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The Relationship Between the Success Tendencies Indicator and Academic Achievement and Behavioral Adjustment

Ted Bartlett

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School of Education

THE RELATIONSHIP BETWEEN THE *SUCCESS TENDENCIES INDICATOR* AND ACADEMIC ACHIEVEMENT AND BEHAVIORAL ADJUSTMENT

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Ted Lawrence Bartlett

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APPROVAL OF THE DISSERTATION

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Abstract

The primary purpose of this research was to examine the relationship between the 50-item *Success Tendencies Indicator* (STI), composed of the two subscales, the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS), and the academic achievement and behavioral adjustment of high school freshmen. The STI was administered by social studies teachers in a suburban public high school in the Mid-Western United States at the end of the 1999-2000 school year. Data from 338 freshman students were analyzed. Success was indicated by a high weighted Grade Point Average (GPA) and a low Discipline Incidents Number (DIN). Scores on the STS showed a significant positive correlation to GPA and a significant negative correlation to DIN. The Cronbach alpha of the STS, indicating internal reliability of the instrument, was determined. Through factor analyses, the alphas of possible STS subscales and their correlations to GPA and DIN were determined. The results suggest that the multidimensional STS and its subscales, or "clusters," can be used as instruments to indicate personality and other variables associated with high school academic and behavioral success, informing a developmentally-appropriate and preventive curriculum and allowing counseling resources to be focused more effectively to build on student strengths and to address student weaknesses.

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CHAPTER 1

INTRODUCTION

Context of the Problem

The *Success Tendencies Indicator* (STI), formerly called the *Achievement Tendencies Indicator* (ATI), is a 50-item self-report instrument that can be used in high school and college to screen students for high performance programs and for assistance with underachievement and social adjustment (Leonard & Taccarino, 2000, pp. 2-3). The STI contains two scales, the *Success Tendencies Scale* (STS) and the *Positive Impression Scale (PIS)*. In the education setting, the STI had shown the ability to significantly differentiate between low- and high-performing high school sophomores (Bartlett, 1998). The STI had also differentiated between students who held high school leadership positions from those who did not, attended a high school honors class from those who did not, attended college from those who did not, attended graduate or professional school from those who attended only undergraduate college, and college students identified as high achievers from those who were average or low achievers. However, characteristics of the STI had yet to be statistically examined with the high school freshmen class. These included the degree of STI unidimensionality, as measured by the Cronbach alpha, and the correlations between individual STI items to the whole STI and to the student weighted Grade Point Average (GPA) and Discipline Incidents Number (DIN). Additionally, subscales of the STI had yet to be

empirically determined and analyzed to provide insight into the various personality, emotional, intelligence, social intelligence, emotional intelligence, and environmental factors that could relate to the academic and behavioral success of high school freshmen.

From their review of the literature, Holland and Nichols (1968) acknowledged concerns of researchers in the 1950s for instruments that would determine such things as mental health and personal effectiveness and competency (p. 503). Holland and Nichols (as cited in Holland & Nichols, 1968) expressed the "need to identify and measure a broad range of student talents" (p. 503).

In 1970, the College Entrance Board (as cited in McClelland, 1973) suggested "that a wider array of talents should be assessed for college entrance and reported as a profile to the colleges" (p. 7). "The 'validity' of these new measures," McClelland (1973) believed, "really ought to be not *grades in school*, but 'grades in life' in the broadest theoretical and practical sense" (p. 7). McClelland (1973) recommended that tests "assess competencies that are more generally useful in clusters of life outcomes, including not only occupational outcomes but social ones as well, such as leadership, interpersonal skills, etc." (p. 9). According to Sutarso (1998), with the pace for intelligence batteries quickening, "the overall effect has been to give clinicians a wider range of choices in what they measure and how they measure it" (p. 24). The current study explored the relationship between the various STS factors and student academic and behavior success, the relationship between the STI and demographic variables, and suggests various modifications of the STS to enhance the diagnosis of success tendencies of high school freshmen. As Boyatzis, Goleman,

and Rhee (2000) stated it, "We seek to understand characteristics that predict better performance because we wish to be more effective"(p. 359).

Statement of the Problem

The first purpose of this research was to determine the relationship of the *Success Tendencies Indicator* (STI), which includes the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS), with freshmen academic achievement, as measured by weighted Grade Point Average (GPA), and with behavioral adjustment, as measured by Discipline Incident Number (DIN). The second purpose was to determine the Cronbach alphas of reliability of the STS and PIS and perform factor analyses of the STS. The third purpose was to determine if there is a gender difference in STS and PIS scores. The fourth purpose was to determine if there are Racial Code differences in STS and PIS scores, and to determine if there are Racial Code differences in GPA and DIN. The fifth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) in the bottom vs. top 50%, 25%, and 10% GPA. The sixth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) by Racial Code. The seventh purpose was to contribute subscales of the STS that have a higher Cronbach alpha reliability and a higher correlation to GPA and DIN.

Definition of Key Concepts

The following terms are defined:

Academic Achievement (AA): This is a measure of the weighted Grade Point Average (GPA). Although the unweighted GPA maximum is

5.000, the weighted GPA used in this study may exceed that number. The grade point averages were determined using the following points: A (5.000), B (4.000), C (3.000), D (2.000), and F (0).

Behavioral Adjustment (BA): This is the measure of the reversed Discipline Incidents Number (DIN), a count of the exhibition of behavior that results in discipline referral. A Discipline Incidents Number (DIN) of 0 is considered high BA. Discipline referrals are given to students whose behavior violates school rules. The students are reported to the disciplinarian for disciplinary action. Discipline incidents include: dishonesty, sexual harassment, truancy, fighting, insubordination, warnings, driving or parking violations, discipline referrals, being off campus, tobacco possession, being under the influence of alcohol, drug possession, tardy referrals, being absent for detention, being absent for Saturday program, theft, conduct endangering others, comments concerning behavior, pager possession, Internet abuse, intimidation, vandalism, gang activity, etc.

CHAPTER 2

LITERATURE REVIEW

Literature Review

The purpose of this research was to examine the relationship between the *Success Tendencies Indicator* (STI)--composed of the two subscales, the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS)--and academic achievement and behavioral adjustment. This section presents a review of the literature regarding assessment instrument considerations, relevant reference frames for the underlying concepts of the STI (success, failure, personality, emotions, intelligence, and social and emotional intelligence), the characteristics and statistical analyses of the *Success Tendencies Indicator* (STI), and a summary.

Assessment Instrument Considerations

Validity

Assessment instruments can sometimes be the source for considerable methodological disagreement. Burisch (1985) revealed,

> When I set out, in the early 1970s, to break the Mischelian validity barrier of .30, I was convinced that a restriction to

> narrow-band 'prototypical' items was all that was necessary. Careful attention to construct considerations somehow must pay back, I believed.... More than a decade and several projects later, I had to face the fact that none of the standard approaches to personality inventory construction can claim a superiority over the rest, that is, not in terms of external validity. In my heart of hearts I still think that 'sophisticated' tests ought to turn out more valid than simple ones. I wish I could prove it, but cannot. Given this state of affairs, mixed feelings result from being accused of less than 100% deductivism (or constructivism). (p. 343)

When Burisch (1984) empirically compared "the three major approaches to personality scale construction," namely the "external, inductive, and deductive strategies," with more than a dozen personality inventories for factors of validity, communicability, economy, and nonarbitrariness and representativeness, he found "no consistent superiority of any strategy in terms of validity or predictive effectiveness" (p. 214). Moreover, Burisch (1984, 1985) recommended deductive self-rating scales for their improved communication and economy. Additionally, Burisch (1985) examined "Optimized versus Ad Hoc Scales," "Construct versus External Scales," "Professional versus Amateur Scales," "Self-Rating versus Questionnaire Scales," and "Short versus Long Questionnaires" (pp. 344-345). Burisch (1985) concluded,

> If approaches that cannot be guaranteed to be optimal--such as Broughton's, Paunonen's, or mine--turn out scales no less valid, but substantially shorter, *and* if those scales survive cross validation, then much more economical personality tests can be expected once the technical problems are solved. (p. 346)

With an opposing viewpoint, Paunonen and Jackson (1985a) rejected Burisch's methodological arguments, and maintained (1985b) that "a program of personality scale construction and research will profit from the application of principles of classical test theory and the consideration of common sources of measurement error" (p. 348). Burisch later reexamined the questions raised in the earlier controversy. In validation of his earlier conclusions, Burisch (1997) advised that "lengthening a scale beyond some point can actually weaken its validity" (p. 303). Burisch (1997) added that "only if the item pool had been prescreened for content saturation.... extremely short scales of two to four items each, which had survived double cross validation, suffered hardly any loss of cross validity," and in one sample "they outperformed standard scales eight times as long" (p. 303). Likewise, Mehrabian (1968) suggested that "specific findings involving the short versions of both scales indicate that these shorter scales are suitable substitutes for the longer scales for use in studies where time is at a premium"(p. 501).

Some psychometric scales are indirect measures of an attribute. Eriksen (cited in McClelland, 1956) "argues that the Taylor Scale is not so much a direct measure of anxiety as a measure of the way in which anxiety is expressed" (p. 51). Bar-On (2000) describes his EQ-i

[Emotional Quotient Inventory] as "a self-report measure of emotionally and socially competent behavior that provides an estimate of one's emotional and social intelligence" (p. 364).

Block and Kremen (1996) acknowledged, "Like most efforts at scale development, this conceptual effort has proceeded in empirical ways and has involved conceptual decisions that were not fully systematic. Therefore, the history of this sequence of efforts [in developing the ego-resilience scale] cannot be fully or precisely described" (p. 352). Similarly, Eysenck and Eysenck (as cited in Block & Kremen, 1996,) stated, "Our reasons for accepting or rejecting items were so complex that it would be difficult to objectify them... [and] the only possible check on the value of our work must be the validation of the final product" (p. 352).

Reliability

Mayer, Caruso, and Salovey (2000) acknowledged that their original *Mayer, Salovey, and Caruso Emotional Intelligence Test* (MSCEIT) had branch score alphas, indicating internal consistencies, from .59 to .87, which "are comparable to many standard tests of intelligence" (p. 332). They also noted that their *Multifactor Emotional Intelligence Scale* (MEIS), which had "only eight items each," had "the lowest alphas, α = .49 and .51" (p. 332). However, "because reliability is a direct function of length (other factors held constant), these alphas can be drastically improved by adding items" (Mayer et al., p. 332).

Likewise, Glass and Hopkins (1996) discussed 2 scatterplots of 2 variables, 1 with a correlation of r = .38, and 1 with a correlation of r = .66, which shows a straighter line of points, indicating a greater degree of relationship between the 2 variables (p. 124). They point out that the "only difference between [them] is that the tests in the lower scatterplot are longer; other things being equal, longer tests are more reliable (i.e., have less measurement error) than shorter tests" (Glass & Hopkins, p. 124).

McClelland (1973) cautioned,

> Unreliability is a fatal defect if the goal of testing is to *select* people.... For rejected applicants could argue that they had been excluded improperly or that they might have high scores the next time they took the test, and the psychologist would have no good defense. (p. 12)

However, in the case where the school is evaluating the success of a program or a class as a whole and not the individual student, "its unreliability does not matter" (McClelland, pp. 12-13).

Self-Report Instruments

Self-report instruments have been reported as valid and invalid measures of student performance and behavior. Hansford and Hattie (1982) performed a meta-analysis of data on the relationship between various self-measures and measures of performance and achievement (p.

138). They found a range of r = -.77 to .96, with an average correlation of r = .21 to .26. Mean correlations were highest for self-expectation (.53), self-concept of ability (.42), self-attitude (.27), self-perception (.26), self (.24), self-regard (.23), and self-esteem (.22). Mean correlations (r) were lowest for self-assurance (-.14), ideal-self (-.05), and self-actualization (.05). The mean correlation with GPA was r = .34. Hansford and Hattie (1982) noted the following variables that can strongly influence a study: "grade level, socioeconomic status, self-test and self-term used, reporting of reliability coefficients, nature and cluster of achievement measure, method of sample selection, quality of design, and restricting the potential range of variables" (p. 139). They "found no differences in the correlation between self-ratings and performance measures between males and females, the terms self-concept and self-esteem, middle and high socioeconomic status, or verbal, mathematics, and composite (e.g., IQ) measures" (Hansford & Hattie, p. 139). Hansford and Hattie found differences "between grades, low and high socioeconomic status, ethnic groups (Anglos and blacks or Chicanos), low and higher ability groups, self-concept of ability and more general self-terms, grade-point average and verbal or mathematics performance...." (p. 139).

On the one hand, Richman, Rosenfeld, and Bowen (1998, Measures section, para. 5) reported that in a field test of their instrument, the *School Success Profile* (SSP), student math and English self-report grades correlated "moderately to highly," at r = .42 to .66, with those in their official student records, and had "medium to high effect sizes." Also, Richman et al. (1998, Measures section, para. 5) found that student self-report of "the number of disciplinary actions and the

number of suspensions that they received during the academic year (including the previous 30 days)" correlated "moderately to highly," with r = .47 and .37, both showing "medium effect sizes." Also, Bar-On (2000) relies upon the accuracy of self-report instruments in his research. His EQ-i self-report instrument is said to measure "emotionally and socially competent behavior that provides an estimate of one's emotional and social intelligence.... not personality traits or cognitive capacity" (Bar-On, 2000, p. 364). From the self-reported ratings, the EQ-I generates a "total EQ score and the following five EQ composite scale scores comprising fifteen subscale scores: (1) Intrapersonal EQ..., (2) Interpersonal EQ..., (3) Stress Management EQ..., (4) Adaptability EQ..., and (5) General Mood EQ..." (Bar-On, 2000, p. 365). In support of their own self-report instrument, Mehrabian and Bank (1978) reported a highly reliable (.91), 38-item "questionnaire measure of individual differences in achieving tendency" that was also free of social desirability and response bias (p. 475). On the other hand, Paulhus, Lysy, and Yik (as cited in Mayer, Caruso, & Salovey, 2000) stated that "people are notoriously inaccurate reporters in several areas of functioning, including the self-assessment of ability: self-reported intelligence correlates only modestly with actual measured intelligence--below .30 or so" (p. 324).

Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (as cited in Chen & Dornbusch, 1998) found that the correlation between self-reported grade and GPA was .76 (N = 1,146), with "only a slight tendency to overstate grades when one reached grades near the bottom of the distribution-mean grade of C and below" (p. 304). In the construction of his *Male and Female Scales of the Tendency to Achieve*,

Mehrabian (1968) considered the following factors: test-retest reliability, ease of administration, ease of scoring, amount of time required, and correlation with the Thematic Apperception Test (p. 493). This instrument was "designed to distinguish high achievers, who have a stronger motive to achieve than to avoid failure, from low achievers, who have a stronger motive to avoid failure than to achieve" (Mehrabian, 1968, p. 493).

Boyatzis, Goleman, and Rhee (2000) reasoned that "clustering, or organizing, of several competencies into larger categories for the purpose of analysis or application" may be done theoretically or empirically; or as competencies that are closely related, independent of others, or inferentially causal (p. 349). Boyatzis et al. added that these clustered competencies may complement each other, be alternate manifestations, be compensatory, or be antagonistic (pp. 349-350).

Reference Frameworks

This section presents a review of the concepts of success and failure. It also describes empirical and theoretical frameworks that can provide an understanding of factors measured by the STI: personality, emotions, intelligence, and social and emotional intelligence.

Success

Definition

There is no singular, universally-accepted definition of success. One standard source, *Merriam Webster's Collegiate Dictionary*, Eleventh Edition (2003), defines success as: "1 *obs*: OUTCOME, RESULT 2 a: a degree or measure of succeeding b: favorable or desired outcome; also: the attainment of wealth, favor, or eminence 3: one that succeeds" (p. 1247).

Success Frameworks

Success can be considered from many viewpoints: objective, subjective, extent, timeframe, culture, or context. Something (or someone) can be considered a short-term success, but a long-term failure, as a whole, or in part. A response that leads to success in one situation might lead to failure in another. As Zurcher (as cited in Averill, 1992) declared, "Emotions that are appropriate during civilian life are not necessarily the most useful under battle conditions"(p. 10). In this research, success in school was defined as a high grade point average (GPA) or low discipline incidents number (DIN). Other factors that could be considered regarding success in school, though not used in this research, are: creativity, standardized test scores, interpersonal collegiality, occupational skills, outstanding attendance, health-promoting behaviors.

Variables Linked to Life Success

In his review of the literature, Mehrabian (1968) reported many factors and characteristics that distinguish high achievers from low achievers. Mehrabian (1968) cited the following research, stating that high achievers had "a cluster of interrelated characteristics which distinguish high achievers from low achievers"(p. 494): preference for intermediate risk situations (Atkinson, as cited in Mehrabian, 1968); less parental indulgence during childhood (McClelland, as cited in Mehrabian, 1968); more independent interpersonal relationships and less susceptibility to conform (McClelland et al., as cited in Mehrabian, 1968); greater ability to delay gratification; more participation in less satisfying, future rewarding activities; and more involvement in skill or competitive activities (Mischel, as cited in Mehrabian, 1968).

In a comprehensive study, Mehrabian (2000) correlated personality and emotional intelligence variables to 6 measures of success:

1. Emotional Success (general happiness and satisfaction with life);
2. Relationship Success (satisfactory, harmonious, and happy relationships with friends, co-workers, relatives, and mates);
3. Physical Success (exercise, healthy diet, sufficient rest, absence of illness, avoidance of drugs, alcohol, and tobacco, judicious use of medical services);
4. Work Success (work satisfaction and dedication, dependability, harmonious relationships with co-workers and supervisors,

honesty, trustworthiness);

5. Career and Financial Success (a more inclusive measure than Work Success that also encompassed career optimism, career dedication, appropriate saving and spending habits, wise and successful investing, planning and striving for advancement); and

6. Overall Success (derived by standardizing and summing Emotional Success, Relationship Success, Physical Success, and Career and Financial Success). (p. 207)

Mehrabian (2000) correlated these success scales with "twenty-six personality scales, an additional statistically computed index based on some of those scales (the Covert Index of Employee Productivity and Reliability), a general intelligence scale, and gender, age, and physical attractiveness" (p. 207). He found the following variables to significantly ($p < .05$) correlate to Overall Success: "Factor 1: Relaxed Temperament (.57*), Abbreviated Achieving Tendency (.39*), Achieving Tendency (.38*), Factor 3: Disciplined Goal Orientation (.34*), Emotional Thinking (-.34*), Overall Physical Attractiveness (.31*), Intelligence (.27*), Integrity (.27*), Abbreviated Trait Dominance (.26*), Adaptive Coping (.26*), Abbreviated Emotional Empathy (.23*), Self-Actualization (.19*), Abbreviated Affiliative Tendency (.17*), Trait Arousability (-.17*), Social Competence (.17*), and Trait Dominance (.12*)" (Mehrabian, p. 195).

Feist and Barron (as cited in Cherniss, 2000), in a study of 80 Ph.D.s in science that after 40 years, "social and emotional abilities were four times more important than IQ in determining professional success and prestige," as measured by contents of "resumes, evaluations

by experts in their own fields, and sources like *American Men and Women of Science*" (p. 5).

Aptitude Tests, Other Variables, and School Success

McClelland (1973) observed that, since French classroom games heavily influenced the development of Binet's original tests, it was understandable that students' aptitude test scores "correlated highly" with school grades (p. 1). However, he doubted that intelligence tests or school grades predicted much more than success in school. Similarly, McClelland believed that tests and grades did not validly predict "real competence in many life outcomes, aside from the advantages that credentials convey on the individuals concerned" (p. 6). However, McClelland did not doubt the value of measuring instruments that could predict general success in life. He maintained that "for some purposes it may be desirable to assess competencies that are more generally useful in clusters of life outcomes, including not only occupational outcomes but social ones as well, such as leadership, interpersonal skills, etc." (McClelland, p. 9). Additionally, he recommended evaluations for "competencies that are more generally useful in clusters of life outcomes, including not only occupational outcomes but social ones as well, such as leadership, interpersonal skills, etc." (McClelland, p. 9). McClelland believed in testing for "traditional cognitive" competencies "involving reading, writing, and calculating skills," and for "personality variables" such as

communication skills, patience, moderate goal setting, and ego development (pp. 9-10). McClelland was not convinced that enough evidence existed to claim a single factor for success. He stated,

> Studies do exist, of course, which show significant positive correlations between special test scores and job-related skills.... Here we are on the safe and uncontroversial ground of using tests as criterion samples. But this is a far cry from inferring that there is a general ability factor that enables a person to be more competent in anything he tries. The evidence for this general ability factor turns out to be contaminated heavily by the power of those at the top of the social hierarchy to insist that the skills they have are the ones that indicate superior adaptive capacity. (McClelland, 1973, p. 7)

Aleamoni and Oboler (1978) found that high school percentile rank (r = .429) was a better predictor of college first semester GPA than either the American College Testing (ACT) Program or the Scholastic Aptitude Test (SAT). Similarly, Armstrong (2000, Results section, para. 2) reported that student dispositional data, such as GPA, last grade in an English or mathematics course, and number of years English or mathematics courses were taken, were "stronger predictors of student success than standardized test scores." He added, "Past behavior is often the best predictor of future behavior" (Armstrong, 2000, Results section, para. 2). In addition, Holland and Richards (cited in Holland & Baird, 1968) found that their Interpersonal Competency Scale "had only low or negligible relationships to ACT scores or high school

grades"(pp. 508-509). Likewise, Thorndike and Hagen (as cited in McClelland, 1973) did not find significant correlations between aptitude tests and later occupational success (p. 3). Also, neither Holland and Richards nor Elton and Shevel (as cited in McClelland, 1973) found consistent correlations of "scholastic aptitude scores in college students and their *actual accomplishments* in social leadership, the arts, science, music, writing, and speech and drama" (p. 3). Ferguson, Sanders, O'Hehir, and James (2000, para. 1) found that previous academic performance (β = .41 and .45) and conscientiousness (β = .58 and .49) were very good predictors of success in medical training. Similarly, in a study of eighth grade students, Singh, Granville, and Dika (2002, Results and Discussion section, para. 3-5) found significant effects on mathematics and science achievement, respectively, from the following variables: time spent on homework (β = .50 and .61), attitude towards subject (β = .23 and .32), and Motivation 1 (β = .11 and .31), with the best measure for Motivation 1 "being late for school" and Motivation 2 "coming to school without books." Singh et al. (2002, para. 5) also found that these and other "variables not only had a direct influence on mathematics achievement but they also affected mathematics achievement through influencing other factors in the model." Agostin and Bain (1997) suggested that "behaviors such as positive social skills, as well as social-emotional factors (i.e. internalizing behaviors) are important in predicting successful academic achievement and promotion in the early grade school years" (p. 224). Atkinson, as well as Atkinson and Birch, (as cited in Lopez, 1999, Discussion section, para. 12) reported that "hopes for success and fears of failure have long been highlighted as motivational

tendencies influencing goal selection and academic success." McClelland, as chair of the Social Science Research Council, "concluded that while grade level attained seemed related to future measures of success in life, performance within grade was related only slightly" (1973, p. 2). Atkinson (as cited in Mehrabian, 1994-1995, para. 3) theorized that "individual differences in achievement were viewed as being a resultant of the motive to achieve success less the motive to avoid failure."

