant findings from the studies are as follows:

- Creating small learning communities (SLCs) for freshman students is a key component to improving their academic success. SLCs can lead to improved relations with teachers, diminishing the large school environment, improved focus on the particular needs of students as they adapt to their new learning environment.

- Schools located in urban areas with high-poverty student populations increased student achievement but did not close the existing achievement gaps with the various implementations of SLCs.

- District support is required for sustainability of reform efforts.

- School leadership matters in the implementation of transition programs.

- Parent involvement is an essential component to successful school reform and has is shown to improve student achievement.

- What was missing from the reviewed studies was any discussion of or strategies to address the cognitive development of students. As we have mentioned, students entering the ninth grade are experiencing changes in their development. They are beginning to become independent thinkers and separating from their parents to form their own identities (Bednar & Fisher, 2003; Manning, 2007; Parra & Oliva, 2009; Steinberg & Morris, 2001; M. J. Zimmer-Gembeck & Collins, 2003).

Throughout the studies mentioned, practitioners address many characteristics of students in the attempt to support them as they navigate the transition from middle to high school. In the learning organizations discussed the school learning environments became the center of focus and in doing so, they addressed non- cognitive factors. None of the studies regarding the improvement of learning environments purposely addresses non-cognitive factors and characteristics of students, yet they were inherent in the strategies presented.

Recent literature has emerged specifically discussing non-cognitive factors as they relate to student academic achievement. Discussions also consider the learning environment as a support to student academic achievement. Studies show that when non-cognitive factors become an intentional focus, student non-cognitive skills improve and therefore their academic success increases.

Non-cognitive Factors

In our understanding of adolescents, we explore physical, emotional and cognitive development. The research calls to our attention that adolescents are developing in each of these arenas at varying rates. We also know that school learning environments and the needs of students are not always synchronized to the needs of the students. This is particularly true at the ninth grade transition point (McPartland, 1996; Rice, 2001; Turcotte, 2006; Anderson, 1982; Sellstram, 2006).

Non-cognitive factors are those influencing student traits, such as self-control, the ability

to establish relationships with staff and peers in the school system, and student academic self-concepts {Lee, 2009 #2;Rosen, 2010 #1}. We see from current research that non-cognitive factors fall into three domains: student engagement, learning strategies, and school climate or learning environments. These factors can all be manipulated and have demonstrated their influence on cognitive achievement as measured by standardized tests.

Disaggregation of each of the domains gives specific scope to non-cognitive factors. Student engagement, for example, includes academic self-belief, asking questions, and sense of belonging. When we focus on learning strategies, non-cognitive factors include homework management, help seeking, and effort management. As we will see in subsequent chapters, these non-cognitive factors are influential in student academic success. School climate or the school-learning environment is very complex in and of itself. A school is an institution dependent upon many external factors to shape its environment, as well as the internal factors. These include district support, community supports, parental support, teachers, and the administration. These factors influence the global philosophy of the school.

The school-learning environment exerts influence on student academic performance. What is also present in the literature is how the learning environment may exert more influence on academic achievement than does cognitive autonomy development. Disaggregated data for multiple subgroups, including those of male and female students, has validated this assertion. Bernard Gifford, University of California, Berkeley, has the following to add to the understanding of the influence of non-cognitive factors (Gifford, 2011).

In a follow-up study of the relationship between self-discipline / self-control and academic performance, Duckworth and Seligman (2006) sought to explain the superior cross-the-board performance of eighth-grade female students in the same three core academic subjects used in the prior study. Female students attained higher scores on the end-of-term or end-of-course exams in Introductory Algebra I and II, English, and social studies than their male schoolmates. Given that on average eighth-grade male students had statistically significantly higher IQ scores than their female schoolmates, one would have expected their mean academic performance in these courses to exhibit similar differences. They did not. Duckworth and Seligman attributed these unexpected differences to the higher levels of self-control among the female students. Girls displayed higher scores on all five measures of self-discipline, and for four measures the differences were statistically significant.

Duckworth and Seligman specifically highlight student self-control as a factor in student academic achievement. They assert that the higher the level of self-control, the higher academic achievement will be. Duckworth and Seligman also assert that self-control is a non-cognitive skill that can be improved by the implementation of purposeful learning environment strategies designed to do so.

In general, the development of autonomy may be a significant factor influencing successful adaptation to the transition to high school and, therefore, to student academic success. Cognitive autonomy may influence academic achievement because of the decisions students make regarding their schooling. In the next section, we address student development of cognitive autonomy.

Cognitive Autonomy

Adolescents experience multiple physiological and psychological changes as they move from primary to secondary schools. The development of autonomy is among the factors potentially affecting student academic success. To understand the possible effects of this facet of adolescent development on academic achievement, we must first define autonomy. Autonomy is defined as having developed self-reliance and self-regulation. Autonomy also involves meta-cognition and the growing identity of ones self as being separate from others (Manning, 2007; Wigfield & Wagner, 2007; M. J. Zimmer-Gembeck & Collins, 2003).

The ability to be independent and to act with independence is central in adolescent development. Zimmer-Gembeck (2001) identifies three dimensions of autonomy: behavioral, emotional, and cognitive. Behavioral autonomy refers to the ability to self regulate; emotional autonomy involves breaking away from parental control (Parra & Oliva, 2009; Steinberg & Silverberg, 1986; M. J. Zimmer-Gembeck & Collins, 2003). Finally, cognitive autonomy involves the decision-making processes and actions resulting from those decisions (Beckert, 2005; Bednar & Fisher, 2003; Steinberg & Morris, 2001; M. J. Zimmer-Gembeck & Collins, 2003; Zimmerman, 1990).

Increasingly adolescents are "maturing" at greater rates. They are maturing earlier physically‘ they have increased social responsibility; and yet in the arena of cognitive autonomy, adolescents do not reach maturity until their mid-twenties (Beckert, 2007; Steinberg & Morris, 2001; Zimmer-Gembeck, 2001). The main indicator of developed cognitive autonomy is the ability to make decisions independent of the influence of other people (Beckert, 2007; Steinberg & Morris, 2001; Zimmer-Gembeck, 2001). Like many of his peers, Troy Beckert embraces the notion of the three main dimensions of autonomy as previously identified but asserts that cognitive autonomy is more than a decision-making model. He maintains that cognitive autonomy is multi-faceted and is truly comprised of five scales: decision making, voicing opinion, comparative validation, self-assessment and evaluation of one's own thought, and making logical deductions. According to Beckert, each of the identified scales is measurable and contributes to the overall ability of an individual to think independently.

The five scales identified by Beckert are echoed in literature linking cognitive autonomy to academic achievement (Greene *et al.*, 2004; Zimmerman, 1990). The notion of self-regulation as applied to adolescent development is particularly salient. According to the literature, self-regulation accounts for students' ability to work towards future goals, to assess their own learning, and to factor both positive and negative feedback into their decision-making processes. Bandura suggest that a positive sense of self is required for continued work towards future goals (Bandura, 1989). Although Bandura's work is not solely rooted in adolescent development, the principles of self-efficacy and meta-cognition are readily applicable to the concepts embodied with-in the notions of cognitive autonomy.

In his investigation of cognitive autonomy, Beckert demonstrates that students at the ninth- and tenth-grade levels are still developing their capacity for independent thought. Based on Beckert's theory and current literature regarding school reform, we can assert that disconnects exist between students and the current structure of school systems (Alspaugh, 1998b; Dupuis &

Badiali, 1987; Lampert, 2005; J. Quint, Miller, C., Pastor, J., Cytron, R., 1999). This may provide a lens to examine existing organizational practices that constrain the successful adaptation of students during the transition from middle to high school (Beckert, 2007). Alignment of Beckert's five scales associated with cognitive autonomy to high school learning environments result in the following detail.

(1) Decision making

Adolescent students increasingly make their own decisions as they move through their school and societal environments. Decision making for this age group manifests in actions regarding risk-taking behaviors, including drugs and sex; peer influence; and success in school (Eccles *et al.*, 1991; Greene et al., 2004; M. J. Zimmer-Gembeck & Collins, 2003). In the arena of school academics, the very structure of high schools forces student to become "self directed and independent learners," which is a disconnect from the learning environment of middle schools (Hertzog, 1999; Kohler & Field, 2003; Lampert, 2005; Legters, 2001) Setting goals and then making choices to achieve those goals are key components in the decision-making process. For adolescents involved in the transition from middle to high school, these key components are still in the developmental stages (Eccles et al., 1991; M. J. Zimmer-Gembeck & Collins, 2003; Zimmerman, 1990).

(2) Voicing opinion

Voicing opinion entails students' ability to articulate what they desire or to articulate their beliefs and opinions. This includes the ability to voice an opinion despite the influence asserted by peers or by authoritative figures. Students who demonstrate a stronger voice also acknowledge more ownership in the school across academic and procedural platforms. (Mitra, 2003) Stronger relationships with teachers and school adults also directly result from the ability to voice opinion. Stronger relationships influence student academic achievement (Dupuis & Badiali, 1987; Mitra, 2003; Turcotte, 2006)

(3) Evaluation of thought and making logical deductions

Setting a goal, evaluating the pros and cons of options to achieve the goal, and learning from the outcomes of the action are components of the decision-making process (Miller & Byrnes, 2001; Zimmerman, 1990). This element (evaluation of thought and making logical deductions) incorporates the above sequence of events. Using the work of Miller and Byrnes along with that of Beckert, a clear definition arises. Evaluation of thought and making logical deductions tells us the adolescent is employing the skills associated with meta-cognition within the context of setting a goal and creating options to achieve the goal.

(4) Self-assessment

Self-assessment occurs when people are acting independently and are then able to reflect on their own actions and evaluate those actions. This may involve evaluation of the process, rationale for actions taken or not taken, or evaluation of success achieved in actions taken (Zimmerman, 1990). Further, the element of self-assessment is associated with a learning phase in which the adolescents evaluate their actions and thought processes and then assess their

personal abilities. As a component of cognitive autonomy, this element evaluates if the adolescents are consciously self-assessing and if they believe themselves to be the best judge of their individual strengths, abilities, and talents (Beckert, 2007).

(5) Comparative Validation

Peer influence is strongest among adolescents entering high school and coincides with a time of minimized parental influence and increased peer influence. The increase in peer influence results from adolescents' perception of positive or negative outcomes connected with the reactions of their peer group to choices they make (Bednar & Fisher, 2003; Manning, 2007). Linked to other aspects of cognitive autonomy, peer influence is particularly strong in the arena of risk-taking behaviors (drugs, alcohol and sex), as well as those behaviors associated with academia and social constructs. Comparative validation refers to how much individuals compare themselves to others for acceptance or for a measure of success. Do they need to "fit in" to be validated or do they have the independence to stand on their own?

Research identifies the transition from middle to high school as an important intersection for students. Failure to successfully adapt to this transition can result in failure to complete high school. Interventions associated with freshman academies have proven to have some success in mitigating the system differences between middle and high school.

There are school structures that increase student success at the ninth-grade transition. Schools that implement either freshman academies or some of the strategies associated with freshman academies showed increased student achievement during the ninth grade. The literature does not provide rationale as to why the successful strategies identified are not universally implemented or sustained. There is no linking of the identified strategies to characteristics of students, even though characteristics of students prove to be very influential in successful adaptation to transition.

Students entering high school are developing mentally and physically, moving from adolescence to adulthood. Many factors associated with adolescent development have the potential to influence successful transition to high school. One such factor is cognitive autonomy. Within Beckert's definition of cognitive autonomy, five individual scales were identified and expanded upon. There is an indication that the scales may be tied to academic success in the ninth grade, but there was no data presented that confirmed this. How we tie the characteristics associated with cognitive autonomy to academic success is an area for study. If there is a link between the two, then what are the implications for school learning environments?

Questions for Consideration

- Is there an association between cognitive autonomy and successful adaptation to high school as demonstrated by student academic performance?

- Is there a relationship between cognitive and non-cognitive factors as applied to student academic achievement?

- Is there any association between cognitive autonomy or non-cognitive factors, and other student characteristics, such as gender, ethnicity, or length of time in the school district?

- If associations as listed above are determined to exist, what are the implications for school learning environments?

CHAPTER III: METHODOLOGY

The purpose of this study is to examine the relationship between cognitive autonomy and a variety of school performance measures, demographic characteristics, and selected aspects of the local school culture. This chapter begins with a restatement of the circumstances prompting this investigation and a review of relevant literature; we then proceed with a review of the research questions and their respective hypothesis. Following these are the research design, target population and sample, and instrumentation. To conclude this chapter, data collection, data analysis procedures and the delimitations of this study are discussed.

The failure of students to persist in high school and therefore to earn a high school diploma has led to much research on the topics surround the success of high school programs. We know that twenty-nine percent of students fail to earn a high school diploma in the United States. Once disaggregated we know that minority, economically disadvantaged and second language learners are at greater risk of failing to earn a high school diploma. The dropout rate for these groups escalates to 45%. (Kaufman, 2004; C. C. Swanson, Duncan, 2003; Zvoch, 2006a) The consequences non-persistence have been identified as diminished earning potential and factors such as health that can be associated with economic status (Laird, 2006; Reimer & Smink, 2005). Transition to high school is one area of the education system associated with persistence in high school.

The success of school systems is measured by graduation rates. Though there has been limited consistency in calculating graduation rates, states are now seeking to address this concern. In compliance with the No Child Left Behind Act (NCLB) high schools are now standardizing the methods for calculating graduation rates. With a standardized method of calculating graduation rates we have a more effective evaluation tool and now add measures of persistence in high school to the cadre of indicators determining the efficacy of the school programs (Shaul, 2005).

Literature, based on the study of these indicators, reveals the need to alter the organizational structure of high schools and to align the delivery of instruction to meet the needs of students (Berliner, 1993; Boykin, 2000; Fritzer, 1996; Legters, 2001; J. Quint, C. Miller, J. Pastor, & R. Cytron, 1999). Currently, national and state mandates are pushing schools to reorganize into various models of small learning communities and to bring equity to these systems so that the achievement gap is closed (Boykin, 2000; Felner et al., 2001; French, 2000; Hoy, 1990; Kemple, 2005). Improved understanding of the students we serve will further the goal of improving the academic achievement of all students while accelerating the achievement of students who remain in the lower quadrants of the achievement gap. In particular, to improve student acquisition of content knowledge, educators must understand the support students require.

Research has centered on negative outcomes that occur when students fail to successfully adapt to transitions of the K-12 system. The negative outcomes all lead to one end, an ultimate failure to persist in the K-12 system and a failure to earn a high school diploma (Alspaugh, 1998;

Berliner, 1993). Although there are many points of transition in the kindergarten through twelfth grade system, the transition from middle to high school is the focal point of this study. This transition is critical to the successful acquisition of a high school diploma. Students who do not successfully adapt to this transition earn poor grades in core academic classes during the ninth grade and this directly leads to the failure to persist in high school (Alspaugh, 1998; Barber & Olsen, 2004; Berliner, 1993; Cotterell, 1992; Hertzog, 1999; Kaufman, 2004; Orfield, 2004; Zvoch, 2006a).

Among the most challenging transitions in life is the progression from adolescence to early adulthood, which is reflected in the first year of high school. This transition is made more complicated by biological changes, the decreasing willingness of students at this age to accept adult authority, and the increase of peer influence, which is greater at this stage than any other period of the human life cycle. In addition, social and educational institutions expect adolescents to begin to function as autonomous, self-regulating adults, and the pressures and confusions attendant to their independence and to their emergent sexual identities further complicate this transition. The transition from middle to high school is also characterized by substantial changes in the capacity to exercise cognitive autonomy and to self-evaluate.

To understand the role that cognitive autonomy may play in the successful transition from middle school to high school, we must simultaneously understand the following:

1. The notion of transition

2. The institutional practices of education

3. The precepts of cognitive autonomy

Bodies of literature examined to facilitate this understanding included transition theory, cognitive autonomy, and current practices in education. This section first defines and then synthesizes those bodies of literature.

Transition

The transition experience can produce positive or negative results for the individual involved. In consideration of adolescents transitioning to the high school environment, the notion of resources to deficit balance calls upon the school system to understand the students it serves and to provide structure and resources, supporting successful transition and therefore academic success. Specifically, in this study we raise the question of cognitive autonomy as a student resource and question school support in this area.

We know from the literature that protective factors influence successful adaptation to transition for students. Included among those the protective factors and considered significant is institutional support (Koizumi, 2000; Schlossberg, 1981). Helping students to adapt to the transition from middle to high school involves maintaining some continuity between the two systems and then phasing from the old to the new. This idea refers back to Koizumi and the notion of giving students anchor points as they develop their understanding of the new environment.

The transition experience can produce positive or negative results for the individual involved, depending on the ability to adapt to changes in the environment. Levine (1976) posits that the balance of resources to deficits at the disposal of the individual will influence his or her ability to successfully adapt during a transition. In consideration of adolescents transitioning to the high school environment, the notion of resources-to-deficit balance requires the school system to understand the students it serves and to provide structure and resources to support successful transition and academic success. Specifically, in this study we raise the question of cognitive autonomy as a student resource and question school support of its development.

Across the various types of transitions covered in the literature, there is consistency in the resources that aid in adaptation to the disequilibrium created by transition. These protective factors include but are not limited to knowledge and understanding of the school, mentoring, familial support, institutional support, and preparation through the acquisition of skills required to operate in the new environment (Koizumi, 2000; Schlossberg, 1981). Koizumi uses the term *anchor points* in describing resources. He notes that during transition people hold on to anchor points as they develop their understanding of the new environment.

Institutional Practices and Transition

Gender, English language acquisition, length of time in the school district, and race are among factors influencing adaptation to the transition from middle to high school. From exploration of the literature, we know we must base student support during this time upon their characteristics and those factors affecting adaptation to this particular transition. To translate for the purposes of this study, students moving from middle school to high school are transitioning from one situational context to another. Their stage of adolescent development as it relates to cognitive autonomy is influential in the successful adaptation to transition. Finally, schools must find a means to understand the needs of their students as they navigate this transition and put into place support structures.

To further clarify the notion that characteristics of an individual influence adaptation to a transition, Schlossberg's Model for Analyzing Human Adaptation to Transition was used in the current study (Schlossberg, 1981). Her model details the interrelationship of the transitional event to perceptions of the transition, characteristics of the pre- and post-transitional environments, and characteristics of the individual. The premise of the model, builds upon the following formula "It is not the transition itself that is of primary importance, but rather how that transition fits with an individual's stage, situation, and style at the time of the transition." We must mediate the factors affecting adaptation to transition to assist individuals in the process.

Multiple factors influence student adaptation during the transition from middle school to high school: the change of physical location, increased academic rigor, and school procedural changes. Indicators of failure to successfully adapt to the transition include poor academic achievement, inappropriate classroom behavior, poor relations with peers, and lack of engagement in academic work (Barone, 1991; Weiss, 2001). Coinciding with their entrance into high school, students between the ages of 13 and 15 experience physical, emotional, social, and cognitive changes as part of their adolescent development (Beckert, 2007; Cauley & Jovanovich, 2006).

As expressed in this model, the individual's characteristics of psychosocial competence and life stage will affect adaptation to the transition from middle to high school. In particular, this study examines cognitive autonomy as an internal factor affecting transition. Cognitive autonomy is a function of adolescent development: As the brain develops the ability to think in the abstract, the ability also develops to make decisions based upon logical deduction, to think independently of friends and family, and to weigh the consequences of actions (Beckert, 2007; Steinberg & Morris, 2001; Wigfield & Wagner, 2007).

School Performance Measures

As discussed in previous chapters, research reveals that students who fail two or more semester classes during the transitional freshman year are at greater risk of non-persistence in high school. Failure to persist in high school results in failure to earn a high school diploma (Allensworth & Easton, 2005; Alspaugh, 1998; Barber & Olsen, 2004; Berliner, 1993; Catterall, 1998; Cotterell, 1992; Hertzog, 1999; Kaufman, 2004; Orfield, 2004; Zvoch, 2006). Moving from that lens, this analysis begins with a look at high school academic systems, specifically the courses and credits required for graduation. We then examine the credits earned by students in the ninth grade and further disaggregate that data according to ethnicity, language proficiency, and response to Beckert Scales (cognitive autonomy) and Domenichelli (learning environments) survey questions.

In the California the Education Code establishes a minimum total of 13 classes required to earn a high school diploma in a four-year time frame (Education, 2010). The scope of required classes encompasses English, math, science, social science and physical education. The California Department of Education (CDE) emphasizes that these requirements are the minimum and that other course work should accompany these base requirements.

High school systems are complex, and earning credits towards graduation reflects that complexity. Credits assigned to each course vary from school district to school district, but historically schools assign a value of 1credit for a one-year course or 10 credits for one- year courses. The sequence in which courses are completed will also vary from school to school. The numbers of possible paths to earning a high school diploma are almost unlimited, and many variables exist. For the purposes of this study, our discussion will limit itself to the system employed by the subject school.

Students are required to complete 220 credits to graduate from the subject school. This includes the 13 classes required by the CDE and an additional 9 classes comprised of those mandated by the school district and those chosen as electives by the students. To earn the 220 credits associated with the 22 classes, students enroll in 6 courses per year, each of which yields 10 credits in the year. The year is organized into two semesters so that each yearlong course yields 5 credits per semester. For example, ninth-grade English is a one-year course; during the first semester, students can earn 5 credits, and during the second semester students can earn the subsequent 5 credits for a total of 10 credits. A student who successfully completes all courses each year will earn 240 credits. The 220-credit requirement allows students to repeat two courses in the event of a course failure, to graduate early, or to choose a four-period day during their senior year.