Thorndike (as cited in Tapia, 1998), "found a correlation of +.80 between intelligence and success in elementary school, and a correlation of +.60 for success in high school and college" (p. 11); he claimed a correlation of r = .40 between intelligence and character. Indeed, Mischel, according to Tapia (1998), "reported that almost anything involving cognitive processes correlates at +.3 with IQ."(p. 11).

Gottfredson, sociologist and co-director of the Delaware-Johns Hopkins Project for the Study of Intelligence and Society, (1998) stated that there is a "general mental ability we commonly call 'intelligence.'" (p. 24). She asserted that

> no matter their form or content, tests of mental skills invariably point to the existence of a global factor that permeates all aspects of cognition. And this factor seems to have considerable influence on a person's practical quality of life. Intelligence as measured by IQ tests is the single most effective predictor known of performance at school and on the job. It also predicts many other aspects of well-being,

> including a person's chances of divorcing, dropping out of school, being unemployed or having illegitimate children. (p. 24)

Chen and Dornbusch (1998) found that adolescent females (compared to males), younger students (compared to older), non-Hispanic Whites (compared to African Americans and Hispanic Americans), Asian Americans (compared to non-Hispanic Whites), adolescents from two-natural-parent families (compared to other clusters of families), and higher parental education (compared to lower) were associated with higher grades in school (pp. 311-312). Also, according to the findings of Chen and Dornbusch, older students, African Americans (compared to non-Hispanic Whites), Asian Americans (compared to non-Hispanic Whites), "other clusters of families" (compared to two-natural-parent families), and higher parental education (compared to lower, partly because of higher parental substance use) were associated with a higher level of deviant behavior (p. 312).

Salazar, Schludermann, Schludermann, and Huynh (2000, Discussion section, para. 3) found that, for junior-high/middle school and high school Filipino-American students, the strongest predictor of academic achievement was student involvement, which itself was substantially influenced by authoritative parenting, as opposed to "authoritarian and permissive or neglectful parenting styles [that] had insignificant correlations."

Sternberg (1998) stated,

> Typically, conventional intelligence tests correlate about 0.4 to 0.6 (on a 0 to 1 scale) with school grades, which statistically

> speaking is a respectable level of correlation. A test that predicts performance with a correlation of 0.5, however, accounts for only about 25 percent of the variation in individual performances, leaving 75 percent of the variation unexplained. (p. 14)

Sternberg (1998) maintained that correlations of IQ to "job performance, salary or even obtaining a job in the first place" are "only a bit over 0.3, meaning that the tests account for roughly 10 percent of the variation in people's performance" (p. 14). Fiedler (as cited in Sternberg, 1998) "found that IQ positively predicts leadership success under conditions of low stress. But in high-stress situations, the tests negatively predict success" (p. 14).

Characteristics of Successful People

Sternberg (as cited by Tapia, 1998) suggested that successful people have the following characteristics: "personal knowledge of strengths and weaknesses, goal setting, high motivation, tenacity, self-efficacy, identification of problems, and translation of thought into action" (p. 13). Neisser et al. (1996) reported that successful school learners have "many personal characteristics other than intelligence, such as persistence, interest in school, and willingness to study"(p. 81). Successful learners may be aided by "the encouragement for academic achievement that is received from peers, family, and teachers" and by "more general cultural factors" (Neisser

et al., 1996, pp. 81-82). Similarly, Scales, and Taccogna (2001, para. 1) asserted that successful learners in school possess both external and internal "developmental assets," such as "relationships, opportunities, values, and skills." Also, Brigman, Lane, and Switzer (1999) believed that students who are successful in the long-term possess social skills, cognitive strategies, and applied learning skills.

Parents and Success

Parents can provide a strong positive influence on their children's academic success. Steinberg, Lamborn, Dornbusch, and Darling (as cited in Gonzalez, 2002, para. 5) noted that parental involvement, even in high school years, increased student motivation and academic achievement, as reflected in GPA, particularly when parents helped with homework and selecting courses, and attended school programs and sporting events.

Failure

Definition

Important insights may be obtained by examining the concept of failure. Relevant definitions of failure, provided by *Merriam Webster's Collegiate Dictionary*, Eleventh Edition (2003), are: "1 a: omission of occurrence or performance; specif: a failing to perform a duty or expected action ... b (1): a state of inability to perform a normal function... 2 a: lack of success... 3a: a falling short:

DEFICIENCY ... 4: one that has failed"(p. 449).

Failure in School

Researchers have studied many specific variables that contribute to failure in educational settings. Chambers, Abrami, and Massue (1998) stated that school failure is related to personal, demographic, and school-related factors. Battistich, Solomon, Kim, Watson, and Schaps (as cited in Chambers, Abrami, & Massue, para. 4) listed several factors that predict school dropout: "poor school attendance, grade retention, poor academic achievement, behavior problems, low socioeconomic status (SES), and enrollment in schools with a high proportion of poor children." Added Chambers et al. (1998, para. 5),

> In terms of the individual child, certain demographic factors (e.g., SES), school-related factors (e.g., attitudes toward school), and personal variables (e.g. self-esteem) are associated with failure. Families whose characteristics are linked to school failure include those in which the parents have little education, and those who move frequently, who have very low expectations of schooling, and who fail to support or encourage learning. School factors associated with school failure include teachers having low expectations, inappropriate or insufficient programs, and a lack of school discipline. The profile of a child at risk, then, includes a constellation of individual, family, and school factors.

Comparing the school to a medical community, Beilke and Peoples (1997, para. 7) studied variables in educational "Failure to Thrive Syndrome." Students "in a terminal educational downward spiral" are involved with such behaviors as: "detentions, persistent patterns of arguing with teachers, insubordination, school truancies, violent events and suspensions" Beilke and Peoples (1997, para. 7). Research by Cassel, Chow, DeMoulin, and Reiger (2001b, para. 5) listed "(1) Locus of Control (decision making), (2) Self-esteem, (3) Coping Skills, (4) Self-efficacy, (5) Conformity, (6) Sympathy, and (7) Caring" as the crucial psychological variables, of which low scores help to identify female high school deviant and criminal behaviors from the norm, adding "(8) Positive Assertiveness" for male high school students (Cassel et al., 2001a, para. 5). Poole (1997, para. 2) asserted that "a complex interplay of forces," resulting from parental alcoholism, drug use, neglect, violence, and stress can lead to school failure. Welton (1999) stated that inattention, low level of wakefulness, low sensory preparedness, inappropriate selective attention, and divided attention all contribute to student failure.

Chen and Kaplan (2003, Results section, para. 1) found that adolescent school failure correlated in young adulthood with fewer years of education completed, a lower level of mental health, and a higher rate of deviant behavior. These in turn correlated with the attainment of a lower midlife socioeconomic status.

In addition to intellectual, social, and emotional factors, researchers have identified environmental factors that negatively influence academic achievement. One of these, asymptomatic lead exposure in a school child's environment, can lead to "impaired

neurobehavioral functioning" and school failure (Needleman, 1992, para. 1). "The Public Health Service has declared that 'lead poisoning remains the most common and societally devastating environmental disease of young children" (cited in Needleman, 1992, para. 1). The United States Environmental Protection Agency (USEPA) (2003, para. 1) stated that "lead may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death." They noted that "children 6 years old and under are most at risk, because their bodies are growing quickly" (USEPA, para. 1). The USEPA Region 2 (2002, para. 2) adds, "Even at low levels, lead poisoning in children can cause IQ deficiencies, reading and learning disabilities, impaired hearing, reduced attention spans, hyperactivity and other behavior problems." The Mississippi State Department of Health (2003, Signs of possible lead poisoning, para. 1) advised that signs of lead poisoning can be unexplained seizures, learning problems, nausea, growth failure, behavior disorder, irritability, developmental delay, hearing loss, and frequent tiredness. The University of California, Davis (1999, Common symptoms of lead poisoning in children, para. 1), noted that "common symptoms of lead poisoning in children [are] decreased appetite, stomach ache, sleeplessness, learning problems, constipation, vomiting, diarrhea, tiredness, lowered IQ, and anemia."

Addressing the Issue of Failure in School

Correcting academic deficiencies is a complex task requiring the attention of multiple levels of society. Researchers agreed that these educational failure factors must be addressed at the family, the

school, and community levels (Poole, 1997; Richman, Rosenfeld, & Bowen, 1998; Walker & Sprague, 1999).

Asthma and Success in School

Surprisingly, research on children with asthma indicated that academic achievement does not decrease with increased asthma suffering, although asthma may or may not result in greater absences (Bender, 1999).

Personality

Definitions

Some definitions of personality relevant to this research are taken from *Merriam Webster's Collegiate Dictionary*, Eleventh Edition (2003): "3 a: the complex of characteristics that distinguishes an individual or a nation or group; esp: the totality of an individual's behavioral and emotional characteristics b : a set of distinctive traits and characteristics" (p. 924).

Personality Frameworks

The concept of personality can be viewed through many frameworks. McClelland (1956) stated that personality can be viewed through methodological and theoretical considerations, traits, schemas (or ideas and values), and motives. He added that personality traits can be organized into movement, cognitive, performance, and emotional traits, which includes the "social traits" of "social sensitivity or

empathy" (McClelland (1956, p. 45). Mayer (as cited in Mayer, Salovey, and Caruso, 2000) pointed out that "the terms people sometimes employ when talking about emotional intelligence--motivation, emotion, cognition, and consciousness--are typically considered in personality psychology as four basic processes that make up personality's near-biological foundation"(p. 98).

Bernreuter (cited in Jackson & Paunonen, 1980) developed the first known multiscale personality inventory and "was among the first to use empirical item selection methods" with "previously developed scales" (p. 504).

Three basic models of personality description were described by Mehrabian: the Wiggin's Circumplex Model, developed to assess "nurturance and dominance"; Goldberg's Big-Five Model, which examined "introversion-extroversion, agreeableness or pleasantness, conscientiousness or dependability, emotional stability-instability, and intellect or sophistication"; and Mehrabian's Trait Pleasure, Trait Arousability, and Trait Dominance scales (Mehrabian, 1995, p. 565). Mehrabian reported development of personality scales that distinguished between high and low achieving college undergraduates (Mehrabian, 1969, p. 445).

Personality as Predictor of Academic and Life Success

Mehrabian (2000) stated, "Personality tests, of achievement in particular, have played a prominent role in studies of academic and work success" (p. 152). In his review of the literature, Mehrabian (2000) found the following to be positively related to each other: goal

setting and job success; integrity and job success; psychological adjustment and academic achievement; and self-efficacy and success in education, vocation, military, and general life. He also found that maladjustment tends to relate negatively to job performance and general life success.

Stress Resilience and Success in the Classroom

In a study of 298 4th, 5th and 6th grade students (92 White, 61 Hispanic, 140 Black, and 5 "other") from four urban Rochester City School District, Work, Cowen, Parker, and Wyman (1990) suggested that resilient outcomes in coping with major life stress are more likely if a child has positive temperamental or dispositional qualities; a warm, supportive family environment; and availability of extrafamilial support and identification. Work et al. suggested that stressors may be more nearly multiplicative than additive. They noted such examples: poverty, drug and alcohol problems, disrupted marriages, serious emotional problems, and histories of abuse or neglect. Work et al. found that stress resilient children were significantly better adjusted in the classroom and had significantly better academic performance than stress affected children. Such children also had significantly fewer problems and more competencies than low stress and stress-affected children. Work et al. noted that classroom problems could include acting-out, shy-anxious, and learning problems, such as poor concentration and limited attention. They stated that competencies included frustration tolerance, assertive social skills, task orientation, and peer sociability. Additionally, Work et al. found

that stress resilient and low stress groups were better adjusted than stress affected children on assertiveness and shy-anxious subscales.

Empathy and Success in the Classroom

According to Kalliopuska (1992), the most empathetic students, aged 14 to 20, are more assertive, have less self-esteem, more sensitivity, respond more honestly, and have more negative attitudes towards and less indulgence in smoking and alcohol than the least empathetic students. The habits of smoking and alcohol use have a slight, negative association with school success.

Delay of Gratification and Success in the Classroom

Shoda, Mischel, and Peake (1990) stated that "to be able to delay immediate satisfaction for the sake of future consequences has long been considered an essential achievement of human development" (p. 978). In one study, children who delayed gratification were rated more than 10 years later to be significantly "more academically and socially competent" even ten years later (Shoda et al., p. 978). They were also found to be more "verbally fluent, rational, attentive, planful, and able to deal well with frustration and stress" (Shoda et al., p. 978). Shoda et al. studied the particular psychological conditions that could be used as predictors in developmental outcomes. They reported that early research showed that behavior skills under more extreme conditions are more predictive than those under those less extreme. Shoda et al. found that adolescents who were able to longer delay receiving an exposed reward under suggested ideation during preschool "were rated as more likely to exhibit self-control in frustrating

situations, less likely to yield to temptation, more intelligent, and less distractable when trying to concentrate" (p. 982). According to Schoda et al., these adolescents were judged to be more playful and able to plan ahead, remain attentive, delay gratification, and stay organized (p. 982). Also, when Shoda et al. examined preschool delay time under those conditions of exposed rewards and spontaneous ideas and adolescent SAT verbal and quantitative scores, they found a positive correlation with verbal scores ($r = .42$, $p < .05$) and with quantitative scores ($r = .57$, $p < .001$).

Social Support, Problem Solving, and School Success

In a study of 361 children in grades three through five in urban and suburban lower-middle-class schools, Dubow and Tisak (1989) investigated the relation between stressful life events and children's behavioral and academic adjustment, with emphasis on the effects of social support and social problem-solving skills (p. 1412). They found that social support and problem-solving measures generally showed modest but significant correlations with adjustment measures. Stressful life events were found to have only a modest relationship to adjustment. The stress-buffering model shows that higher levels of social support and problem solving moderate the relation between stressful life events and behavior problems. In addition, Dubow and Tisak found a stress-buffering effect for problem-solving skills on grade point average (GPA), and they obtained a main effect for social support on GPA (p. 1417). Social support significantly correlated with grade point average, at $r = .24$ ($p < .01$). Social problem solving skills correlated at $r = .26$ ($p < .01$) with GPA. Esteem support is

consistent with a stress-buffering model, "because esteem support indicates to the highly stressed individual that he or she is valued, which in turn leads to enhanced self-esteem and more effective coping, thus preventing behavior problems" (Dubow & Tisak, p. 1420).

Ego-Resiliency, Intelligence, and Social Intelligence

Block and Kremen (1996) defined ego-resiliency as "the capacity of the individual to effectively modulate and monitor an everchanging complex desires and reality constraints" (p. 359). Block and Kremen (1996) discussed the

> relation of ego-resiliency to the popular and frequently referenced concept of 'social intelligence' (as compared with what may be called 'intellective intelligence'—i.e., IQ). There has been a long 'search for social intelligence'.... A recent study by Kosmitzki and John (1993) of the common understandings underlying the idea of 'social intelligence' has usefully identified the following qualities as 'most central' to the meaning of the concept: understanding people, being good in dealing with people, being warm and caring; being open to new experiences and ideas, having perspective-taking ability, knowing social rules and norms, and having social adaptability. Reasoning from the psychological meaning of our reported constellation of findings, we suggest that these various aspects of 'social intelligence' may well be subsumed under the construct of ego-resiliency as defined and elaborated here. (p. 359)

According to Block and Kremen (1996) "measures of ego-resiliency and measures of IQ tend to correlate somewhat," as do generalized concepts of "executive functions" (p. 351). They added that one would expect this, since adaptability is one indicator of satisfactory "functioning of underlying intellective components, such as short-term memory, information, reaction time, et cetera" (Block & Kremen, p. 351). In their research of participants at age 18, Block and Kremen found that composite ego-resiliency for females correlated at $r = .10$ (ns) with IQ and for males at $r = .31$ ($p < .05$) (p. 353). Block (as cited in Block & Kremen, 1996) speculated that the lower correlation of the females might be the result of "more psychological restructuring of their adaptive modes" compared to males, "who continue into these years with much the same personalities established earlier" (p. 353). According to Block and Kremen (1996), ego-resilient persons

> tend to be more competent and comfortable in the 'fuzzier' interpersonal world [while] persons defined primarily by raw IQ tend to be effective in the 'clearer' world of structured work but tend also to be uneasy with affect and less able to realize satisfying human connections. (p. 349)

Ego-Resiliency and Personality Variables

Klohnen (1996) explored the components of ego-resiliency through factor analysis (p. 1072). She found that the following factors highly positively correlated with several California Adult Q-Set items. Confident optimism correlated highly positively with: has social poise

and presence; responds to humor; calm, relaxed in manner; arouses liking and acceptance; is skilled in social techniques; initiates humor. Productive activity correlated highly positively with: is productive/gets things done; values own independence; sees to heart of problems. Insight and warmth correlated highly positively with: has warmth/is compassionate; insight into own motives and behavior; arouses liking and acceptance; perceptive of interpersonal cues; sees to heart of problems; is dependable and responsible. Skilled expressiveness is correlated highly positively with: is skilled in social techniques; and initiates humor. Additionally, Klohnen found that the following factors highly negatively correlated with several California Adult Q-Set items (p. 1072). Confident optimism correlated highly negatively with: is basically anxious; is vulnerable, fearful; tends to ruminate; feels cheated, victimized by life; maladaptive under stress; is self-defeating; feels a lack of personal meaning; over-reactive to frustrations. Productive activity correlated highly negatively with: is self-defeating; gives up/withdraws from adversity. Insight and warmth correlates highly negatively with: denies unpleasant experiences; over-reactive to frustrations. Also, Klohnen found that skilled expressiveness correlates highly negatively with: calm, relaxed in manner; denies unpleasant experiences; is emotionally bland; does not vary roles; and uncomfortable with uncertainty.

Ego-Resiliency and Gender

Block and Kremen (1996) determined the differential personality correlates of "Pure ER" with the California Q-sort in the sample of

young women (p. 353). The personalities of Pure ER young women seem to show "social poise and assertiveness and an absence of self-concern, rumination, and fearfulness" (p. 353). The high Pure ER woman shows "gregariousness, cheerfulness, and playfulness; has a sense of meaning in life and a rich but appropriate emotionality; and shows adaptiveness when under stress" (p. 353). The low Pure ER woman shows "brittle overcontrol, a preoccupation with issues of self-adequacy, a chronic sense of vulnerability, and an inability to engage in trusting, collaborative, and satisfying relationships with others" (p. 353). Pure ER young men seem to show "social poise, gregariousness, cheerfulness, and an absence of rumination and fearfulness" (p. 353). The high Pure ER man shows "a capacity for commitment, responsibility, ethical behavior, and sympathetic caring in his relationships with others. He displays a rich and appropriate emotionality" (p. 353). The low Pure ER man "is extrapunitive, manifests hostility, feels cheated in life, is rebellious, is irritable, and has fluctuating moods. Overall, his dealings with others and with the larger society are chronically frictional" (p. 353).

Low IQ and Delinquency of Black and White Students

The research of Lynam, Moffitt, and Stouthamer-Loeber (1993) on 13-year old high-risk boys suggested that juvenile delinquency-related factors do not lead to lower IQ, but that low IQ leads to juvenile delinquency, even after controlling for race, class, and observed test motivation. The subjects were observed for indications of boredom, impatience/impersistence, and a variety of antisocial and impulsive behaviors. "'Impatience/impersistence' was coded if boys gave the

appearance of wanting the testing session to end as quickly as possible, forced the examiners to work hard to get them to try a task, refused to attempt tasks, or responded rapidly with 'I don't know' responses" (Lynam et al., 1993, p. 190). Impulsive behaviors included such things as: "fails to finish things he starts," "impulsive or acts without thinking," "demands must be met immediately," "talks out of turn," "wants to have things right away," and "impatient" (p. 190). The subjects were also evaluated for characteristics of an undercontrolled person: one who has a difficult time modulating feelings, impulses, and desires. Impulsive behavior was measured using a delay-of-gratification task. Academic achievement was assessed by teacher reports regarding reading, writing, spelling, and math. Lynam et al. found that Verbal IQ was significantly associated with delinquency among White and Black youth. IQ had significant effects on impulsivity for White youth, and nearly so with Black youth. Their data suggested that "only 17%-25% of the effect of IQ on delinquency operated indirectly through behavioral impulsivity" (p. 193). For both Whites and Blacks, IQ had significant effects on school achievement. For White youths, school achievement did not have a significant effect on delinquency, but it did so for Black youths. Lynam et al. (1996) stated, "The more poorly a boy does in school, the more frustrating he will find school, the less attachment he will feel to the school and the values it represents, and the more likely he is to be delinquent" (p. 194). They suggested that when school provides less social control, negative factors in the environment assume a more important role (p. 195).

Self-Handicapping, Self-Image, and School Performance

Researchers have suggested that some students attempt to maintain their self-image and self-presentation image of worthiness and ability by self-handicapping, in which they "deliberately do not try in school, put off studying until the last moment, fool around the night before the test," and use other strategies (Midgley et al., 1996, p. 423). These proactive strategies allow circumstances to be seen as the cause of poor performance, rather than low ability. The excuse of failure because one was tired, which is an attribution, is different from purposely staying up late in order to use the excuse of being tired, which is self-handicapping. Covington's (as cited in Midgley et al., 1996) research theory of self-worth "is based on the belief that achievement behavior in schools can best be understood in terms of students' attempts to maintain a positive self-image" (p. 423). In other words, it is "the struggle to escape being labeled as stupid" (Midgley et al., p. 423). Procrastination is perceived by students as a positive strategy because failure can be blamed on having put off studying until the last minute, and success will show that they are particularly capable. Other examples of self-handicapping strategies are: (1) overloading oneself with so many activities that failure could be reasonably expected should it occur, (2) using the "academic wooden leg," admitting to a minor personal weakness in order to avoid admitting the lack of ability, and (3) allowing classmates to keep them from paying attention in class or from doing homework (p. 423). Self-handicapping is positively correlated with defining oneself as a bad student. In an eighth grade sample, researchers found that boys and

lower achievers used these strategies more frequently than girls and high achievers. "Low achievement, an extrinsic orientation, and an association with friends who devalue academics predicted the use of self-handicapping strategies" (Midgley et al., p. 424). There is a relationship between feelings of worth and esteem and the use of self-handicapping strategies. Individuals with both high and low self-esteem use handicapping strategies to enhance their image, but for different reasons. The positive and negative dimensions of self-esteem relate in different ways to emotional well-being and school grades. The greater a student's pessimism about the value of education, the poorer was the student's performance in school. Midgley et al. found that self-handicapping was significantly, positively related to ego-oriented goals, self-deprecation (negative self-esteem), and negative attitudes toward education (p. 428). It was significantly negatively related to GPA. Although negative attitudes did not have a direct effect on GPA, they did have a significant, negative indirect effect on GPA through self-handicapping. Self-deprecation (negative self-esteem) "was significantly related to self-handicapping, negative attitudes about education, and ego-oriented goals" (Midgley et al., p. 430).

Motivation and School Success

Karsenti and Thibert (1995) identified three main clusters of motivation: amotivation, extrinsic motivation, and intrinsic motivation. Amotivation refers to a condition in which the student does not recognize a link between their actions and outcomes. They do not understand why they are in school. Intrinsic motivation is a condition of performing an activity for the pleasure of performing it.