Table 2: Courses Required for Graduation

Courses required for Graduation								
	9th Grade		10th Grade		11th Grade		12th Grade	
Credits Required to Graduate	Semester1	Semester2	Semester1	Semester2	Semester1	Semester2	Semester1	Semester2
40	English	English	English	English	English	English	English	English
30	Math	Math	Math	Math	Math	Math		
20	Science	Science	Science	Science				
30			Social Science	Social Science	Social Science	Social Science	Gov't	Economics
5	Health							
20	PE	PE	PE	PE				
40	Elective	Elective	Elective	Elective	Elective	Elective	Elective	Elective
25		Elective			Elective	Elective	Elective	Elective
20					Elective	Elective	Elective	Elective
10							Elective	Elective
240								

Students enter the ninth grade and enroll in six classes. Four of the six classes are compulsory and include English, math (according to proficiency level), science, and physical education (PE). These classes must be passed in order to graduate from high school. Math, science, English, and social science courses are also termed Core Academic classes. The school site investigated also requires students to pass a semester-long health course. The remaining courses are electives, and thus students choose from an array of advanced core curricular courses, technology, fine arts, or language courses. Some students are required to enroll in support classes for math or English, thus reducing their elective options. Enrolment in these addition support classes is based on performance on state standardized tests, as well as performance in like subjects during their eighth-grade year.

As previously noted, in the subject high school, 220 credits are required for graduation. This is a minimum course of study. Students may choose to enroll in extra classes and therefore may earn more than 240 credits during the four-year program. The subject school offers an early optional class, allows Internet-based course work, or allows students to pursue course work at colleges as appropriate. The option to pursue additional course work is available for classes not offered in the school's curricular program. For example, the subject high school did not offer geology, so a student wishing to enroll in this course would be required to pursue an option outside of the school, such as offerings at colleges or internet-based course work. Typically, students pursue this option as juniors or seniors; however, freshman and sophomores can in some instances, pursue college level work as well.

To restate, research reveals that students who do not pass two or more semester courses during their freshman year are at greater risk of non-persistence in high school and, therefore, of

failure to earn a high school diploma. Given the grading scale of A to F, passing a course is defined as earning a D or better. Detailed discussion of the grading scale and implications of grades earned will follow in a later section. It is beneficial for the purposes of this study to sort students into five categories with respect to credits earned.

Students categorized as being at highest risk of dropping out of high school were students who did not pass four or more of their semester courses during the ninth-grade year. The data set showed these students earned between 5 and 40 credits during the ninth-grade year. The category of credits earned in the data set shows a defined failure in core curricular courses. The opportunity to earn the credits in courses not passed is possible; however, a sustained effort over two to three years will be required.

The second classification of students at risk of dropping out of high school is comprised of students who did not pass at least two semester classes and therefore earned between 45 and 50 credits. Students in this category who have failed core curricular classes required for graduation must repeat those classes. If the course is a math course, the effect of failing one semester is a ten-credit loss versus a five-credit loss. This occurs because students must demonstrate proficiency in order to progress to the next level of math; failing one semester negates the entire year. When the students repeat the course, they will not receive duplicate credit for the semester they passed.

Students who failed one other course besides math earned 55 credits for the year and may need to repeat the particular class if it is in a core curricular area. If the course is not in the core set of classes required for graduation, the student will not be required to make the class up. The option to repeat a course always remains it is the student's choice. Referring back to the credits required for graduation, note that 220 credits are the minimum required at the school; students are enrolled in six classes per year, earning 60 credits per year for a total of 240 credits over four years. The student who does not pass one course has ample time and opportunity to remediate the situation.

These students do not meet the threshold to qualify as At Risk of Dropping Out; however, they still failed one semester of course work and depending upon the course not passed, they may be required to repeat the course in order to earn their high school diplomas. This would be the case if the students failed their math class. As previously stated, failure in this course will require the student to repeat the class with the outcome culminating in a net loss of 10 credits.

As a group, students making adequate progress did not fail any course and have earned 60 credits for the ninth grade. They have completed the compulsory coursework and are on track to graduate. The one caveat for this group is the passing of a math class with the letter grade of D. Earning a D in the math course will require the student to repeat that course. This results in a credit deficiency in the subsequent year. Most courses in the school's offerings are not repeatable for credit; thus, when students earn a D in math, they have not mastered the skills to move forward. When students repeat a class under these circumstances, they will not earn credit when they repeat the course. This resultant credit outcome is equivalent to failing the class.

Students who are accelerated have enrolled in either the extra period offered at the subject school or have participated in course offerings outside of the school's program through

the local colleges or internet-based programs. These students typically have earned more than the 60 credits and few fail courses.

Analysis of the total survey population with respect to total credits earned reveals that 20.7% of students included in the survey are at risk of not earning a high school diploma because they earned 50 or fewer credits during their freshman year. Stated in the negative, they earned an F in two or more of their semester classes. Further disaggregated, 12.4% of the students are at Highest Risk of not earning their diploma as they failed three or more classes. Having failed two classes, 8.3% of students are considered at Risk of not earning their diplomas. Students who failed one class are included in this grouping. They are not considered at risk; however, they again may well be at risk if the course not passed is a math course.

Students enrolled in the standard curricular program and making adequate progress earned 60 credits. This means they have earned a D or better in all classes. This group comprised 42.6% of the data set. The same conclusion holds true for those students with accelerated progress: they too have passed their classes with a minimum grade of a D. The accelerated student group comprised 28.2% of the data set.

Grade Point Average

The grade students earn in each course indicates their course mastery and academic performance. The overall academic achievement of the students is measured by the rigor of the courses they complete and the averaging of grades they earn. When students complete a semester course, they receive a letter grade of A, B, C, D, or F. The letter grades A through D indicate the course was passed with a proficiency as follows: A shows superior work, B indicates the work was above average, C indicates average work with the D indicating the student barely passed the course. An F shows the student did not pass the class.

Schools calculate grade point average (GPA) by assigning a number value to each grade and then dividing by the number of classes taken. The letter grade of A earns 4 points, B earns 3 points, C earns 2 points, the D earns 1 point, and an F earns no points. A student who is enrolled in six courses would have the points for each grade earned added together and divided by six to calculate the GPA. As students progress through their years of high school, they will have the opportunity to enroll in advanced courses that earn an extra point because of the rigor of the course. Schools denote these classes as Honors or Advanced Placement (AP) and yield 5 points for an A, 4 points for a B and 3 points for a grade of C. They do not earn an extra point for the grade of D or F. We do not provide further details regarding these circumstances, as ninth grade students are not enrolled in AP or Honors classes.

Further disaggregation of data regarding GPA showed student performance in the core academic classes as opposed to their performance in all classes. Examining the disaggregated data in this regard was important as students performed better in classes they choose. As previously discussed, students were enrolled in these elective courses. The compulsory classes are their core academic classes required for graduation from high school. These courses are compulsory and, in the instance of math, are based on demonstrated ability. Performance in core academic courses may prove to reveal more insight regarding the influence of Beckert's cognitive autonomy scales and Domenichelli elements upon student academic performance.

Aligning GPA to credits earned allows us to construct a complete picture of student academic performance during the ninth grade (See Table 3). Students who were at greatest risk of dropping out had a mean GPA of 1.01in all coursework and in their core academic courses a mean GPA of .50. Those students, classified as at risk of dropping out had a mean GPA of 1.73 for all coursework and a 1.15 mean GPA in their core academic classes. We begin to see that at-risk students are earning lower grades in their core academic course work, and their mean GPA for core academic work is lower than that for the overall course work. Continuing with students who failed one course, we see the same trend with a mean GPA of 2.07 overall and 1.52 in the core academics. The group classified as making adequate progress towards graduation earned a mean GPA of 3.06 for overall coursework and a GPA of 2.72 for core academic course work. Following the established trend, the students classified as having accelerated progress had an overall mean GPA of 3.22 and a core academic mean of 2.88. The stated trend of the mean of the overall GPA proving to be higher than mean of the core GPA held true for all groups.

Table 3: Academic Achievement Groups

Group	% of Sample Population	Credits Earned Mean	Credits Attempted Mean	Overall Mean GPA	Core Mean GPA
Highest Risk of Drop Out	12.4%	30	61	1.01	.50
Risk of Drop Out	8.3%	48	60	1.73	1.15
Failed One Course	8.5%	55	60	2.06	1.52
Adequate Progress	42.6%	60	60	3.06	2.73
Accelerated Progress	28.2%	69	70	3.22	2.87

Analysis of this initial data also reveals a relationship between the credits students earned and their academic performance in classes. Students who were at risk of dropping out of school also performed poorly in their classes, as compared to those who were making adequate or accelerated progress. This is evidenced by the difference of the mean overall GPA of the highest risk student group at 1.01, compared to that of the accelerated progress group with an overall mean GPA of 3.22. The same holds true when comparing the core GPA; students at highest risk have a mean GPA of .50. This is as compared to those with accelerated progress with a mean GPA in core course work of 2.87.

It is important to disaggregate the data to examine it for differences that may occur based on characteristics of the students in the sample. From this initial analysis, we can learn which characteristics of students show variance in academic performance. Information garnered from the disaggregation of academic performance data based on the characteristics of students allows for the comparison of student academic performance as aligned to the Beckert variables and the Domenichelli variables by showing any variances that occur in the base data. Subsequently applying the Beckert and Domenichelli variables to these groups further completes our understanding of the influence of the development of cognitive autonomy and the student learning-environment on student academic performance.

Institutional Practices and Transition

Gender, English language acquisition, length of time in the school district, and race are among factors influencing adaptation to the transition from middle to high school. From exploration of the literature, we know we must base student support during this time upon their characteristics and those factors affecting adaptation to this particular transition. To translate for the purposes of this study, students moving from middle school to high school are transitioning from one situational context to another. Their stage of adolescent development as it relates to cognitive autonomy is influential in the successful adaptation to transition. Finally, schools must find a means to understand the needs of their students as they navigate this transition and put into place support structures.

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As expressed in this model, the individual's characteristics of psychosocial competence and life stage will affect adaptation to the transition from middle to high school. In particular, this study examines cognitive autonomy as an internal factor affecting transition. Cognitive autonomy is a function of adolescent development: As the brain develops the ability to think in the abstract, the ability to make decisions based upon logical deduction, to think independently of friends and family and to weigh the consequences of actions also develops (Beckert, 2007; Steinberg & Morris, 2001; Wigfield & Wagner, 2007).

Cognitive Autonomy

Autonomy, the ability to be independent and to act independently, is central in adolescent development. Adolescents are not only maturing earlier physically, but they have also increased social responsibility. Yet in the arena of cognitive autonomy, adolescents do not reach maturity until their mid-twenties (Beckert, 2007; Steinberg & Morris, 2001; Zimmer-Gembeck, 2001).

Cognitive autonomy addresses one developmental stage experienced by students and maintains that people develop the ability to think independently in their early twenties. The main indicator of developed cognitive autonomy is the ability to make decisions (Beckert, 2007; Steinberg & Morris, 2001; Zimmer-Gembeck, 2001). Like many of his peers, Troy Beckert embraces the notion of three main dimensions of autonomy as previously identified; however, he also asserts that cognitive autonomy is more than a decision-making model. He maintains that cognitive autonomy is multi-faceted and that this singular indicator is truly comprised of five scales: decision-making, voicing opinion, comparative validation, self-assessment, and evaluation of one's own thought and the process of logical deductions. According to Beckert, each of these scales is measurable and contributes to an individual's overall ability to think independently.

Beckert CASE Scales

In his investigation of cognitive autonomy, Beckert demonstrates that students at the ninth-and tenth-grade levels are still developing their capacity for independent thought. Based on this theory and current literature regarding school reform, we can assert that disconnects exist between students and the current structure of school systems. This assertion may provide a lens to examine existing organizational practices that constrain the successful adaptation of students to transition because of their characteristics.(Beckert, 2007). Following is an analysis of each of these scales.

Decision Making

Adolescent students increasingly make their own decisions as they move through their school and societal environments. Decision making for this age group manifests in actions related to risk-taking behaviors, including drugs and sex, peer influence, and success in school. In the arena of school academics, the very structure of high schools forces student to become "self directed and independent learners." Setting goals and then making choices to achieve those goals are key components in the decision-making process.

Voicing Opinion

Voicing opinion entails student ability to articulate what they desire or to articulate their beliefs and opinions. This includes the ability to voice an opinion despite the influence asserted by peers or by authoritative figures. Students who demonstrate a stronger voice also acknowledge more ownership in the school across academic and procedural platforms. (Mitra, 2003) Stronger relationships with teachers and school adults also directly result from the ability to voice opinion. Stronger relationships influence student academic achievement (Dupuis & Badiali, 1987; Mitra, 2003; Turcotte, 2006)

Evaluation of Thought and Making Logical Deductions

Setting a goal, evaluating the pros and cons of options to achieve the goal, and learning from the outcomes of the action are components of the decision-making process (Miller & Byrnes, 2001). This element (evaluation of thought and making logical deductions) incorporates a sequence of events. Using the work of Miller and Byrnes, along with that of Beckert, a clear definition arises. Evaluation of thought and making logical deductions tells us the adolescent is employing the skills associated with meta-cognition within the context of setting a goal and creating options to achieve the goal.

Self-Assessment

Self-assessment occurs when individuals are acting independently and are then able to reflect on their own actions and evaluate those actions. This may involve evaluation of the process, rationale for actions taken or not taken, or evaluation of success achieved. Further, the element of self-assessment is associated with a learning phase in which the adolescents evaluate their actions and thought processes, then assess their personal abilities. As a component of cognitive autonomy, this element evaluates if the adolescents are consciously self-assessing and if they believe themselves to be the best judge of their individual strengths, abilities, and talents (Beckert, 2007).

Comparative Validation

Peer influence is strongest among adolescents entering high school and coincides with a time of minimized parental influence and increased peer influence. The increase in peer influence results from the adolescents' perception of positive or negative outcomes connected with the reactions of their peer group to choices they make (Bednar & Fisher, 2003; Manning, 2007). Linked to other aspects of cognitive autonomy, peer influence is particularly strong in the arena of risk-taking behaviors (use of drugs, alcohol, and sex), as well as those behaviors associated with academia and social constructs. Comparative validation refers to how much individuals compares themselves to others for acceptance or for a measure of success. Do they need to "fit in" to be validated? Alternatively, do they have the independence to stand on their own?

School Culture

Schools are complex organizations with special procedures, organizational structures, and community social stratifications. All of which influence student persistence in high school. In addition, school culture is shown to have an influence on student achievement and success. All have been the focus of extensive study (Akos & Galassi, 2004; Boykin, 2000; Fritzer, 1996; J. Quint et al., 1999).

Currently as students make the transition to high school, they are required to become independent learners and to make decisions in their own best educational interest. They also enter a system where for the first time they are required to successfully pass a class before they move to the next level. As a result, there is a withdrawal of support in many instances for students by teachers and administrators of the school. Students are left to become self-directed learners and to take full responsibility for all aspects of their learning. One example is the

responsibility to see a teacher or contact other students to obtain missed work due to an absence. If the student does not take the initiative to do this, they bare full responsibility for the lower grade resulting from the missed assignment. As we examine the school culture, we see there is also little consideration of student development at this stage, and yet student's ability to think independently may significantly influence the adaptation to the high school environment.

Domenichelli Elements

This author contributed four additional elements associated with local school culture: learning responsibility, learning influences, relations with teachers, and self-assessment. Created by the author and a team of colleagues in 2006, these elements were originally used to assess student perception of school climate. Selected questions from that initial instrument identified for inclusion in this study served, along with the scales of Beckert's Cognitive Autonomy model, as measures of student decision-making and the manifestation of those measures in student actions and perceptions of the ecological factors of the school's learning environment. Following is an explanation of each of four additional elements.

Domenichelli—Relations with Teachers

Positive student relationships with staff are integral to the academic success of students. Positive relationships result in improved campus climates, better classroom environments, and open communications between students and teachers (Sellstram, 2006; Turcotte, 2006) . Ultimately, positive relationships between staff and students enhance academic achievement (Sellstram, 2006; Zvoch, 2006b). This element assesses how students perceive their relationships with teachers in context of teachers knowing and understanding the student.

Domenichelli – Self-Assessment

This element proves to be a manifestation of the CASE Self-Assessment Element. Here students reflected upon their thoughts and actions with relation to success in the academic environment. The questions in this element also center on a self-assessment of student academic skills, encompassing student understanding of the sufficiency of skills that are components of academic success.

Domenichelli—Learning Responsibility

One of the differences between the middle school and high school learning environment is the level of responsibility students are expected to assume for their academic success. This element seeks to assess multiple factors that would influence students accepting high levels of responsibility and therefore encompasses questions regarding multiple CASE scales. To be effective in taking responsibility for their learning students must know when to speak up and ask question. They are expected by teachers and staff to connect immediate actions with long and short term results. The decision students are required to make encompass not only those associated with the classroom and academics, but those associated with daily procedures in the school such as attendance and managing academic records. They are also required to know how

to seek assistance for ancillary activities involved with activities and planning for post secondary options. This element proves to be a manifestation of the sum of the CASE Scales.

Domenichelli—Learning Influences

What others think of students can be important to them and to their success. This element synthesizes considerations regarding peer influence, teacher expectations, and self-expectations. It seeks to determine if the value students place on the opinions of others with relation to self have any correlation to the CASE scales.

Problem and Purpose Overview

Conducted as a design experiment, this study seeks (a) to discover if a relationship between levels of cognitive autonomy and academic achievement exists, (b) to see if the characteristics of individuals correlate to levels of cognitive autonomy and academic success, and (c) to establish a relationship between school climate, cognitive autonomy, and academic achievement.

Research Questions and Hypotheses

This quantitative study examined the relationships among cognitive autonomy, school performance measures, demographic characteristics, and selected aspects of the local school culture. Cognitive autonomy, represented by five Scales, following Beckert's (2007) CASE instrumentation includes the following scales: decision making, voicing opinion, evaluation of thought, making logical deductions-self assessment, and comparative validation.

The remaining elements—relations with teachers, learning responsibility, learning influences, and self-assessment—evaluated local school culture, student self-assessment of skills, and perceptions influencing academic success. Gender, ethnicity, GPA, and the grade when the students first entered the district were the demographic variables considered, with GPA used specifically to measure school performance.

In line with the investigation of relationships among the variables mentioned, the purpose of this study was to address the following research questions:

> Research Question 1: Is there a significant relationship between the scales of cognitive autonomy and academic performance?
>
> Research Question 2: Is there a significant relationship between non-cognitive elements and academic performance?
>
> Research Question 3: Is there a significant relationship between the scales of cognitive autonomy and certain non-cognitive elements?

Furthermore, in line with these research questions, the following are the corresponding research hypotheses that were tested:

H1o: There is no significant relationship between the scales of cognitive autonomy and academic performance.

H1a: There is a significant relationship between the scales of cognitive autonomy and academic performance.

H2o: There is no significant relationship between non-cognitive elements and academic performance.

H2a: There is a significant relationship between non-cognitive elements and academic performance.

H3o: There is no significant relationship between the scales of cognitive autonomy and certain non-cognitive elements.

H3a: There is a significant relationship between the scales of cognitive autonomy and certain non-cognitive elements.

Research Design

This section describes the research method and the specific research design employed in this study. We chose a quantitative approach as the research method for this study. This method should yield a better understanding of the studied population by testing the relationships and differences of the variables involved in cognitive autonomy and self-evaluation, school performance, demographic characteristics, and elements of the local school culture. A quantitative rather than a qualitative research approach allowed the researcher to statistically compare the groups of participants. Based on open-ended questions (Creswell, 2009), data in qualitative studies have to be interpreted and coded to identify themes and trends in addressing "how" and "why" questions, which are not the concern of this study. Rather, this study seeks to determine if significant relationships exists between cognitive autonomy, self-evaluation and school performance, and certain demographic characteristics and elements of the local school culture (non-cognitive factors).

The research design of this study is an experiment as it aimed to investigate the relationships among cognitive autonomy, school performance, and demographic characteristics and elements of the local school culture. Given that the participants were tenth-grade students of a high school located in a suburb of San Francisco, California, and that the information being extracted involved student cognitive autonomy, school performance, and demographic characteristics, as well as elements of the local school culture, there was no control treatment group, which is a hallmark of full experimental designs. As such, a quasi-experimental design was most appropriate in addressing the research questions in this study. Quasi-experimental quantitative designs analyze two or more groups but have no control group (Creswell, 2009). In this study, groups were analyzed according to individual characteristics, including race, academic performance, length of time in the school district, and English language acquisition. These characteristics and others were measured against the student's development of cognitive autonomy during the transitional phase of the ninth-grade year of high school.

Population and Sample

This study, consisting of one high school, allowed for a deep analysis of the relationship between cognitive autonomy and the other factors shown to have an influence upon student performance in school. While data from this study is not a representation of all high schools, this school is a large, semi-urban high school in the San Francisco Bay Area. Schools in the area have reported similar data regarding academic performance, demographics, and economic status of their communities. Performance indicators included course-taking patterns, academic achievement, and persistence.