Extrinsic motivation refers to a condition of performing an activity as the means to an end and not for their own sake. Four clusters of extrinsic motivation are: external, introjected, identified, and integrated regulation. External regulation is performed with the use of rewards and constraints. Introjected regulation is performed because of internalization of external regulation. For example, although students are being forced to go to school, they still would feel guilty if they stayed home. Identified regulation is performed when the action is valued and freely chosen. Integrated regulation is a more intense form of identified regulation, usually with greater committment. With Canadian students aged 12 to 18, amotivation was negatively correlated to school achievement, as measured by GPA. Positive correlations were found between identified regulation, intrinsic motivation, and GPA. Additionally, Karsenti and Thibert (1995) found that the correlation between intrinsic motivation and GPA was significantly higher for boys, at $r = .20$ ($p < .0001$) than for girls, at $r = .10$ ($p < .001$), and for senior high school students, at $r = .25$ ($p < .0001$) compared to junior high school students, at $r = .09$ ($p < .001$).

Self-Concept, Self-Esteem, and Academic Achievement

Gribbons, Tobey, and Michael (1995) found that general education GPA (GE GPA) was not significantly correlated to the five hypothesized Dimensions of Self-Concept: level of aspiration, anxiety, academic interest and satisfaction, identification vs. alienation, and leadership and initiative. They suggested that "academic self-concept lacks stability during students' first semester at the university and

that GE GPA may be an unreliable criterion" (Gribbons et al., p. 866). They suggested future research to address these issues. Surprisingly, Liu, Kaplan, and Risser (1992) found that the relationship between academic achievement and general self-esteem negatively correlated, at $r = -.50$ ($p < .001$), with several mediating variables: academic self-concept, perception of teachers' responses towards the student, deviance, motivation, psychological distress, illness, and absence (p. 139). Liu et al. suggested, "This unique negative effect could be due to poor students' tendency to compensate for their negative self-feelings by developing abilities unrelated to academics" (p. 141). To the contrary, Chen and Dornbusch (1998) found that "self-esteem was associated significantly with high grades. However, an unexpected finding was that self-esteem was also associated with a higher level of deviant behaviors" (p. 311).

Emotions

Conceptualizations of Emotions

As with the definitions of success, failure, and intelligence, various definitions of emotions abound in the scientific community. According to LeDoux (1996), a leading authority in the field of neuroscience, "scientists have not been able to agree about what an emotion is" (p. 23). Dolan (2002) wrote, "Emotion is central to the quality and range of everyday human experience.... An emerging theme is the question of how emotion interacts with and influences other domains of cognition, in particular attention, memory, and reasoning" (p.

1191). Emotions, according to Dolan, "represent complex psychological and physiological states that, to a greater or lesser degree, index occurrences of value," with value being "an organism's facility to sense whether events in its environment are more or less desirable" (p. 1191). He adds, "In higher order primates, in particular humans, this involves adaptive demands of physical, sociocultural, and interpersonal contexts" (Dolan, p. 1191).

According to Salovey and Mayer (1989-1990), emotions are "organized responses, crossing the boundaries of many psychological subsystems, including the physiological, cognitive, motivational, and experiential systems" (p. 186). Leeper (as cited in Salovey & Mayer (1990) "suggested that emotions are primarily motivating forces; they are 'processes which arouse, sustain, and direct activity'" (p. 186). Ekman (1992) stated: "I expect that specific emotions regulate the way in which we think, and this will be evident in memories, imagery, and expectations" (p. 175). Ekman continued that some emotions are considered "basic" because they "evolved for their adaptive value in dealing with *fundamental life-tasks*" (p. 171), such as achievements, losses, and frustrations, which were suggested by Johnson-Laird and Oatley (1992). Johnson-Laird and Oatley (1992) proposed that the basic emotions are "happiness, sadness, anger, fear, desire, and disgust" (p. 220). Ekman stated that all emotions share these features: "rapid onset, short duration, unbidden occurrence, automatic appraisal, and coherence among responses—which allow us to begin to deal with fundamental life-tasks quickly without much elaborated planning, in ways that have been adaptive in our past" (p. 195). Levenson, Ekman, and Friesen (1990) noted that "three common psychophysiological

measures (heart rate, finger temperature, and skin conductance) each distinguish different subsets of emotions (p. 382). Of these three measures, only heart rate and finger temperature make distinctions among negative emotions. Levenson et al. added, "A fourth measure of muscle activity does not distinguish among any of the emotions that we studied" (p. 382).

Averill (1992) asserted, "It is becoming increasingly common among psychological theorists to view emotions as constructions, built up from more elementary units that are not themselves 'emotional'" (p. 20). Constructionist theories may be organized along biological, psychological, and social levels of analysis. "Any analysis that remains on only one level must, however, be incomplete" (Averill, p. 20). According to Averill, structural variables that help determine emotional behavior at the biological level of analysis are: (system of behavior) instincts, (enabling mechanism) organ systems, (operating characteristic) temperament, (transient condition) physiological states, and (level of (dis)integration) disease (p. 2). At the social level of analysis are: (system of behavior) institutions, (enabling mechanism) organizations, (operating characteristic) ethos, such as power and status, (transient condition) movements, such as fads, and (level of (dis)integration) anarchy/anomie. Also, according to Averill at the psychological level of analysis are: (system of behavior) life-scripts/long range motives, (enabling mechanism) faculties, such as memory and perception, (operating characteristic) trait/capacity, (transient condition) moods, and (level of (dis)integration) anxiety/mysticism (p. 2).

According to Buck (1985), "Emotion is a readout mechanism

associated with motivation. Emotion is generally defined in terms of subjective experiences or feelings, goal-directed behaviors (attack, flight), expressive behavior (smiling, snarling), and physiological arousal (heart rate increases, sweating)" (p. 396). According to LeDoux (1996), emotions did not develop from a single part of the brain (p. 16). He noted that different kinds of emotion systems arose through evolution from different neural systems. LeDoux added, "The system we use to defend against danger is different from the one we use in procreation, and the feelings that result from activating these systems--fear and sexual pleasure--do not have a common origin" (p. 16). Researchers can now identify the basic brain structures responsible for feelings and emotion: "brainstem autoregulatory systems; amygdala, insula, and other somatosensory cortices; cingulate and orbital-prefrontal cortices" (Dolan, 2002, p. 1194). Dolan (p. 1191) asserted that events that trigger "joy, sorrow, pleasure, and pain" have the sharpest impact on and demand the greatest attention from an organism.

Studies have suggested the value of emotions in understanding behavior. Emotions allow an organism to rate and rank events within an organism's "physical, socio-cultural, and interpersonal" environments according to their value to the organism (Dolan, 2002, p. 1191). Emotional order is essential to mental health; "mental problems, to a large extent, reflect a breakdown of emotional order" (LeDoux, 1996, p. 20). Neurologist Antonio Damasio "emphasizes the importance of *gut feelings* in making decisions" (LeDoux, p. 36).

Some researchers have suggested a possible emotion-influenced pathway for goal-directed behaviors. Bagozzi, Baumgartner, and Pieters

(1998) presented a possible emotional goal system, using correlational data: a goal is presented to a person; the person reacts to the goal and displays positive and negative anticipatory emotions; these emotions contribute to the person's intentions, plans, and decisions, which then affect the person's goal-directed behaviors; the intensity of the behaviors affects the level of goal attainment; and then goal-outcome emotions are produced (p. 19).

Moods and feelings are also important for understanding behavior. According to Swinkels and Giuliano (1995),

> although there is no universally accepted statement on the defining characteristics of mood (especially in distinguishing the term *mood* from related terms such as *affect*, *emotion*, or *feeling*), most researchers agree in defining moods as affective states that are non-specific, pervasive, and capable of widely influencing cognition and behavior (e.g., Frijda, 1986; Isen, 1984; Morris, 1989; Nowlis, 1965; Ruckmick, 1936). (p. 935)

Swinkels and Guiliano (1993) noted that mood awareness "relates to one aspect of emotional intelligence, namely appraisal of affect in the self, and holds consequences for another aspect of emotional intelligence, namely the regulation of affect in the self" (p. 2). According to Dolan (2002), "feelings are defined as mental representations of physiological changes that characterize and are consequent upon processing emotion-eliciting objects or states" (p. 1193).

The conscious level is not the primary controller of emotions.

An unconscious system of detectors is the first response to emotive stimuli; conscious feelings, trembling, rapid heartbeat, and sweating are some secondary responses (LeDoux, 1996, p. 18). People routinely manipulate their environment to provide the likelihood of pleasant emotions, but such emotions cannot be directly produced (LeDoux, p. 19). Emotional stimuli can affect an organism "preattentively" (Dolan, 2002, p. 1191). Dolan stated, "In visual backward masking paradigms," a rapidly-presented, unperceived target stimulus is effectively hidden by a second "masking stimulus" (p. 1191). He added, that although much of the nature of emotions is now understood, so much more remains a mystery. Researchers have made little progress understanding the relationship between emotions and motivation or moods. Dolan stated that researchers still do not understand "the perplexing issue of how emotion infects rational thought processes such that people adhere, often with great conviction, to ideas and beliefs that have no basis in reason or reality" (p. 1194). Goleman (1995) was fascinated by "moments of impassioned action that we later regret" and wondered "how we so easily become so irrational" (p. 16). Plato, according to LeDoux, "said that passions and desires and fears make it impossible for us to think" (p. 24). LeDoux observed that people make up and believe in reasons for their behaviors or beliefs when the reasons are unknown to them (p. 32).

Insights Gained from Disorders

Disorders can provide insight into the relationships among intelligence, emotional, and social concepts. Holden (2003) reported

that schizophrenic patients often cannot "discriminate between different facial emotional expressions" (p. 334). Cattell and Stice (as cited in McClelland, 1956) found that "'adventurous cyclothymia,' is significantly associated with leadership" (p. 45). *Merriam Webster's Collegiate Dictionary*, Eleventh Edition (2003), states that cyclothymic is "relating to or being a mood disorder characterized by alternating episodes of depression and elation in a form less severe than that of bipolar disorder" (p. 311). Schizophrenia is a condition dominated by psychosis, as well as "flattened emotions and disordered thinking" (Holden, 2003, p. 333). According to Holden (2003), "the components [of schizophrenia] that scientists are most eager to get a grasp on are the cognitive disruptions that affect short-term memory, attention, and so-called executive functions needed for planning and problem solving" (p. 333). Scientists now believe that the inability to "think clearly" leads to "delusions and hallucinations and thought disorganization," not the other way around (Holden, 2003, p. 334). Studies begun in 2000 at the University of Pennsylvania will examine schizophrenia and attempt "to resolve the genetic differences between African-American and Caucasian schizophrenia patients" (Holden, 2003, p. 334). Schizophrenics often "have trouble retaining the memory of a target image after it has been 'masked' by a second stimulus" and discriminating "between different facial emotional expressions" (Holden, 2003, p. 334). Asperger syndrome (AS) sheds light on the issue of the existence of singular vs. multiple intelligences. A study of Asperger syndrome, "a mild version of autism," supports the idea "that deficiencies in 'social' intelligence have no effect on math smarts" (Holden, 2000, p. 1395). Holden (2000) explained, Asperger

syndrome "can make people socially awkward, withdrawn, and unable to sense the emotions of others" (p. 1395). "The results 'strongly suggest that social intelligence is independent of other kinds of intelligence, and may therefore have its own unique evolutionary history" (Holden, 2000, p. 1395).

Rudolph, Lambert, Clark, and Kurlakowsky (2001) reported that depressive symptoms correlated at $r = -.48$ ($p < .001$) with academic perceived control, at $r = -.21$ ($p < .001$) with academic importance, at $r = -.43$ ($p < .001$) with academic effort, at $r = -.35$ ($p < .001$) with academic performance, at $r = .55$ ($p < .001$) with academic chronic strain, at $r = .56$ ($p < .001$) with school hassles (p. 938).

Boyatzis, Goleman, and Rhee (2000) noted that although scientific knowledge in individual personality and behavior has greatly increased in the 1900s, more investigations are "needed to understand how our emotions and capabilities affect our lives and work" (p. 359).

Intelligence

Definitions and Conceptualizations of Intelligence

Claimed Sternberg and Detterman (as cited in Neisser et al., 1996), "Indeed, when two dozen prominent theorists were recently asked to define intelligence, they gave two dozen somewhat different definitions" (p. 77). Descartes' (as cited in Salovey & Mayer, 1989-1990) definition for intelligence was "the ability to judge true from false" (p. 186). Salovey and Mayer preferred the broad definition of

Wechsler: "Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment" (p. 186). They explained that this definition includes historical and the modern views of intelligence, and distinguish among abstract (verbal), mechanical (visual/spatial), and social intelligences, as well as the intelligences proposed by Gardner and Sternberg. Wagner and Sternberg (cited in Sutarso, 1998,) claimed that intelligence has "many forms and abilities, which may encompass motivation, the need for achievement, affiliation, or power, as well as understanding tacit knowledge related to motivation" (p. 18). Sternberg and Grigorenko (2000) stated that "practical intelligence involves a number of skills as applied to adaptation to, shaping of, and selection of environments" (p. 216). According to Sternberg and Grigorenko, these problem-solving skills include: problem recognition, problem definition, resource allocation, mental representation, strategy formulation, solution monitoring, and solution evaluation (p. 216).

Averill (2000) clarified his conceptualizations of important terms: "I use *intelligence* in the narrow sense...that is, to refer to the capacity for abstract reasoning as measured more or less accurately by IQ tests; I use *ability* to refer to any of the panoply of human talents, of which intelligence is only one; and I use *cognition* to refer to the processes (perception, memory, thinking, and so forth) that help mediate both intellectual and emotional behavior" (p. 278).

Herrnstein and Murray (as cited in Tapia, 1998) maintained that intelligence theory has "three distinct periods of development: (a) intelligence as a structure, (b) intelligence and information

processing, and (c) the theory of multiple intelligences" (p. 12). Spearman, they continued, formulated early concepts of intelligence in the early 1900s, and Terman and Thorndike, in the early 1920s. Spearman (as cited in Neisser et al., 1996) claimed that a general intelligence factor, g, is the common factor that intelligence tests measure, while Thurstone "focus[ed] on more specific group factors, such as memory, verbal comprehension, or number facility" (p. 78). Guilford (as cited in Tapia, 1998) reported "120 different kinds of primary intelligence" (p. 15). Gardner (1983/1993) included the following intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and personal.

Mayer, Caruso, and Salovey (1999) stated that "three major criteria for a standard intelligence are that it consists of mental abilities, that those abilities meet certain correlational criteria, and that the abilities develop with age" (p. 291).

Block and Kremen's (1996) summarized their understanding of intelligence. With the study of human intelligence having been a preoccupation of psychologists for over a century, a researcher cannot seriously hope to assimilate it. Block and Kremen stated that researchers presume that IQ tests measure "raw basic processing functions" that provide the basis of intelligence (p. 349). Summarized by Block and Kremen, Jensen viewed IQ "as a summarizing index of what may be viewed as a latent 'general' factor underlying the diverse measures of intellectual ability that psychologists have used" (p. 349). Sternberg (as cited in Block & Kremen, 1996) confessed, "We acknowledge that 'although many of us act as though intelligence is what intelligence tests measure, few of us believe it" (p. 349). For

their work with the correlation of IQ and ego-resiliency, Block and Kremen viewed intelligence simply as an IQ score (p. 349).

According to Hedlund and Sternberg (2000), Sternberg and his colleagues developed the concept of practical intelligence, evaluated by the Sternberg Triarchic Abilities Test (STAT), which measures the analytical, creative, and practical domains of mental processing (p. 152).

Sutarso (1998) considered that intelligence has possibly-interacting cultural, biological, and physical aspects (p. 19). Neisser et al. (1996) named such social variables as occupation, schooling, interventions, and family environment as important factors in intellectual development. They added biological variables to this list, such as nutrition, lead, alcohol, and perinatal factors.

World Concepts of Intelligence

Other world cultures have varied concepts of intelligence that include the affective variables and the capability of improving through hard work. Das (as cited in Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 6) suggested that Buddhist and Hindu philosophies include "such things as determination, mental effort, and even feelings and opinions" in their concept of intelligence. Yang & Sternberg (as cited in Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 2) related that the Chinese Confucian understanding of intelligence includes behavior with good will and a lifetime of learning with

enthusiasm and enjoyment. They found five factors in the conceptualization of Taiwanese Chinese intelligence: "(a) a general cognitive factor, much like the g factor in conventional Western tests; (b) interpersonal intelligence; (c) intrapersonal intelligence; (d) intellectual self-assertion; and (e) intellectual self-effacement" (para. 3). Dasen (as cited in Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 7) reported both social and cognitive components of the concept of intelligence in Malay students. Sternberg & Kaufman (1998, Cross-Cultural Views section, para. 10) indicated the importance of interpersonal and intrapersonal skills in the concept of intelligence as reported by researchers in African nations of Zimbabwe, Zambia, Mali, and Kenya. Kornhaber, Krechevsky, and Gardner (1990) noted that in Japanese society, intelligence is not generally considered an innate capacity, but an achievement through hard work and commitment. Many levels of interaction exist in Japan between: "individual and family, family and school, school and work, and employee and employer" (Kornhaber et al., p. 185). According to Gould (as cited in Kornhaber et al.), "the rendering of the concept of intelligence into a reified, inherited trait was 'an American invention'" (p. 187). According to Kornhaber et al., assessment of intelligence should be placed "in the context of authentic domains and social environments" if it is to represent intellectual performance (p. 189).

IQ and Intelligence

In testing for intelligence, the scores of varied, but related,

subtests can be included to form a composite score. According to Sutarso (1998), "Basically, IQ scores are an aggregate index of performance on several different kinds of intellectual tasks" (p. 22). He considered that each subtest score is related to the others in the battery. Sutarso added, "Tests formed by selecting non-overlapping subtests will yield common factors that are comparable.... [Therefore] the choice of tests to be included in the battery of tests is not critical. The commonality among all possible measures of cognitive ability that form a positive manifold is called 'g,' or general intelligence" (p. 23).

Intelligent Ability Versus Intelligence

The ability to do intelligent things does not necessarily indicate intelligence. Just because our mind can do complex things does not mean that we know how we do them (LeDoux, 1996, p. 31). LeDoux marveled at the ability of honeybees and homing pigeons to return home after flying out considerable distances.

Non-Conscious Processing and Intelligence

Much cognitive processing takes place during non-conscious processing and does not necessarily indicate intelligence. The field of cognitive science has determined that much of the processing of information takes place unconsciously for such things as orderly perception of the world, remembering past events, selectively attending

to one stimulus among many, and making belief, attitude, and behavioral judgments (LeDoux, 1996, pp. 33-34). Bechara, Damasio, Tranel, and Damasio (1997) reported that situations can trigger "covert activation of biases related to previous emotional experience of comparable situations," and these non-conscious biases can result in a beneficial decision even before the person is aware of the best strategy to take in solving a problem (p. 1294).

Social and Emotional Intelligence

Concept of Social Intelligence

Social intelligence has been conceptualized in many ways. E.L. Thorndike wrote that social intelligence is "the ability to understand and manage men and women, boys and girls—to act wisely in human relations" (Salovey & Mayer, 1989-1990, p. 187). Weinstein (as cited in Salovey & Mayer, 1989-1990) stated that social intelligence "boils down to the ability to manipulate the responses of others..." (p. 187). In 1937, R. Thorndike and Stern (as cited in Goleman, 2001) considered three areas that might be related to social intelligence:

> The first area encompassed primarily an individual's attitude toward society and its various components: politics, economics, and values such as honesty. The second involved social knowledge: being well versed in sports, contemporary issues, and general 'information about society.... The third form of social

> intelligence was an individual's degree of social adjustment: introversion and extroversion were measured by an individual's responses to questionnaires. (p. 16)

Mayer and Geher (1996) stated that in the 1930s,

> social intelligence was largely a study of how people made judgments regarding others and the accuracy of such judgments. By the 1950s, however, this work had become divided into an intelligence tradition that was interested in abilities of person perceptions, and a social psychological tradition that focused on the social determinants of person perception. (p. 91)

Foote and Cottrell (as cited in Holland & Baird, 1968) suggested interpersonal competency consisted of "(1) health, (2) intelligence, (3) empathy, (4) autonomy, (5) judgment, and (6) creativity" (p. 503). However, Holland and Baird, of the American College Testing Program, using many ideas from Foote and Cottrell to construct the Interpersonal Competency Scale, concluded, "The results thus far indicate that interpersonal competency is a talent unrelated to educational and intellectual abilities," such as ACT scores or high school grades (p. 503). Holland and Baird (1968) added,

> Although the IC Scale was designed to assess the ability to deal with others, not general personal effectiveness, the present results suggest that there may be a strong relation between interpersonal skills and general psychological health. It is

> eminently reasonable that psychological health is manifested in both intra-personal and inter-personal effectiveness. (p. 509)

Taft (as cited in McClelland, 1956) believed

> that the ability to judge others depends on (a) knowledge of appropriate norms in terms of which the judgment is to be made (including similarity of the judge to the person judged), (b) certain personal ability factors (including intelligence, and possibly a social intelligence factor), and (c) motivation (a desire, both conscious and unconscious, to judge objectively). (p. 45).

Referring to interpersonal intelligence, Gardner (1983/1993) stated, "The other personal intelligence turns outward, to other individuals. The core capacity here is *the ability to notice and make distinctions among other individuals* and, in particular, among their moods, temperaments, motivations, and intentions" (p. 239).

Zirkel (2000) called social intelligence "a model of personality and individual behavior" that assumes that people willfully use knowledge of themselves and others to manage their emotions to achieve their goals (p. 20). She adds, "This model incorporates work from both personality psychology and social psychology–focusing on individuals in their social contexts" (Zirkel, p. 20).

Cantor and Kihlstrom (as cited in Hedlund & Sternberg, 2000) suggested that social intelligence is a specific realm of understanding used for social problem-solving, consisting of both "declarative

knowledge (such as abstract social concepts and memory for specific social events) and procedural knowledge (such as rules, skills, and strategies for applying social knowledge)" (p. 144).

McClelland (1973) acknowledged the importance of socially intelligent behavior and successful life outcomes. He stated, "Important communication skills are nonverbal.... The abilities to know what is going on in a social setting and to set the correct emotional tone for it are crucial life-outcome criteria" (p. 10).

Newmeyer (as cited in McClelland, 1973) found that African-American boys were better able than White boys to accurately send and receive emotions through different means, a "particular kind of communication skill, which is a far more crucial cluster of criterion behavior than most paper-and-pencil tests sample" (p. 10).

Social intelligence and related concepts continue to develop. Mayer and Geher (1996) divided the concept of social intelligence into emotional and motivational intelligences. They stated that Gardner's "intrapersonal intelligence," Mayer and Mitchell's "hot processing," and Averill and Thomas-Knowles' "emotional creativity" were closely-related concepts (Mayer & Geher, p. 90). Social competence was defined by Topping, Bremner, and Holmes (2000) as "the possession and use of ability to integrate thinking, feeling, and behavior to achieve social tasks and outcomes valued in the host context and culture" (p. 32). They stated that social competence is important in school, on the job, and in everyday activities. Welton (1999) claimed that skills in decoding nonverbal gestures, facial expressions, pauses, intonation, and loudness are all important for successful language and social interactions.

Social intelligence strategies have an important influence on how one's objectives are identified, evaluated, and achieved. Researchers suggest that social intelligence focuses on people's goals and plans, and on the means with which they accomplish them (Zirkel, 2000, p. 17). Some strategies used by individuals within this context are defensive pessimism, self-handicapping, and being selective about the people, situations, and activities with which they involve themselves.

Concept of Emotional Intelligence

Mayer, Salovey, and Caruso (2000) shared the following in apparent resignation: "Emotional intelligence has been defined and redefined so many times that it would be impossible (or at least, quite a lengthy job) to outline all the ways the phrase has been employed" (p. 92). Salovey and Mayer (1989-1990) defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (pp. 189-190). Mayer and Salovey (1995) proposed "one internally consistent model [that] includes tenets such as 'happiness should be optimized over the lifetime,'" and suggested ways to compose and direct mood "at non-, low-, and high-conscious levels of experience" (p. 197).

Mayer and Salovey (1993) noted about their concept of emotional intelligence: "Emotional intelligence could have been labeled 'emotional competence,' but we chose intelligence in order to link our framework to a historical literature on intelligence. Our concept

overlaps with Gardner's (1983) '[intra]personal intelligence'" (p. 433). According to Mayer and Salovey, social intelligence can be applied outwardly and include the ability to understand and manage others, and it can be applied inwardly to include the ability to understand and manage oneself (p. 435). Although Wechsler (as cited in Mayer & Salovey, 1993) considered a particular item on his Wechsler Adult Intelligence Scale a measure of verbal intelligence, Mayer and Salovey believed that the item also requires social knowledge and moral knowledge, but no emotional intelligence (p. 436). Mayer and Salovey continued, "Emotional intelligence, as compared with social intelligence, may therefore be more clearly distinguished from general intelligence as involving the manipulation of emotions and emotional content. As a result, it may have better discriminant validity" (p. 436). They added that emotionality contributes to the ability to "generate emotions and emotion-related thoughts" (p. 436). Furthermore, according to Mayer (as cited in Mayer & Salovey, 1993), strong mood swings may help one to generate a larger number of plans for the future, creating an advantage for future opportunities (p. 436). According to Mayer and Salovey (1993), moods may focus attention inward and would seem to promote cognitive and behavioral activities leading to better prioritization of life needs and goals (p. 437). Mayer and Salovey contended that mood regulatory mechanisms may be helpful in explaining empathy and related abilities (p. 438).

According to Gardner (1983/1993), "In its most primitive form, the intrapersonal intelligence amounts to little more than the capacity to distinguish a feeling of pleasure from one of pain and, on the basis of such discrimination, to become more involved in or to withdraw from

a situation" (p. 239). Gardner adds, "At its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings" (p. 239).

Mayer, Caruso, and Salovey (2000) cited the 1997 work of Mayer and Salovey which operationalized the notion of emotional intelligence:

> Emotional intelligence involves the capacity to reason with and about emotions, including [1] the ability to perceive accurately, appraise, and express emotions; [2] the ability to access and/or generate feelings when they facilitate thought; [3] the ability to understand emotion and emotional knowledge; and [4] the ability to regulate emotions to promote emotional and intellectual growth. (p. 328)

Mayer, Salovey, and Caruso (2000) refined their ability model of emotional intelligence across cognitive and emotional systems, and it can be divided into four branches: (1) "emotional perception and identification," (2) "emotional facilitation of thought," (3) "emotional understanding," and (4) "emotion management" in self and others (p. 107).

Cavallo and Brienza (2001, Conclusions & Next Steps section, para. 2) believed that "research has shown that Emotional Intelligence, like technical skill, can be developed through a systematic and consistent approach to building competence in personal and social awareness, self-management, and social skill."

Emotional Intelligence and Health Habits

Using Hamilton & Burry-Stock's 1998 *Emotional Intelligence Inventory* (EQI), Yates (1999) found generally weak correlations between the health habits of college-aged health education students and emotional intelligence, the strongest of which were: empathy and nutrition (r = .12), emotion (r = .20), safety (r = .27), and disease (r = .19); self-expression and tobacco (r = .13) and emotion (r = .13); self-control and tobacco (r = .15), alcohol (r = .16), nutrition (r = .17), exercise (r = .16), emotion (r = .33), safety (r = .24), and disease (r = .16); and sensitivity and tobacco (r = .12), alcohol (r = .10), exercise (r = -.14), safety (r = .18), and disease (r = .12) (p. 44). Yates also reported low to medium gender differences in the emotional inventory scores and health habit scores (p. 73).

Emotional Intelligence and GPA

Tapia (1998) found no significant correlation between the EQI and the Math Preliminary Scholastic Assessment Test (PSAT); she also found no significant correlation between the EQI and the Otis-Lennon School Ability Test (OLSAT), which was designed to measure performance on "Verbal Comprehension, Verbal Reasoning, Pictorial Reasoning, Figural Reasoning, and Quantitative Reasoning" (p. 37). However, Tapia found a significant ($p < .01$) correlation (r = .204) between EQI and grade point average (GPA), a variable perhaps affected by empathy and self-control.

Emotional Intelligence and Interpersonal Relations

Researchers reported relationships between emotional intelligence and interpersonal relations. In world-wide research on 358 managers at the Johnson & Johnson Consumer and Personal Care Group, Cavallo and Brienza (2001, Conclusions & Next Steps section, para. 1) found that "high performing managers" have "significantly higher levels of Self-Awareness, Self-Management capability, Social Skills, and Organizational Savvy, all considered part of the Emotional Intelligence domain." Schutte et al. (2001) reported from the results of seven studies that emotional intelligence positively relates to empathic perspective taking, self-monitoring, social skills, cooperative responses toward their partners, inclusion and affection in relationships, and marital satisfaction (p. 534).

Mixed Models of Emotional Intelligence

Some researchers have criticized Goleman and Bar-On for expanding the concept of emotional intelligence to include domains that have been considered to belong to personality. Hedlund and Sternberg (2000) complained that Goleman's "term emotional intelligence...attempts to capture almost everything but IQ" (p. 146). According to Gardner, as well as Sternberg, (as cited in Hedlund & Sternberg), Goleman's "framework arguably stretches the definition of intelligence way beyond acceptable limits" (p. 146). McCrae (2000) contended that the concept of emotional intelligence has been broadened by Goleman and Bar-On to "include desirable motivational, interpersonal, and intrapsychic attributes that resemble personality traits more than traditional

abilities" (p. 263). McCrae asserted, "Most of the traits" in their conceptualization of emotional intelligence can be found "within a comprehensive taxonomy of personality traits, the five-factor model (FFM)...." and labels the concepts of Goleman and Bar-On as "Mixed Models" of emotional intelligence (p. 263).

Goleman (1995) claimed that emotional intelligence is a better predictor of success in life than either Intelligence Quotient (IQ) or Scholastic Aptitude Test (SAT) scores. Goleman (as cited in Goleman, 2001) found that, for all clusters of occupations and especially for leadership positions, emotional intelligence competencies were "twice as prevalent among distinguishing competencies as were technical skills and purely cognitive abilities combined" (p. 23). Boyatzis, Goleman, and Rhee (2000) said that "emotional intelligence is a convenient phrase with which to focus attention on human talent...and incorporates the complexity of a person's capability" (p. 343). In 1998, Goleman (as cited in Boyatzis et al., 2000) "presented a model of emotional intelligence with twenty-five competencies arrayed in five clusters: (1) the Self-Awareness ..., (2) the Self-Regulation..., (3) the Motivation..., (4) the Empathy..., and (5) the Social Skills...." (p. 345).

Bar-On (2000) suggested that "emotional and social intelligence is a multifactorial array of interrelated emotional, personal, and social abilities that influence our overall ability to actively and effectively cope with daily demands and pressures" (p. 385). Bar-On's array consisted of: self-regard, emotional self-awareness, assertiveness, empathy, interpersonal relationship, stress tolerance, impulse control, reality testing, flexibility, and problem-solving (p.

385). Bar-On described his EQ-i [Emotional Quotient Inventory] as "a self-report measure of emotionally and socially competent behavior that provides an estimate of one's emotional and social intelligence. It is important to stress that the EQ-i was developed to measure this particular construct and not personality traits or cognitive capacity...." (p. 364). Bar-On's EQ-i measures the following Emotional Quotients: intrapersonal, interpersonal, stress management, adaptability, and general mood.

Other researchers developed concepts related to emotional and social intelligence: social competence (Topping, Bremner, & Holmes, 2000), emotional competence (Saarni, 2000), psychological mindedness (McCallum & Piper, 2000), and practical intelligence (Hedlund & Sternberg, 2000). Bar-On (2000) stated, "In that there is a great deal of overlap between many of the concepts involved, I prefer to generically refer to this wider area as emotional and social intelligence" (p. 363). Topping, Bremner, and Holmes (2000) now define social competence as "the possession and use of the ability to integrate thinking, feeling, and behavior to achieve social tasks and outcomes valued in the host context and culture" (p. 32). Saarni defined emotional competence as "the demonstration of self-efficacy in emotion-eliciting social transactions" (p. 68). Silver (as cited in McCallum & Piper, 2000) defined psychological mindedness as

> the patient's desire to learn the possible meanings and causes of his internal and external experiences as well as the patient's ability to look inwards to psychical factors rather than only outwards to environmental factors...[and] to potentially

conceptualize the relationship between thoughts, feelings, and actions. (p. 119)

The Success Tendencies Indicator: The Success Tendencies Scale and the Positive Impression Scale

The *Success Tendencies Indicator* (STI), formerly called the *Achievement Tendencies Indicator* (ATI), is a self-report instrument "developed for the purpose of assessing achievement tendencies in individuals from the high school level through adulthood" (Leonard & Taccarino, 2000, p. 2). The STI is a paper and pencil test containing 50 yes/no and multiple-choice items (5 choices) in two scales. The first scale, the *Success Tendencies Scale* (STS), consists of 39 items. Each item is weighted with 1 to 4 points. The second scale, the *Positive Impression Scale* (PIS), consists of 16 items. Each item is weighted with 1 to 5 points. The STS and PIS share 5 assessment scale items. The STI is not timed. It generally takes about 10 to 15 minutes, but rarely takes as long as 20 minutes for a student to complete.

Leonard and Taccarino (2000) suggested that the STS measures the S (success)-Factor, "seen as a constellation of interrelated traits, perceptions, attitudes and values which are commonly shared by individuals who attain success in a variety of areas such as, but not limited to, academics and commerce" (p. 2). The S-Factor, according to the authors, includes sub-factors such as "persistence, a positive view of self, goal clarity, a tolerance for adversity, self motivation, flexibility and resilience" (Leonard & Taccarino, 2000, p. 2).

According to Leonard and Taccarino (2003, p. 3),

> Within the Success Tendencies Indicator, the student's overall S-Factor score obtained from the Success Tendencies Scale is supplemented by the S-Factor Profile. The S-Factor Profile is formed by the student's score levels on the four interrelated sub-scales of the Success Tendencies Indicator: internal motivation and self-regulation, self-valuing, self-potency and success drive. The S-Factor Profile can be used to identify specific dispositions and areas of developmental need within the individual's overall pattern of success tendencies.

The PIS "is a validity scale which has been designed to identify a response pattern which could suggest the possibility that the respondent has attempted, consciously or unconsciously, to create a deceptively positive image of his/her characteristics and tendencies" (Leonard & Taccarino, p. 2). Taccarino (J. R. Taccarino, personal communication, January 15, 2003) stated, "Based upon a normative sample of 684 subjects, adolescents and adults, the mean for the Positive Impression Scale was 19.1 and the standard deviation was 5.1. Any respondent with a Positive Impression Scale score at or beyond two standard deviations positive from the mean could be a high risk of having faked positive on the assessment."

The following success tendencies are indicated by scores on the STS: 53-77, Very Strong; 44-52, Strong; 35-43, Somewhat Strong; 26-34, Somewhat Weak; 16-25, Weak; and 0-15, Very Weak (Leonard and Taccarino, 2000). For example, a score of 53-77 would indicate an individual with

very strong success and leadership tendencies in educational, business, and social interactions—someone who maximizes potential and demonstrates very strong resiliency. This individual would also show strong social and emotional intelligence.

"The normative sample for the STI," according to Leonard and Taccarino (2000), "included 684 male and female subjects between the ages of 14 and 70 years of age" (p. 8). The sample included "job applicants and students at both the high school and college levels" from the states of Illinois, Florida, and California (Leonard & Taccarino, p. 8). They reported that a reliability coefficient of r = .89, using the Pearson Product Moment Method, was determined by the test-retest method with 45 DePaul University students separated by two months.

In the first validity study, Leonard and Taccarino (2000) sought "to assess a construct underlying patterns of achievement effectiveness" through a review of the literature "in the areas of academic and work related achievement" (p. 9). They selected 60 items that most effectively distinguished high achievers from low achievers. In another validity study, Leonard and Taccarino used the Pearson Product Moment Method to correlate the scores of 64 graduate students on the ATS and the *California Psychological Inventory*. Correlations ranged from r = .32 to r = .47. Researching with a sample of 80 sophomore students of a suburban Mid-West high school, Bartlett (1998) reported statistically significant ($p < .01$) higher mean STS scores for the high academic achievement group than the low academic achievement group. Bartlett also reported statistically significant ($p < .05$) higher mean STS scores for the low behavior problem group than the high

behavior problem group.

Leonard and Taccarino reported criterion-related validity studies (2000). In a criterion-related validity study of 338 Chicago area undergraduate and graduate students, the STS showed a statistically significant difference ($p < .001$) in the scores of those who achieved leadership positions in high school and those who did not. In a criterion-related validity study of 185 applicants for a managerial position in a Chicago area firm, the STS showed statistically significant differences ($p < .001$) between those who were in a high school honors class and those not. Statistically significant differences ($p < .001$) were found in a study of 48 people, distinguishing between those who currently attended or ever attended college from those who had not attended college. In a comparison between those who attended college below the graduate school level and those who attended graduate or professional school, the STS indicated significantly ($p < .001$) higher mean scores for the latter, lending support that the STS can "discriminate achievement levels even within a relatively high achieving population" (Leonard and Taccarino, p. 19). In yet another study, the STS showed statistically significant differences ($p < .01$) between high and low achievers in career success. In a variety of educational and work-related settings, the STI has shown to be a valid and reliable instrument that differentiates between high- and low-achieving individuals.

Literature Summary

This review of the literature described the assessment instrument considerations, relevant reference frames for the underlying concepts of the STI (success, failure, personality, emotions, intelligence, and social and emotional intelligence) and characteristics and statistical analyses of the *Success Tendencies Indicator* (STI). Some controversial issues relating to the validity and reliability of assessment instruments were described. Burisch (1984) stated that neither the external, inductive, nor deductive approach to personality scale construction was superior to another regarding "validity or predictive effectiveness" (p. 214). He also found that his shorter scales were no less valid than his longer ones. In opposition, Paunonen and Jackson (1985b) stood by the "principles of classical test theory" (p. 348). Years later, Burisch (1997) confirmed his earlier research and maintained that his double cross-validated short scales of 2 to 4 items "outperformed standard scales eight times as long" (p. 303). Block and Kremen (1996) defended their conceptual effort of scale development that was "not fully systematic" (p. 352). Eysenck and Eysenck (as cited in Block & Kremen, 1996) believed that "validation of the final product" must determine the value of the scale (p. 352).

Mayer, Caruso, and Salovey (2000) stated that alpha reliabilities of internal consistency from .59 to .87 are "comparable to many standard tests of intelligence" (p. 332). Mayer et al., as well as Glass and Hopkins (1996) believed that adding items to a scale could increase its reliability. McClelland (1973) warned that unreliability

is a "fatal defect" if the goal of the instrument is to single out successful individuals and exclude others (pp. 12-13). Instead, he said, such instruments should be used to evaluate the entire program or class for success.

Hansford and Hattie (1982) found that self-report instruments correlated from $r = -.77$ to .96 with student performance and behavior; however, the mean correlation with GPA was $r = .34$ (p. 138). They also found that grade level and quality of design could influence the results of the study. They did not find gender differences in their correlations, but did find racial/ethnic group and ability group differences. On the one hand, Richman, Rosenfeld, and Bowen (1998, Measures section, para. 5) found moderate to high correlations of self-report to official GPA and disciplinary actions. Similarly, Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (as cited in Chen & Dornbusch, 1998) found a high correlation of self-report to GPA (p. 304). On the other hand, Paulhus, Lysy, and Yik (as cited in Mayer, Caruso, & Salovey, 2000) contended that "people are notoriously inaccurate reporters in several areas of functioning, including the self-assessment of ability" (p. 324). Mehrabian (1968) considered ease of scoring and amount of time required to be important factors for assessment instruments (p. 493).

Clustering of competencies, according to Boyatzis, Goleman, and Rhee (2000), could be done "theoretically or empirically; or as competencies that are closely related, independent of others, or inferentially causal" (p. 349). They believed that these clustered competencies could be complementary, alternate manifestations, compensatory, or antagonistic.

This review of literature also examined empirical and theoretical frameworks that can provide an understanding of factors measured by the STI: personality, emotions, intelligence, and social and emotional intelligence. Success can be considered from many viewpoints: objective, subjective, extent, timeframe, culture, or context. As in this study, success can be defined as a high weighted grade point average (GPA) or low discipline incidents number (DIN), although high creativity, high standardized test scores, outstanding attendance, and other measures may be used as well. According to Sternberg (1998), "conventional intelligence tests correlate about 0.4 to 0.6 ... with school grades" and about 0.3 with job performance and salary (p. 14). Curiously, Fiedler (as cited in Sternberg, 1998) found that under low stress, IQ positively predicted successful leadership, but under high stress, IQ negatively predicted it (p. 14). From his review of literature, Mehrabian (1968) cited researchers reporting that high achievers selected average risk situations, were indulged less by their parents, resisted pressure to conform, and engaged in activities with benefits in the future (p. 494). Mehrabian (2000) examined emotional, relationship, physical, work, career and financial, and overall success (p. 207). Among those factors correlating positively and significantly to overall success were relaxed temperament, achieving tendency, disciplined goal orientation, intelligence, integrity, empathy, and social competence. Feist and Barron (as cited in Cherniss, 2000) held that "social and emotional abilities were four times more important than IQ in determining professional success and prestige" (p. 5). In agreement with this idea, Agostin and Bain (1997) stated that social skills were important in "predicting successful academic achievement

and promotion in the early grade school years" (p. 224). In contrast, Foote and Cottrell (as cited in Holland & Baird, 1968) noted that "the results thus far indicate that interpersonal competency is a talent unrelated to educational and intellectual abilities" (p. 503). Holland and Richards (as cited in Holland & Baird, 1968) found just low to negligible correlations of social competencies to high school grades (pp. 508-509). McClelland (1973) believed that measuring instruments could predict success in life, and he suggested evaluations for leadership and other interpersonal skills. Standardized test scores were less successful than high school percentile rank in predicting college first semester GPA (Aleamoni & Oboler, 1978) and less successful than GPA in predicting student success (Armstrong, 2000). Armstrong (2000, Results section, para. 2) noted, "Past behavior is often the best predictor of future behavior." In support of that statement, researchers reported that previous academic performance predicted success in medical training (Ferguson, Sanders, O'Hehir, & James, 2000, para. 1). Thorndike (as cited in Tapia, 1998) found strong to very strong correlations between intelligence and success from elementary school through college (p. 11). Gottfredson (1998) asserted that "intelligence as measured by IQ tests is the single most effective predictor known of performance at school and on the job" (p. 24). Chen and Dornbusch (1998) found age, gender, and racial/ethnic differences associated with grades in school (pp. 311-312). They also found age and racial/ethnic differences associated with deviant behavior. Salazar, Schluderman, Schluderman, and Huynh (2000) found that academic achievement was best predicted by student involvement, which itself was substantially influenced by authoritative parenting.

Sternberg (as cited by Tapia, 1998) associated success with "personal knowledge of strengths and weaknesses, goal setting, high motivation, ... and identification of problems" (p. 13). Neisser et al. (1996) included "interest in school" and "willingness to study" as some of their factors for success in school (p. 81). Brigman, Lane, and Switzer (1999) stated that social skills, cognitive strategies, and applied learning skills are important for long-term success. Steinberg, Lamborn, Dornbusch, and Darling (as cited in Gonzalez, 2002, para. 5) noted that parental involvement correlated with higher GPA, especially when helping with homework.

According to Chambers, Abrami, and Massue (1998), school failure is affected by personal, demographic, and school-related factors. Battistich, Solomon, Kim, Watson, and Schaps (as cited in Chambers, Abrami, & Massue, para. 4) listed poor attendance, poor academic achievement, behavior problems, and parents who do not encourage learning as factors in school failure. Beilke and Peoples (1997, para. 7) named several behavioral variables that contribute to the educational "Failure to Thrive Syndrome." Cassel, Chow, DeMoulin, and Reiger (2001b, para. 5) listed such factors as decision making, self-esteem, coping skills, and self-efficacy as crucial psychological variables to examine to avoid high school student deviant and criminal behaviors. Chen and Kaplan (2003, Results section, para. 1) correlated adolescent school failure to a lower level of mental health, more deviant behaviors, and a lower socioeconomic status in midlife. Environmental lead poisoning can cause behavior problems and learning disabilities (USEPA, 2003; USEPA Region 2, 2002; Mississippi State Department of Health, 2003; University of California, Davis, 1999).

The issue of failure in school must be addressed at the family, school, and community levels (Poole, 1997; Richman, Rosenfeld, & Bowen, 1998; Walker & Sprague, 1999).

This review of the literature also examines the framework of personality. McClelland (1956) said that personality can be viewed from methodological and theoretical considerations, traits, schemas, and motives. They can also be organized into movement, cognitive, performance, and emotional traits. Bernreuter (as cited in Jackson & Paunonen, 1980) developed the first known multiscale personality inventory (p. 504). Three basic models of personality description described by Mehrabian (1995) were: Wiggin's Circumplex Model; Goldberg's Big-Five Model; and Mehrabian's Trait Pleasure, Trait Arousability, and Trait Dominance scales (p. 565). Personality factors related to success, according to Mehrabian's review of literature (2000), are goal setting, integrity, psychological adjustment, and self-efficacy. Work, Cowen, Parker, and Wyman (1990) noted that stress resilient children performed better in school than stress affected. Kalliopuska (1992) found that students with higher empathy are more sensitive and honest, and are more positive about avoiding the use of cigarettes and alcohol. Shoda, Mischel, and Peake (1990) found that children who were able to delay gratification were "academically and socially competent event ten years later" (p. 978). Dubow and Tisak (1989) found modest correlations between social support and social problem-solving skills, both of which had low correlations with GPA (p. 1412). Block and Kremen (1996) suggested that various aspects of social intelligence could be "subsumed under the construct of ego-resiliency" (p. 359). Klohnen (1996) found that ego-resilient people

arouse liking, get things done, have insight into their own motives and behavior, are dependable and responsible, and are skilled in social techniques (p. 1072). Lynam, Moffitt, and Stouthamer-Loeber (1993) suggested that low IQ leads to juvenile delinquency. Midgley et al. (1996) suggested that self-handicapping can be used to maintain one's positive self-image (p. 423). "Overloading oneself with so many activities that failure could be reasonably expected should it occur" is one such strategy (Midgley et al., p. 423). Karsenti and Thibert (1995) found that intrinsic motivation was positively correlated with GPA; they noted higher correlations for boys (compared to girls) and senior high school students (compared to junior high school students). Gribbons, Tobey, and Michael (1995) claimed that GPA was not significantly correlated with such self-concept factors as level of aspiration, anxiety, academic interest, and leadership. Surprisingly, on the one hand, Liu, Kaplan, and Risser (1992) found a negative correlation between self-esteem and academic achievement. On the other hand, Chen and Dornbusch (1998) found a positive correlation between them. However, Chen and Dornbusch also found self-esteem positively correlated to deviant behaviors (p. 311).