In accordance with James March (1991), the study of one sample allows for rich exploration of a singular event. The event, in this instance, was the administration of the student survey. Upon completion of the survey, we then examined known characteristics of the students as they relate to the content of the survey. This examination yielded more data regarding the factors affecting student academic success during the ninth grade. This complex array of interconnected characteristics allowed us to interpret and draw inferences from the singular event.

This investigation was conducted in a high school located a suburb of San Francisco, California. The site of the high school is a bedroom community where the majority of adults commute one to two hours each direction to work. School demographics at the time of the study were representative of the ethnically mixed community: 25% White, 25% Hispanic, 25% Asian, and 25% African American. Economically, the population of the community and school is predominately "middle class" although 20% of the students attending the school fall in the classification of economically disadvantaged and receive free or reduced priced lunch benefits. The community is also home to a population of non-native English speakers, with Spanish as the predominant home language.

We invited all students in the tenth grade present on the days of survey administration and enrolled in core English classes to participate in the study. The tenth-grade population consisted of 821 students; 458 students were included in the voluntary response data sample. The excluded students, as listed in Table X, account for the difference between the tenth-grade enrollment population size and the survey sample size. Excluded students included those enrolled in special education English classes, those students who did not speak any English, students who opted not to participate in the study, and those who wished to remain anonymous.

Table 4 shows students who were excluded from the survey and the rationale for the exclusion.

Table 4: Student Exclusion from Participation: Total Tenth-Grade Population, N=821

Description of Excluded Students	Number	% of Total Student Population	Reason for Exclusion
Students new to school Note: These students did not attend ninth grade at the school	71	8.64%	No academic data from the ninth grade to correlate with survey data
Special Education Students	78	9.5%	Disability manifestation may affect survey responses
Second Language Learners Enrolled in English Language Development Classes	32	3.89%	English language fluency may affect survey responses
Identity Unverifiable	62	7.55%	Unable to correlate survey data to academic data.
Students who put patterns on answer sheets	27	3.2%	Invalidated due to suspect patterns on answer document
Students who were absent during survey administration or declined to participate	73	8.89%	No survey data
Total: Excluded	343	41.67%	

Note: In June 2008, 863 ninth-grade students completed the year at the school. Implications are a 5% drop-out rate between the end of the ninth grade and the beginning of the tenth-grade year.

Instrumentation

The survey administered in this study consisted of questions to elicit responses to the five CASE scales and the four Domenichelli elements. In addition, questions addressing student self-assessment of study skills and assessment of peer influence were also included. Finally, the survey instrument contained one open-ended question: “If you were to rate yourself on your ’independent thought’ today, what score would you assign from 1 to 10, with 10 being the most independent? Please write a brief paragraph to justify your assigned score.” This data has not been included in the study results as it was not the focus of this study. The information will be utilized to extend the findings of this study.

Evaluative Thinking

- I think about the consequences of my decisions.
- I look at every situation from other people's perspectives before making my own judgments.
- I think of all possible risks before acting on a situation.
- I like to evaluate my daily actions.
- I consider alternatives before making decisions.
- I think about how my actions will affect others.
- I think about how my actions will affect me in the long run.
- I like to evaluate my thoughts.

Voicing Opinion

- If I have something to add to a class discussion, I speak up.
- When I disagree with others, I share my views.
- I stand up for what I think is right regardless of the situation.
- I feel that my opinions are valuable enough to share.
- At school, I keep my opinions to myself.

Decision Making

- There are consequences to my decisions.
- I can tell that my way of thinking has improved with age.
- I think more about the future today than I did when I was younger.
- My decision-making ability has improved with age.
- I am good at evaluating my feelings.
- I am better at decision making than my friends.

Self-Assessing

▪ I am good at identifying my own strengths.
▪ I am best at identifying my abilities.
▪ I am the best judge of my talents.

Comparative Validation

- I need family members to approve my decisions.
- I need my views to match those of my parents.
- It is important to me that my friends approve of my decisions.
- I need my views to match those of my friends.
- I care about what others think of me.

The element of comparative validation is "reverse scored" as the wording of the questions lead to a "negative" response. For example, in the question regarding family approval of decisions, an initial response of "never" would indicate that the student would not act without seeking the approval of his or her family. On the Likert scale used, this is a score of 1; reverse scored this becomes "I always seek approval of my family before I act," a Likert scale score of 5. Reverse scoring of this scale allowed the scoring to become consistent with the other scales. Overall, students indicated a dependency upon approval from peers and adults in their lives of the actions they chose to take.

Domenichelli Element Questions

In addition to the Beckert scales, this investigator employed questions designed to explore certain aspects of the school's learning environment. These included classroom environments, relationships with members of the school community, and student views of their contributions to the learning environment. These additional questions formed four elements that enhanced the Beckert CASE scales. Beckert's scales measure actual levels of autonomy, and those added by this investigator may prove to either influence the CASE scales or to be manifestations of the student levels of autonomy.

As an example, relationships with staff and safe school environment may prove to enhance the CASE scale of voicing opinion. Responses to student ownership in academic success may prove to correlate to The CASE scales of self-assessment and evaluation of thought. Further disaggregation of the responses to these elements may provide data to make these deductions.

Relations with Teachers

- My teachers focus on teaching me how to be a successful student.
- My teachers are aware of factors outside of class (on campus or at home) that affect my learning.
- The ninth-grade classroom environment allowed me to voice an unpopular opinion.
- I feel my teachers value my opinions.
- My teachers know me as an individual.
- Good relationships with my teachers and staff members are important to me.

Self-Assessment

- My freshman grades reflect my true abilities.
- I connect my actions with positive or negative consequences.
- I am more comfortable voicing my opinions now that I was in the ninth grade.
- I understand the importance of passing each class to earning a high school diploma.
- I have the skills I need to fully participate in my classes at school.
- I have the study skills I need to be effective at home in completing homework and preparing for tests.

Learning Responsibility

- I believe I have control over my educational success in high school.
- I am an equal partner in my education along with school staff and my parents.
- I feel my classmates respect my opinions.
- I received encouragement and support when I expressed my opinions in ninth grade.
- I think about the consequences of not completing assignments.
- In ninth grade, I would seek help when I had questions about class work.
- I currently seek help when I have questions about class work.
- I think about passing my classes so that I can take advanced classes and participate in other campus activities.
- I connect my actions with creating a positive school environment.

Learning Influences

- It is important to me that my teachers believe I can succeed in their class.
- My ninth grade teacher created a classroom where I felt I could say what I think.
- I It is important to me that other students think I am intelligent.
- My friends influence my success or lack of success in my classes.

Pilot Study

English teachers administered a pilot survey during the spring semester, May 2008, to their tenth-grade English classes. The school site, literacy coach then entered the data entered into a statistical program used at the site (DataWise) and gave the results to the investigator for preliminary analysis. In addition to analyzing the pilot survey data, the investigator organized a student focus group, consisting of five students, to receive feedback on the survey and the process of administration.

Comments from the student focus group resulted in survey revisions as follows:

1. The pilot survey used the Likert responses strongly agree to strongly disagree. Discussions with the student focus group revealed these answers were not eliciting the information sought by the investigator; therefore, the Likert Scale responses were changed to (a) always, (b) often, (c) sometimes, (d) seldom, (e) never.

2. The pilot survey was administered during May of 2008, the end of the tenth-grade year Conversations that occurred with the focus group revealed the necessity to survey students at the beginning of their tenth-grade year when they were newly transitioned to the tenth grade. This shift allowed for a more accurate retrospective look and self-analysis of their freshman year experiences.

Data Collection

English teachers administered the revised survey during the fall semester of 2008. Tenth-grade students participated in the study. The revised survey consisted of the five CASE scales with four additional elements added as previously described. This investigator did not interact with the students. Instead, we delivered surveys to the school office; the office distributed them to the English teachers who administered the survey and returned the documents to the office. The investigator retrieved the completed surveys from the school secretary.

After collection, an examination of the surveys for completeness occurred checking for name accuracy and validity. A correlation of survey data to student demographic and academic data received from the school occurred, with all data finally entered into an Excel file. Once cleared of erroneous or incomplete information, the database was imported into the IBM SPSS 18.0 statistical program, PAWS Statistics 18.0, (SPSS) for analysis.

Participation in the survey was optional. The survey questions were non-sequential with respect to the individual scales, as intermingling of the questions helped to insure thoughtful responses. As mentioned earlier, English teachers administered the survey to their respective students. Although the survey was optional, students included their names for the purposes of correlating the survey to their demographic and academic data. Once the survey was completed, both data sets were entered into SPSS for analysis. The following table details demographic data regarding the student population

Preliminary Findings

Data entered into SPSS included ninth-grade cohort data and academic records from the school's database. The data collected also included student responses to the survey instrument. Once entered into SPSS, initial analysis of data included frequency tabulations to establish characteristics of the student population. These tabulations included demographic data (Table 3-4): ethnicity, gender, language proficiency, time in district, grade point average, participation in special education programs, and course enrollment. The frequency tabulations provided the following picture of the school's tenth grade population.

The total population of the tenth grade class consisted of 821 students, the majority of whom (74.5%) enrolled in district schools during their primary grades (Table 5). This tenth grade cohort proved to have a 5% decline in enrollment from the previous year. Indications point to a 5% dropout rate after factoring for mobility (students who move to other schools or who enroll from other schools). Official disenrollment from the school allows for the calculation of the mobility rate. Students complete this process by personal notification to the school registrar or by enrolling in a new school, at which time that school requests the student's files.

The majority of students (81.7%) earned a C or better grade point average (GPA) across all classes during their ninth-grade year. Looking only at the core academics—math, English, and science—the overall GPA slips to 73.6%, and considering only math courses the GPA further slip to 67.5% 6). Further disaggregation of academic data revealed an achievement gap

between White students, Asians students, and the populations including Hispanic, African American, second language learners, and economically disadvantaged.

Table 5: Basic Demographics

Ethnicity	Percentage of Total Population	Count	Gender Count		Gender Percentage	
			M	F	M	F
American Indian	.7	3	2	1	66.6	33.4
African American	21.4	98	36	62	36.7	63.3
Asian	10.9	42	19	23	45.2	54.8
Filipino	9.4	43	17	23	39.5	60.5
Hispanic	22.2	102	48	54	47	53
Pacific Islanders	1.5	7	1	6	14.3	85.7
White	30.3	138	69	69	50.0	50.0
Declined to state	5.4	25	10	15	39.5	60.5
Totals	100	458	202	253	44.7	55.3

Table 6: Length of Time in District

Grade Students first entered the District	K -2 46.4%	3 – 5 28.1%	6 – 8 19.8%	9 5.7%

Table 7: Grade Point Average

GPA Groups	A	B	C	D	F
GPA Overall	12.2%	45.1%	24.4%	15.7%	2.6%
GPA Core	11.5%	45.1%	17%	15.7%	10.7%
GPA Math	11.3%	25.9%	30.3%	19.6%	12.9%

List of Analyses

Data sets for further examination include but are not limited to the following:

Demographic Data disaggregated and analyzed according to

a. Length of time in the school district
b. Grade Point Averages: overall, core and math
c. Rigor of courses taken
d. Response to CASE survey scales
e. Response to Domenichelli survey elements

Response to CASE survey scales analyzed according to

a. Length of time in the school district
b. Grade point averages: overall, core and math
c. Rigor of courses taken
d. Response to Domenichelli survey elements

Response to Domenichelli survey elements analyzed according to

a. Length of time in the school district
b. Grade point averages: overall, core and math
c. Rigor of courses taken
d. CASE scales as noted above

CHAPTER IV: RESULTS OF SURVEY QUESTIONS

In this chapter, we will look at the results of the Domenichelli Elements and the Beckert's CASE Scales by overall frequency response to the survey questions. We then examine the elements by risk group overall, male, female, Whites, Hispanics, African Americans, Asian, and then by language (English Only, English Proficient, English Learner, Language, and Re-designated). The number of credits attempted and the actual credits earned in each risk group are examined as a measure of academic success. Along with the credits earned, we also look at the core grade point average (GPA). Core GPA includes the grades earned in English, math, and science.

In the first tables, we define the Likert Scale we used to assess student response to the survey questions and the basis for calculations of the Beckert scales and Domenichelli element values. Next, we will look at the Domenichelli Elements (Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teachers) to see how they vary by risk group and category. We follow the same investigative format and examine the Beckert overall frequency responses and then the Beckert Scales (Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessing, and Comparative Validation). We further disaggregate the Domenichelli Elements by student entry into the school district. This chapter concludes with results from correlations between the Domenichelli Elements and the Beckert Scales.

Likert Scale Values

Table 8 provides the basis for establishing response groups based upon mean Likert Scale answers.

Table 8: Likert Scale Key

Response Group	Response Description	Response Mean Range
1	Never	0.5 – 1.4
2	Seldom	1.5 – 2.4
3	Sometimes	2.5 – 3.4
4	Often	3.5 – 4.4
5	Always	4.5 – 5.0

Grouped Beckert Scale and Domenichelli Element frequencies have their basis in student response to the survey instrument. Student responses to multiple questions form the basis for the calculations of mean scores for each of the five Beckert Scales and each of the four Domenichelli Elements. For example, calculations for the scale of Voicing Opinion originate from responses to the five survey questions used to evaluate student development in this area; similarly, Decision Making scores result from the average of six questions. Score such as 3.2, 4.6, and 1.9 resulted from averaging the questions and produced many statistical points, making analysis less meaningful. Grouping the scores in whole numbers minimizes data points for analysis. This results in a more effective analysis of the data.

Table 9 provides the percentage data for the frequency of Likert Scale responses of Always, Often, Sometimes, Seldom, and Never to the Domenichelli Elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher.

Table 9: Overall Percentages for Likert Scale Responses to Domenichelli Elements

Domenichelli Elements Response Frequency	Always (5)	Often (4)	Sometimes (3)	Seldom (2)	Never (1)
Learning Responsibility	3.1%	43.6%	42.6%	9.6%	1.1%
Self-Assessment	6.1%	57.4%	34.5%	2.0%	0%
Learning Influences	0.4%	8.6%	38.2%	47.1%	5.7%
Relations with Teachers	0.7%	21.1%	45.4%	30.0%	2.8%

We see from student response to the Domenichelli Elements contained in the survey that the greatest number of students responded that they partially accepted responsibility for their learning. The same holds true for the element of Self-Assessment. The two remaining elements of Learning Influence and Teacher Relations show a shift, with students answering sometimes and seldom to questions regarding their independence of thought and actions. From this baseline analysis, the investigation delved deeper to determine what relationships exist among academic performance, demographic data, and response to the survey instrument. This investigation also sought to determine any relationships between the five Beckert scales and those designed by the investigator.

Table 10 provides the percentage data for the frequency of Likert Scale responses of Always, Often, Sometimes, Seldom and Never to the Beckert CASE Scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessing and Comparative Validation.

Table 10: Overall Percentages for Likert Scale Responses to Beckert CASE Scales

Beckert CASE Scales	Always (5)	Often (4)	Sometimes (3)	Seldom (2)	Never (1)
Evaluative Thinking	13.3%	46.9%	32.3%	6.6%	.9%
Decision Making	19.1%	65.1%	15.4%	.4%	0%
Voicing Opinion	11.8%	37.0%	39.2%	10.9%	1.1%
Self Assessing	24.6%	37.3%	30.9%	6.5%	.7%
Comparative Validation (reverse scored)	8.1%	32.2%	46.6%	11.3%	1.7%

Student responses to the Beckert Scales yielded interesting data. The scale of Evaluative Thinking is comprised of eight questions regarding self-evaluation of thought and making logical deductions. In response to these survey questions, the majority of the students answered often or always. Forty six percent of the students indicated that they engage in self-evaluative behaviors often. The data also reveal that 39.9% of students surveyed fell into the sometimes to never range, with 13% indicating they always engage in self-evaluative thinking.

Positive responses to the survey questions were even more pronounced in the scale of Decision Making, to which 65% of students indicated strong confidence in their abilities to make effective decisions. The scale of Decision Making consists of six questions. When averaged, 15.7% of students were in Groups 1 and 2; answering sometimes and never to the survey questions. This leaves 84.3% of students with responses in Groups 3 to 5, indicating the majority of students believe themselves to be effective decision makers.

The scale of Voicing Opinion indicates students are less inclined to speak out. In this scale we see an overall shift towards the mid-range answer of sometimes. Examining student responses regarding Voicing Opinion shows that 76% of students respond in groups 3 or 4, therefore making them somewhat comfortable in voicing their opinions. Eleven percents of the students answered that they would voice their opinion always, with a comparable 12% responding seldom or never. Disaggregating this data yields more information regarding any correlation between this CASE scale and student achievement.

The same occurs in the scale of Self-Assessing, in which the results of the survey reveal an overwhelming sense by the students that they are the best judges of their individual abilities. Twenty-four percent of the students' answers are in the Group 5 (always) category, with 61.7 percent answering in Groups 3 and 4. Interestingly, as we proceeded through analysis of the data, we will see there is no relationship between the scale of Self-Assessing and academic achievement.

The last scale of Comparative Validation gives an indication of the influence of peer pressure. How influential are the thoughts of friends and parents upon the actions of students? Student responses in this instance revealed the majority of students believe peer and parental influence is present; 46% of the students answered sometimes, followed by 32% often. These responses give an indication that student autonomy is still emerging at this stage of development. Again, note that groups 1 (never), 2 (seldom) and 5 (always) have much smaller populations.

Domenichelli Elements

Table 11 provides the data for the overall mean, standard error of the mean, and standard deviation for the credits attempted, credits earned, core GPA, and the Domenichelli Elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 11: Overall - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsi-bility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=57)	M	61.1	30.39	0.5	3.09	3.38	2.81	2.71
	SEM	0.46	1.35	0.04	0.08	0.08	0.09	0.1
	SD	3.44	10.2	0.33	0.64	0.6	0.66	0.75
2 - Risk of Dropout (N=38)	M	60.26	47.5	1.27	3.27	3.56	2.86	2.86
	SEM	0.18	0.41	0.09	0.12	0.08	0.11	0.14
	SD	1.13	2.53	0.57	0.75	0.5	0.69	0.87
3 - Failed One Course (N=39)	M	60.51	55	1.69	3.36	3.62	2.65	2.98
	SEM	0.4	0	0.1	0.11	0.08	0.11	0.1
	SD	2.51	0	0.61	0.68	0.47	0.71	0.62
4 - Adequate Progress (N=195)	M	60.31	60	3.03	3.57	3.81	2.61	2.95
	SEM	0.12	0	0.04	0.05	0.04	0.05	0.05
	SD	1.66	0	0.55	0.66	0.54	0.73	0.74
5 - Accelerated Progress (N=129)	M	69.63	69.04	3.17	3.72	3.93	2.59	3.06
	SEM	0.16	0.2	0.06	0.06	0.04	0.06	0.07
	SD	1.77	2.3	0.68	0.65	0.5	0.65	0.75
Total - (N=458)	M	63.04	57.4	2.49	3.51	3.75	2.65	2.94
	SEM	0.22	0.58	0.05	0.03	0.03	0.03	0.03
	SD	4.6	12.47	1.12	0.69	0.56	0.7	0.75

Table 11 represents the entire survey population. Student participation was voluntary and consisted of students enrolled in the College Preparatory English class. Refer to Table 5 in Chapter 3 for student demographic data. As we disaggregate the students into academic performance groups, we note that students in Groups 1 through 3 never earn the total number of credits for the work attempted. These groups of students are, to varying degrees, at risk of not graduating from high school. Students in Groups 4 and 5 are either on track to graduate or have made accelerated progress towards graduation.

In our study population, members of Group 1, those at highest risk of dropping out, had lower scores on all of the Domenichelli Elements. The elements of Learning Responsibility and Self-Assessment showed higher average scores than the other Domenichelli Elements. In all five groups of students, the Self-Assessment element score was always higher than the scores of the other elements. Within the elements of Learning Responsibility and Self-Assessment, the scores were lower in groups 1 and 2, and as credits earned increased, the scores for these two elements also increased.

Overall, the scores for Learning Influences were higher for the lower achieving groups than the higher achieving groups. The scores in the Relations with Teacher element showed an overall increase as academic success increased. Both of these scores barely reached 3, which tells us that on average the students did not agree or disagree with the questions discussing their relations with teachers.

Table 12 provides the data for the male students overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA as well as the Domenichelli Elements: Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 12: Males - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=30)	M	61.33	31.5	0.51	3.1	3.39	2.89	2.71
	SEM	0.63	1.65	0.06	0.13	0.13	0.1	0.14
	SD	3.46	9.02	0.35	0.73	0.71	0.57	0.79
2 - Risk of Dropout (N=14)	M	60.36	47.5	1.33	3.36	3.68	2.68	3.26
	SEM	0.36	0.69	0.19	0.22	0.16	0.14	0.22
	SD	1.34	2.59	0.69	0.82	0.6	0.52	0.81
3 - Failed One Course (N=21)	M	60.48	55	1.57	3.23	3.58	2.67	3.13
	SEM	0.48	0	0.11	0.16	0.1	0.15	0.12
	SD	2.18	0	0.51	0.73	0.45	0.7	0.57
4 - Adequate Progress (N=95)	M	60.11	60	3.03	3.54	3.83	2.67	2.97
	SEM	0.07	0	0.05	0.07	0.05	0.07	0.08
	SD	0.72	0	0.48	0.66	0.53	0.67	0.79
5 - Accelerated Progress (N=42)	M	69.56	68.97	3.08	3.71	3.85	2.59	3.06
	SEM	0.31	0.38	0.1	0.08	0.08	0.12	0.12
	SD	1.98	2.47	0.64	0.54	0.49	0.75	0.78
Total - (N=202)	M	62.31	56.25	2.4	3.47	3.73	2.69	2.99
	SEM	0.29	0.86	0.08	0.05	0.04	0.05	0.05
	SD	4.17	12.28	1.11	0.69	0.57	0.67	0.77

The male students in our study population, Group 1, Highest Risk of Dropout, had lower average scores on three of four Domenichelli Elements: Learning Responsibility, Self-Assessment, and Relations with Teachers, which is similar to what we saw in Table 11, where all four elements

were lower for the students in the Highest Risk of Dropout group. The male population is reflective of the trends shown in the overall survey population.