This review of the literature also examines the framework of emotions. Although scientists do not agree about what an emotion is (LeDoux, 1996, p. 23), they question how emotion affects the attention, memory, and reasoning domains of cognition (Dolan, 2002, p. 1191). Dolan stated that emotions "represent complex psychological and physiological states that ... index occurrences of value ... [and] involve "adaptive demands of physical, sociocultural, and interpersonal contexts" (p. 1191). Salovey and Mayer (1989-1990) stated that

emotions are "organized responses, crossing the boundaries of many psychological subsystems, including the physiological, cognitive, motivational, and experiential systems" (p. 186). Leeper (as cited in Salovey & Mayer, 1990) reported "that emotions are primarily motivating forces; they are 'processes which arouse, sustain, and direct activity" (p. 186). Ekman (1992) expected "that specific emotions regulate the way in which we think" (p. 175). Averill (1992) asserted that constructionist theories of emotions "may be organized along biological, psychological, and social levels of analysis" (p. 20). Buck (1985) maintained that "emotion is a readout mechanism associated with motivation" (p. 396). LeDoux (1996) stated that emotional order is essential to mental health (p. 20). From their review of literature, Swinkels and Giuliano (1995) believed that "most researchers agree in defining moods as affective states that are non-specific, pervasive, and capable of widely influencing cognition and behavior" (p. 935). According to Dolan (2002), "feelings are defined as mental representations of physiological changes that characterize and are consequent upon processing emotion-eliciting objects or states" (p. 1193). LeDoux (1996) noted that it is not the conscious level that is the primary controller of emotive stimuli, but an unconscious level (p. 18). Dolan (2002) claimed that it is unknown why people often cling to irrational ideas and beliefs (p. 1194). LeDoux (1996) observed that people make up and believe in reasons for their behaviors or beliefs when the reasons are unknown to them (p. 32).

Holden (2003) noted that schizophrenic patients often cannot "discriminate between different facial emotional expressions" (p. 334). Cattell and Stice (as cited in McClelland, 1956) suggested that

"adventurous cyclothymia" is correlated with leadership (p. 45). Holden (2003) suggested that inability to think clearly leads to "delusions and hallucinations and thought disorganization," not the other way around (p. 334). A study of Asperger Syndrome indicated that social intelligence is a unique intelligence (Holden, 2000, p. 1395). Rudolph, Lambert, Clark, and Kurlakowsky (2001) reported that depressive symptoms correlated negatively with academic performance (p. 938). Boyatzis, Goleman, and Rhee (2000) recommended more research on "how our emotions and capabilities affect our lives and work" (p. 359).

This review of the literature includes the framework of intelligence. Scientists do not entirely agree on the definition of intelligence (Sternberg & Detterman as cited in Neisser et al., 1996, p. 77). Descartes (as cited in Salovey & Mayer, 1989-1990) said intelligence was "the ability to judge true from false" (p. 186). Wechsler (as cited in Salovey & Mayer) said, "Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment" (p. 186). Sternberg and Grigorenko (2000) suggested that practical intelligence involves the skills for problem recognition, problem definition, resource allocation, mental representation, strategy formulation, solution monitoring, and solution evaluation (p. 216). Averill (2000) conceptualized intelligence as what IQ tests measure (p. 278). Spearman (as cited in Neisser et al., 1996) claimed that a general intelligence factor, g, is the common factor that intelligence tests measure (p. 78). Thurstone (as cited in Neisser et al., 1996) "focus[ed] on more specific group factors, such as memory, verbal comprehension, or number facility" (p. 78). Guilford (as cited in

Tapia, 1998) reported "120 different kinds of primary intelligence" (p. 15). Gardner (1983/1993) included the following intelligences: linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and personal. Mayer, Caruso, and Salovey (1999) claimed that an intelligence must consist of mental abilities that meet correlational criteria and that develop with age (p. 291). Hedlund and Sternberg (2000) noted that Sternberg and his colleagues developed the Sternberg Triarchic Abilities Test, designed for measuring the analytical, creative, and practical domains of mental processing (p. 152). Sutarso (1998) considered that intelligence has possibly-interacting cultural, biological, and physical aspects (p. 19). Neisser et al. (1996) named several social factors (occupation, schooling, interventions, and family environment) and several biological factors (nutrition, lead, alcohol, and perinatal) that influence intellectual development.

World cultures have different concepts of intelligence. Some of these include "determination, mental effort, and even feelings and opinions" (Das as cited in Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 6), "behavior with good will and a lifetime of learning with enthusiasm and enjoyment" (Yang & Sternberg as cited in Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 2), and interpersonal and intrapersonal skills (Sternberg & Kaufman, 1998, Cross-Cultural Views section, para. 10). Kornhaber, Krechevsky, and Gardner (1990) noted that the Japanese do not generally consider intelligence an innate capacity, but an achievement through hard work and commitment.

According to Sutarso (1998) "IQ scores are an aggregate index of performance on several different kinds of intellectual tasks," with the

subtests related to one another (p. 22). He added, "The commonality among all possible measures of cognitive ability that form a positive manifold is called 'g,' or general intelligence" (p. 23). LeDoux (1996) cautioned that just because our mind can do complex things, it does not mean that we know how to do them (p. 31). LeDoux pointed out that much of the processing of information takes place unconsciously (pp. 33-34). Bechara, Damasio, Tranel, and Damasio (1997) reported that activation of non-conscious biases can result in a beneficial decision even before the person is aware of the best strategy to take in solving a problem (p. 1294).

This review of literature included the concepts of social and emotional intelligence. E. L. Thorndike (Salovey & Mayer, 1989-1990,) wrote that social intelligence is "the ability to understand and manage men and women, boys and girls--to act wisely in human relations"(p. 187). Weinstein (as cited by Salovey & Mayer, 1989-1990) stated that social intelligence "boils down to the ability to manipulate the responses of others..." (p. 187). Referring to interpersonal intelligence, Gardner (1983/1993) stated, "The other personal intelligence...*is the ability to notice and make distinctions among other individuals* and, in particular, among their moods, temperaments, motivations, and intentions" (p. 239). Zirkel (2000) called social intelligence "a model of personality and individual behavior" that assumes that people willfully use knowledge of themselves and others to manage their emotions to achieve their goals (p. 20). Cantor and Kihlstrom (as cited in Hedlund & Sternberg, 2000) stated that social intelligence is a specific realm of understanding used for social problem-solving, consisting "of both declarative knowledge...and

procedural knowledge" (p. 144). McClelland (1973) maintained that socially intelligent abilities "are crucial life-outcome criteria" (p. 10). Welton (1999) claimed that skills in decoding non-verbal communications are important for successful language and social interactions.

There are many definitions of emotional intelligence (Mayer, Salovey, & Caruso, 2000, p. 92). Salovey and Mayer (1989-1990) defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (p. 189-190). Mayer and Salovey (1993) claimed they could have called their concept *emotional competence* instead of *emotional intelligence* (p. 433). According to Mayer and Salovey (1993) moods may focus attention inward and would seem to promote cognitive and behavioral activities leading to better prioritization of life needs and goals (p. 437). Gardner (1983/1993) asserted that "at its most advanced level, intrapersonal knowledge allows one to detect and to symbolize complex and highly differentiated sets of feelings" (p. 239). Mayer, Salovey, and Caruso (2000) divided emotional intelligence into four branches: (1) "emotional perception and identification," (2) "emotional facilitation of thought," (3) "emotional understanding," and (4) "emotion management" in self and others (p. 107). Cavallo and Brienza (2001, Conclusions & Next Steps section, para. 2) stated that emotional intelligence "can be developed through a systematic and consistent approach to building competence in personal and social awareness, self-management, and social skill."

Yates (1999) found generally weak correlations between health

habits and emotional intelligence (p. 44). Tapia (1998) found a correlation between emotional intelligence and GPA. Cavallo and Brienza (2001) found higher levels of emotional intelligence in their high performing managers. Schutte et al. (2001) found that emotional intelligence positively relates to empathic perspective taking, self-monitoring, social skills, and other factors (p. 534).

Goleman and Bar-On have been criticized for expanding the concept of emotional intelligence "to capture almost everything but IQ" (Hedlund & Sternberg, 2000, p. 146). Gardner, as well as Sternberg, (as cited in Hedlund & Sternberg, 2000) noted that Goleman's "framework arguably stretches the definition of intelligence way beyond acceptable limits" (p. 146). McCrae (2000) claimed that Goleman's and Bar-On's concepts of emotional intelligence "resemble personality traits more than traditional abilities" (p. 263). Boyatzis, Goleman, and Rhee (2000) stated that "emotional intelligence is a convenient phrase with which to focus attention on human talent...and incorporates the complexity of a person's capability" (p. 343). Bar-On (2000) argued that "emotional and social intelligence is a multifactorial array of interrelated emotional, personal, and social abilities that influence our overall ability to actively and effectively cope with daily demands and pressures" (p. 385). Other researchers have developed concepts related to emotional and social intelligence: social competence (Topping, Bremner, & Holmes, 2000), emotional competence (Saarni, 2000), psychological mindedness (McCallum & Piper, 2000), and practical intelligence (Hedlund & Sternberg, 2000).

This review of the literature also described the characteristics and statistical analyses of the *Success Tendencies Indicator* (STI).

The STI is a self-report instrument composed of two scales: the 39-item Success Tendencies Scale and the 16-item Positive Impression Scale. The STI is untimed and quick to administer, usually taking about 10 to 15 minutes. According to Leonard and Taccarino (2000), the STI is composed of items representing interrelated traits, perceptions, attitudes, and values associated with successful individuals in a variety of areas, including education and business (p. 2). They reported several studies regarding the STI's validity and reliability. In a study of university students, the STI showed a very strong test-retest reliability. In a validity study of graduate students, correlations of the STI with the *California Psychological Inventory* were moderate to moderately low. In a sophomore high school student study, Bartlett (1998) reported that the STI mean score of the high academic achievement group was statistically significantly higher than that of the low academic achievement group. Additionally, the STI mean score of the low behavior problem group was statistically significantly higher than that of the high behavior problem group. Leonard and Taccarino (2000) described other validation studies. In a criterion-related validity study of undergraduate and graduate students, the STS showed statistically significant differences between those who achieved leadership positions in high school and those who did not. In a criterion-related validity study of applicants for a managerial position in a business firm, the STS showed statistically significant differences between those who were in a high school honors class and those not. The STS showed statistically significant differences between those who ever attended college from those who never did. In a comparison between those who attended college below the graduate school

level and those who attended graduate or professional school, the STS indicated significantly higher mean scores for the latter, lending support that the STS can "discriminate achievement levels even within a relatively high achieving population" (Leonard & Taccarino, 2000, p. 19). In yet another study, according to Leonard and Taccarino, the STS showed statistically significant differences between high and low achievers in career success.

In the preceding review of the literature, numerous researchers have shown both positive and negative relationships between the factors subsumed under the concepts of success, failure, personality, emotions, intelligence, and social and emotional intelligence, and such success-related variables as grade point average, standardized test scores, behavioral adjustment, motivation, sociability, coping with frustration, problem-solving ability, creativity, conflict resolution ability, communication skills, memory ability, and goal-setting ability.

Purposes and Hypotheses

The first purpose of this research was to determine the relationship of the *Success Tendencies Indicator* (STI), which includes the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS), with freshmen academic achievement, as measured by weighted Grade Point Average (GPA), and with behavioral adjustment, as measured by Discipline Incident Number (DIN). The directional and null hypotheses were:

Directional Hypothesis 1: The STS significantly, positively correlates with GPA.

Null Hypothesis 1: The STS does not significantly correlate with GPA.

Directional Hypothesis 2: The STS significantly negatively correlates with DIN.

Null Hypothesis 2: The STS does not significantly correlate with DIN.

Directional Hypothesis 3: None.

Null Hypothesis 3: The STS does not significantly correlate with PIS.

Directional Hypothesis 4: The mean STS score of students in the bottom 50% GPA is significantly lower than that of those in the top 50% GPA.

Null Hypothesis 4: The mean STS score of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Directional Hypothesis 5: The mean STS score of students in the bottom 25% GPA is significantly lower than that of those in the top 25% GPA.

Null Hypothesis 5: The mean STS score of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Directional Hypothesis 6: The mean STS score of students in the bottom 10% GPA is significantly lower than that of those in the top 10% GPA.

Null Hypothesis 6: The mean STS score of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

Directional Hypothesis 7: The mean STS score of students in the bottom 50% DIN is significantly higher than that of those in the top 50% DIN.

Null Hypothesis 7: The mean STS score of students in the bottom 50% DIN is not significantly different from that of those in the top 50% DIN.

Directional Hypothesis 8: The mean STS score of students in the bottom 25% DIN is significantly higher than that of those in the top 25% DIN.

Null Hypothesis 8: The mean STS score of students in the bottom 25% DIN is not significantly different from that of those in the top 25% DIN.

Directional Hypothesis 9: The mean STS score of students in the bottom 10% DIN is significantly higher than that of those in the top 10% DIN.

Null Hypothesis 9: The mean STS score of students in the bottom 10% DIN is not significantly different from that of those in the top 10% DIN.

Directional Hypothesis 10: None.

Null Hypothesis 10: The mean PIS score of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Directional Hypothesis 11: None.

Null Hypothesis 11: The mean PIS score of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Directional Hypothesis 12: None.

Null Hypothesis 12: The mean PIS score of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

The second purpose was to determine the Cronbach alphas of reliability of the STS and PIS and perform factor analyses of the STS.

The third purpose was to determine if there is a gender difference in STS and PIS scores. The hypotheses were:

Directional Hypothesis 13: The female STS score mean is significantly higher than that of the male STS score mean.
Null Hypothesis 13: The female STS score mean is not significantly different from that of the male STS score mean.
Directional Hypothesis 14: None.
Null Hypothesis 14: The female PIS score mean is not significantly different from that of the male PIS score mean.

The fourth purpose was to determine if there are Racial Code differences in STS and PIS scores, and to determine if there are Racial Code differences in GPA and DIN. The hypotheses were:

Directional Hypothesis 15: The STS score means significantly differ by Racial Code.
Null Hypothesis 15: The STS score means do not significantly differ by Racial Code.
Directional Hypothesis 16: None.

Null Hypothesis 16: The PIS score means do not significantly differ by Racial Code.

The fifth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) in the bottom vs. top 50%, 25%, and 10% GPA.

Directional Hypothesis 17: The mean N/A Response of students in the bottom 50% GPA is significantly higher than that of those in the top 50% GPA.

Null Hypothesis 17: The mean N/A Response of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Directional Hypothesis 18: The mean N/A Response of students in the bottom 25% GPA is significantly higher than that of those in the top 25% GPA.

Null Hypothesis 18: The mean N/A Response of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Directional Hypothesis 19: The mean N/A Response of students in the bottom 10% GPA is significantly higher than that of those in the top 10% GPA.

Null Hypothesis 19: The mean N/A Response of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

The sixth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) by Racial Code.

Directional Hypothesis 20: None.
Null Hypothesis 20: The N/A Response Means do not significantly differ by Racial Code.

The seventh purpose was to contribute subscales of the STS that have a higher Cronbach alpha reliability and a higher correlation to GPA and DIN.

Significance of the Study

This study was significant because it examined the various factors of the *Success Tendencies Scale* (STS) for their relationship to high school freshmen success in academic achievement and behavioral adjustment. This study also examined the Cronbach alpha reliability of the STS. This study reviewed the literature regarding assessment instrument considerations, relevant reference frames for the underlying concepts of the *Success Tendencies Indicator* (STI) (success, failure, personality, emotions, intelligence, and social and emotional intelligence), the characteristics and statistical analyses of the STI, and provided a summary of the most relevant findings. The original and modified versions of the STS instrument and its variations were correlated with high school academic and behavioral success. The results suggest that the multidimensional STS and its subscales, or

"clusters," can be used as instruments to indicate personality and other variables associated with high school academic and behavioral success, informing a developmentally-appropriate and preventive curriculum and allowing counseling resources to be focused more effectively to build on student strengths and to address student weaknesses. Sutarso (1998), concerning the recent proliferation of assessment instruments [such as the STI], contended, "The overall effect has been to give clinicians a wider range of choices in what they measure and how they measure it," depending on their desired objectives or interventions (p. 24).

CHAPTER 3

METHODOLOGY

Participants

This study involved data from freshman students from one suburban high school in the Mid-Western United States. Included were 338 students, with 174 male and 164 female students, representing 252 Caucasian, Not Hispanic, 13 African American, 43 Hispanic, 30 Asian, and 0 Native American students.

Materials

The Success Tendencies Indicator, consisting of the Success Tendencies Scale (STS) and the *Positive Impression Scale* (PIS), were used in this study. The *Success Tendencies Indicator* was given to freshmen in May 2000 in a classroom setting by their regular teacher in a social science course mandatory for all freshmen. The STI is not timed. It generally takes about 10 to 15 minutes, but it sometimes takes as long as 20 minutes for a student to complete.

In this study, the assessment scale, *The Success Tendencies Indicator* (STI), developed by Drs. Leonard and Taccarino, was used to measure academic success. The STI is a paper and pencil test containing 50 yes/no and multiple-choice items in two scales. The first scale, the Success Tendencies Scale (STS), consists of 39 items. Each item is

weighted with 1 to 4 points. The second scale, the *Positive Impression Scale* (PIS), consists of 16 items. The STS and PIS share 5 assessment scale items. According to its authors, "The Success Tendencies Indicator (STI) was developed for the purpose of assessing achievement tendencies in individuals from the high school level through adulthood" (Leonard & Taccarino, 2000, p. 2). The authors suggested that the STS measures the S (success)-Factor, "seen as a constellation of interrelated traits, perceptions, attitudes and values which are commonly shared by individuals who attain success in a variety of areas such as, but not limited to, academics and commerce" (p. 2). The S-Factor, according to the authors, includes sub-factors such as "persistence, a positive view of self, goal clarity, a tolerance for adversity, self motivation, flexibility and resilience" (p. 2). The Positive Impression Scale "is a validity scale which has been designed to identify a response pattern which could suggest the possibility that the respondent has attempted, consciously or unconsciously, to create a deceptively positive image of his/her characteristics and tendencies" (p. 2). According to Dr. Taccarino (personal communication of January 15, 2003),

> based upon a normative sample of 684 subjects, adolescents and adults, the mean for the Positive Impression Scale was 19.1 and the standard deviation was 5.1. Any respondent with a Positive Impression Scale score at or beyond two standard deviations positive from the mean could be a high risk of having faked positive on the assessment.

The following success tendencies are indicated by scores on the STS: 53+, Very Strong; 44-52, Strong; 35-43, Somewhat Strong; 26-34, Somewhat Weak; 16-25, Weak; and 0-15, Very Weak (Leonard & Taccarino, 2000).

According to Leonard and Taccarino (2000), "The normative sample for the STI included 684 male and female subjects between the ages of 14 and 70 years of age" (p. 8). The sample included "job applicants and students at both the high school and college levels" from the states of Illinois, Florida, and California (Leonard & Taccarino, 2000, p. 8). A reliability coefficient of $r = .89$, using the Pearson Product Moment Method, was determined by the test-retest method with 45 DePaul University students separated by two months (Leonard & Taccarino, 2000).

In the first validity study, Leonard and Taccarino (2000) sought "to assess a construct underlying patterns of achievement effectiveness" through a review of literature "in the areas of academic and work related achievement" (p. 9). They selected 60 items that most effectively distinguished high achievers from low achievers. In another validity study, Leonard and Taccarino (2000) used the Pearson Product Moment Method to correlate the scores of 64 graduate students on the Achievement Tendencies Scale and the California Psychological Inventory. Correlations ranged from $r = .32$ to .47. Researching a sample of 80 sophomore students of Stevenson High School, Bartlett (1998) reported statistically significant ($p < .01$) higher mean STS scores for the high academic achievement group than the low academic achievement group. Bartlett also reported statistically significant ($p < .05$) higher mean STS scores for the low behavior problem group than

the high behavior problem group.

Leonard and Taccarino report criterion-related validity studies (2000). In a criterion-related validity study of 338 Chicago area high school students, the STS showed statistically significant differences ($p < .001$) between those who achieved leadership positions from those who did not. In a criterion-related validity study of 185 applicants for a managerial position in a Chicago area firm, the STS showed statistically significant differences ($p < .001$) between those who were in a high school honors class and those not. Statistically significant differences ($p < .001$) were found in a study of 48 people, distinguishing between those who currently attended or ever attended college from those who had not attended college. In a comparison between those who attended college below the graduate school level and those who attended graduate or professional school, the STS indicated significantly ($p < .001$) higher mean scores for the latter, lending support that the STS can "discriminate achievement levels even within a relatively high achieving population" (Leonard & Taccarino, 2000, p. 19). In yet another study, the STS showed statistically significant differences ($p < .01$) between high and low achievers in career success.

As a precaution against falsified responses, the *Positive Impression Scale* (PIS) scores of the 338 students were examined. "The Positive Impression Scale is a validity scale which has been designed to identify a response pattern which suggests the possibility that the respondent has attempted, consciously or unconsciously, to create a deceptively positive image of their characteristics and tendencies" (Leonard & Taccarino, 1996, p. 1). Calculation of 2 standard deviations (4.34 X 2 = 8.68) from the mean (23.21) yielded a score of

31.89. However, since a conservative trial removal of 7 students, with PIS scores of 32 (N = 2) and 31 (N = 5) resulted, in negligible change of correlation with GPA, from .491 to .492 (p < .01), and DIN, from -.250 to -.244 (p < .01), no students' scores were removed from the original N = 338 throughout all analyses in this study.

Design and Procedure

An *ex post facto* correlational study design was used for this research. In this study, the data were collected and analyzed for statistical significance using the Pearson Product-Moment Correlation. The level of significance p < .05 was chosen.

The Success Tendencies Indicator (STI) was administered to the students by their social studies teacher during their regular social studies class at the end of the 1999-2000 school year as part of the administration's ongoing school improvement process. To maintain total student confidentiality at all times, students' regular identification numbers and names were omitted and never revealed to this researcher.

Analysis Plan

The STS scores were correlated with student weighted Grade Point Average (GPA) and Discipline Incidents Number (DIN). To determine if any statistically significant differences existed between the mean STS scores of the bottom and top 50%, 25%, and 10% of students, regarding academic achievement and behavioral adjustment, t-tests were performed. Alphas were determined to assess the reliabilities of the original STS

instrument and its variations. The SPSS Graduate Pack 10.0 for Windows was used for the statistical analyses.

Measures

Academic achievement was measured by weighted Grade Point Average (GPA). Behavioral adjustment was measured by Discipline Incidents Number (DIN). Success was defined as high GPA and low DIN. The weighted GPA and DIN were determined as of June 2000.

CHAPTER 4

RESULTS

This chapter presents the data analyses of the current investigation in sections, according to the 7 purposes.

Section 1

Relationship of the Success Tendencies Scale (STS) and the Positive Impression Scale (PIS) to Academic Achievement and Behavioral Adjustment

The first purpose of this research was to determine the relationship of the *Success Tendencies Indicator* (STI), which includes the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS), with academic achievement, as measured by Grade Point Average (GPA), and with behavioral adjustment, as measured by Discipline Incident Number (DIN). The hypotheses were:

Null Hypothesis 1: The STS score does not significantly correlate with GPA.

Null Hypothesis 2: The STS score does not significantly correlate with DIN.

Null Hypothesis 3: The STS score does not significantly correlate with PIS.

The original STS correct responses are weighted variously from 1 to 4 points. The PIS correct responses are weighted variously from 1 to 5 points. As shown in Table 1, the original weighted STS correlated moderately (r = .400 to .499) with GPA at r = .491, (p < .01), so the Null Hypothesis 1 is rejected. The STS negatively correlated lowly (r = .200 to .299) with DIN at r = -.250 (p < 0.01), so Null Hypothesis 2 is also rejected. The STS does not show a significant correlation with the PIS, a validity scale that suggests a participant's possible deception in order to create a positive image, so the Null Hypothesis 3 was accepted. GPA negatively correlated moderately strongly with DIN at r = -.578 (p < .01).

As a precaution, the PIS scores of the 338 students were examined. Calculation of 2 standard deviations (4.34 X 2 = 8.68) from the mean (23.21) yielded a score of 31.89. However, since a conservative trial removal of 7 students, with PIS scores of 32 (N = 2) and 31 (N = 5), resulted in a negligible change of correlation with GPA, from r = .491 to .492 (p < .01), and DIN, from r = -.250 to -.244 (p < .01), no students' scores were removed from the original N = 338 throughout all analyses in this study.

An additional set of correlations was performed on an unweighted version of the STS. See Table 2. The results show that even if the STS scores are unweighted (all correct scores are equal to 1), the Null Hypothesis 1 is still rejected. The unweighted STS still correlates moderately with GPA at r = .437 (p < .01) and negatively lowly to DIN at r = -.232** (p < .01). The unweighted STS still does not show a significant correlation to PIS.

Table 1

Correlations Among Original Weighted Success Tendencies Scale (STS), Grade Point Average (GPA), Discipline Incidents Number (DIN), and Positive Impression Scale (PIS) (N = 338).

	Original Weighted STS	GPA	DIN	PIS
Original Weighted STS	1.000	.491**	-.250**	-.096
GPA	.491**	1.000	-.578**	-.054
DIN	-.250**	-.578**	1.000	.071
PIS	-.096	-.054	.071	1.000

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 2

Correlations Among Unweighted Success Tendencies Scale (STS), Grade Point Average (GPA), Discipline Incidents Number (DIN), and Positive Impression Scale (PIS) (N = 338).

	Unweighted STS	GPA	DIN	PIS
Unweighted STS	1.000	.437**	-.232**	-.104
GPA	.437**	1.000	-.578**	-.054
DIN	-.232**	-.578**	1.000	.071
PIS	-.104	-.054	.071	1.000

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Null Hypothesis 4: The mean STS score of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Table 3 shows t-tests of Success Tendencies Scale (STS) mean scores of students by bottom vs. top 50% GPA. The mean scores are: bottom, 32.50; and top, 39.56. The difference is statistically significant ($p < .001$), so Null Hypothesis 4 is rejected

Table 3

T-Test: Success Tendencies Scale (STS) Mean Score of Students in Bottom Vs. Top 50% Grade Point Average (GPA).

Group Statistics

	GPA Rank of 50%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	169	32.50	7.22	.56
	Top	169	39.56	6.94	.53

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.023	.880

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-9.172	336	.000	-7.07
Equal Variances Not Assumed	-9.172	335.468	.000	-7.07

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Null Hypothesis 5: The mean STS score of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Table 4 shows t-tests of Success Tendencies Scale (STS) mean scores of students by bottom vs. top 25% GPA. The mean scores are: bottom, 30.79; and top, 40.49. The difference is statistically significant ($p < .001$), so Null Hypothesis 5 is rejected.

Table 4

T-Test: Success Tendencies Scale (STS) Mean Score of Students in Bottom Vs. Top 25% Grade Point Average (GPA).

Group Statistics

	GPA Rank of 25%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	85	30.79	6.87	.75
	Top	85	40.89	6.48	.70

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.313	.577

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-9.864	168	.000	-10.11
Equal Variances Not Assumed	-9.864	167.417	.000	-10.11

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Null Hypothesis 6: The mean STS score of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

Table 5 shows t-tests of Success Tendencies Scale (STS) mean scores of students by bottom vs. top 10% GPA. The mean scores are: bottom, 29.06; and top, 42.24. The difference is statistically significant ($p < .001$), so Hypothesis 7 is rejected.

Table 5

T-Test: Success Tendencies Scale (STS) Mean Score of Students in Bottom Vs. Top 10% Grade Point Average (GPA).

Group Statistics

	GPA Rank of 10%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	34	29.06	7.14	1.23
	Top	34	42.24	5.97	1.02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.775	.382

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-8.253	66	.000	-13.18
Equal Variances Not Assumed	-8.253	63.983	.000	-13.18

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Null Hypothesis 7: The mean STS score of students in the bottom 50% DIN is not significantly different from that of those in the top 50% DIN.

Table 6 shows t-tests of Success Tendencies Scale (STS) means of students by bottom vs. top 50% DIN. The mean scores are: bottom DIN, 37.91; and top DIN, 34.15. The difference is statistically significant ($p < .001$), so Null Hypothesis 7 is rejected.

Table 6

T-Test: Success Tendencies Scale (STS) Mean of Students in Bottom Vs. Top 50% Discipline Incidents Number (DIN) Group.

Group Statistics

	DIN Rank of 50%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	169	37.91	7.52	.58
	Top	169	34.15	7.85	.60

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.155	.694

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	4.499	336	.000	3.76
Equal Variances Not Assumed	4.499	335.384	.000	3.76

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Null Hypothesis 8: The mean STS score of students in the bottom 25% DIN is not significantly different from that of those in the top 25% DIN.

Table 7 shows t-tests of *Success Tendencies Scale* (STS) means of students by bottom (random sample) vs. top 25% DIN. The mean scores are: bottom DIN, 37.49; and top DIN, 32.24. The difference is statistically significant ($p < .001$), so Null Hypothesis is rejected.

Table 7

T-Test: Success Tendencies Scale (STS) Mean of Students in Bottom (Random Sample) Vs. Top 25% Discipline Incidents Number (DIN) Group.

Group Statistics

	DIN Rank of 25%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	85	37.49	8.19	.89
	Top	85	32.24	7.24	.78

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	2.606	.108

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	4.437	168	.000	5.26
Equal Variances Not Assumed	4.437	165.494	.000	5.26

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Null Hypothesis 9: The mean STS score of students in the bottom 10% DIN is not significantly different from that of those in the top 10% DIN.

Table 8 shows t-tests of *Success Tendencies Scale* (STS) means of students by bottom (random sample) vs. top 10% DIN. The mean scores are: bottom DIN, 37.00; and top DIN, 31.59. The difference is statistically significant ($p < .05$), so Null Hypothesis 9 is rejected.

Table 8

T-Test: Success Tendencies Scale (STS) Mean of Students in Bottom (Random Sample) Vs. Top 10% Discipline Incidents Number (DIN) Group.

Group Statistics

	DIN Rank of 10%	N	Mean	Standard Deviation	Std. Error Mean
STS	Bottom	34	37.00	8.99	1.54
	Top	34	31.59	8.29	1.42

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.729	.396

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	2.579	66	.012	5.41
Equal Variances Not Assumed	2.579	65.571	.012	5.41

Null Hypothesis 10: The mean PIS score of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Table 9 shows t-tests of Positive Impression Scale (PIS) means of students by bottom vs. top 50% GPA. The mean scores are: bottom GPA, 23.38; and top GPA, 23.04. The difference is not statistically significant, so Null Hypothesis 10 is accepted.

Table 9

T-Test: Positive Impression Scale (PIS) Means of Students in Bottom Vs. Top 50% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 50%	N	Mean	Standard Deviation	Std. Error Mean
PIS	Bottom	169	23.38	4.38	.34
	Top	169	23.04	4.30	.33

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.010	.919

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.739	336	.460	.35
Equal Variances Not Assumed	.739	335.887	.460	.35

Null Hypothesis 11: The mean PIS score of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Table 10 shows t-tests of Positive Impression Scale (PIS) means of students by bottom vs. top 25% GPA. The mean scores are: bottom GPA, 23.73; and top GPA, 22.22. Contrary to expectation, the difference is statistically significant ($p < .05$), and Null Hypothesis 11 is rejected.

Table 10

T-Test: Positive Impression Scale (PIS) Mean of Students in Bottom Vs. Top 25% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 25%	N	Mean	Standard Deviation	Std. Error Mean
PIS	Bottom	85	23.73	4.47	.49
	Top	85	22.22	4.43	.48

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.377	.540

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	2.205	168	.029	1.51
Equal Variances Not Assumed	2.205	167.986	.029	1.51

Null Hypothesis 12: The mean PIS score of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

Table 11 shows *t*-tests of Positive Impression Scale (PIS) means of students by bottom vs. top 10% GPA. The mean scores are: bottom GPA, 22.91; and top GPA, 21.88. The difference is not statistically significant, so Null Hypothesis 12 is accepted.

Table 11

T-Test: Positive Impression Scale (PIS) Mean of Students in Bottom Vs. Top 10% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 10%	N	Mean	Standard Deviation	Std. Error Mean
PIS	Bottom	34	22.91	5.33	.91
	Top	34	21.88	4.10	.70

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	1.793	.185

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.893	66	.375	1.03
Equal Variances Not Assumed	.893	61.957	.376	1.03

Section 2

Cronbach Alphas of the Success Tendencies Scale (STS) and the Positive Impression Scale (PIS) and Factor Analyses of the STS

The second purpose was to determine the Cronbach alphas of reliability of the STS and PIS and perform factor analyses of the STS.

Table 12 provides statistics for the original STS scale. It consists of 39 items (1, 3, 6, 7*, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27*, 28*, 29*, 31, 32, 33, 34, 37, 39, 40, 41, 42*, 43, 44, 45, 46, 47, 48, 49, and 50), of which the 5 starred items are also included in the Positive Impression Scale. The STS shows a Cronbach alpha of .3945, indicating that STS's interitem reliability has a moderately low unidimensionality. Table 12 also shows statistics for the Positive Impression Scale (PIS). It consists of 16 items (2, 4, 5, 7*, 9, 15, 22, 25, 27*, 28*, 29*, 30, 35, 36, 38, and 42*), of which the 5 starred items are also included in the STS scale. It shows a Cronbach alpha of .3646, also indicating a moderately low unidimensionality.

Table 12

Statistics on Success Tendencies Scale and Positive Impression Scale.

Scale	Number of items	Mean	Variance	Standard Deviation	Alpha	Number of cases
1. Success Tendencies Scale (STS)	39	36.0296	62.5036	7.9059	.3945	338
2. Positive Impression Scale (PIS)	16	23.2101	18.8311	4.3395	.3646	338

Table 13 provides an item analysis that shows the correlations of all *Success Tendencies Scale* (STS) scale items with the entire STS, Grade Point Average (GPA), Discipline Incidents Number (DIN), *Positive Impression Scale* (PIS), and *STS* Subscale EW. From 39 total items, the STS correlates strongly and moderately strongly with 0 scale items; moderately with 2 items: 19, and 45; moderately lowly with 7 items: 1, 3, 20, 24, 31, 48, 50; lowly with 8 items: 14, 16, 21, 26, 34, 37, 39, and 42; very lowly with 12 items: 7, 8, 12, 13, 18, 23, 32, 41, 44, 46, 47, and 49; and marginally with 10 items: 6, 10, 11, 17, 27, 28 (negatively), 29, 33, 40, 43.

From 39 total items, GPA correlates strongly with 1 item: 19; moderately strongly with 1 item: 1; moderately with 1 item: 45; moderately lowly with 0 items; lowly with 3 items: 32, 34, and 41 (neg.); very lowly with 11 items: 7, 8, 16, 21, 23, 24, 28 (neg.), 31, 42, 48, and 50; and marginally with 22 items: 3, 6, 10 (neg.), 11, 12,

13, 14, 17 (neg.), 18 (neg.), 20, 26, 27, 29, 33 (neg.), 37, 39, 40, 43 (neg.), 44, 46 (neg.), 47, and 49.

From 39 total items, DIN correlates strongly, moderately strongly, and moderately with 0 items; moderately lowly with 1 item: 19 (neg.); lowly with 3 items: 1 (neg.), 45 (neg.), and 48 (neg.); very lowly with 6 items: 7 (neg.), 21 (neg.), 32 (neg.), 34 (neg.), 41, and 42 (neg.); and marginally with 29 items: 3, 6 (neg.), 8 (neg.), 10, 11, 12 (neg.), 13, 14 (neg.), 16 (neg.), 17, 18 (neg.), 20, 23 (neg.), 24 (neg.), 26 (neg.), 27, 28, 29 (neg.), 31 (neg.), 33, 37 (neg.), 39 (neg.), 40 (neg.), 43, 44 (neg.), 46, 47 (neg.), 49 (neg.), and 50 (neg.).

From 39 total items, PIS correlates strongly, moderately strongly, and moderately with 0 items; moderately lowly with 3 items: 27, 28, and 29; lowly with 2 items: 37 (neg.), and 48 (neg.); very lowly with 6 items: 10 (neg.), 11 (neg.), 16 (neg.), 31, 46 (neg.), and 50 (neg.); and marginally with 28 items: 1 (neg.), 3 (neg.), 6 (neg.), 7 (neg.), 8, 12, 13 (neg.), 14 (neg.), 17 (neg.), 18 (neg.), 19 (neg.), 20, 21 (neg.), 23 (neg.), 24 (neg.), 26 (neg.), 32 (neg.), 33, 34, 39 (neg.), 40 (neg.), 41 (neg.), 42, 43 (neg.), 44 (neg.), 45 (neg.), 47 (neg.), and 49 (neg.).

From 39 items, STS Subscale EW correlates strongly with 1 item: 19; moderately strongly with 1 item: 1; moderately with 2 items: 34 and 45; moderately low with 4 items: 24, 31, 48, and 50; lowly with 5 items: 16, 21, 32, 39, 42; very lowly with 9 items: 3, 7, 8, 13, 14, 20, 23, 28 (neg.), and 37; and marginally with 17 items: 6, 10, 11 (neg.), 12, 17, 18, 26, 27, 29 (neg.), 33 (neg.), 40, 41 (neg.), 43 (neg.), 44 (neg.), 46 (neg.), 47 (neg.), and 49.

Table 13

Correlations of All Success Tendencies Scale (STS) Scale Items with the STS, Grade Point Average (GPA), Discipline Incidents Number (DIN), Positive Impression Scale (PIS), and STS Subscale EW.

Sort by STS Scale Item Number (in Bold Print)

STS Scale Item Number	STS *r*	GPA *r*	DIN *r*	PIS *r*	STS Subscale EW *r*
1	.376**	.535**	-.211**	-.030	.594**
3	.316**	.083	.016	-.080	.135*
6	.076	.057	-.048	-.082	.046
7	.114*	.155**	-.142**	-.067	.178**
8	.129*	.112*	-.085	.093	.176**
10	.090	-.070	.028	-.110*	.032
11	.012	.037	.026	-.167**	-.018
12	.155**	.012	-.016	.037	.048
13	.197**	.010	.010	-.045	.100
14	.240**	.051	-.043	-.012	.104
16	.243**	.135*	-.052	-.187**	.288**
17	.056	-.086	.042	-.006	.005
18	.188**	-.069	-.007	-.096	.031
19	.492**	.695**	-.391**	-.088	.638**
20	.372**	.015	.085	.045	.195**
21	.258**	.180**	-.117*	-.055	.279**
23	.166**	.109*	-.044	-.035	.106
24	.334**	.108*	-.038	-.037	.382**
26	.249**	.019	-.034	-.098	.087
27	.096	.012	.044	.335**	.013

28	-.025	-.151**	.091	.362**	-.190**
29	.014	.063	-.086	.355**	-.015
31	.359**	.169**	-.048	.104	.347**
32	.182**	.234**	-.100	-.077	.219**
33	.056	-.037	.075	.093	-.073
34	.285**	.207**	-.181**	.001	.440**
37	.259**	.014	-.044	-.214**	.191**
39	.266**	.066	-.039	-.029	.202**
40	.095	.027	-.022	-.037	.018
41	.103	-.212**	.149**	-.022	-.041
42	.254**	.133*	-.103	.052	.244**
43	.031	-.030	.003	-.061	-.009
44	.176**	.058	-.025	-.013	-.056
45	.454**	.405**	-.230**	-.058	.494**
46	.164**	-.047	.066	-.116*	-.012
47	.120*	.055	-.034	-.004	-.021
48	.317**	.185**	-.213**	-.282**	.397**
49	.162**	.074	-.076	-.033	.063
50	.351**	.176**	-.042	-.146**	.396**

Note. **. Correlation is significant at the 0.01 level (2-tailed. *. Correlation is significant at the 0.05 level (2-tailed. The underlined values of STS subscale EW indicate that the left-hand STS Scale Item Number is included in Subscale EW.

Table 14 indicates that the following 17 STS item numbers correlated statistically significantly with GPA (highest to lowest): 19, 1, 45, 32, 41 (negatively), 34, 48, 21, 50, 31, 7, 28 (negatively), 16, 42, 8, 23, and 24. 22 items did not correlate significantly with GPA.

Table 14

Correlations of All Success Tendencies Scale (STS) Scale Items with the STS, Grade Point Average (GPA), Discipline Incidents Number (DIN), Positive Impression Scale (PIS), and STS Subscale EW.

Sort by GPA Correlation to STS Scale Item Number (By Descending Absolute Value, in Bold Print)

STS Scale Item Number	STS *r*	**GPA *r***	DIN *r*	PIS *r*	STS Subscale EW *r*
19	.492**	**.695****	-.391**	-.088	.638**
1	.376**	**.535****	-.211**	-.030	.594**
45	.454**	**.405****	-.230**	-.058	.494**
32	.182**	**.234****	-.100	-.077	.219**
41	.103	**-.212****	.149**	-.022	-.041
34	.285**	**.207****	-.181**	.001	.440**
48	.317**	**.185****	-.213**	-.282**	.397**
21	.258**	**.180****	-.117*	-.055	.279**
50	.351**	**.176****	-.042	-.146**	.396**
31	.359**	**.169****	-.048	.104	.347**
7	.114*	**.155****	-.142**	-.067	.178**
28	-.025	**-.151****	.091	.362**	-.190**
16	.243**	**.135***	-.052	-.187**	.288**
42	.254**	**.133***	-.103	.052	.244**
8	.129*	**.112***	-.085	.093	.176**
23	.166**	**.109***	-.044	-.035	.106
24	.334**	**.108***	-.038	-.037	.382**
17	.056	**-.086**	.042	-.006	.005
3	.316**	**.083**	.016	-.080	.135*

49	.162**	**.074**	-.076	-.033	.063
10	.090	**-.070**	.028	-.110*	.032
18	.188**	**-.069**	-.007	-.096	.031
39	.266**	**.066**	-.039	-.029	.202**
29	.014	**.063**	-.086	.355**	-.015
44	.176**	**.058**	-.025	-.013	-.056
6	.076	**.057**	-.048	-.082	.046
47	.120*	**.055**	-.034	-.004	-.021
14	.240**	**.051**	-.043	-.012	.104
46	.164**	**-.047**	.066	-.116*	-.012
33	.056	**-.037**	.075	.093	-.073
11	.012	**.037**	.026	-.167**	-.018
43	.031	**-.030**	.003	-.061	-.009
40	.095	**.027**	-.022	-.037	.018
26	.249**	**.019**	-.034	-.098	.087
20	.372**	**.015**	.085	.045	.195**
37	.259**	**.014**	-.044	-.214**	.191**
27	.096	**.012**	.044	.335**	.013
12	.155**	**.012**	-.016	.037	.048
13	.197**	**.010**	.010	-.045	.100

Note. **. Correlation is significant at the 0.01 level (2-tailed. *. Correlation is significant at the 0.05 level (2-tailed. The underlined values of STS subscale EW indicate that the left-hand STS Scale Item Number is included in Subscale EW.

Table 15 indicates that the following 8 STS scale items correlated statistically significantly with DIN (highest to lowest): 19 (negatively), 45 (negatively), 48 (negatively), 1 (negatively), 34

(negatively), 41, 7 (negatively), and 21 (negatively). 31 items did not statistically correlate with DIN.

Table 15

Correlations of All Success Tendencies Scale (STS) Scale Items with the STS, Grade Point Average (GPA), Discipline Incidents Number (DIN), Positive Impression Scale (PIS), and STS Subscale EW.

Sort by DIN Correlation to STS Scale Item Number (By Descending Absolute Value, in Bold Print)

STS Scale Item Number	STS *r*	GPA *r*	**DIN *r***	PIS *r*	STS Subscale EW *r*
19	.492**	.695**	**-.391****	-.088	.638**
45	.454**	.405**	**-.230****	-.058	.494**
48	.317**	.185**	**-.213****	-.282**	.397**
1	.376**	.535**	**-.211****	-.030	.594**
34	.285**	.207**	**-.181****	.001	.440**
41	.103	-.212**	**.149****	-.022	-.041
7	.114*	.155**	**-.142****	-.067	.178**
21	.258**	.180**	**-.117***	-.055	.279**
42	.254**	.133*	**-.103**	.052	.244**
32	.182**	.234**	**-.100**	-.077	.219**

28	-.025	-.151**	**.091**	.362**	-.190**
29	.014	.063	**-.086**	.355**	-.015
8	.129*	.112*	**-.085**	.093	.176**
20	.372**	.015	**.085**	.045	.195**
49	.162**	.074	**-.076**	-.033	.063
33	.056	-.037	**.075**	.093	-.073
46	.164**	-.047	**.066**	-.116*	-.012
16	.243**	.135*	**-.052**	-.187**	.288**
31	.359**	.169**	**-.048**	.104	.347**
6	.076	.057	**-.048**	-.082	.046
23	.166**	.109*	**-.044**	-.035	.106
37	.259**	.014	**-.044**	-.214**	.191**
27	.096	.012	**.044**	.335**	.013
14	.240**	.051	**-.043**	-.012	.104
50	.351**	.176**	**-.042**	-.146**	.396**
17	.056	-.086	**.042**	-.006	.005
39	.266**	.066	**-.039**	-.029	.202**
24	.334**	.108*	**-.038**	-.037	.382**
47	.120*	.055	**-.034**	-.004	-.021
26	.249**	.019	**-.034**	-.098	.087
10	.090	-.070	**.028**	-.110*	.032

11	.012	.037	**.026**	-.167**	-.018
44	.176**	.058	**-.025**	-.013	-.056
40	.095	.027	**-.022**	-.037	.018
12	.155**	.012	**-.016**	.037	.048
3	.316**	.083	**.016**	-.080	.135*
13	.197**	.010	**.010**	-.045	.100
18	.188**	-.069	**-.007**	-.096	.031
43	.031	-.030	**.003**	-.061	-.009

Note. **. Correlation is significant at the 0.01 level (2-tailed. *. Correlation is significant at the 0.05 level (2-tailed. The underlined values of STS Subscale EW indicate that the left-hand STS Scale Item Number is included in Subscale EW.