Male students in Groups 1 through three have lower scores on the Domenichelli Element of Learning Responsibility than male students in Groups 4 and 5. In the element of Learning Responsibility as student academic achievement increased, so did their mean scores in this element. The one exception occurred in Group 3, where there was a .13 decrease from the mean scores in Group 2. Remembering that Group 3 students have higher academic achievement, this is a point of interest. This set of circumstances occurred again in the element of Self-Assessment, with a .10 drop in scores as we move from Group 2 to Group 3.

Just as it was for the whole population, the Learning Influences element was higher for the lower achieving males than the higher achieving males. Learning Influence is also the element with the lowest overall mean score for the male population.

The scores in the Relations with Teacher element were higher and more variable for males than for the population as a whole. For males the scores for Responses to Learning barely reach 3, as was true for the whole population, but in the Relations with Teachers element the average is greater than 3 for some of the risk groups, which differs from the whole population.

Table 13 provides data for the female students' overall mean, standard error of the mean, and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli Elements (Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher). These are presented overall and by risk group.

Table 13 Females - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=27)	M	60.83	29.17	0.5	3.08	3.36	2.71	2.71
	SEM	0.67	2.2	0.06	0.1	0.09	0.14	0.14
	SD	3.47	11.41	0.32	0.53	0.46	0.75	0.71
2 - Risk of Dropout (N=24)	M	60.21	47.5	1.23	3.22	3.49	2.96	2.62
	SEM	0.21	0.52	0.1	0.15	0.09	0.16	0.17
	SD	1.02	2.55	0.49	0.73	0.42	0.77	0.83
3 - Failed One Course (N=18)	M	60.56	55	1.83	3.52	3.66	2.64	2.81
	SEM	0.69	0	0.16	0.14	0.12	0.18	0.15
	SD	2.91	0	0.69	0.6	0.51	0.75	0.64
4 - Adequate Progress (N=100)	M	60.5	60	3.03	3.59	3.78	2.54	2.93
	SEM	0.22	0	0.06	0.07	0.05	0.08	0.07
	SD	2.19	0	0.61	0.66	0.55	0.78	0.69
5 - Accelerated Progress (N=87)	M	69.66	69.08	3.21	3.73	3.98	2.59	3.06
	SEM	0.18	0.24	0.07	0.08	0.05	0.06	0.08
	SD	1.67	2.23	0.69	0.7	0.51	0.6	0.74
Total - (N=256)	M	63.62	58.31	2.57	3.54	3.77	2.62	2.91
	SEM	0.3	0.79	0.07	0.04	0.03	0.04	0.05
	SD	4.85	12.57	1.12	0.69	0.55	0.72	0.73

Female students who were at highest risk of dropping out, Group 1, earned fewer credits than their male counterparts in the same group. Their scores also look very similar to the scores

from our overall population, with lower average scores on all four Domenichelli Elements when compared to the other four groups.

As we found with the male students, the female students in Groups 1 and 2 have lower scores on the Domenichelli Element of Learning Responsibility. In contrast to the male population, female students increased their Learning Responsibility scores as they improved their academic achievement. The female Academic Assessment scores increased as their academic achievement increased. Female students, like male students, also scored highest in this element among the four Domenichelli elements. Self-Assessment for the all-female risk groups had the lowest standard deviation among the four elements. Males and the whole population did not have these lower standard deviations.

Just as we saw with the whole population and the male students, the lower achieving groups scored higher in the Learning Influences element than the higher achieving groups. In the instance of Learning Influences, the two groups at highest risk of non-graduation, Groups 1 and 2 had the highest mean scores. The scores in the Relations with Teacher element showed an overall increase as academic success increased. Again, as in the whole population, both of these scores barely reach 3, which tells us that on average the students did not agree or disagree with the questions discussing their relations with teachers.

As compared to the male population, the female population scored Learning Responsibility and Self-Assessment lower and Learning Influences higher.

Table 14 provides the data for the White students overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA as well as the Domenichelli Elements: Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 14: Whites - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=3)	M	63.33	38.33	0.58	3.44	3.67	2.67	3.83
	SEM	3.33	1.67	0.1	0.29	0.38	0.17	0
	SD	5.77	2.89	0.17	0.51	0.67	0.29	0
2 - Risk of Dropout (N=6)	M	60	45.83	1.64	2.96	3.44	2.92	3.06
	SEM	0	0.83	0.28	0.23	0.21	0.25	0.43
	SD	0	2.04	0.68	0.56	0.51	0.61	1.05
3 - Failed One Course (N=10)	M	61.5	55	1.38	3.34	3.58	2.83	2.82
	SEM	1.07	0	0.16	0.25	0.15	0.23	0.22
	SD	3.37	0	0.52	0.8	0.49	0.74	0.7
4 - Adequate Progress (N=70)	M	60.29	60	3.16	3.57	3.86	2.64	2.98
	SEM	0.17	0	0.07	0.08	0.07	0.09	0.09
	SD	1.45	0	0.59	0.67	0.57	0.78	0.74
5 - Accelerated Progress (N=49)	M	69.63	69.12	3.24	3.68	3.95	2.57	2.96
	SEM	0.26	0.33	0.09	0.09	0.07	0.08	0.1
	SD	1.84	2.31	0.63	0.6	0.5	0.58	0.72
Total - (N=138)	M	63.74	61.79	2.93	3.57	3.85	2.64	2.98
	SEM	0.41	0.6	0.07	0.06	0.05	0.06	0.06
	SD	4.79	7.04	0.88	0.66	0.55	0.7	0.74

Academic Achievement Groups 1 through 3 have very few students, making any observations about these groups difficult. We will discuss this further in Chapter 5. For the White sub-group the element of Learning Influences had lower mean scores than all other

Domenichelli Elements, regardless of student academic achievement. Excluding Academic Achievement Groups 1 and 2, mean scores for Learning Influences decreased as academic performance increased. In the elements of Learning Responsibility, Self-Assessment, and Learning Influences, students at risk of dropping out of school, Group 2, showed higher mean scores than students at highest risk of dropping out of school, academic Group 1.

The sub-groups of White students scored lowest in the Domenichelli element of Learning Influences. Within this element students in Groups 1 and 2, those at risk of dropping out, had the highest mean scores for Learning Influences. In Groups 3 through 5, as academic successes increased, the mean scores for this element decreased. The same pattern emerged in the element Relations with Teacher. As student academic achievement increased, their mean scores for Relations with Teacher decreased. This is unique to the White student population. An exception does occur in Group 4, making adequate progress; in this achievement group the mean score for Relations with Teachers increased from Group 3 and then declines again in Group 5.

As we have noted in previous subgroups, for White students the mean scores for Learning Responsibility and Self-Assessment are higher than the mean scores for Learning Influences and Relations with Teacher.

Table 16 provides the data for the Hispanic students overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli Elements: Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 15: Hispanics - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=19)	M	60.66	33.29	0.62	3.33	3.55	2.92	2.81
	SEM	0.81	2.11	0.07	0.11	0.11	0.14	0.11
	SD	3.52	9.21	0.29	0.46	0.48	0.61	0.47
2 - Risk of Dropout (N=7)	M	60.71	48.57	1.26	3.65	3.45	2.79	2.88
	SEM	0.71	0.92	0.18	0.25	0.19	0.22	0.36
	SD	1.89	2.44	0.48	0.66	0.52	0.59	0.95
3 - Failed One Course (N=12)	M	60.00	55.00	1.43	3.04	3.56	2.56	2.89
	SEM	0.00	0.00	0.13	0.2	0.11	0.25	0.16
	SD	0.00	0.00	0.47	0.7	0.39	0.86	0.57
4 - Adequate Progress (N=39)	M	60.51	60.00	2.99	3.5	3.77	2.72	2.8
	SEM	0.36	0.00	0.08	0.11	0.09	0.11	0.12
	SD	2.23	0.00	0.51	0.68	0.54	0.72	0.78
5 - Accelerated Progress (N=25)	M	69.80	68.80	3	3.79	3.92	2.56	3.35
	SEM	0.20	0.44	0.16	0.14	0.1	0.13	0.16
	SD	1.00	2.18	0.81	0.69	0.51	0.63	0.81
Total - (N=102)	M	62.77	55.81	2.25	3.5	3.72	2.71	2.95
	SEM	0.45	1.27	0.11	0.07	0.05	0.07	0.07
	SD	4.56	12.82	1.14	0.68	0.52	0.69	0.75

The Hispanic subgroup has more students who were included in the lower academic performance groups 1 through 3. These students achieved fewer credits than White and Asian students in the same groups and earned lower grade point averages than White students in the same group. As in previous subgroups, the Domenichelli elements of Learning Responsibility and Self-Assessment had higher mean scores than did the Domenichelli elements of Learning Influences and Relations with Teacher.

Students with lower academic success, Groups 1 and 2, had mean scores for Learning Responsibility that "straddled" the scores of students in Groups 4 and 5, with higher academic achievement. In rank order the group mean scores emerged from lowest to highest as follows: Group3, Group1, Group 4, Group 2, and finally Group 5. Given the lack of pattern, it is difficult

to generate any conclusion associating academic performance with student mean scores for Learning Responsibility.

In examining the element of Self-Assessment, it is clear that students in the at-risk groups showed lower mean scores than those in the higher achievement groups. We again see an anomaly in Group 2, with those scores dipping before the overall trend of increase continues.

Learning Influences and Relations with Teachers had lower overall mean scores than did the Learning Responsibility and Self-Assessment elements. Within Learning Influences, as academic performance increased, mean scores for this element decreased. The exception to this pattern occurred within Group 4, those students making adequate progress. Students in this group had a higher mean score than those in Group 3. Group 4 mean scores were also higher than those of Group 5. Relations with Teachers followed a similar pattern, the difference being that, as academic achievement increased, mean scores for this element also increased. The exception for this element again occurred within Group 4, in which there was a decrease in mean score followed by an increase in Group 5.

Table 16 provides the data for the African American students' overall mean, standard error of the mean, and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teachers. These are presented overall and by risk group.

Table 16: African Americans - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsi-bility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=23)	M	61.3	26.74	0.43	2.97	3.37	2.8	2.53
	SEM	0.72	2.32	0.08	0.16	0.13	0.15	0.19
	SD	3.44	11.14	0.38	0.78	0.6	0.73	0.91
2 - Risk of Dropout (N=18)	M	60.28	47.22	1.19	3.31	3.65	2.76	2.83
	SEM	0.28	0.6	0.13	0.17	0.12	0.19	0.21
	SD	1.18	2.56	0.54	0.71	0.52	0.81	0.89
3 - Failed One Course (N=9)	M	61.11	55	1.96	3.73	3.76	2.39	3.35
	SEM	1.11	0	0.14	0.19	0.2	0.22	0.2
	SD	3.33	0	0.42	0.57	0.6	0.65	0.59
4 - Adequate Progress (N=34)	M	60	60	2.84	3.59	3.85	2.4	2.97
	SEM	0	0	0.1	0.1	0.09	0.1	0.12
	SD	0	0	0.6	0.56	0.5	0.57	0.72
5 - Accelerated Progress (N=14)	M	69.29	68.93	3.04	3.92	3.95	2.61	3.02
	SEM	0.49	0.57	0.17	0.18	0.11	0.18	0.19
	SD	1.82	2.13	0.63	0.66	0.4	0.68	0.72
Total - (N=98)	M	61.79	50.66	1.92	3.45	3.71	2.59	2.88
	SEM	0.38	1.59	0.12	0.07	0.06	0.07	0.08
	SD	3.75	15.76	1.17	0.72	0.56	0.69	0.81

The majority of African American students were included in Groups 1, 2, or 3. In all of these groups, students had failed at least one course. African American students had the highest

percentage of students in these groups compared to their peers. For these students, the Domenichelli elements of Learning Responsibility and Self-Assessment showed higher mean scores than the elements of Learning Influences and Relations with Teachers. This held true regardless of the academic performance group. It also held true that, for the elements of Learning Responsibility, Self-Assessment, and Relations with Teacher, as academic performance increased with minor exception so did the mean scores for each academic group. The exceptions are noted as follows. Learning Responsibility: mean scores increased from academic group to academic group until Group 4, in which there was a decrease in the mean score. The element of Self-Assessment showed that, as students increased in their academic success, their mean scores for this element also increased.

The Domenichelli element of Learning Influences showed an overall decrease in mean score as academic performance increased. The exception was again in academic Group 4, those students making adequate progress. Here there was a very slight decrease of .01 points in the mean score from the scores of students in Group 3. The element of Relations with Teacher showed an overall increase in mean scores as academic success increased with the following exceptions: In Group 4, students making adequate progress, scores dropped .38 points from the students who had failed one course in Group 3. There was an increase between Group 4 and Group 5 of .05 points. Note that the mean score of Group 5 is lower than the mean score of Group 3. In three of the four elements, there is an exception at Group 4, making adequate progress.

Table 17 provides the data for the Asian and Filipino students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 17 Asian and Filipino - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=5)	M	62	31	0.34	3.09	3.53	2.55	2.93
	SEM	2	2.45	0.07	0.27	0.3	0.28	0.19
	SD	4.47	5.48	0.16	0.61	0.67	0.62	0.42
2 - Risk of Dropout (N=6)	M	60	49.17	1.2	3.3	3.58	3.04	2.75
	SEM	0	0.83	0.26	0.37	0.2	0.26	0.34
	SD	0	2.04	0.64	0.9	0.48	0.64	0.82
3 - Failed One Course (N=5)	M	59	55	2.51	3.4	3.43	2.8	2.87
	SEM	1	0	0.15	0.24	0.2	0.22	0.27
	SD	2.24	0	0.34	0.54	0.45	0.48	0.59
4 - Adequate Progress (N=36)	M	60	60	3.04	3.75	3.79	2.55	3.2
	SEM	0	0	0.06	0.1	0.08	0.12	0.1
	SD	0	0	0.35	0.58	0.49	0.72	0.62
5 - Accelerated Progress (N=33)	M	69.39	68.94	3.32	3.73	3.95	2.63	3.12
	SEM	0.36	0.42	0.1	0.11	0.1	0.12	0.12
	SD	2.08	2.42	0.57	0.66	0.58	0.67	0.72
Total - (N=85)	M	63.71	60.71	2.83	3.65	3.8	2.63	3.1
	SEM	0.53	1.06	0.1	0.07	0.06	0.07	0.07
	SD	4.89	9.73	0.94	0.65	0.54	0.68	0.66

Asian and Filipino students were overwhelmingly successful in their academic performance. In the elements of Learning Responsibility (LR) and Self-Assessment (SA) the students had higher mean scores than they did in the elements of Learning Influences (LI) and Relations with Teachers (RT). This pattern has been present in all tables examined to this point.

In addition, the LI, SA, and RT elements showed an increase in mean scores as academic success increased, with the following exceptions. In the element Learning Responsibility, students showed a slight decrease of .02 points between Group 4 and Group 5.

Examination of the Element of Self-Assessment again showed an overall increase, however from Group 2 to Group 3 there was a decrease in mean score. It should also be noted that mean scores for members of Group 5, those who made accelerated progress, is shared by members of the Asian, White and African American subgroups. This score of 3.95 is second only to the scores registered by members of the EL population.

Looking at the element of Learning Influences, we see an overall increase from the academic performance Group1 to the academic performance Group 5. What is notable in this instance is the progression of mean scores as aligned to the academic achievement groups. There appears to be no pattern or logic associated. When academic groups are sequenced according to the mean scores for this element the following is the outcome: Group 1 and 4 are tied for the lowest mean score followed by Group 5, Group 3 and then Group 2 with the highest mean score. A very similar pattern in repeated in the element Relations with Teacher. Again, we show an overall increase from the lowest to highest academic group. In this instance there is also a clear distinction between the two groups on target for graduation and the three groups with students who have failed one or more classes but as before the sequencing is not linear.

Table 18 provides the data for the English-only students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli Elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 18: Language: English Only - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=42)	M	60.83	30.12	0.5	3	3.35	2.75	2.68
	SEM	0.48	1.6	0.05	0.1	0.1	0.1	0.13
	SD	3.11	10.39	0.35	0.67	0.64	0.67	0.83
2 - Risk of Dropout (N=28)	M	60.18	46.96	1.31	3.12	3.54	2.88	2.79
	SEM	0.18	0.47	0.11	0.14	0.09	0.14	0.17
	SD	0.94	2.49	0.6	0.73	0.5	0.76	0.88
3 - Failed One Course (N=28)	M	60.71	55	1.7	3.38	3.66	2.78	3.02
	SEM	0.56	0	0.12	0.13	0.1	0.13	0.12
	SD	2.95	0	0.62	0.7	0.5	0.7	0.62
4 - Adequate Progress (N=148)	M	60.34	60	3.06	3.55	3.84	2.57	2.92
	SEM	0.14	0	0.05	0.05	0.04	0.06	0.06
	SD	1.72	0	0.56	0.65	0.52	0.73	0.73
5 - Accelerated Progress (N=98)	M	69.61	68.95	3.13	3.67	3.9	2.58	2.98
	SEM	0.18	0.24	0.07	0.07	0.05	0.07	0.07
	SD	1.77	2.35	0.73	0.66	0.5	0.66	0.73
Total - (N=344)	M	63.06	57.43	2.51	3.47	3.76	2.63	2.91
	SEM	0.25	0.67	0.06	0.04	0.03	0.04	0.04
	SD	4.61	12.51	1.13	0.7	0.56	0.7	0.75

Remember that this table categorizes students whose first language is English. Its purpose will be to act as a comparison for students whose first language is not English yet who

participated in this study. The majority of native English-speaking students are on track to graduate, as indicated by their academic performance. The mean scores for the four Domenichelli Elements in concert with all other subgroups are as follows: Learning Responsibility and Self-Assessment mean scores are higher than those Learning Influence and Relations with Teacher.

Examination of the individual elements reveals the following: Mean scores for Learning Responsibility and Self Assessment increase as academic performance increases. The mean scores for Learning Influences (LI) decrease as academic performance decreases, but in examining how the decrease occurs the following is noted: Students in Groups 1 through 3 have an overall higher mean score than those students in Groups 4 and 5. The statistics are not sufficient to allow further conclusions at this point. The element of Relations with Teacher (RT) follows a similar pattern to the LI element, and again the statistical data in this table is not sufficient to draw further conclusions.

Table 19 provides the data for the English Proficient students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli Elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 19: - Language: English Proficient - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
	SEM	1.47	3.13	0.09	0.13	0.14	0.18	0.12
1 - Highest Risk of Dropout (N=11)	M	62.5	30.23	0.55	3.49	3.59	3.07	2.73
	SD	4.87	10.4	0.3	0.43	0.47	0.59	0.39
2 - Risk of Dropout (N=6)	M	60	49.17	0.99	3.63	3.67	2.67	3.03
	SEM	0	0.83	0.12	0.27	0.17	0.17	0.35
	SD	0	2.04	0.3	0.67	0.42	0.41	0.85
3 - Failed One Course (N=7)	M	60	55	1.85	3.06	3.38	2.61	2.71
	SEM	0	0	0.24	0.15	0.15	0.23	0.17
	SD	0	0	0.63	0.4	0.39	0.61	0.45
4 - Adequate Progress (N=28)	M	60	60	2.94	3.61	3.6	2.75	3.05
	SEM	0	0	0.08	0.14	0.1	0.14	0.14
	SD	0	0	0.42	0.73	0.54	0.76	0.72
5 - Accelerated Progress (N=17)	M	70.29	70	3.45	4.09	4.13	2.69	3.56
	SEM	0.29	0.43	0.1	0.14	0.11	0.17	0.19
	SD	1.21	1.77	0.4	0.59	0.47	0.7	0.78
Total - (N=69)	M	62.93	56.27	2.4	3.66	3.71	2.76	3.09
	SEM	0.57	1.63	0.14	0.08	0.06	0.08	0.09
	SD	4.75	13.57	1.15	0.68	0.53	0.68	0.73

English-Proficient students are those whose first language is not English but who, upon entering the school system and taking an English proficiency exam, tested as fully proficient in the English language and in no need English language development. This subgroup of students showed the same trends as all other subgroups. The mean scores for the elements of Learning Responsibility, Self-Assessment, and Relations with Teacher all showed an increase in mean score values as student academic performance increased. The two elements of Learning

responsibility and Self-Assessment showed higher mean scores than did those of Learning Influences and Relations with Teacher.

Student in the highest achieving group had very high mean scores in the elements of Learning Responsibility and Self-Assessment. Their scores were in fact higher than those in any of the disaggregated subgroups were.