The Appendix shows the intercorrelations among Success Tendencies Scale (STS) scale items with all other statistically significant STS scale items. Two data sorts are provided: (1) first by STS scale item number, then correlating STS scale item number, and (2) first by STS scale item number, then absolute value of correlation (from highest to lowest). Item 1 correlates significantly (either positively or negatively) with 9 other items (7 at $p < .01$ and 2 at $p < .05$); item 3, with 8 other items (2 at $p < .01$ and 6 at $p < .05$), item 6, with 3 other items (1 at $p < .01$ and 2 at $p < .05$); item 7, with 6 other items (2 at $p < .01$ and 4 at $p < .05$); item 8, with 1 (at $p < .01$); item 10, with 1 (at $p < .05$); item 11, with 10 other items (4 at $p < .01$ and 6

at $p < .05$); item 12, with 6 other items (3 at $p < .01$ and 3 at $p < .05$); item 13, with 5 other items (3 at $p < .01$ and 2 at $p < .05$); item 14, with 4 other items (1 at $p < .01$ and 3 at $p < .05$); item 16, with 8 other items (6 at $p < .01$ and 2 at $p < .05$); item 17, with 4 other items (1 at $p < .01$ and 3 at $p < .05$); item 18, with 7 other items (2 at $p < .01$ and 5 at $p < .05$); item 19, with 9 other items (8 at $p < .01$ and 1 at $p < .05$); item 20, with 9 other items (5 at $p < .01$ and 4 at $p < .05$); item 21, with 7 other items (6 at $p < .01$ and 1 at $p < .05$); item 23, with 3 other items (1 at $p < .01$ and 2 at $p < .05$); item 24, with 7 other items (4 at $p < .01$ and 3 at $p < .05$); item 26, with 5 other items (1 at $p < .01$ and 4 at $p < .05$); item 27, with 1 item (at $p < .05$); item 28, with 9 other items (5 at $p < .01$ and 4 at $p < .05$); item 29, with 8 other items (5 at $p < .01$ and 3 at $p < .05$); item 31, with 12 other items (7 at $p < .01$ and 5 at $p < .05$); item 32, with 5 other items (2 at $p < .01$ and 3 at $p < .05$); item 33, with 4 other items (at $p < .05$); item 34, with 5 other items (2 at $p < .01$ and 3 at $p < .05$); item 37, with 9 other items (3 at $p < .01$ and 6 at $p < .05$); item 39, with 11 other items (6 at $p < .01$ and 5 at $p < .05$); item 40, with 1 item (at $p < .05$); item 41, with 9 other items (5 at $p < .01$ and 4 at $p < .05$); item 41, with 6 other items (4 at $p < .01$ and 2 at $p < .05$); item 43, with 5 other items (1 at $p < .01$ and 4 at $p < .05$); item 44, with 8 other items (1 at $p < .01$ and 7 at $p < .05$); item 45, with 12 other items (4 at $p < .01$ and 8 at $p < .05$); item 46, with 5 other items (at $p < .05$); item 47, with 6 other items (2 at $p < .01$ and 4 at $p < .05$); item 48, with 6 other items (3 at $p < .01$ and 3 at $p < .05$); item 49, with 2 other items (at $p < .05$), and item 50, with 7 other items (5 at $p < .01$ and 2 at $p < .05$).

Section 3

Gender Differences in Success Tendencies Scale (STS) and Positive Impression Scale (PIS) Scores

The third purpose was to determine if there are gender differences in STS and PIS scores.

Null Hypothesis 13: The female STS score mean is not significantly different from that of the male STS score mean.
Null Hypothesis 14: The female PIS score mean is not significantly different from that of the male PIS score mean.

Table 16 shows t-tests of *Success Tendencies Scale* (STS) mean scores by gender. The mean scores are: males, 35.55; and females, 36.54. The difference is not statistically significant. Null Hypothesis 13 is accepted. Table 17 shows t-tests of the *Positive Impression Scale* (PIS) mean scores by gender. The mean scores are: males, 23.13; and females, 23.30. The difference is not statistically significant. Null Hypothesis 14 is accepted.

Table 16

T-Test: Success Tendencies Scale (STS) Mean Score by Gender.

Group Statistics

	Gender	N	Mean	Standard Deviation	Std. Error Mean
STS	Male	174	35.55	8.00	.61
	Female	164	36.54	7.80	.61

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.046	.831

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.159	336	.247	-1.00
Equal Variances Not Assumed	-1.160	335.619	.247	-1.00

Table 17

T-Test: Positive Impression Scale (PIS) Mean Score by Gender.

Group Statistics

	Gender	N	Mean	Standard Deviation	Std. Error Mean
PIS	Male	174	23.13	4.52	.34
	Female	164	23.30	4.15	.32

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.728	.394

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-.364	336	.716	-.17
Equal Variances Not Assumed	-.365	335.763	.715	-.17

Section 4

Racial Code Differences in the Success Tendencies Scale (STS), the Positive Impression Scale (PIS), Weighted Grade Point Average (GPA), and Discipline Incidents Number (DIN)

The fourth purpose was to determine if there are Racial Code differences in STS, PIS, GPA, and DIN.

Null Hypothesis 15: The STS score means do not significantly differ by Racial Code.

Table 18 shows the mean *Success Tendencies Scale* (STS) scores by racial code, gender, and total. It also shows the number of student participants and standard deviation of the mean. African Americans had the lowest mean STS score at 29.77, followed by Hispanics at 31.93, Caucasians, Not Hispanic at 36.87, and Asians at 37.57. Females had a mean STS score of 36.54; males had a mean STS score of 35.55.

Table 19 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for Asians is 37.57; for African Americans, 29.77. The difference is statistically significant ($p < .001$). Null Hypothesis 15 is rejected for Racial Codes Asians and African Americans.

Table 20 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for Asians is 37.57; for Hispanics is 31.93.

The difference is statistically significant ($p < .005$). Null Hypothesis 15 is rejected for Racial Codes Asians and Hispanics.

Table 21 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for Asians is 37.57; for Caucasians, Not Hispanic, 36.87. The difference is not statistically significant. Hypothesis 15 is accepted for Codes Asians and Caucasians, Not Hispanic.

Table 22 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for African Americans is 29.77; for Hispanics, 31.93. The difference is not statistically significant. Null Hypothesis 15 is accepted for Codes African Americans and Hispanics.

Table 23 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for African Americans is 29.77; for Caucasians, Not Hispanic, 36.87. The difference is statistically significant ($p < .001$). Null Hypothesis 15 is rejected for Racial Codes African Americans and Caucasians, Not Hispanic.

Table 24 shows *t*-tests of *Success Tendencies Scale* (STS) means for racial code. The mean for Hispanics is 31.93; for Caucasians, Not Hispanic, 36.87. The difference is statistically significant ($p < .001$). Null Hypothesis 15 is rejected for Racial Codes Hispanics and Caucasians, Not Hispanic.

Table 18

Means: Success Tendencies Scale (STS) Score Means by Racial Code.

Racial Code	Gender	Mean	N	Std. Deviation
1 = Native American	Female	.	0	.
	Male	.	0	.
	Total	.	0	.
2 = Asian	Female	37.12	17	7.21
	Male	38.15	13	7.94
	Total	37.57	30	7.42
3 = African American	Female	29.71	7	2.98
	Male	29.83	6	3.54
	Total	29.77	13	3.11
4 = Hispanic	Female	33.48	25	6.14
	Male	29.78	18	8.68
	Total	31.93	43	7.45
5 = Caucasian, Not Hispanic	Female	37.54	115	8.08
	Male	36.31	137	7.67
	Total	36.87	252	7.87
Total	Female	36.54	164	7.80
	Male	35.55	174	8.00
	Total	36.03	338	7.91

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
STS and Racial Code	Between Groups	(Combined)	1480.561	3	493.520	8.417	.000

	Linearity	138.806	1	138.806	2.367	.125
	Deviation from Linearity	1341.754	2	670.877	11.442	.000
Within Groups		19583.144	334	58.632		
Total		21063.704	337			

Table 19

T-Test: Success Tendencies Scale (STS) Means for Racial Code: Asian and African American.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	Asian	30	37.57	7.42	1.35
	African American	13	29.77	3.11	.86

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	6.591	.014

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	3.634	41	.001	7.80
Equal Variances Not Assumed	4.855	40.997	.000	7.80

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Table 20

T-Test: Success Tendencies Scale (STS) Means by Racial Code: Asian and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	Asian	30	37.57	7.42	1.35
	Hispanic	43	31.93	7.45	1.14

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.000	.989

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	3.186	71	.002	5.64
Equal Variances Not Assumed	3.189	62.730	.002	5.64

Table 21

T-Test: Success Tendencies Scale (STS) Means by Racial Code: Asian and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	Asian	30	37.57	7.42	1.35
	Caucasian, Not Hispanic	252	36.87	7.87	.50

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.564	.453

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.462	280	.645	.70
Equal Variances Not Assumed	.484	37.215	.631	.70

Table 22

T-Test: Success Tendencies Scale (STS) Means by Racial Code: African American and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	African American	13	29.77	3.11	.86
	Hispanic	43	31.93	7.45	1.14

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	6.555	.013

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.014	54	.315	-2.16
Equal Variances Not Assumed	-1.514	48.220	.136	-2.16

Table 23

T-Test: Success Tendencies Scale (STS) Means by Racial Code: African American and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	African American	13	29.77	3.11	.86
	Caucasian, Not Hispanic	252	36.87	7.87	.50

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	10.013	.002

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-3.235	263	.001	-7.10
Equal Variances Not Assumed	-7.131	21.103	.000	-7.10

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Table 24

T-Test: Success Tendencies Scale (STS) Means by Racial Code: Hispanic and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
STS	Hispanic	43	31.93	7.45	1.14
	Caucasian, Not Hispanic	252	36.87	7.87	.50

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.733	.393

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-3.833	293	.000	-4.94
Equal Variances Not Assumed	-3.985	59.155	.000	-4.94

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Table 25 shows the mean Grade Point Averages (GPA) by racial code, gender, and total. It also shows the number of student participants and standard deviation of the mean. African Americans had the lowest GPA at 2.78478, followed by Hispanics at 3.19577, Caucasians, Not Hispanic at 4.03349, and Asians at 4.20133. Females had a mean GPA of 4.10730; males had a mean GPA of 3.69254. It is noteworthy that Table 26 presents the same order for *Success Tendencies Scale* (STS) mean score: African Americans had the lowest mean STS score at 29.77, followed by Hispanics at 31.93, Caucasians, Not Hispanic at 36.87, and Asians at 37.57. Females had a mean STS score of 36.54; males had a mean STS score of 35.55. It is also noteworthy that Table 34 shows the reverse order for Discipline Incidents Number (DIN) means: Asians have the lowest number of DIN at 1.10, followed by Caucasians, Not Hispanic at 1.15, Hispanics at 3.23, and African Americans at 5.62. Females have a mean DIN of 1.15, while males have a mean DIN of 2.02.

Table 25

Means: Grade Point Average (GPA) Means by Racial Code.

Racial Code	Gender	Mean	N	Std. Deviation
1 = Native American	Female	.	0	.
	Male	.	0	.
	Total	.	0	.
2 = Asian	Female	4.50556	17	.58087
	Male	3.80348	13	1.25581
	Total	4.20133	30	.98181
3 = African American	Female	3.26967	7	.76140
	Male	2.21907	6	.70894
	Total	2.78478	13	.89244
4 = Hispanic	Female	3.39046	25	1.15542
	Male	2.92537	18	1.10002
	Total	3.19577	43	1.14304
5 = Caucasian, Not Hispanic	Female	4.25525	115	.90210
	Male	3.84734	137	.89272
	Total	4.03349	252	.91808
Total	Female	4.10730	164	.98036
	Male	3.69254	174	1.01280
	Total	3.89378	338	1.01712

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
GPA and Racial Code	Between Groups	(Combined)	44.695	3	14.898	16.371	.000
		Linearity	3.348	1	3.348	3.679	.056
		Deviation from Linearity	41.347	2	20.674	22.718	.000
	Within Groups		303.945	334	.910		
	Total		348.640	337			

Table 26

Means: Discipline Incidents Number (DIN) Means by Racial Code.

Racial Code	Gender	Mean	N	Std. Deviation
1 = Native American	Female	.	0	.
	Male	.	0	.
	Total	.	0	.
2 = Asian	Female	.82	17	1.59
	Male	1.46	13	3.86
	Total	1.10	30	2.77
3 = African American	Female	2.14	7	1.57
	Male	9.67	6	8.87
	Total	5.62	13	7.02
4 = Hispanic	Female	3.16	25	5.85
	Male	3.33	18	4.41
	Total	3.23	43	5.24
5 = Caucasian, Not Hispanic	Female	.70	115	2.20
	Male	1.57	137	3.62
	Total	1.17	252	3.08
Total	Female	1.15	164	3.09
	Male	2.02	174	4.23
	Total	1.60	338	3.74

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
DIN and Racial Code	Between Groups	(Combined)	377.311	3	125.770	9.675	.000
		Linearity	57.793	1	57.793	4.446	.036
		Deviation from Linearity	319.518	2	159.759	12.290	.000
	Within Groups		4341.769	334	12.999		
	Total		4719.080	337			

Null Hypothesis 16: The PIS score means do not significantly differ by Racial Code.

Table 27 shows the Positive Impression Scale (PIS) means by racial code, gender, and total. It also shows the number of student participants and standard deviation from the mean. Asians had the lowest PIS score at 22.20, followed by Hispanics at 22.53, Caucasians, Not Hispanic at 23.39, and African Americans at 24.23. Females had a total PIS score mean of 23.30; males had a score of 23.13.

Table 28 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for Asians is 22.20; the mean for African Americans, 24.23. The difference is not statistically significant. Null Hypothesis 16 is accepted.

Table 29 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for Asians is 22.20; for Hispanics, 22.53. The difference is not statistically significant. Null Hypothesis 16 is accepted.

Table 30 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for Asians is 22.20; for Caucasians, Not Hispanic. The difference is not statistically significant. Null Hypothesis 16 is accepted.

Table 31 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for African Americans is 24.23; for Hispanics, 22.53. The difference is not statistically significant. Null Hypothesis 16 is accepted.

Table 32 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for African Americans is 24.23; for Caucasians, Not Hispanic, 23.39. The difference is not statistically significant. Null Hypothesis 16 is accepted.

Table 33 shows t-tests of Positive Impression Scale (PIS) means for racial code. The mean for Hispanics is 22.53; for Caucasian, Not Hispanic is 23.39. The difference is not statistically significant. Null Hypothesis 16 is accepted. There are no statically significant differences in the PIS means for Racial Code.

Table 27

Means: Positive Impression Scale (PIS) Means by Racial Code.

Racial Code	Gender	Mean	N	Std. Deviation
1 = Native American	Female	.	0	.
	Male	.	0	.
	Total	.	0	.
2 = Asian	Female	22.71	17	4.88
	Male	21.54	13	4.43
	Total	22.20	30	4.65
3 = African American	Female	23.86	7	2.91
	Male	24.67	6	4.03
	Total	24.23	13	3.35
4 = Hispanic	Female	22.72	25	3.80
	Male	22.28	18	5.40
	Total	22.53	43	4.48
5 = Caucasian, Not Hispanic	Female	23.48	115	4.20
	Male	23.32	137	4.42
	Total	23.39	252	4.31
Total	Female	23.30	164	4.15
	Male	23.13	174	4.52
	Total	23.21	338	4.34

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
PIS and Racial Code	Between Groups	(Combined)	72.173	3	24.058	1.281	.281
		Linearity	30.060	1	30.060	1.600	.207
		Deviation from Linearity	42.114	2	21.057	1.121	.327
	Within Groups		6273.913	334	18.784		
	Total		6346.086	337			

Table 28

T-Test: Positive Impression Scale (PIS) Means for Racial Code: Asian and African American.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	Asian	30	22.20	4.65	.85
	African American	13	24.23	3.35	.93

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	1.361	.250

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.419	41	.163	-2.03
Equal Variances Not Assumed	-1.615	31.391	.116	-2.03

Table 29

T-Test: Positive Impression Scale (PIS) Means by Racial Code: Asian and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	Asian	30	22.20	4.65	.85
	Hispanic	43	22.53	4.48	.68

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.172	.679

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-.309	71	.758	-.33
Equal Variances Not Assumed	-.307	61.096	.760	-.33

Table 30

T-Test: Positive Impression Scale (PIS) Means by Racial Code: Asian and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	Asian	30	22.20	4.65	.85
	Caucasian, Not Hispanic	252	23.39	4.31	.27

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.002	.968

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.420	280	.157	-1.19
Equal Variances Not Assumed	-1.338	35.203	.189	-1.19

Table 31

T-Test: Positive Impression Scale (PIS) Means by Racial Code: African American and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	African American	13	24.23	3.35	.93
	Hispanic	43	22.53	4.48	.68

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.696	.408

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	1.258	54	.214	1.70
Equal Variances Not Assumed	1.471	26.357	.153	1.70

Table 32

T-Test: Positive Impression Scale (PIS) Means by Racial Code: African American and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	African American	13	24.23	3.35	.93
	Caucasian, Not Hispanic	252	23.39	4.31	.27

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	2.185	.141

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.689	263	.491	.84
Equal Variances Not Assumed	.867	14.141	.401	.84

Table 33

T-Test: Positive Impression Scale (PIS) Means by Racial Code: Hispanic and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
PIS	Hispanic	43	22.53	4.48	.68
	Caucasian, Not Hispanic	252	23.39	4.31	.27

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.428	.513

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.199	293	.232	-.86
Equal Variances Not Assumed	-1.166	56.067	.249	-.86

Section 5

N/A Response Differences by Weighted Grade Point Average (GPA)

The fifth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) in the bottom vs. top 50%, 25%, and 10% GPA.

Null Hypothesis 17: The mean N/A Response of students in the bottom 50% GPA is not significantly different from that of those in the top 50% GPA.

Table 34 shows t-tests of N/A Response means of students by bottom vs. top 50% GPA. The mean scores are: bottom GPA, .47; and top GPA, .34. The difference is not statistically significant. Null Hypothesis 17 is accepted.

Table 34

T-Test: N/A Response Mean of Students in Bottom Vs. Top 50% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 50%	N	Mean	Standard Deviation	Std. Error Mean
N/A Response	Bottom	169	.47	1.00	7.69E-02
	Top	169	.34	.98	7.51E-02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	2.004	.158

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	1.156	336	.249	.12
Equal Variances Not Assumed	1.156	335.802	.249	.12

Null Hypothesis 18: The mean N/A Response of students in the bottom 25% GPA is not significantly different from that of those in the top 25% GPA.

Table 35 shows t-tests of N/A Response means of students by bottom vs. top 25% GPA. The mean scores are: bottom GPA, .45; and top GPA, .35. The difference is not statistically significant. Null Hypothesis 18 is accepted.

Table 35

T-Test: N/A Response Mean of Students in Bottom Vs. Top 25% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 25%	N	Mean	Standard Deviation	Std. Error Mean
N/A Response	Bottom	85	.45	.93	.10
	Top	85	.35	1.04	.11

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.579	.448

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.620	168	.536	9.41E-02
Equal Variances Not Assumed	.620	165.922	.536	9.41E-02

Null Hypothesis 19: The mean N/A Number of students in the bottom 10% GPA is not significantly different from that of those in the top 10% GPA.

Table 36 shows t-tests of N/A Number means of students by bottom vs. top 10% GPA. The mean scores are: bottom GPA, .44; and top GPA, .21. The difference is not statistically significant. Hypothesis 19 is accepted.

Table 36

T-Test: N/A Number Mean of Students in Bottom Vs. Top 10% Grade Point Average (GPA) Group.

Group Statistics

	GPA Rank of 10%	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	Bottom	34	.44	.89	.15
	Top	34	.21	.48	8.21E-02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	6.845	.011

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	1.353	66	.181	.24
Equal Variances Not Assumed	1.353	50.475	.182	.24

Section 6

N/A Response Differences by Racial Code

The sixth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) by Racial Code.

Null Hypothesis 20: There are no statistically significant differences in N/A Number (the number of responses left blank and/or deemed not applicable to the student) means for racial code.

Table 37 shows t-tests of N/A Number means for racial code. The mean for Asians is .43; for African Americans, 1.31. The difference is not statistically significant. Null Hypothesis 20 for these racial codes is accepted.

Table 38 shows t-tests of N/A Number means for racial code. The mean for Asians is .43; for Hispanics, .42. The difference is not statistically significant. Null Hypothesis 20 for these racial codes is accepted.

Table 39 shows t-tests of N/A Number means for racial code. The mean for Asians is .43; for Caucasian, Not Hispanic, .35. The difference is not statistically significant. Null Hypothesis 20 for these racial codes is accepted.

Table 40 shows t-tests of N/A Number means for racial code. The mean for African Americans is 1.31; for Hispanics, .42. The difference is not statistically significant. Null Hypothesis 20 for these racial codes is accepted.

Table 41 shows t-tests of N/A Number means for racial code. The means for African Americans is 1.31; for Caucasians, Not Hispanics, .35. Levene's Test for Equality of Variance indicates a $p < .001$ (.000 on output), so the Quasi (Welch) t' test ("Unequal") must be used. With "Equal Variances Not Assumed," $p < .240$ indicates that the difference in N/A Number means is not statistically significant. Null Hypothesis 20 for these racial codes is accepted.

Table 42 shows t-tests of N/A Number means for racial code. The means for Hispanics is .42; for Caucasians, Not Hispanics, .35. The difference is not statistically significant. Null Hypothesis 20 for these racial codes is accepted. It is concluded that there are no statistically significant differences in N/A Number means regarding Racial Code.

Table 37

T-Test: Comparison of N/A Number Means for Racial Code: Asian and African American.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	Asian	30	.43	1.14	.21
	African American	13	1.31	2.78	.77

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	7.735	.008

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	-1.478	41	.147	-.87
Equal Variances Not Assumed	-1.095	13.766	.292	-.87

Table 38

T-Test: Comparison of N/A Number Means by Racial Code: Asian and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	Asian	30	.43	1.14	.21
	Hispanic	43	.42	.85	.13

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.348	.557

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.063	71	.950	1.47E-02
Equal Variances Not Assumed	.060	50.838	.952	1.47E-02

Table 39

T-Test: Comparison of N/A Number Means by Racial Code: Asian and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	Asian	30	.43	1.14	.21
	Caucasian, Not Hispanic	252	.35	.79	4.99E-02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	2.337	.127

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.497	280	.619	8.02E-02
Equal Variances Not Assumed	.376	32.449	.709	8.02E-02

Table 40

T-Test: Comparison of N/A Number Means by Racial Code: African American and Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	African American	13	1.31	2.78	.77
	Hispanic	43	.42	.85	.13

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	14.934	.000

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	1.859	54	.068	.89
Equal Variances Not Assumed	1.137	12.688	.277	.89

Table 41

T-Test: Comparison of N/A Number Means by Racial Code: African American and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	African American	13	1.31	2.78	.77
	Caucasian, Not Hispanic	252	.35	.79	4.99E-02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	46.772	.000

Note: SPSS output ".000" = "$p < .0001$" (Tuckman, 1999, p. 301).

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	3.440	263	.001	.95
Equal Variances Not Assumed	1.235	12.101	.240	.95

Table 42

T-Test: Comparison of N/A Number Means by Racial Code: Hispanic and Caucasian, Not Hispanic.

Group Statistics

	Racial Code	N	Mean	Standard Deviation	Std. Error Mean
N/A Number	Hispanic	43	.42	.85	.13
	Caucasian, Not Hispanic	252	.35	.79	4.99E-02

Independent Samples Test

	Levene's Test for Equality of Variances	
	F	Sig.
Equal Variances Assumed	.743	.389

Independent Samples Test

	t-test for Equality of Means			
	t	df	Sig. (2-tailed)	Mean Difference
Equal Variances Assumed	.495	293	.621	6.54E-02
Equal Variances Not Assumed	.470	55.120	.640	6.54E-02

Section 7

Possible Subscales of the STS

The seventh purpose was to contribute possible subscales of the STS that have a higher Cronbach alpha reliability and a higher correlation to GPA and DIN.