Examination of student distribution across the academic performance groups reveals the majority of students are making adequate or accelerated progress towards graduation. The grade point average for Group 5 was also higher than those of their disaggregated peers were.

Table 20 provides the data for the English Learner students overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA as well as the Domenichelli Elements: Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall and by risk group.

Table 20 Language: English Learner - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout (N=1)	M	60	20	0.17	3.22	3.5	3.5	3.67
	SEM	.	.	.	.	.	.	.
	SD	.	.	.	.	.	.	.
2 - Risk of Dropout (N=3)	M	61.67	50	1.51	3.67	3.56	3	3.11
	SEM	1.67	0	0.37	0.55	0.47	0.43	0.72
	SD	2.89	0	0.64	0.95	0.82	0.75	1.25
3 - Failed One Course (N=2)	M	60	55	1.16	4.11	3.58	1.63	3.58
	SEM	0	0	0.03	0.22	0.25	0.63	0.08
	SD	0	0	0.04	0.31	0.35	0.88	0.12
4 - Adequate Progress (N=4)	M	60	60	3.01	3.89	4	2.5	3.46
	SEM	0	0	0.15	0.29	0.18	0.23	0.44
	SD	0	0	0.3	0.59	0.36	0.46	0.89
5 - Accelerated Progress (N=4)	M	68.33	68.33	2.76	3.78	4.11	2.5	3.17
	SEM	1.67	1.67	0.26	0.45	0.4	0.38	0.29
	SD	2.89	2.89	0.45	0.78	0.69	0.66	0.5
Total - (N=13)	M	62.31	55.77	2.1	3.79	3.82	2.56	3.35
	SEM	1.08	3.53	0.29	0.17	0.15	0.21	0.2
	SD	3.88	12.72	1.03	0.63	0.55	0.74	0.74

These groups of students are English Language Learners (ELL) who are enrolled in the college preparatory English class. Their numbers are small, so the data will be limited in its scope. What is notable about this table is the fact that the trend of Learning Responsibility, Self-Assessment, and Relations with Teacher mean scores increased with academic achievement. In the instance of Learning Influences, the mean scores showed an overall decrease as student academic performance increased. This too remained constant with other disaggregated subgroups. Due to the low number of participants, academic achievement for Group 1 was not included in the statements above.

Table 21 provides the data for students who were in English Language Development (ELD) classes but have gained language proficiency. These have been re-designated as English Proficient. Data for students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher are included in the table. These are presented overall and by risk group.

Table 21 Language: Re-designated - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 – Highes	M	60	38.33	0.56	2.81	2.94	2.42	2.78
t Risk of Dropout (N=3)	SEM	0	1.67	0.11	0.23	0.15	0.36	0.24
	SD	0	2.89	0.19	0.39	0.25	0.63	0.42
2 - Risk of Dropout (N=1)	M	60	45	1	4.11	3.5	3	2.83
	SEM	.	.	.	.	.	.	.
	SD	.	.	.	.	.	.	.
3 - Failed One Course (N=2)	M	60	55	1.53	3.39	3.83	2.13	2.67
	SEM	0	0	0.43	0.94	0	0.13	0.83
	SD	0	0	0.6	1.34	0	0.18	1.18
4 - Adequate Progress (N=15)	M	60.67	60	2.89	3.52	3.77	2.75	2.9
	SEM	0.67	0	0.17	0.18	0.17	0.2	0.21
	SD	2.58	0	0.66	0.71	0.66	0.77	0.81
5 - Accelerated Progress (N=11)	M	69.09	68.64	3.2	3.63	3.86	2.57	2.97
	SEM	0.61	0.7	0.14	0.16	0.17	0.17	0.2
	SD	2.02	2.34	0.48	0.51	0.57	0.56	0.66
Total - (N=32)	M	63.44	60.16	2.63	3.5	3.72	2.63	2.9
	SEM	0.82	1.61	0.18	0.12	0.11	0.12	0.12
	SD	4.66	9.11	1.01	0.67	0.61	0.65	0.71

The data regarding these students reveal that significant majorities are making adequate progress or accelerated progress towards graduation. The Domenichelli elements show the same pattern of Learning Responsibility, Self-Assessment, and Relations with Teacher increasing as student academic success increases. Learning Influences, unlike other subgroups, seemed to also increase as academic success increased. This is the only subgroup where all four Domenichelli elements increase with increased student achievement.

CASE Scales

Frequencies of CASE Scales

The frequency tabulations generated general response patterns to the CASE inventory. Preliminary data from the CASE scales verify earlier statements that students do not fully develop cognitive autonomy until they are in their early twenties. In each of the scales, frequency tabulations show that students exhibited autonomous traits but that this is not universal across the group. The data actually emphasizes the various developmental states of this cohort of students.

Table 22 provides the data for the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 22: Overall - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=57)	M	61.1	30.39	0.5	3.21	3.80	3.45	3.74	3.45
	SE M	0.46	1.35	0.04	.11	.09	.11	.12	.10
	SD	3.44	10.2	0.33	.81	.65	.85	.89	.78
2 - Risk of Dropout (N=38)	M	60.26	47.5	1.27	3.38	3.73	3.40	3.96	3.47
	SE M	0.18	0.41	0.09	.15	.08	.13	.14	.15
	SD	1.13	2.53	0.57	.91	.50	.78	.87	.92
3 - Failed One Course (N=39)	M	60.51	55	1.69	3.47	3.92	3.32	3.67	3.38
	SE M	0.4	0	0.1	.10	.08	.13	.14	.13
	SD	2.51	0	0.61	.62	.50	.82	.88	.81
4 - Adequate Progress (N=195)	M	60.31	60	3.03	3.69	3.98	3.42	3.77	3.29
	SE M	0.12	0	0.04	.05	.04	.06	.06	.05
	SD	1.66	0	0.55	.68	.52	.83	.90	.76
5 - Accelerated Progress (N=129)	M	69.63	69.04	3.17	3.71	3.97	3.50	3.73	3.24
	SE M	0.16	0.2	0.06	.06	.04	.07	.08	.07
	SD	1.77	2.3	0.68	.71	.50	.78	.89	.81
Total - (N=458)	M	63.04	57.4	2.49	3.59	3.93	3.44	3.76	3.32
	SE M	0.22	0.58	0.05	.03	.03	.04	.04	.04
	SD	4.6	12.47	1.12	.74	.53	.81	.89	.80

In examining the entire survey population, we note that mean scores in the Beckert element of Decision Making is consistently higher than the remaining scales. The scales of Self-Assessment and Evaluative Thinking always show higher mean scores than the remaining two scales of Comparative Validation and Voicing Opinion. As we will see, this pattern held true for each subgroup as the data was disaggregated.

Across the total population, the mean scores for the Beckert Scales of Evaluative Thinking and Decision Making increased as student academic achievement increased. The scales of Voicing Opinion and Self-Assessment seemed to have no pattern associated with student academic achievement. The mean scores for these two scales fluctuated as we moved from achievement group to achievement group. Comparative Validation was the only scale with an overall declining mean score as student academic achievement increased.

Table 23 provides the data for male students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 23: Male - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group Male		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=307)	M	61.33	31.50	.51	3.22	3.63	3.25	3.78	3.51
	SE M	.63	1.65	.06	.16	.13	.16	.17	.13
	SD	3.46	9.02	.35	.86	.69	.89	.92	.70
2 - Risk of Dropout (N=14)	M	60.36	47.50	1.33	3.58	3.75	3.56	4.21	3.37
	SE M	.36	.69	.19	.23	.16	.18	.17	.27
	SD	1.34	2.59	.69	.88	.58	.69	.65	1.01
3 - Failed One Course (N=21)	M	60.48	55.00	1.57	3.48	3.93	3.17	3.60	3.24
	SE M	.48	.00	.11	.12	.13	.15	.19	.16
	SD	2.18	.00	.51	.56	.58	.70	.87	.71
4 - Adequate Progress (N=95)	M	60.11	60.00	3.03	3.66	3.97	3.39	3.84	3.26
	SE M	.07	.00	.05	.08	.05	.08	.09	.07
	SD	.72	.00	.48	.74	.53	.77	.89	.72
5 - Accelerated Progress (N=42)	M	69.56	68.97	3.08	3.68	3.94	3.27	3.76	3.08
	SE M	.31	.38	.10	.11	.08	.12	.14	.13
	SD	1.98	2.47	.64	.74	.50	.81	.93	.83
Total - (N=202)	M	62.31	56.25	2.40	3.57	3.90	3.33	3.82	3.27
	SE M	.29	.86	.08	.05	.04	.06	.06	.05
	SD	4.17	12.28	1.11	.76	.57	.78	.89	.77

Male students followed the patterns established in the overall student survey population. It should be noted that Group 2, those students at risk of dropping out, seem to have mean scores that are significantly different from those of the risk groups preceding or following this group. Note in particular the scale of Self-Assessment, in which Group 1 had a mean score of 3.78, Group 2 scored 4.21 and Group 3 scored 3.60. Similar patterns for Group 2 will be noted again in other subgroups. In the male data, this pattern emerged in three of the five scales.

Comparative Validation still held a declining trend of lower mean scores as academic achievement increase.

Table 24 provides the data for female students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 24: Female - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group Female		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=27)	M	60.83	29.17	.50	3.21	3.99	3.66	3.70	3.38
	SEM	.67	2.20	.06	.15	.11	.15	.17	.17
	SD	3.47	11.41	.32	.77	.57	.76	.86	.87
2 - Risk of Dropout (N=24)	M	60.21	47.50	1.23	3.27	3.72	3.31	3.82	3.53
	SEM	.21	.52	.10	.19	.09	.17	.19	.18
	SD	1.02	2.55	.49	.93	.45	.83	.95	.88
3 - Failed One Course (N=18)	M	60.56	55.00	1.83	3.46	3.91	3.50	3.74	3.56
	SEM	.69	.00	.16	.17	.09	.22	.21	.21
	SD	2.91	.00	.69	.70	.40	.93	.90	.90
4 - Adequate Progress (N=100)	M	60.50	60.00	3.03	3.72	3.99	3.46	3.70	3.32
	SEM	.22	.00	.06	.06	.05	.09	.09	.08
	SD	2.19	.00	.61	.62	.51	.88	.91	.79
5 - Accelerated Progress (N=87)	M	69.66	69.08	3.21	3.72	3.99	3.60	3.72	3.32
	SEM	.18	.24	.07	.07	.05	.08	.09	.09
	SD	1.67	2.23	.69	.69	.50	.75	.88	.80
Total - (N=256)	M	63.62	58.31	2.57	3.61	3.96	3.52	3.72	3.36
	SEM	.30	.79	.07	.04	.03	.05	.06	.05
	SD	4.85	12.57	1.12	.72	.50	.83	.89	.82

Data for the female population reveals a slightly different result. We note again in this population the misalignment of mean scores that occurs within Group 2, setting this group apart from the remaining groups. When we examine the scales of Decision Making and Self-Assessment, we note that the change in mean scores, excluding the Group 2 anomaly, is almost negligible as academic success increases. The Scale of Voicing Opinion appears to have no correlation to academic success.

Table 25 provides the data for White students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 25: White - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group White		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=3)	M	63.33	38.33	.58	2.96	3.61	3.73	3.44	3.07
	SEM	3.33	1.67	.10	.53	.40	.47	.29	.29
	SD	5.77	2.89	.17	.92	.69	.81	.51	.50
2 - Risk of Dropout (N=6)	M	60.00	45.83	1.64	3.02	3.61	3.20	4.00	3.53
	SEM	.00	.83	.28	.39	.13	.22	.27	.28
	SD	.00	2.04	.68	.95	.33	.54	.67	.69
3 - Failed One Course (N=10)	M	61.50	55.00	1.38	3.49	3.85	3.48	3.53	3.26
	SEM	1.07	.00	.16	.19	.19	.21	.29	.28
	SD	3.37	.00	.52	.59	.61	.66	.92	.90
4 - Adequate Progress (N=70)	M	60.29	60.00	3.16	3.68	3.93	3.28	3.70	3.30
	SEM	.17	.00	.07	.08	.07	.11	.12	.08
	SD	1.45	.00	.59	.69	.59	.93	.97	.69
5 - Accelerated Progress (N=49)	M	69.63	69.12	3.24	3.61	3.88	3.54	3.62	3.36
	SEM	.26	.33	.09	.09	.07	.11	.12	.11
	SD	1.84	2.31	.63	.60	.48	.76	.85	.75
Total - (N=138)	M	63.74	61.79	2.93	3.60	3.89	3.39	3.66	3.32
	SEM	138.00	138.00	138.00	137.00	137.00	138.00	138.00	138.00
	SD	4.79	7.04	.88	.68	.54	.84	.90	.72

The mean score for each of four Beckert scales increased as student academic achievement increased. Those four elements are Evaluative Thinking, Decision Making, Self-Assessment, and Comparative Validation. For this group of students the scale of Voicing Opinion was the only one to decrease as academic success increased. Note that again for students in Group 2 Voicing Opinion, Self-Assessment, and Comparative Validation all show mean scores that are set apart from the other groups within their scales. The scale of Evaluative Thinking showed a significant change from the lower-achieving students in Group 1 to those in Group 5, who had the highest academic performance.

Table 26 provides the data for Hispanic students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 26: Hispanic - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group Hispanic		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=19)	M	60.66	33.29	.62	3.28	3.75	3.45	3.65	3.55
	SEM	.81	2.11	.07	.18	.13	.19	.21	.12
	SD	3.52	9.21	.29	.78	.57	.81	.92	.54
2 - Risk of Dropout (N=7)	M	60.71	48.57	1.26	3.61	3.74	2.91	3.76	3.31
	SEM	.71	.92	.18	.48	.11	.31	.36	.46
	SD	1.89	2.44	.48	1.26	.29	.81	.96	1.21
3 - Failed One Course (N=12)	M	60.00	55.00	1.43	3.33	4.00	3.10	3.39	3.43
	SEM	.00	.00	.13	.21	.12	.22	.24	.19
	SD	.00	.00	.47	.72	.40	.76	.83	.67
4 - Adequate Progress (N=39)	M	60.51	60.00	2.99	3.50	3.97	3.40	3.66	3.25
	SEM	.36	.00	.08	.11	.08	.11	.13	.15
	SD	2.23	.00	.51	.71	.50	.67	.80	.93
5 - Accelerated Progress (N=25)	M	69.80	68.80	3.00	3.75	3.97	3.51	4.01	3.31
	SEM	.20	.44	.16	.15	.11	.17	.15	.14
	SD	1.00	2.18	.81	.77	.56	.83	.74	.72
Total - (N=102)	M	62.77	55.81	2.25	3.51	3.92	3.37	3.72	3.35
	SEM	.45	1.27	.11	.08	.05	.08	.08	.08
	SD	4.56	12.82	1.14	.79	.51	.76	.83	.80

The mean scores for Hispanic students rose as their academic performance increased. The one exception to this was the scale of Comparative Validation, in which the mean score decreased as academic performance increased. There may be a cultural implication in this finding. Again, for Group 2 students there were three scales with mean scores that were not aligned to the other means within that scale. The three included Evaluative Thinking, Voicing Opinion, and Comparative Validation.

Table 27 provides the data for African American students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 27: African American - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group African American		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=19)	M	61.30	26.74	.43	3.27	3.99	3.43	4.01	3.43
	SEM	.72	2.32	.08	.19	.16	.19	.18	.21
	SD	3.44	11.14	.38	.92	.75	.89	.85	1.02
2 - Risk of Dropout (N=18)	M	60.28	47.22	1.19	3.47	3.69	3.83	4.04	3.36
	SEM	.28	.60	.13	.19	.14	.15	.24	.21
	SD	1.18	2.56	.54	.81	.61	.64	1.02	.90
3 - Failed One Course (N=9)	M	61.11	55.00	1.96	3.71	3.87	3.49	4.11	3.36
	SEM	1.11	.00	.14	.19	.17	.32	.27	.27
	SD	3.33	.00	.42	.57	.51	.95	.80	.82
4 - Adequate Progress (N=34)	M	60.00	60.00	2.84	3.65	4.25	3.84	4.21	3.31
	SEM	.00	.00	.10	.11	.07	.13	.14	.13
	SD	.00	.00	.60	.62	.43	.74	.80	.75
5 - Accelerated Progress (N=14)	M	69.29	68.93	3.04	3.83	4.19	3.66	4.00	3.07
	SEM	.49	.57	.17	.19	.16	.18	.29	.24
	SD	1.82	2.13	.63	.72	.59	.68	1.08	.88
Total - (N=98)	M	61.79	50.66	1.92	3.56	4.04	3.68	4.09	3.32
	SEM	.38	1.59	.12	.08	.06	.08	.09	.09
	SD	3.75	15.76	1.17	.75	.61	.78	.88	.86

The Beckert scales for this group followed some trends previously established. The scales of Decision Making and Evaluative Thinking increased as academic success increased. Mean scores associated with Voicing Opinion varied from academic performance group to group. What is notable is the Self-Assessment scale; here African-American students scored higher than any other subgroup, regardless of the achievement group. In addition, we noted that like the Hispanic subgroup, the African-American students had mean scores that declined in the scale of Comparative Validation as academic success increased. Additionally, please note that, like other subgroups, mean scores presented for Group 2 in the scales of Decision Making and Voicing opinion were not aligned to the other mean values within that scale.

Table 28 provides the data for Asian and Filipino students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment, and Comparative Validation. These are presented overall and by risk group.

Table 28: Asian and Filipino - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group Asian and Filipino		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=5)	M	62.00	31.00	.34	3.33	3.73	3.48	3.53	3.16
	SEM	2.00	2.45	.07	.29	.26	.34	.44	.32
	SD	4.47	5.48	.16	.64	.57	.76	.99	.71
2 - Risk of Dropout (N=6)	M	60.00	49.17	1.20	3.31	4.03	2.93	4.06	3.80
	SEM	.00	.83	.26	.37	.19	.34	.23	.39
	SD	.00	2.04	.64	.91	.46	.84	.57	.95
3 - Failed One Course (N=5)	M	59.00	55.00	2.51	3.48	4.00	3.04	3.60	3.28
	SEM	1.00	.00	.15	.28	.26	.53	.45	.55
	SD	2.24	.00	.34	.62	.59	1.18	1.01	1.23
4 - Adequate Progress (N=36)	M	60.00	60.00	3.04	3.90	3.87	3.32	3.64	3.24
	SEM	.00	.00	.06	.10	.08	.11	.12	.10
	SD	.00	.00	.35	.62	.45	.67	.74	.60
5 - Accelerated Progress (N=33)	M	69.39	68.94	3.32	3.70	4.01	3.39	3.64	3.08
	SEM	.36	.42	.10	.15	.09	.15	.16	.17
	SD	2.08	2.42	.57	.85	.49	.88	.93	.95
Total - (N=85)	M	63.71	60.71	2.83	3.72	3.93	3.31	3.66	3.22
	SEM	.53	1.06	.10	.08	.05	.09	.09	.09
	SD	4.89	9.73	.94	.75	.48	.80	.83	.82

The scales of Evaluative Thinking and Decision Making increased as academic performance increased. Voicing Opinion and Comparative Validation decreased as student

academic performance increased. We again see the anomaly in Group 2, in which mean scores are significantly different from the mean scores of other academic performance groups within those scales. Note the scores for Voicing Opinion, Self-Assessment, and Comparative Validation. Perhaps the decline in Voicing Opinion and Comparative Validation as academic performance increases can be related to student culture.

Table 29 provides the data for English-speaking students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, Voicing Opinion, Self-Assessment and Comparative Validation. These are presented overall and by risk group.

Table 29: English Speaking - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group English Only		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=42)	M	60.83	30.12	.50	3.19	3.82	3.52	3.85	3.42
	SEM	.48	1.60	.05	.13	.11	.14	.14	.13
	SD	3.11	10.39	.35	.83	.70	.89	.90	.86
2 - Risk of Dropout (N=28)	M	60.18	46.96	1.31	3.28	3.69	3.50	4.00	3.49
	SEM	.18	.47	.11	.16	.10	.15	.16	.17
	SD	.94	2.49	.60	.83	.52	.77	.87	.88
3 - Failed One Course (N=28)	M	60.71	55.00	1.70	3.47	3.95	3.48	3.86	3.49
	SEM	.56	.00	.12	.11	.10	.16	.15	.15
	SD	2.95	.00	.62	.56	.52	.85	.80	.77
4 - Adequate Progress (N=148)	M	60.34	60.00	3.06	3.71	4.02	3.47	3.80	3.26
	SEM	.14	.00	.05	.05	.04	.07	.08	.06
	SD	1.72	.00	.56	.61	.52	.86	.93	.74
5 - Accelerated Progress (N=98)	M	69.61	68.95	3.13	3.64	3.95	3.51	3.73	3.24
	SEM	.18	.24	.07	.07	.05	.08	.09	.08
	SD	1.77	2.35	.73	.69	.49	.79	.89	.79
Total - (N=344)	M	63.06	57.43	2.51	3.57	3.94	3.49	3.81	3.31
	SEM	.25	.67	.06	.04	.03	.04	.05	.04
	SD	4.61	12.51	1.13	.70	.54	.83	.90	.78

Mean scores in this group increased in the scales of Evaluative Thinking and Decision Making. The scale of Voicing Opinion did not significantly change over the academic performance groups. Self-Assessment and Comparative Validation decreased as academic performance increased in this subgroup.

Table 30 provides the data for English Proficient students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert scales of Evaluative Thinking, Decision Making, and Voicing Opinion.

Table 30 English Proficient - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group English Proficient		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=11)	M	62.50	30.23	.55	3.24	3.64	3.07	3.45	3.45
	SEM	1.47	3.13	.09	.26	.18	.21	.26	.14
	SD	4.87	10.40	.30	.86	.59	.69	.86	.47
2 - Risk of Dropout (N=6)	M	60.00	49.17	.99	3.88	3.94	3.50	4.22	3.53
	SEM	.00	.83	.12	.33	.20	.18	.32	.39
	SD	.00	2.04	.30	.81	.49	.43	.78	.95
3 - Failed One Course (N=7)	M	60.00	55.00	1.85	3.27	3.64	2.66	2.90	3.26
	SEM	.00	.00	.24	.15	.09	.10	.19	.32
	SD	.00	.00	.63	.40	.24	.28	.50	.85
4 - Adequate Progress (N=28)	M	60.00	60.00	2.94	3.63	3.88	3.33	3.65	3.49
	SEM	.00	.00	.08	.18	.10	.15	.18	.14
	SD	.00	.00	.42	.96	.52	.77	.96	.73
5 - Accelerated Progress (N=17)	M	70.29	70.00	3.45	3.99	4.02	3.66	3.82	3.36
	SEM	.29	.43	.10	.17	.12	.15	.20	.23
	SD	1.21	1.77	.40	.68	.51	.62	.81	.95
Total - (N=69)	M	62.93	56.27	2.40	3.64	3.86	3.32	3.64	3.43
	SEM	.57	1.63	.14	.10	.06	.09	.11	.09
	SD	4.75	13.57	1.15	.85	.51	.71	.89	.77

Table 31 provides the data for English Language Learner students' overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert Scales: Evaluative Thinking, Decision Making, Voicing Opinion.

Table 31: English Language Learners - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group English Learner		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=1)	M	60.00	20.00	.17	3.63	4.00	4.40	4.33	3.80
	SEM	.	.	.	.	.	.	.	.
	SD	.	.	.	.	.	.	.	.
2 - Risk of Dropout (N=3)	M	61.67	50.00	1.51	3.08	3.78	2.53	3.44	3.20
	SEM	1.67	.00	.37	1.01	.11	.59	.59	1.00
	SD	2.89	.00	.64	1.75	.19	1.03	1.02	1.73
3 - Failed One Course (N=2)	M	60.00	55.00	1.16	4.31	3.75	3.40	2.67	3.20
	SEM	.00	.00	.03	.69	.08	.80	.67	.20
	SD	.00	.00	.04	.97	.12	1.13	.94	.28
4 - Adequate Progress (N=4)	M	60.00	60.00	3.01	3.91	3.75	3.35	3.75	2.90
	SEM	.00	.00	.15	.34	.17	.26	.25	.33
	SD	.00	.00	.30	.67	.35	.53	.50	.66
5 - Accelerated Progress (N=3)	M	68.33	68.33	2.76	3.75	4.11	3.40	4.22	3.47
	SEM	1.67	1.67	.26	.29	.22	.23	.62	.18
	SD	2.89	2.89	.45	.50	.38	.40	1.07	.31
Total - (N=13)	M	62.31	55.77	2.10	3.72	3.86	3.26	3.67	3.22
	SEM	1.08	3.53	.29	.27	.08	.22	.25	.23
	SD	3.88	12.72	1.03	.96	.30	.79	.89	.84

Table 32 provides the data for English Learners who have been re-designated students in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Beckert Scales: Evaluative Thinking, Decision Making, Voicing Opinion

Table 32: English Re-designated - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Beckert Scales by Risk Group

Group English Re-designated		Credits Attempted	Credits Earned	Core GPA	Becker Evaluative Thinking	Beckert Decision Making	Beckert Voicing Opinion	Beckert Self Assessment	Beckert Comparative Validation
1 - Highest Risk of Dropout (N=3)	M	60.00	38.33	.56	3.33	4.06	3.47	3.11	3.73
	SEM	.00	1.67	.11	.40	.15	.18	.22	.48
	SD	.00	2.89	.19	.69	.25	.31	.38	.83
2 - Risk of Dropout (N=1)	M	60.00	45.00	1.00	4.25	3.50	2.60	3.00	3.60
	SEM	.	.	.	.	.	.	.	.
	SD	.	.	.	.	.	.	.	.
3 - Failed One Course (N=2)	M	60.00	55.00	1.53	3.38	4.67	3.40	4.67	2.60
	SEM	.00	.00	.43	1.13	.33	.60	.33	1.20
	SD	.00	.00	.60	1.59	.47	.85	.47	1.70
4 - Adequate Progress (N=15)	M	60.67	60.00	2.89	3.57	3.86	3.16	3.67	3.29
	SEM	.67	.00	.17	.19	.13	.17	.15	.25
	SD	2.58	.00	.66	.72	.52	.66	.56	.95
5 - Accelerated Progress (N=11)	M	69.09	68.64	3.20	3.83	4.03	3.15	3.48	2.95
	SEM	.61	.70	.14	.27	.19	.29	.30	.28
	SD	2.02	2.34	.48	.90	.61	.96	.99	.93
Total - (N=32)	M	63.44	60.16	2.63	3.64	3.97	3.18	3.59	3.18
	SEM	.82	1.61	.18	.14	.10	.13	.14	.17
	SD	4.66	9.11	1.01	.81	.54	.74	.77	.95

Individual English Language Learner groups have too few students to draw conclusions regarding the mean scores and academic achievement. Aggregated together the scores do suggest mean scores for non-native English speakers to be higher than those are for native English speakers. In particular, the majority students who have been re-designated as English Proficient, Table 32, are on target to graduate or have accelerated progress.

Domenichelli Elements and Length of Time in the District

In this next data set, we make note of the relationship of time in the district, academic achievement, and the Domenichelli elements. Data is presented as follows. Each of the tables presents data according to academic performance group. We then disaggregate data by the grade the student entered into the school district, also referred to as length of time in the district. Finally, as we read across the table, we see the credits attempted, credits earned, Core Grade Point Average (GPA), and the Domenichelli elements. After each table, we present narrative descriptions of data contained in the tables.

Table 33 provides the data for academic performance of Group 1, Highest Risk of Dropout, in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, and core GPA, as well as the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall, by risk group, and by year of entry into the school district.

Table 33: Overall for Risk Group 1 - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Year of Entry into School District

Group	School Entry		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
1 - Highest Risk of Dropout	1_KNDG to Grade Two (N=13)	M	62.31	31.54	0.63	3.29	3.54	2.79	2.92
		SEM	1.22	2.74	0.10	0.14	0.15	0.21	0.22
		SD	4.39	9.87	0.36	0.51	0.54	0.74	0.78
	2_Grade Three to Five (N=18)	M	61.11	31.11	0.42	3.15	3.39	2.72	2.81
		SEM	0.76	2.70	0.07	0.11	0.12	0.12	0.16
		SD	3.23	11.45	0.28	0.48	0.49	0.52	0.68
	3_Grade Six to Eight (N=23)	M	60.54	30.54	0.50	2.98	3.31	2.84	2.51
		SEM	0.67	1.92	0.07	0.16	0.13	0.16	0.16
		SD	3.19	9.23	0.33	0.77	0.61	0.75	0.76
	4_Grade Nine (N=3)	M	60.00	20.00	0.52	2.70	3.11	3.17	2.72
		SEM	0.00	5.77	0.32	0.50	0.78	0.22	0.48
		SD	0.00	10.00	0.56	0.86	1.36	0.38	0.84

As student length of time in the district decreased, so did the number of credits earned and the core grade point average. The elements of Learning Responsibility and Self-Assessment also declined as length of time in the district declined. Learning Influences and Relations with Teachers show no clear patterns.

Table 34 provides the data for academic performance Group 2, Risk of Dropout, in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA, and the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. We present this data by overall, by risk group, and by year of entry into the school district.

Table 34: Overall for Risk Group 2 - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Year of Entry into School District

Group	School Entry		Credits Attempted	Credits Earned	Core GPA	Learning Responsi-bility	Self-Assessment	Learning Influences	Relations with Teacher
2 - Risk of Dropout	1_KNDG to Grade Two (N=15)	M	60.00	47.33	1.26	3.10	3.54	3.03	2.69
		SEM	0.00	0.67	0.17	0.13	0.11	0.20	0.25
		SD	0.00	2.58	0.65	0.49	0.43	0.76	0.97
	2_Grade Three to Five (N=8)	M	60.63	47.50	1.18	3.64	3.69	2.59	2.90
		SEM	0.63	0.94	0.13	0.26	0.20	0.28	0.27
		SD	1.77	2.67	0.37	0.74	0.56	0.78	0.77
	3_Grade Six to Eight (N=11)	M	60.45	47.73	1.37	3.44	3.56	2.86	3.09
		SEM	0.45	0.79	0.17	0.23	0.14	0.18	0.24
		SD	1.51	2.61	0.56	0.76	0.45	0.58	0.80
	4_Grade Nine (N=4)	M	60.00	47.50	1.20	2.72	3.33	2.69	2.75
		SEM	0.00	1.44	0.37	0.65	0.40	0.28	0.54
		SD	0.00	2.89	0.73	1.29	0.81	0.55	1.08

The number of credits earned for this academic group was not influenced by the school entry grade. The Domenichelli elements also show no pattern for mean scores as the entry date changes.

Table 35 provides data for the Academic Performance Group 3, Failed One Course, in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA, and the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall, by risk group, and by year of entry into the school district.

Table 35: Overall for Risk Group 3 - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Year of Entry into School District

Group	School Entry		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
3 - Failed One Course	1_KNDG to Grade Two (N=18)	M	60.56	55.00	1.51	3.31	3.73	2.67	2.91
		SEM	0.69	0.00	0.13	0.15	0.08	0.17	0.14
		SD	2.91	0.00	0.55	0.65	0.34	0.71	0.59
	2_Grade Three to Five (N=12)	M	60.83	55.00	1.76	3.23	3.33	2.71	2.90
		SEM	0.83	0.00	0.19	0.19	0.15	0.22	0.19
		SD	2.89	0.00	0.66	0.67	0.51	0.77	0.65
	3_Grade Six to Eight (N=8)	M	60.00	55.00	1.89	3.71	3.77	2.56	3.25
		SEM	0.00	0.00	0.21	0.28	0.20	0.27	0.24
		SD	0.00	0.00	0.60	0.79	0.56	0.76	0.68
	4_Grade Nine (N=1)	M	60.00	55.00	2.50	3.22	3.67	2.50	3.00
		SEM	.	.	.	.	.	.	.
		SD	.	.	.	.	.	.	.

Students in academic Group 3 earned a higher GPA as their length of time in the district decreased. There was no direct relationship detected for the Domenichelli elements and length of time in the district.

Table 36 provides data for Risk Group 4, Adequate Progress, in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA, and the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall, by risk group, and by year of entry into the district.

Table 36: Overall for Risk Group 4 - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Year of Entry into School District

Group	School Entry		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
4 - Adequate Progress	1_KNDG to Grade Two (N=97)	M	60.26	60.00	3.12	3.62	3.85	2.59	3.02
		SEM	0.15	0.00	0.06	0.07	0.06	0.08	0.08
		SD	1.51	0.00	0.60	0.68	0.55	0.76	0.76
	2_Grade Three to Five (N=53)	M	60.28	60.00	2.91	3.49	3.77	2.71	2.91
		SEM	0.21	0.00	0.08	0.08	0.07	0.09	0.09
		SD	1.52	0.00	0.56	0.60	0.51	0.65	0.64
	3_Grade Six to Eight (N=31)	M	60.32	60.00	2.91	3.65	3.76	2.50	2.96
		SEM	0.32	0.00	0.07	0.10	0.10	0.13	0.14
		SD	1.80	0.00	0.41	0.58	0.58	0.74	0.76
	4_Grade Nine (N=14)	M	60.71	60.00	3.05	3.28	3.69	2.59	2.62
		SEM	0.71	0.00	0.06	0.22	0.13	0.20	0.22
		SD	2.67	0.00	0.23	0.83	0.47	0.75	0.84

In Table 36 for students with adequate progress, as the entry grade increased so did the mean value for the Domenichelli element Self-Assessment.

Table 37 provides data for Risk Group 5, Accelerated Progress, in terms of the overall mean, standard error of the mean and standard deviation for the credits attempted, credits earned, core GPA, and the Domenichelli elements of Learning Responsibility, Self-Assessment, Learning Influences, and Relations with Teacher. These are presented overall, by risk group, and by year of entry into the school district.

Table 37: Overall for Risk Group 5 - Mean, Standard Error of the Mean, and Standard Deviation for Credits Attempted, Credits Earned, Core GPA, and Domenichelli Elements by Year of Entry into School District

Group	School Entry		Credits Attempted	Credits Earned	Core GPA	Learning Responsibility	Self-Assessment	Learning Influences	Relations with Teacher
5 - Accelerated Progress	1_KNDG to Grade Two (N=69)	M	69.52	68.79	3.11	3.69	3.95	2.50	3.03
		SEM	0.22	0.29	0.09	0.08	0.06	0.08	0.09
		SD	1.83	2.41	0.71	0.63	0.46	0.65	0.74
	2_Grade Three to Five (N=38)	M	69.87	69.34	3.14	3.82	3.90	2.70	3.08
		SEM	0.30	0.39	0.11	0.10	0.09	0.10	0.12
		SD	1.83	2.37	0.70	0.63	0.56	0.63	0.74
	3_Grade Six to Eight (N=17)	M	69.71	69.41	3.37	3.46	3.84	2.82	3.08
		SEM	0.29	0.40	0.11	0.18	0.14	0.16	0.20
		SD	1.21	1.66	0.47	0.76	0.56	0.67	0.84
	4_Grade Nine (N=5)	M	69.00	69.00	3.50	4.33	4.23	2.10	3.23
		SEM	1.00	1.00	0.20	0.07	0.17	0.13	0.39
		SD	2.24	2.24	0.45	0.16	0.38	0.29	0.86

Summary of Domenichelli Elements and Length of Time in the District

Upon examination of the element of Learning Responsibility, we note that, in four of the five academic performance groups, students who entered the district during their early primary years have higher Learning Responsibility mean scores than those who entered later. The group that is an exception to this statement is Group 5, those students with accelerated progress. This group showed significant increase in mean score for students who entered the district during their ninth grade year. Also note that Group 1, those students at highest risk of dropping out, is the only student group whose mean scores declined as students entered the district at later grade levels. The other risk groups showed an overall decline but there was variance in the scores of the entry groups.

The element of Self-Assessment followed the same trend as stated above for Learning Responsibility. Four of the five risk groups showed decline in mean scores as the length of time students were enrolled in the district decreased. Again, the one exception occurred with those students who were making accelerated progress towards graduation. Consistent with the patterns we saw in the disaggregated tables, the two elements of Learning Responsibility and Self-Assessment consistently have mean scores higher than the elements of Learning Influence and Relations with Teacher

Learning Influences decreased overall from risk group to risk group. Once disaggregated by length of time in the district, within each risk group there were mixed patterns. Students at highest risk of dropout, Group 1, showed an increase in Learning Influence from early grade entry to those who entered in later grades. Group 4 showed fluctuations but those students at the earliest and the latest entry points had the same mean score for this element. Groups 2 and 3 maintained the same overall pattern of decreasing mean scores as length of time in the district became shorter. Note the progression in Group 5, accelerated students; students in this group had an increase in mean scores as length of time in the district shortened. The mean score dropped significantly for those who entered the district during the ninth grade. These students have the shortest length of time in the district.

Relations with Teachers increased as academic success increased overall. Once disaggregated by length of time in the school district, academic Groups 2, 3, 4, and 5 show an increase in mean score as length of time in the district shortens. Those students in Group 1 at highest rick of dropout had mean scores decline as the length of time in the district declined.

Correlations

Table 38 looks at the correlations between the student identifying elements of academic success and the Beckert measures of the development of cognitive autonomy, as well as the Domenichelli measures of non-cognitive factors.

Table 38: Correlations between Total Credits Attempted, Total Credits Earned, Core Grade Point Average, and Risk Group and Beckert CASE Scales and Domenichelli Elements

Student Characteristics		Beckert CASE: Evaluative Thinking	Beckert CASE: Decision-Making:	Beckert CASE: Voicing Opinion	Beckert CASE: Self-Assessment	Beckert CASE: Comparative Validation	Domenichelli Element: Learning Responsibility	Domenichelli Element: Self-Assessment	Domenichelli Element: Learning Influences	Domenichelli Element: Relations with Teacher
Total Credits Attempted	Cor.	.088	.041	.074	-.026	-.068	.167**	.191**	-.046	.069
	Sig	.062	.388	.112	.582	.149	.000	.000	.323	.138
	N	457	455	458	458	458	458	458	458	458
Total Credits Earned	Cor.	.200**	.112*	.057	-.024	-.101*	.300**	.314**	-.111*	.117*
	Sig	.000	.017	.226	.610	.031	.000	.000	.017	.012
	N	457	455	458	458	458	458	458	458	458
Core Grade Point Average	Cor.	.211**	.097*	.069	-.050	-.085	.379**	.422**	-.050	.163**
	Sig	.000	.039	.140	.290	.068	.000	.000	.290	.000
	N	457	455	458	458	458	458	458	458	458
Risk Group	Cor.	.197**	.110*	.051	-.022	-.098*	.285**	.303**	-.115*	.112*
	Sig	.000	.019	.281	.640	.037	.000	.000	.014	.016
	N	457	455	458	458	458	458	458	458	458

In this correlation between academic indicators, Beckert scales, and Domenichelli elements, we note that no Beckert scales correlate to the academic indicators of credits earned or grade point average. We also note the Domenichelli elements of Learning Responsibility and Self-Assessment do correlate to the academic indicators. A Spearman *rho* correlation coefficient was calculated for the relationship between Total Credits Attempted, Total Credits Earned, Core Grade Point Average, Risk Group, and Beckert CASE scales and Domenichelli elements. A positive correlation was found between Total Credits Earned and Learning Responsibility (*rho* (458) = .300, $p < .000$), indicating a significant relationship between the two variables. Positive correlations were also found between Credits Earned and the Domenichelli element of Self-Assessment (*rho* (458) = .314, p< .000). For these same two Domenichelli elements, Learning Responsibility and Self-Assessment, a moderately strong correlation was found with Core Grade Point Average, Learning Responsibility ((*rho* (458) = .379, $p < .000$), and Self-Assessment.

Table 39 presents the correlations between Beckert CASE Scales and Domenichelli elements. Beckert CASE scales measure student cognitive development, and the Domenichelli elements measure non-cognitive elements of the student-learning environment. Each Beckert and Domenichelli element is also correlated against the remaining elements of their groups.

Table 39: Correlations between Beckert CASE Scales and Domenichelli Elements
** = Significance <.005 * = Significance < .05

		Beckert CASE: Decision-Making:	Beckert CASE: Voicing Opinion	Beckert CASE: Self-Assessment	Beckert CASE: Comparative Validation	Domenichelli Element: Learning Responsibility	Domenichelli Element: Self-Assessment	Domenichelli Element: Learning Influences	Domenichelli Element: Relations with Teacher
Beckert CASE: Evaluative Thinking	Cor.	.416**	.251**	.192**	-.268**	.515**	.425**	-.294**	.329**
	Sig	.000	.000	.000	.000	.000	.000	.000	.000
	N	454	457	457	457	457	457	457	457
Beckert CASE: Decision-Making:	Cor.		.406**	.447**	-.061	.330**	.384**	-.235**	.228**
	Sig		.000	.000	.194	.000	.000	.000	.000
	N		455	455	455	455	455	455	455
Beckert CASE: Voicing Opinion	Cor.			.371**	.113*	.282**	.374**	-.053	.229**
	Sig			.000	.015	.000	.000	.254	.000
	N			458	458	458	458	458	458
Beckert CASE: Self-Assessment	Cor.				.019	.263**	.279**	-.147**	.176**
	Sig				.686	.000	.000	.002	.000
	N				458	458	458	458	458
Beckert CASE: Comparative Validation	Cor.					-.274**	-.151**	.453**	-.348**
	Sig					.000	.001	.000	.000
	N					458	458	458	458
Domenichelli Element: Learning Responsibility	Cor.						.605**	-.265**	.587**
	Sig						.000	.000	.000
	N						458	458	458
Domenichelli Element: Self-Assessment	Cor.							-.258**	.457**
	Sig							.000	.000
	N							458	458
Domenichelli Element: Learning Influences	Cor.								-.251**
	Sig								.000
	N								458

The following Spearman *rho* correlation coefficients were calculated for the relationship among and between Beckert CASE scales and Domenichelli elements. Positive correlations were found among the Beckert CASE scales. Specifically, the Beckert CASE scale of Decision Making was correlated to the Beckert CASE scale of Evaluative Thinking (*rho* (454) = .416, $p <$ .000). The element of Decision Making was also correlated to the Beckert CASE scales of Self-Assessment (*rho* (455) = .406, $p <$ .000) and Voicing Opinion (*rho* (455) = .447, $p <$.000).

The Domenichelli elements showed multiple correlations to each other and validated the patterns established in the means analysis. Remember that we have a pattern established in the means analysis of Learning Responsibility and Self-Assessment; they have higher scores than Learning Influences and Relations with Teacher. In Spearman rho correlations, we see a strong correlation between Learning Responsibility and Self-Assessment (*rho* (458) = .605, $p <$ .000). We also have a pattern in the means analysis of the mean scores for Relations with Teacher, Learning Responsibility, and Self-Assessment; we see these scores increasing as student academic success increases. In the correlation, we see that Relations with Teacher correlate to both Learning Responsibility and Self-Assessment. The correlation with Learning Responsibility was the stronger of the two (*rho* (458) = .587, $p <$ .000) versus (rho (458) = .457, p <.000).

There are multiple correlations between Domenichelli elements and Beckert CASE scales. Negative correlations occur when, as the mean value of one item increases, the mean value of another decreases. In our study, the mean scores of the Domenichelli element of Learning Influence decreased as the mean scores for Beckert scale items increased. All Learning Influence correlations with Beckert CASE scales are negative except for one—the element of Learning Influence as correlated to the Beckert Comparative Validation scale (*rho* (458) = .453, $p <$ .000).

All Domenichelli elements were correlated to the Beckert CASE scale of Evaluative Thinking. In particular, Domenichelli Learning Responsibility and Self-Assessment had the highest correlations (*rho* (458) = .515, $p <$ .000) and (*rho* (458) = .425, $p <$ .000), respectively. We also see that these two Domenichelli elements showed correlation to the Beckert CASE scale of Decision Making (*rho* (455) = .330, $p <$ .000) and (*rho* (455) = .384, $p <$ .000), respectively. The Domenichelli element of Self-Assessment had a positive correlation to the Beckert CASE scale of Voicing Opinion (*rho* (458) = .374, $p <$ .000). There is also a negative correlation between Domenichelli Relations with Teacher and Beckert Comparative Validation (*rho* (458) = -.348, $p <$ .000).

In the next chapter, we will examine the following findings:

- The Beckert CASE scales have no correlation to academic achievement.
- The Domenichelli elements show correlation to academic achievement.
- The Domenichelli elements of Leaning Responsibility and Self-Assessment show correlation to each other across all subgroups, as well as correlation to the Beckert scales of Evaluative Thinking and Decision Making.

- The students' length of time in the school district has a relationship to academic achievement and the Domenichelli elements.

- Students for whom English is a second language have higher academic performance and mean scores on Domenichelli elements than their peers. This is particularly true for students in the accelerated progress group.

CHAPTER V: SUMMARY OF FINDINGS

In this chapter, we review the major findings from the data analysis as presented in Chapter 4. We have synthesized the findings related to student academic performance, the Domenichelli Elements and the Beckert Scales. Our analysis is rooted in the belief that students need assistance to make the transitions from middle to high school and that assistance must be based upon their characteristics to be effective. We have focused this investigation on the student characteristic of cognitive autonomy. The Beckert Scales speak to cognitive aspects of adolescent development with relation to their ability to make decisions. The Domenichelli Elements address the non-cognitive aspects of the learning environment and how they may influence student adaptation to the high school transition. We further tie the Domenichelli Elements to the Beckert Scales to determine their relationship to student developmental stages of cognitive autonomy.

This analysis of the findings includes disaggregating data regarding students by gender, ethnicity and language proficiency. We chose to disaggregate the data based on our understanding of the achievement gap that exists for students of color, economic disadvantage and second language learners. This disaggregation also allows us to account for additional student characteristics that may influence student adaptation to the transition to high school.

Examining the data with a lens on cognitive and non-cognitive factors has allowed us to understand the greater influence of the non-cognitive factors on academic achievement. As we proceed, patterns of mean values from student responses to Beckert CASE Scales and Domenichelli Elements will. We will further note the influence of non-cognitive factors on student achievement and the data will reveal the lesser influence of the cognitive factors on academic achievement.

Major Finding 1

Major Finding 1: Academic Performance: Credits Earned, Credits Attempted, Core GPA have correlation to Domenichelli Elements but no correlation to the Beckert Scales.

When we examine the data regarding student academic performance, we noted the achievement gap that is persistently mentioned in education was also present in this student population. The highest risk group contained the students who earned the least amount of credits during their freshman year of high school; students with 5 – 40 credits. Our data showed that students in this highest risk group had the highest standard deviation for credits earned. The wide band of credits bracketing this group explains this. The remaining risk groups have very narrow bands of credits resulting in their smaller standard deviation of the mean.

The academic achievement gap present in the survey population was partially identified in the following data. With in the high-risk group of students, the lowest standard deviation for credits earned exist for White and Asian students; SD =2.89 and SD = 5.48 respectively. Hispanic and African American students presented standard deviations of SD = 9.21 and SD = 11.14 respectively. As noted the band of credits for this group was quite wide. We will see as the analysis continues that African American and Hispanic students had greater numbers in this

category and in particular greater number of students who were in the bottom half of this academic performance group.

As we examine the GPA and credits earned for English Learner (EL) students included in this data set, we see that 8.9% of the EL students are categorized in risk Group 1. Comparing EL student achievement to students with English as their first language showed the English Only students to have 12.2% of their population in this high-risk group versus the 8.9% of EL students. As noted in previous chapters EL students are considered at high risk for non-graduation.

Overall, when considering Credits Attempted, Credits Earned, and Core GPA we see the pattern of White and Asian students achieving at higher levels than students of color. We see female students achieving at higher levels than their male counter parts (see table 4.2 and 4.3). We also note there were fewer female students in the highest risk groups (10.5% female and 14.8% male) and significantly more female students in the accelerated group (33.9% female and 20.8% male). This pattern was also present for students of color as compared to White and Asian students in the academic accelerated groups as well. Students of color we under represented in the upper groups.

Once we disaggregated the mean values for student achievement we examined the data for correlations between academic achievement, the Beckert Case Scales and the Domenichelli Element. Spearman *rho* correlations between the Beckert CASE Scales and academic achievement were calculated. The resulting data found no significant correlations between the Beckert CASE Scales and total credits attempted, total credits earned, grade point average or the academic achievement groups. The same Spearman *rho* correlation calculations performed for the Domenichelli Elements found significant correlations as follows:

Domenichelli Element Learning Responsibility and Total Credits Earned
(rho (458) = .300, $p < .000$)
Domenichelli Element Learning Responsibility and Core Grade Point Average
(rho (458) = .379, $p < .000$)
Domenichelli Element Learning Responsibility and Academic Performance Group
(rho (458) = .285, $p < .000$)
Domenichelli Element Self-Assessment and Total Credits Earned
(rho (458) = .314, $p < .000$)
Domenichelli Element Learning Self-Assessment and Core Grade Point Average
(rho (458) = .422, $p < .000$)
Domenichelli Element Self Assessment and Academic Performance Group
(rho (458) = .303, $p < .000$)

These initial data points lead us to believe that non-cognitive factors are more influential to student's successful adaptation to the transition to high school. This gives a basis for the examination of the influence of cognitive and non-cognitive factors as related to student academic achievement during the transitional ninth grade year. As the data is disaggregated by gender and ethnic sub-groups, we are further able to explore the role student characteristics may play in the adaptation to this transition.

Major Finding 2: Domenichelli Elements of Learning Responsibility and Self-Assessment are highly correlated to each other and strongly correlated to the Beckert CASE Scales of Evaluative Thinking and Decision Making.

The element of Learning Responsibility (LR) consists of question designed to determine what students believe about their individual level of control and responsibility related to academic success. Learning Responsibility is a non-cognitive element with ties to student characteristics and to the Beckert Scales. Questions included in this element link specifically to non-cognitive factors specifically those addressing homework, seeking assistance, and taking responsibility for ones learning.

The Domenichelli Element of Self-Assessment measured the extent to which students believed they exercised the control expressed in the element of Learning Responsibility. Lee and Shute, (2009) identified student engagement as domain of non-cognitive factors. Within this domain, behavioral, cognitive-motivational and emotional engagement was identified as the focus area for non-cognitive factors. Questions contained in this element focused in particular on the area of cognitive-motivational factors. We will see that student response to these two elements suggests there is a strong relationship between these elements and academic achievement.

Data shows that as mean scores for the total survey population as the Domenichelli Element of Learning Responsibility increased so did student academic achievement. This held true for the Domenichelli Element of Self-Assessment as well. This suggests a correlation between the two elements and academic success. When Spearman *rho* correlations were calculated for these elements we found they were significantly correlated, Learning Responsibility (rho (458) = .300, $p < .000$) and Self Assessment (rho (458) = .314, $p < .000$). The correlation between these two elements was further strengthened when we examined the Spearman rho correlations between the elements and grade point average, Learning Responsibility (rho (458) = .379, $p < .000$) and Self Assessment (rho (458) = .422, $p < .000$). Note these correlations are higher than those for credits.

Knowing that success in academics requires focused efforts toward learning we examined the element of Learning Responsibility for correlation to the Beckert Scales of Decision Making (DM) and Evaluative Thinking (ET). In both instances there was a correlation however the correlation between Learning Responsibility and Evaluative Thinking was significantly higher (*rho* (458) = .515, $p < .000$) than the correlation between Leaning Responsibility and Decision Making (*rho* (458) = .330, $p < .000$). This supports the idea of a relationship between cognitive and non-cognitive factors and their influence on student achievement.

What we extrapolate from this is an understanding that students are developing the cognitive ability to make decisions. At the time of this survey, Decision Making mean scores were 3.93 and the Evaluative Thinking mean scores were 3.59 for the overall survey population. As we focus this understanding on academic success, we can see that expectations for students to be independent learners may be the antithesis from their stage of cognitive development.

Upon further examination, we note the mean score for Learning Responsibility was 3.51. This along with the correlation to the Beckert CASE Scales implies that students are still developing in this area. Understanding Learning Responsibility to be a non-cognitive factor, we begin to see the strength of its influence and how it may work in tandem with cognitive factors. As we disaggregated student responses to this element we saw that increases in Learning Responsibility accompanied increases in academic achievement.

Once disaggregated by gender we note that Female students had a higher mean score than male students for the element of Learning Responsibility. As previously noted, female students also had higher overall academic achievement than did male students. When we disaggregate further by length of time in the district, students who entered the district during the early primary grades had higher mean score for this element than those who entered in later years. Understanding non-cognitive factors as teachable and or environmental, this supports the notion of the non-cognitive factors supporting student academic achievement. We suspect the increase in academic achievement is due to the student understanding the culture of the school system and therefore feeling more comfortable in the system; yet another link to the influence of non-cognitive factors. We posit that the school environments have a nurturing aspect that promotes and supports the student's feeling of control over their learning. Either or both would contribute to the higher mean scores and both are environmentally controlled.

We noted that when disaggregated by ethnicity, the mean scores for the element of Learning Responsibility was overall higher for White and Asian students than for Hispanic and African American Students. An exception exists for accelerated African American students. They had the highest mean scores for Learning Responsibility among all sub-groups. The GPA of African American students however were the lowest among all of the accelerated student sub-groups. We can speculate that African American students who have accelerated progress towards graduation also have a higher sense of control over their education. Why their GPA would not correspond is a question for further investigation.

Accepting Learning Responsibility as a non-cognitive element, and noting that students who were in the district from early primary grade had higher scores than those who entered the district later, we believe that the learning environment has an influence on student perception of their control over their learning and influence on the level of responsibility they own for their learning.

For all populations Learning Responsibility was higher in academic Group 2 than Group 3. This was most pronounced among the males. We are not sure why this occurs and believe it also requires further study to explain. One possible factor is that those students in Group 2 are at risk of not graduating but have failed less than two courses during their freshman year. The failure may have multiple contributors.

We return to the Element of Self-Assessment and the correlation between the mean scores for Learning Responsibility and Self-Assessment. This correlation leads us to conclude that if a student believes they are in control of their academic success, if they believe they have the skills necessary to exercise control over their learning, then they will exercise that control. Again we note that students who entered the district during the early elementary years consistently had higher mean values for the element of Self-Assessment. We once again

conclude that the non-cognitive element of Self-Assessment has significant influence on student achievement and can itself be influenced by the learning environment.

As with the Element of Learning Responsibility, the female students had higher mean values than the male students for the Element of Self-Assessment. White and Asian sub-groups reflected higher mean scores that the Hispanic and African American sub-groups for this element as well. One exception did arise in the pattern of disaggregated data for White and African American students. For accelerated students in Group, 5 the White and African American subgroups shared the highest mean score for the element of Self-Assessment (mean = 3.95).

What factors are influencing student beliefs? We speculate that for African American students it is not the school environment. We discount the school environment because a larger percentage of African American students are classified in the higher risk academic achievement groups while lower percentages exist for White and Asian students. The opposite is true in the higher achieving academic groups. Here White and Asian students are the larger populations while African American and Hispanic students have a smaller percentage in this performance group. We speculate that if the school environment were responsible for the achievement of African American students in the accelerated group, we would see in their disaggregated numbers the same distribution of all students across the five academic achievement groups. This does not occur. We suspect the home environment may have the stronger influence for higher achieving African American students. Having stated this, we turn to the learning environment to examine what level of influence it does exert on student academic achievement.

Major Finding 3

Major Finding 3: The learning environment can enhance the student's cognitive abilities and proves to be a significant influence in student academic achievement.

The learning environment has many components and is a non-cognitive factor. In this study we have attempted to assess relationships with teachers, student perception of the learning environment in terms of acceptance and support, and their perceptions regarding the schools emphasis of academic achievement for all students. For the purposes of this study, success in the system is measure by student academic achievement. The Domenichelli elements were used to evaluate non-cognitive factors that may have an influence on student academic achievement. What we discovered was the non-cognitive factors had stronger correlation to academic success than did the cognitive factors.

Utilizing ANOVA calculations (refer to Table 4-31 in Chapter 4), we were able to calculate the significance of each of the Beckert CASE Scales and each of the Domenichelli Elements as compared to the academic achievement groups for the overall student population. The ANOVA calculations for the Beckert Scales revealed significant relationship to academic achievement for the scale of Evaluative Thinking (.000) and the scale of Decision Making (.025). The remaining scales, Voicing Opinion, Self-Assessment and Comparative Validation showed no significance between academic achievement groups.

Post Hoc Test were then run to disaggregate the ANOVA data. The Post Hoc Test revealed the following: For the scale of Evaluative Thinking the mean scores for students at greatest risk of dropping out (Mean = 3.21) and students who were making adequate progress towards graduation (Mean = 3.69) were statistically different (refer to Table 4-15 in Chapter 4). In addition the test also revealed statistical significance between the difference of the mean scores for students at greatest risk of dropping out (Mean = 3.21) and those students with accelerated progress (Mean = 3.71).

The scale of Evaluative Thinking measures the student's cognitive ability. The questions were global in nature and not focused in the arena of education. This is true of all Beckert Scale questions. When examining results from the overall population we see that mean scores increase as academic success increases. This was true for all disaggregated populations. There was little difference in scores when the population was disaggregated by ethnicity or gender and the difference between males and females mean scores was less than .04. Once disaggregated by ethnicity, African American and Hispanic students had mean scores that were slightly lower than the general populations mean and Asian students had mean scores slightly higher. Beckert defines evaluative thinking as the ability to set a goal, evaluate the pros and cons of options to achieve it and then learn form the outcomes.

The Beckert Scale of Evaluative Thinking showed a correlation to student academic achievement. Statistically there was significance between the mean scores for Group 2 students who were at risk of dropping out (Mean 3.73) and Group 4 students who were making adequate progress (Mean = 3.98). This confirms our analysis in Chapter 4 of the Beckert CASE Scales indicating that for the overall student population Decision Making and Evaluative Thinking have influence on the academic achievement of students. This is most pronounced in the scale of Evaluative Thinking between the lowest and each of the two highest achieving groups.

In a next step model, the scale of Decision Making is a natural progression from the scale of Evaluative Thinking. Decision Making measures the student's cognitive development of choosing options that will achieve the goals set in Evaluative Thinking. Mean scores for this scale indicate that students believe they make effective decisions, 3.93, yet as previously stated, the Post Hoc disaggregated data reveals the statistical difference to be not as strong as that for Evaluative Thinking. Interestingly students did not indicate they always based their decisions upon goals or plans as measured by the scale of Evaluative Thinking.

All groups presented higher mean scores for the Decision Making Scale as academic success increased. For African American students and Asian students, mean scores significantly increased as their academic proficiency increased. The African American population had a mean score of 4.25 for those making adequate progress and a mean score of 4.19 for those with accelerated progress. We note once again these are cognitive measures and yet, the grade point average for this population of students is lower than those of other ethnic groups were. Asian students also had mean score that topped at 4.03. This particular mean score was attained by the group of students who were at risk of dropping out.

Domenichelli Elements stand in contrast to the Beckert Scales regarding their relationships to student academic achievement. We refer once again to the ANOVA data for these elements (refer to Table 4-31 in Chapter 4). Here we note the Domenichelli Elements of

Learning Responsibility and Self-Assessment had strong correlation to student academic achievement. The Domenichelli Element of Teacher Relations also had relationship to student academic achievement.

Post Hoc tests reveal the Domenichelli Element of Learning Responsibility showed a significant relationship between the mean scores of students who were at high risk of dropping out (Mean = 3.09) and the mean score of students who were making adequate progress (Mean = 3.57). There was also significance between the mean scores of students at highest risk and those with accelerated progress (Mean = 3.72). Finally, the Post Hoc Test reveals significance between at-risk students and those with accelerated progress (Mean = 3.27 and 3.72 respectively) as well as students who failed one course and those with accelerated progress (Mean = 3.36 and 3.72 respectively). We can conclude that students with higher academic achievement also had higher mean scores for Learning Responsibility and the higher mean scores were significant and meaningful.

We noted that in Chapter IV the Element of Self-Assessment appeared to be closely related to that of Learning Responsibility (refer to 4-32). In the Post Hoc Test, results this was confirmed when the academic groups showing significance were the same as those for the element of Learning Responsibility. In the context of this element, we again showed significance between the mean scores of students who were at high risk of dropping out (Mean = 3.38) and the mean score of students who were making adequate progress (Mean = 3.81). There was also significance between the mean scores of students at highest risk of dropping out of school and those with accelerated progress (Mean = 3.93). Just as before, the Post Hoc Test revealed significance for the scores of at risk students and those with accelerated progress (Mean = 3.56 and 3.93 respectively) as well as students who failed one course and those with accelerated progress (Mean = 3.62 and 3.93 respectively). In all subgroup populations the elements of Self-Assessment and Learning Responsibility have a strong relationship with each other and both have strong relationship with student academic achievement.

Finally, the Domenichelli Element of Relations with Teacher also proved to be significant when related to academic achievement. The relationship between the highest and lowest achieving groups for this element was notable. We found the mean values ranged from 2.71 in the lowest achieving group to 3.06 in the highest achieving academic group for this element.

The Scores for Relations with teachers were based upon student answers to questions regarding how well the students felt their teachers knew them as individuals. The questions also assessed student perception of feeling valued as an individual by the teacher. As academic success increased for the overall population the mean scores for Relations with Teachers also increased. While there appears to be a connection, we note that overall population scores barely reached a score of 3. This indicates that relationship with teachers may influence academic achievement but the strength of that influence may be questionable.

When the Relations with Teachers data were disaggregated the mean scores for the female population followed the trend set by the overall population; the mean scores increased as academic success increased. Conversely, male students had mean scores that reached 3 for students at risk of dropping out (Group 2), those who failed one course (Group 3) and students

with accelerated progress (Group 5). The remaining academic groups had mean scores in the range of 2.9 (refer to table x). This leads us to question if the relationship with teachers leads to improved academics or if the level of academic proficiency begets the better relationship.

We suspect a combination of the two causal agents is responsible for the mean scores. We root this suspicion in the fact that once disaggregated the White student populations posted mean scores above 3.5 in the groups at risk of not graduating. We would submit that students who are at risk benefit when teachers foster positive relationships with them. We also suspect that students who are academically successful are by default granted the improved relationship and potentially less cognizant of the value of the positive relationship.

Major Finding 4

Major Finding 4: Student subgroups showed findings outside of the normal means for this study. Because this finding is discussed sufficiently in the following text, it is not included in the conclusions section of this dissertation, Chapter VI>

This finding contains random items that emerged from the data set as significant, but not large. The findings herein illustrate the power of the learning environment to influence, in a positive or negative manner, student academic achievement. In the examination of data, we discovered these outliers in the subgroups of English Language Learners, African American students, and Female students; none of these finding individually present as a major finding. Together however, they support the notion that non-cognitive factors can and will influence cognitive factors. They also support the idea that the learning environment should be tailored to the needs of the students. Linking back to Schlossberg we tie the needs of the students are dependent upon their individual characteristics. Finally, the student characteristics facilitate their adaptation to the transition to high school.

English Language Learners who have completed the English Language Development (ELD) program were situated by vast majority in the academic performance groups of adequate progress and accelerated progress. The criteria for completion of the ELD program involves course completion, showing proficiency on the California English Language Development Test and scoring proficient on the California High School Exit Exam. A student whose first language is other than English but are also proficient in English are termed English Proficient. We mention this to illustrate that this group of students has met established criteria showing language proficiency.

Having stated the criteria for exiting second language learners who are in the main college preparatory classes we found the mean scores of EL students to be higher than we found those of their English-speaking peers. Even after disaggregating the English-speaking students, the EL students posted higher mean scores in cognitive and non-cognitive factors.

Second language learners classified as English proficient had the highest mean score, 3.66, for the Domenichelli Element of Learning Responsibility. This would be expected as this group of students is working to overcome a language barrier as well as to master content knowledge. This requires the student to be highly motivated to succeed and this motivation would be accompanied by taking responsibility for ones learning. When we examined the scores

for the remaining Domenichelli Elements, the scores of second language learners were higher in all elements excluding Self-Assessment.

Looking at the element of Relations with Teachers, we found the English Learner population posted mean scores above 3.0 in all of the academic groups. This gives rise to the notion that relationships with teachers are more important for this population. Second language learners are often dependent upon their teachers for more than acquisition of academic content. This may be one of several possible explanations for the higher mean value for Relations with Teachers in this population. The students are dependent upon teachers for survival in the system. Dependency upon the teacher extends beyond academia and to general skills required to function in the system. This manner of dependency forges a stronger bond between student and teacher. The relationship between non-English speakers and their teachers can and frequently does involve a certain level of nurturing and that would naturally lead to the higher mean scores we have recorded.

In examining the relationship of Beckert Scales and Domenichelli Elements we again point to the correlation between the two. The Beckert Scales of Evaluative Thinking and Decision Making showed a correlation to the Domenichelli Elements of Learning Responsibility and Self-Assessment (see table 4-32); both increased as academic achievement increased. Remembering that Beckert Scales measure cognitive development and Domenichelli Elements measure non-cognitive factors; a relationship between the two may help us to understand how to alter the learning environment elements to influence student success. In making this statement, we refer once again to influencing student adaptation to transition.

When mean scores for Beckert Scales and Domenichelli Elements were disaggregated, we noted the trends mention for the overall student population followed for each of the disaggregated groups. Notable results included African American students who were accelerated in their academic achievement. They had the highest mean scores of all subgroup populations in the scales of Evaluative Thinking, Self-Assessment, and Decision Making. Likewise, African American students in this same academic achievement group also had the highest mean scores for the Domenichelli element of Learning Responsibility and tied with Asian student in the same achievement group for the highest mean score in the element of Self-Assessment. This suggests that African American students who are accelerated in their progress towards graduation are self-directed and self-motivated learners. We saw however that the higher mean scores for these elements did not translate to higher grade point averages. Still the African American students, even in the highest achievement groups, had the lowest grade point averages for students in their achievement bracket giving credence to the factors surrounding the learning environment having influence upon student academic achievement.

Similar to the African American population we note members of the EL population with accelerated academic progress earned mean scores for the element of Self-Assessment that were greater than 4. Again, we note that this population of students has worked to learn the English language in addition to the subject matter content. The characteristic of being a self-assessing learner may be inherent in their academic success.

The Domenichelli element of Learning Influences (LI) was unique among all Domenichelli elements because it increased in all disaggregated groups as academic performance

decreased. Learning Influences contained questions that centered on peer and teacher influence in the classroom. The mean scores reported for all groups of students; male, female and the ethnic groups were lower than those of any of the other Domenichelli Element. Most of the average scores for this element were less than 3.0 indicating that the students did not think that this has a great influence on their learning. Perhaps student really did not think there was a social influence on their learning or perhaps the students are thinking about social influences, but are at the stage of their cognitive development where independence from peer pressure is beginning to emerge.

The students categorized as high risk of dropping out tended to score the element of Learning Influences (LI) higher than the students who were performing well in school. Students who were academically successful had lower mean scores in the LI Element and higher mean scores in the Learning Responsibility and Self Assessment elements. Together, these scores indicate self-reliance for academic achievement and support the conclusion that greater academic achievement is partially the result of less dependence on outside approval.

It is interesting that females had Learning Influence mean scores higher than males. This indicates the female students continue to seek external approval despite their potential for early cognitive maturity. Still, the opinions of others exercised less influence on female students with higher academic success than they did on female students with lower academic success. This mirrors the findings of other disaggregated groups. The higher achieving academic groups though the entire population consistently scored higher than at risk counterparts.

Two of the five Beckert Scales also presented a set of outliers. For each of theses cognitive findings we were able to site a non-cognitive factor that may have influenced the Beckert Scale.

Voicing Opinion

As student populations were disaggregated, we find that White students exhibited no real pattern of mean scores as related to academic performance. This did not hold true for other ethnic populations however. Asian students had decreased mean scores for this scale as academic success increased. Hispanic and African American students showed increased mean scores for this scale as academic success increased. This is finding causes us to speculate that the scale of voicing opinion maybe part of the student's cognitive development yet there are indicators that other non-cognitive factors such as family culture can influence the student's ability or willingness to voice their opinions. We at one point held speculation that relationships with their teachers may influence student willingness to voice their opinion in the classroom. Upon examination of the Beckert Scale and the Domenichelli Element, we found no consistent pattern between the two. We then turned to the correlation matrix and again found no correlation between the two.

Comparative Validation

The Beckert Scale of Comparative Validation showed a notable variance in mean response among the disaggregated populations. While decreasing for the overall population as

academic success increased, Female, White and Asian populations presented mean scores that increased as academic success increased. African American, Hispanic and male populations showed a decrease in mean scores as their academic success increased. The questions contained in this scale are centered on approval of decisions and views the students hold. The questions can allude to peer pressure however we believe when related to academic performance, expectations also become a factor. For example male students are expected to out perform female students in the math and sciences; female students achieve at greater levels in English courses than do their male counterparts. These again are non-cognitive influences of the learning environment. They are referred to as teacher expectations.

The mean scores of the student participants demonstrated the cognitive factor of Comparative Validation; comparing one's self to others or seeking approval, influences student academic achievement. Manifestations of Comparative Validation present as a result of the non-cognitive factors that influence the student's decision making. We point to the student populations that exhibited decreasing mean scores as their academic achievement increased. For all of these populations there are non-cognitive factors we can identify that would exert this type of influence. Brown students have peer pressure regarding academic success and potentially lack of teacher expectation that they potentially must over come. These two factors have been demonstrated to influence academic success. Male students are expected to succeed in school. We suspect if the ethnic data were disaggregated by gender, for White and Asian students we would see males out perform female students. We suspect this pattern may not hold true for Hispanic and African American students.

We would expect to see the Beckert Scale of Comparative Validation and the Domenichelli Element of Learning Influence show a relationship to student achievement. We know the two have a significant correlation to each other, (rho (458) = .453, $p < .000$) and yet neither one showed any correlation to academic achievement. This leads us to question the notion that peers are a strong enough influence to effect poor academic success in a population of students.

In the following chapter we will look specifically at how these findings can help us to assist students adapt to their transition from middle to high school. Understanding that student characteristics influence their adaptation to the transition, how can schools best meet the needs of these students? We have identified basic characteristics in this study, what additional information would be beneficial in helping schools to help students? How would we obtain that information? Can we reduce the failure rate of ninth grade students and thusly influence their graduation rates?

CHAPTER VI: CONCLUSIONS

The findings herein illustrate the power of the learning environment to influence, in a positive or negative manner, student academic achievement. In the examination of data we discovered these outliers in the subgroups of English Language Learners, African American students, and Female students.. Together they support the notion that non-cognitive factors can and will influence cognitive factors. They also support the idea that the learning environment should be tailored to the needs of the students. Linking back to Schlossberg (Schlossberg, 1981) we tie the needs of the students are dependent upon their individual characteristics. Finally, the student characteristics facilitate their adaptation to the transition to high school.

The purpose of this study was to explore the interactions of cognitive factors, non-cognitive factors, and the school-learning environment as they related to student academic achievement during the ninth grade. We did not begin with this end in mind, however. This journey began with a desire to determine why students were not graduating from high school at satisfactory rates. In the investigation of graduation rates, we learned that students who fail more than one course in their freshman year were more prone to drop out of school than their peers who passed all of their classes were.

With new insight, we began to investigate school factors in the ninth grade that would influence student achievement. This investigation yielded a large body of literature focused on the transition from middle to high school and the structure of the ninth-grade learning environment. As the study proceeded, we learned that transition to high school was more of a process with a beginning and an end; as opposed to the singular event, most educators understand the transition to be. We also learned the phenomenon of transition was not unique to the field of education and gained our understanding of this phenomenon from multiple fields. Regardless of the setting, transition is process. Successful transition is dependent upon how an individual reacts to the process. How someone reacts to transition depends upon the circumstances involved in the transition and the personal characteristics of the individual navigating the transition.

During collaboration with Dr. Bernard Gifford, the concept of cognitive autonomy emerged as an important characteristic of students. This became the focal point of our study, and we chose to administer a survey instrument to students. We used Beckert's instrument to measure student development of cognitive autonomy. In creating the survey, we also chose to incorporate questions that had been created by this investigator in collaboration with a team of teachers to measure school climate. These questions, in addition to student demographic data obtained from the school, created the variables associated with non-cognitive factors and the school-learning environment. Aligning these three factors—cognitive autonomy, non-cognitive factors, and the school-learning environment—to academic achievement has yielded strong data and significant findings. As this study began, we expected to determine that cognitive autonomy had significant influence on student academic performance. As this chapter will show, that was not the outcome of the study.

In this chapter, we will first restate the purpose of this study and give a simple overview of the research questions. We will then discuss each finding in relation to the conclusions we have drawn. The chapter concludes with recommendations and finally researcher reflections.

This study investigated the relationship of the development of cognitive autonomy to student achievement. The purpose was to determine if the characteristic of cognitive autonomy and other non-cognitive factors were influential on student academic performance. By asking if there is a significant relationship between the scales of cognitive autonomy and academic performance, between non-cognitive elements and academic performance, or between the scales of cognitive autonomy and certain non-cognitive elements, we attempted to answer the question.

The conclusions presented will follow the research questions presented in Chapter III and address three areas:

- Cognitive autonomy as a student characteristic that affects student academic achievement
- Non-cognitive factors and their effect on the academic achievement of students
- Cognitive and non-cognitive factors in regard to their inter-relationship and influence on each other (suggestion: The inter-relationship and influence of cognitive and non-cognitive factors

The overarching finding of this study shows cognitive autonomy does not significantly influence student academic achievement. Bearing this in mind, we believe focus areas within the school should include building the curricular program with an understanding of non-cognitive factors at the core of decision-making. With this lens in place, the following questions arise.

What structures are in place to enhance the development of a supportive learning environment?

1. Do the structures in place take into account the non-cognitive characteristics of the student population?
2. Does the teaching staff have an understanding of the concepts of cognitive autonomy, student non-cognitive characteristics, and the influence they may exert on student achievement?
3. What factors external to the school may influence student achievement as related to non-cognitive characteristics?

Conclusions Regarding Major Finding 1

Major Finding 1: Academic Performance: Credits Earned, Credits Attempted, and Core GPA have correlation to the Domenichelli elements but no correlation to the Beckert scales.

Through this study, the characteristic of cognitive autonomy did not have a greater influence on student academic achievement than the non-cognitive elements. While this is an important finding, we must remember that we cannot totally discount or ignore student development of cognitive autonomy. The ability to make effective decisions is critical to the success of adults. This study illustrates that at the ninth-grade level, cognitive autonomy is still developing for students.

We also conclude that supporting students during their ninth-grade transition to high school involves a focus on the institutional practices that will support students; institutional practices implements with an understanding of student non-cognitive attributes. A learning environment incorporating this understanding better serves students and reduces failure rates during the ninth-grade transition. To illustrate, we turn to the subject school of this study for positive and negative examples of such an environment. We will first describe the basic structure of high schools and follow with examples of structures within the subject school.

The organization of high schools continues to reflect the agrarian society they were designed to serve. Schools typically offer six classes per day. In this structure, we group students by content area and by grade level to learn course materials. The number of students scheduled into a class will ebb and flow with the economic times. When funding is limited, such as it currently is, schools enroll more students in each class as a cost-cutting measure.

Multiple factors influence how we schedule students into classes. Among factors considered is, the type of class and the time of day the class is offered. Too often, teacher preference and ease of building the schedule becomes the primary lens through which we build school schedules. Embedded within the master schedule are important philosophies of the school. They require extrapolation to facilitate understanding of the schools priorities.

Support structures, such as the school-within-a-school models we discussed in the literature review, are in place in the subject school. They support building student-teacher relationships by assigning students to their classes using a cohort model. In the subject school, three to four teachers share a cohort of students. This facilitates teacher understanding of their students and collaboration regarding their students. Within this cohort model, teachers have opportunity to employ learning strategies centered on the non-cognitive attributes of their students. This latter piece strengthens the support of building a positive learning environment for students that encompasses the individual components of the Domenichelli elements.

While the foundational support is in place at the subject school, the academic achievement data of the school shows the basics are not enough. The academic achievement gap persists, and 20.7% of the survey population failed two or more classes during the ninth grade, placing them at risk of dropping out of school.

Conclusions Regarding Major Finding 2

Major Finding: The Domenichelli elements of Learning Responsibility and Self-Assessment are highly correlated to each other and strongly correlated to the Beckert CASE scales of Evaluative Thinking and Decision Making.

Non-cognitive factors can influence cognitive factors. We see the personal characteristics of students and the factors associated with the learning environments supporting student development of cognitive autonomy. This clearly divides non-cognitive factors into two classifications and, with that, the ways in which non-cognitive factors inform practice becomes evident. In a system based upon the academic support needs of students, non-cognitive characteristics of the student will inform the structure of the school. The characteristics of the school influencing student achievement are environmental, changeable, and again based on their needs.

This concept of a modifiable school program links back to the previous statements of schools programs adapting to the needs of students as they transition from middle to high school. Each student cohort entering the ninth grade will have particular characteristics and particular academic needs. School programs must be able to adjust to those needs to be effective in their efforts to assist students as they move from middle to high school.

Conclusions Regarding Major Finding 3

Major Finding 3: The learning environment can enhance a student's cognitive abilities and proves to be a significant influence in student academic achievement.

Drawn from this finding we conclude that there are non-cognitive characteristics of students, external to the school that has influence on student academic achievement. In order to reduce the failure rate of students during the ninth grade, schools must incorporate understanding of these factors into their pedagogical design and practice.

The subject school has allocated time for teachers to collaborate. Examples of the uses of collaboration time include focus on reviewing the academic achievement of students, creating interdisciplinary unit lessons, creating programs to enhance student skills for acquiring content knowledge, and organizing and strengthening content specific curriculum. Through the literature review, we have seen examples that demonstrate similar practices can be effective in supporting the academic achievement of students.

Implementing strategies of this nature will not be effective, however, unless implementation occurs with an understanding of student characteristics. We have seen effective practice, one example of which is the focus on improving female representation and success in math and science programs. The characteristics of female students informed the change in policy and procedures. When the characteristic of the student was at the center of policy and procedures reform, we saw improvement of entry into programs and the improvement of academic success for female students in math and science. Taking into account non-cognitive factors, such as gender or race, and then reforming policy and practice will improve academic outcomes for the targeted groups.

We conclude that, while it is difficult to differentiate learning environments to meet the specific needs of various subgroups, this must occur if we are to succeed in closing achievement gaps and improving the academic performance of students during the ninth-grade transition. We further conclude that the design of appropriate learning environments, if predicated upon results from assessments given to students, will require a flexible learning environment capable of

adapting to the needs of the particular cohorts being served. Since cohorts change from year to year, the implications are that learning environments could be required to change as well.

As educators have worked toward closing achievement gaps and meeting the needs of various student groups, it has become evident that student characteristics must form the basis for academic support. We cannot select one characteristic of a student and then determine all of the academic support needs from that one characteristic. For example, not all second-language learners have identical support requirements. Similarly, not all African-American students have the same support requirements. In both instances, academic support needs rise from the sum of their personal characteristics. Other factors—such as ethnicity, economic status, language development, prior school environments, cognitive abilities, home environments, and their levels of cognitive autonomy—influence student needs as well.

Schools currently create calendars according to the agrarian calendar, giving most institutions a summer vacation. Students end one academic year in June and resume their academic pursuits in September. While there is some shifting of dates from institution to institution, our entire kindergarten through college system (K – 16) resides within this calendar structure. Summer not only brings vacations for students but teachers as well. This is particularly true in the K-12 system. This has posed difficulties for educators in changing practice as the needs of students change. Time to work on curriculum and practice is spars Conclusions Regarding .

Recommendations

By increasing our understanding of the relationships among the development of cognitive autonomy, non-cognitive characteristics, and student success during the ninth-grade academic year, we hope to establish the notion of designing programs based upon student characteristics. We intend that curricular programs assist students with successful adaptation to the high school transition. We feel data related to student achievement proves those existing programs are asynchronous to the needs of some students at this intersection. As noted in the literature review, there are limited numbers of students enrolled in transitional programs. To improve national graduation rates and to reduce the achievement gap, transition programs for ninth-grade students must become systemic in the education system. This is a paradigm shift for high school leaders and teachers.

In the next section, we present recommendations emanating from the results of this study. We presented the recommendations in three sections: recommendations for district and school site leaders, recommendations for teachers, and recommendations for further study.

Recommendations for District and School Site Leaders

Leaders at the district and site levels make decisions regarding curricular programs, school policies, support programs, and organizational structures. In doing so, they determine what areas of the organization to target for improvement, desired outcomes, and measureable indicators. District and school site leaders also make financial decisions allocating funds to achieve goals for student achievement. The work of school leaders has a direct influence on student academic achievement; therefore, it is important that research and best practices inform

their work. We desire that this study improve understanding of student cognitive and non-cognitive characteristics as they relate to academic success during the transition from middle to high school. We further desire that this understanding is included in decision-making processes as related to the design and structure of ninth grade academic programs.

Administering a survey instrument such as the one used in this study can provide for school site leaders and teachers information as to the development of cognitive and non-cognitive characteristics of each student. Administration of the survey instrument to the same cohort of students on an annual basis would assist schools in designing curricular programs based on the developmental needs of each cohort. If as we stated in the conclusion we believe non-cognitive factors of the learning environment can influence the development of cognitive autonomy, this instrument would allow school sites to monitor the effectiveness of their school programs in this arena.

Using data collected during this study, we believe considerations for the improvement of student achievement during their transition to high school has its basis in modifying the learning environment. As such, we believe to improve classroom practices, school leaders should consider the following:

1. Determine to what degree teachers consciously consider the non-cognitive characteristics of their students as they plan lessons, structure their classroom environments, and interact with their students.

2. Implement staff development programs for teachers to improve their understanding of the role of cognitive and non-cognitive characteristics of students in academic achievement.

3. Provide means and opportunity for the assessment of student non-cognitive characteristics as they relate to achievement.

4. Assess the current learning environments with the intent to modify programs and practices not supporting students during this transitional time. Questions for assessment may include the following:

    a. What structures are in place supporting the development of student cognitive autonomy?

    b. Do these structures take into account non-cognitive characteristics of students and the learning environment?

    c. How can we alter the academic program of the ninth grade to support students during the transition from middle to high school?

    d. What environmental factors can we manipulate to develop a greater sense of cognitive autonomy?

e. What structures in the school do not align with the needs of students as they transition from middle to high school?

Recommendations for Teachers

We desire that teachers understand the concepts contained in this study. Teachers implement curricular programs and interact with students. While district office personnel and administrators facilitate the design and implementation of programs, teachers are the practitioners. The non-cognitive factors associated with the learning environment are the result of teacher practices. To improve student achievement during the ninth-grade year, we recommend teachers do the following:

1. Understand the non-cognitive characteristics of their students and the resulting implications for pedagogical practice.

2. Understand how their interactions with students are influencing student achievement.

3. Become flexible in their practices to meet the assessed needs of their students.

Recommendations for Further Research

This study began with the idea that cognitive autonomy would prove to have significant influence on student academic achievement during the ninth-grade transition. What we have learned is that the influence of cognitive autonomy is minimal. We discovered that non-cognitive characteristics of students had greater influence on their academic achievement. With that in mind, we suggest the following steps to follow up on this finding:

1. Conduct the current study among a larger sample of high schools.

2. Refine the survey instrument to further capture non-cognitive characteristics exerting influence on student academic achievement during the ninth-grade transition.

3. Determine to what extent teachers understand the concepts of cognitive autonomy, non-cognitive factors, and the role they may play in the success of students academically.

4. Explore options for bringing to scale those structures supporting the transition of students from middle to high school.

5. Research pedagogical practices that, based upon student non-cognitive characteristics, will support students during the ninth grade transition.

In concluding this study, we hope we have been informative regarding the notion of transition and the way student characteristics influence successful adaptations to transitions. Although conducted at the ninth-grade level, we believe the findings from this study are

applicable to multiple settings within K-12 educational systems. As reformers, we believe that changes in the educational system are required to address the failure of students to earn high school diplomas and close the achievement gap. We have presented here one facet of the high school structure requiring modification.

We believe a paradigm shift is required to improve the academic achievement of students as they enter high school. We have the skills required to educate students, and the application of our skills makes the difference. We enhance our efforts when we add new tools to our repertoire; knowledge and understanding of our students' non-cognitive characteristics will greatly enhance the use of our skills.

We close with words from Asa Hilliard (1995):

> The knowledge and skills to educate all children already exist. Because we have lived in a historically oppressive society, educational issues tend to be framed as technical issues, which denies their political origin and meaning…There are no pedagogical barriers to teaching and learning when willing people are prepared and made available to children.

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