Table 43 presents comparisons of the original STS scale, selected STS item numbers, and selected modified scales. These items and scales were selected for study from theoretical considerations or for illustrative purposes. They were derived from deleting or inserting various STS items from or into the subscale to determine their effect on the subscale regarding increased Cronbach alpha reliability or correlation to GPA or DIN.

Table 43

Statistical Comparisons of Success Tendencies Scale (STS) Original Scale to STS Modified Scales for Increased Cronbach Alpha Reliability and Correlation to Grade Point Average (GPA), Discipline Incidents Number (DIN), and STS Original. Also shown are the Mean, Variance, and Standard Deviation. Sort of STS Item Numbers (in Bold Print) is Numerical, and Sort of STS Subscales (in Bold Print) is Alphabetical (N = 338).

Original Scale	N of Items	STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
STS	39	1, 3, 6, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 31, 32, 33, 34, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	.3945	.491**	-.250**	1.000

Sort by STS Item Number (Numerical, in Bold Print)

STS Item Number	N of Items	Significantly Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
1	1	1	.	.535**	-.211**	.376**
19	1	19	.	.695**	-.391**	.492**
45	1	45	.	.405**	-.230**	.454**
50	1	50	.	.176**	-.042	.351**

Sort by STS Subscale (Alphabetical, in Bold Print)

STS Subscale	N of Items	Significantly Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
EA	2	1, 19	.4952	.752**	-.367**	.531**
EB	3	1, 19, 45	.5715	.753**	-.378**	.590**
ET	11	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.3063	.479**	-.330**	.738**
EU = ET + 50	12	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48, 50	.3401	.490**	-.313**	.777**
EV	12	1, 7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.4096	.583**	-.332**	.779**
EW = EV + 19, 50	14	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48, 50	.5316	.678**	-.385**	.796**
EY	5	7, 34, 41, 45, 48	.0454	.343**	-.294**	.581**
FA	7	1, 7, 19, 34, 41, 45, 48	.4246	.652**	-.398**	.674**
HX	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	.657**	-.335**	.709**
HZ	8	3, 16, 19, 26, 37, 39, 45, 48	.4658	.485**	-.298**	.691**
II	10	19, 21, 28, 31, 32, 34, 42, 45, 48, 50	.3850	.602**	-.374**	.757**
IQ	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	.233**	-.158**	.665**
IS	7	7, 14, 19, 21, 26, 37	.3873	.479**	-.308**	.596**

NEC	2	1, 45	.4422	.592**	-.268**	.500**
NED	2	19, 45	.4658	.701**	-.395**	.582**
NEE	10	3, 7, 18, 21,	.3236	.316**	-.203**	.728**
= IQ + 45		24, 37, 42, 45,				
		48, 50				
NIP	13	1, 7, 8, 16, 19,	.5148	.684**	-.402**	.769**
= EV + 19		21, 24, 31, 32,				
		34, 42, 45, 48				
NIT	2	1, 50	.2703	.489**	-.177**	.477**
NIU	2	19, 50	.2577	.600**	-.303**	.562**
NIV	3	1, 19, 50	.4550	.698**	-.322**	.589**
NIW	8	21, 28, 31, 32,	.1880	.425**	-.310**	.662**
= II Minus		34, 42, 45, 48				
19, 50						

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Statistics

Scale	Mean	Variance	SD
STS Original	36.0296	62.5036	7.9059
1	1.14	2.130	1.46
19	2.04	1.963	1.40
45	1.02	1.002	1.00
50	.59	1.435	1.20
EA	3.1864	5.4399	2.3324
EB	4.2101	8.2317	2.8691
ET	10.8107	13.7029	3.7017
EU = ET + 50	11.4053	16.4495	4.0558
EV	11.9556	19.2413	4.3865
EW = EV + 19, 50	14.5917	30.4441	5.5176
EY	5.3580	6.4501	2.5397
FA	8.5444	16.2072	4.0258
HX	8.0740	19.7601	4.4452

HZ	8.0089	15.3441	3.9172
II	11.7840	16.6505	4.0805
IQ	7.7870	14.1563	3.7625
IS	6.7130	6.9174	2.6301
NEC	2.1686	4.0219	2.0055
NED	3.0651	3.8652	1.9660
NEE	8.8107	16.4863	4.0603
= IQ + 45			
NIP = EV + 19	13.9970	26.6380	5.1612
NIT	1.7396	4.1219	2.0303
NIU	2.6361	3.8998	1.9748
NIV	3.7811	7.9341	2.8168
NIW = II Minus 19,	9.1479	8.9573	2.9929
50			

Table 44 presents potential STS subscales sorted by Cronbach alpha, showing reliability. Subscales showing alphas greater than .5000 are: EB, EW, HX, and NIP. Subscales with alphas from .4000 to .4999 are: EA, NED, HZ, NIV, NEC, FA, and EV. Subscales with alphas from .3000 to .3999 (in which category the original STS falls) are: IS, II, EU, NEE, and ET.

Table 45 presents potential STS subscale correlations sorted by descending GPA. Subscales EB, EA, NED, NIV, NIP, and EW show the highest correlations with GPA. Subscales IQ, NEE, EY, NIW, ET, and IS show the lowest correlations with GPA.

Table 46 presents potential STS subscale correlations sorted by absolute value of DIN. Subscales NIP, FA, NED, EW, EB, and II show the greatest negative correlations with DIN. Subscales IQ, NIT, NEE, NEC, EY, and HZ show the lowest negative correlations with DIN.

Table 47 presents potential STS subscales ("Clusters") sorted numerically.

Table 44

Statistical Comparisons of Success Tendencies Scale (STS) Original Scale to STS Modified Scales for Increased Cronbach Alpha Reliability and Correlation to Grade Point Average (GPA), Discipline Incidents Number (DIN), and STS Original. Sort is by Cronbach Alpha (Descending, in Bold Print) (N = 338).

STS Subscale	N of Items	Significantly Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
EB	3	1, 19, 45	**.5715**	.753**	-.378**	.590**
EW = EV + 19, 50	14	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48, 50	**.5316**	.678**	-.385**	.796**
HX	8	1, 16, 19, 23, 24, 34, 45, 50	**.5205**	.657**	-.335**	.709**
NIP = EV + 19	13	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48	**.5148**	.684**	-.402**	.769**
EA	2	1, 19	**.4952**	.752**	-.367**	.531**
NED	2	19, 45	**.4658**	.701**	-.395**	.582**
HZ	8	3, 16, 19, 26, 37, 39, 45, 48	**.4658**	.485**	-.298**	.691**
NIV	3	1, 19, 50	**.4550**	.698**	-.322**	.589**
NEC	2	1, 45	**.4422**	.592**	-.268**	.500**
FA	7	1, 7, 19, 34, 41, 45, 48	**.4246**	.652**	-.398**	.674**
EV	12	1, 7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	**.4096**	.583**	-.332**	.779**

IS	7	7, 14, 19, 21, 26, 37	**.3873**	.479**	-.308**	.596**
II	10	19, 21, 28, 31, 32, 34, 42, 45, 48, 50	**.3850**	.602**	-.374**	.757**
EU = ET + 50	12	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48, 50	**.3401**	.490**	-.313**	.777**
NEE = IQ + 45	10	3, 7, 18, 21, 24, 37, 42, 45, 48, 50	**.3236**	.316**	-.203**	.728**
ET	11	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	**.3063**	.479**	-.330**	.738**
IQ	9	3, 7, 18, 21, 24, 37, 42, 48, 50	**.2761**	.233**	-.158**	.665**
NIT	2	1, 50	**.2703**	.489**	-.177**	.477**
NIU	2	19, 50	**.2577**	.600**	-.303**	.562**
NIW = II Minus 19, 50	8	21, 28, 31, 32, 34, 42, 45, 48	**.1880**	.425**	-.310**	.662**
EY	5	7, 34, 41, 45, 48	**.0454**	.343**	-.294**	.581**

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 45

Statistical Comparisons of Success Tendencies Scale (STS) Original Scale to STS Modified Scales for Increased Cronbach Alpha Reliability and Correlation to Grade Point Average (GPA), Discipline Incidents Number (DIN), and STS Original. Sort is by GPA (Descending, in Bold Print) (N = 338).

STS Subscale	N of Items	Significantly Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
EB	3	1, 19, 45	.5715	**.753****	-.378**	.590**
EA	2	1, 19	.4952	**.752****	-.367**	.531**
NED	2	19, 45	.4658	**.701****	-.395**	.582**
NIV	3	1, 19, 50	.4550	**.698****	-.322**	.589**
NIP = EV + 19	13	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48	.5148	**.684****	-.402**	.769**
EW = EV + 19, 50	14	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48, 50	.5316	**.678****	-.385**	.796**
HX	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	**.657****	-.335**	.709**
FA	7	1, 7, 19, 34, 41, 45, 48	.4246	**.652****	-.398**	.674**
II	10	19, 21, 28, 31, 32, 34, 42, 45, 48, 50	.3850	**.602****	-.374**	.757**
NIU	2	19, 50	.2577	**.600****	-.303**	.562**
NEC	2	1, 45	.4422	**.592****	-.268**	.500**
EV	12	1, 7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.4096	**.583****	-.332**	.779**
EU	12	7, 8, 16, 21,	.3401	**.490****	-.313**	.777**

= ET + 50		24, 31, 32, 34, 42, 45, 48, 50				
NIT	2	1, 50	.2703	**.489****	-.177**	.477**
HZ	8	3, 16, 19, 26, 37, 39, 45, 48	.4658	**.485****	-.298**	.691**
IS	7	7, 14, 19, 21, 26, 37	.3873	**.479****	-.308**	.596**
ET	11	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.3063	**.479****	-.330**	.738**
NIW = II Minus 19, 50	8	21, 28, 31, 32, 34, 42, 45, 48	.1880	**.425****	-.310**	.662**
EY	5	7, 34, 41, 45, 48	.0454	**.343****	-.294**	.581**
NEE = IQ + 45	10	3, 7, 18, 21, 24, 37, 42, 45, 48, 50	.3236	**.316****	-.203**	.728**
IQ	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	**.233****	-.158**	.665**

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 46

Statistical Comparisons of Success Tendencies Scale (STS) Original Scale to STS Modified Scales for Increased Cronbach Alpha Reliability and Correlation to Grade Point Average (GPA), Discipline Incidents Number (DIN), and STS Original. Sort is by DIN (By Descending Absolute Value, in Bold Print) (N = 338).

STS Subscale	N of Items	Significantly Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
NIP = EV + 19	13	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48	.5148	.684**	**-.402****	.769**
FA	7	1, 7, 19, 34, 41, 45, 48	.4246	.652**	**-.398****	.674**
NED	2	19, 45	.4658	.701**	**-.395****	.582**
EW = EV + 19, 50	14	1, 7, 8, 16, 19, 21, 24, 31, 32, 34, 42, 45, 48, 50	.5316	.678**	**-.385****	.796**
EB	3	1, 19, 45	.5715	.753**	**-.378****	.590**
II	10	19, 21, 28, 31, 32, 34, 42, 45, 48, 50	.3850	.602**	**-.374****	.757**
EA	2	1, 19	.4952	.752**	**-.367****	.531**
HX	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	.657**	**-.335****	.709**
EV	12	1, 7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.4096	.583**	**-.332****	.779**
ET	11	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48	.3063	.479**	**-.330****	.738**
NIV	3	1, 19, 50	.4550	.698**	**-.322****	.589**

EU = ET + 50	12	7, 8, 16, 21, 24, 31, 32, 34, 42, 45, 48, 50	.3401	.490**	**-.313****	.777**
NIW = II Minus 19, 50	8	21, 28, 31, 32, 34, 42, 45, 48	.1880	.425**	**-.310****	.662**
IS	7	7, 14, 19, 21, 26, 37	.3873	.479**	**-.308****	.596**
NIU	2	19, 50	.2577	.600**	**-.303****	.562**
HZ	8	3, 16, 19, 26, 37, 39, 45, 48	.4658	.485**	**-.298****	.691**
EY	5	7, 34, 41, 45, 48	.0454	.343**	**-.294****	.581**
NEC	2	1, 45	.4422	.592**	**-.268****	.500**
NEE = IQ + 45	10	3, 7, 18, 21, 24, 37, 42, 45, 48, 50	.3236	.316**	**-.203****	.728**
NIT	2	1, 50	.2703	.489**	**-.177****	.477**
IQ	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	.233**	**-.158****	.665**

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 47 provides statistical comparisons of the original *Success Tendencies Scale* (STS) scale to STS subscales for increased Cronbach alpha reliability and correlation to Grade Point Average (GPA), Discipline Incidents Number (DIN), and original STS. These subscales (called "Clusters") were derived from selection of all STS items that positively correlated with the initially-listed STS item.

Table 47

Listing of Statistics of the Success Tendencies Scale (STS) and STS Subscales Derived from All Positively Significantly Correlating STS Items. Shown are the STS Subscales ("Clusters"), Number of Items in the Scale, STS Items or Significant Positively Correlating STS Items, Cronbach Alpha, Correlation to GPA, Correlation to DIN, and Correlation to Original STS Scale. Also shown are the Mean, Variance, and Standard Deviation. Subscale Sort is by Numerical Order (in Bold Print) (N = 338).

Original Scale	N of Items	STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
STS	39	1, 3, 6, 7, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 31, 32, 33, 34, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50	.3945	.491**	-.250**	1.000

STS Subscales	N of Items	Significant Positively Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
Cluster 1	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	.657**	-.335**	.709**
Cluster 3	8	3, 16, 19, 26, 37, 39, 45, 48	.4658	.485**	-.298**	.703**
Cluster 6	2	6, 11	.1989	.065	-.022	.064
Cluster 7	6	7, 14, 19, 21, 37, 42	.3963	.530**	-.331**	.566**

Cluster 8	1	8	.	.112*	-.085	.129*
Cluster 10	2	10, 46	.1922	.	.	.178*
Cluster 11	4	6, 11, 16, 43	.2767	.084	-.032	.136*
Cluster 12	5	12, 13, 20, 41, 47	.3794	-.046	.088	.378**
Cluster 13	6	12, 13, 18, 24, 41, 45	.2325	.098	-.060	.520**
Cluster 14	5	7, 14, 21, 42, 50	.3514	.235**	-.128*	.462**
Cluster 16	8	1, 3, 11, 16, 43, 45, 48, 50	.3915	.479**	-.226**	.641**
Cluster 17	4	17, 28, 31, 39	.4105	.020	.015	.281**
Cluster 18	5	13, 18, 31, 37, 39	.4111	.044	-.039	.412**
Cluster 19	9	19, 21, 31, 32, 34, 42, 45, 48, 50	.4526	.631**	-.389**	.757**
Cluster 20	8	12, 20, 21, 24, 31, 39, 41, 47	.4947	.084	.013	.526**
Cluster 21	7	7, 14, 19, 20, 21, 37, 42	.3828	.433**	-.225**	.637**
Cluster 23	3	1, 23, 45	.3896	.584**	-.264**	.507**
Cluster 24	7	1, 13, 20, 24, 31, 37, 41	.4081	.267**	-.050	.620**
Cluster 26	5	3, 26, 32, 42, 44	.1582	.147**	-.053	.432**
Cluster 27	1	27	.	.012	.044	.096
Cluster 28	3	17, 28, 44	.1275	-.019	.018	.184**
Cluster 29	2	29, 43	.2667	.036	-.067	.026
Cluster 31	10	17, 18, 19, 20, 24, 31, 34, 39, 41, 45	.4678	.362**	-.190**	.715**
Cluster 32	4	19, 26, 32, 45	.3925	.623**	-.354**	.608**
Cluster 33	2	33, 47	.1608	-.007	.049	.101
Cluster 34	5	1, 19, 31, 34,	.4913	.647**	-.340**	.611**

		39				
Cluster 37	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	.233**	-.158**	.665**
Cluster 39	9	3, 17, 18, 20, 31, 34, 39, 41, 49	.3567	.096	-.030	.593**
Cluster 40	1	40	.	.027	-.002	.095
Cluster 41	7	12, 13, 20, 24, 31, 39, 41	.5224	.055	.034	.506**
Cluster 42	7	7, 14, 19, 21, 26, 37, 42	.3873	.479**	-.308**	.596**
Cluster 43	5	11, 16, 29, 43, 48	.2987	.178**	-.172**	.274**
Cluster 44	5	26, 28, 44, 45, 46	.2586	.125*	-.061	.385**
Cluster 45	12	1, 3, 13, 16, 19, 23, 31, 32, 44, 45, 47, 50	.3984	.626**	-.271**	.768**
Cluster 46	3	10, 44, 46	.1411	.018	.008	.229**
Cluster 47	5	12, 20, 33, 45, 47	.2736	.167**	-.027	.486**
Cluster 48	6	3, 16, 19, 37, 43, 48	.3768	.443**	-.274**	.587**
Cluster 49	2	39, 49	.1818	.091	-.082	.252**
Cluster 50	7	1, 14, 16, 19, 37, 45, 50	.5115	.667**	-.327**	.690**

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Statistics

Original Scale	Mean	Variance	Standard Deviation
STS	36.0296	62.5036	7.9059

Subscales	Mean	Variance	Standard Deviation
Cluster 1	8.0740	19.7601	4.4452
Cluster 3	8.0089	15.3441	3.9172
Cluster 6	1.2308	1.7329	1.3164
Cluster 7	5.9556	5.4906	2.3432
Cluster 8	1.4083	.8358	.9142
Cluster 10	.8521	1.0463	1.0229
Cluster 11	2.1538	2.5757	1.6049
Cluster 12	3.9615	6.1380	2.4775
Cluster 13	4.4822	8.5412	2.9225
Cluster 14	4.0562	4.0354	2.0088
Cluster 16	6.7899	15.3296	3.9153
Cluster 17	3.7751	2.8514	1.6886
Cluster 18	3.6775	5.6672	2.3806
Cluster 19	10.1864	17.1254	4.1383
Cluster 20	7.2811	12.4875	3.5338
Cluster 21	7.9260	8.5019	2.9158
Cluster 23	2.3550	4.4374	2.1065
Cluster 24	6.3018	12.4190	3.5241
Cluster 26	5.3905	8.7669	2.9609
Cluster 27	.7692	.9496	.9745
Cluster 28	3.7189	5.2769	2.2971
Cluster 29	2.1065	1.0925	1.0452
Cluster 31	11.5355	22.4809	4.7414
Cluster 32	4.4941	5.8531	2.4193
Cluster 33	1.7604	1.2747	1.1290
Cluster 34	7.0296	12.0525	3.4717
Cluster 37	7.7870	14.1563	3.7625

Cluster 39	9.9615	16.8501	4.1049
Cluster 40	.6509	.8807	.9385
Cluster 41	6.2101	12.5462	3.5421
Cluster 42	6.7130	6.9174	2.6301
Cluster 43	4.0858	5.1944	2.2791
Cluster 44	5.7041	9.1941	3.0322
Cluster 45	11.3402	23.3527	4.8325
Cluster 46	2.7219	5.4536	2.3353
Cluster 47	5.6538	6.6602	2.58.7
Cluster 48	6.1775	10.4254	3.2288
Cluster 49	1.4053	1.3219	1.1497
Cluster 50	7.0503	13.9470	3.7346

Table 48 presents STS subscales derived from all positively significantly correlating STS items, sorted by Cronbach alpha. The Cronbach alpha is a measure of the unidimensionality. These subscales show STS items that relate to one another in varying degrees and will be called "Clusters" for convenience. The 3 clusters with a Cronbach alpha greater than .5000 are (descending value): 41, 1, and 50. It is noteworthy that Cluster 41, with the highest alpha, does not contain STS items 1, 19, or 45; it also does not significantly correlate to GPA or DIN. Cluster 41 has a moderately strong correlation to the original STS. The 8 clusters that fall between .4000 and less than .5000 are (descending value): 20, 34, 31, 3, 19, 18, 17, and 24. It is noteworthy that Cluster 20, Cluster 18, and Cluster 17 do not contain STS items 1, 19, or 45; they also do not significantly correlate to GPA or DIN. The 11 clusters that fall between .3000 and less than .4000 are (descending value): 45, 7, 32, 16, 23, 42, 21, 12, 48, 39, and 14. Also noteworthy is the lack of items 1, 19, and 45 in Cluster 12,

Cluster 39, and Cluster 14. However, Cluster 14 significantly positively correlates with GPA at .235 ($p < .01$) and negatively with DIN at -.128 ($p < .05$). The 11 clusters that fall between .2000 and less than .3000 are (descending value): 43, 11, 37, 47, 29, 44, and 13. Cluster 43, Cluster 11, Cluster 37, and Cluster 29 lack STS numbers 1, 19, and 45. Cluster 43 and Cluster 37 significantly positively correlate with GPA at .178 and .233 ($p < .01$) and negatively with DIN at -.172 and -.158 ($p < .01$). The 7 clusters that fall between .1000 and less than .2000 are (descending value): 6, 10, 49, 33, 26, 46, and 28. These clusters all lack STS items 1, 19, and 45. Cluster 26 shows a significantly positive correlation to GPA at .147 ($p < .01$). Clusters 8, 27, and 40 consist of single items and therefore have no Cronbach alpha.

Table 48

Rank Ordering by Cronbach Alpha (in Bold Print) of STS Subscales ("Clusters") Derived from All Positively Significantly Correlating STS Items (N = 338).

STS Subscales	N of Items	Significant Positively Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
Cluster 41	7	12, 13, 20, 24, 31, 39, 41	**.5224**	.055	.034	.506**
Cluster 1	8	1, 16, 19, 23, 24, 34, 45, 50	**.5205**	.657**	-.335**	.709**
Cluster 50	7	1, 14, 16, 19, 37, 45, 50	**.5115**	.667**	-.327**	.690**
Cluster 20	8	12, 20, 21, 24, 31, 39, 41, 47	**.4947**	.084	.013	.526**
Cluster 34	5	1, 19, 31, 34, 39	**.4913**	.647**	-.340**	.611**
Cluster 31	10	17, 18, 19, 20, 24, 31, 34, 39, 41, 45	**.4678**	.362**	-.190**	.715**
Cluster 3	8	3, 16, 19, 26, 37, 39, 45, 48	**.4658**	.485**	-.298**	.703**
Cluster 19	9	19, 21, 31, 32, 34, 42, 45, 48, 50	**.4526**	.631**	-.389**	.757**
Cluster 18	5	13, 18, 31, 37, 39	**.4111**	.044	-.039	.412**
Cluster 17	4	17, 28, 31, 39	**.4105**	.020	.015	.281**
Cluster 24	7	1, 13, 20, 24, 31, 37, 41	**.4081**	.267**	-.050	.620**
Cluster 45	12	1, 3, 13, 16, 19, 23, 31, 32,	**.3984**	.626**	-.271**	.768**

		44, 45, 47, 50				
Cluster 7	6	7, 14, 19, 21, 37, 42	**.3963**	.530**	-.331**	.566**
Cluster 32	4	19, 26, 32, 45	**.3925**	.623**	-.354**	.608**
Cluster 16	8	1, 3, 11, 16, 43, 45, 48, 50	**.3915**	.479**	-.226**	.641**
Cluster 23	3	1, 23, 45	**.3896**	.584**	-.264**	.507**
Cluster 42	7	7, 14, 19, 21, 26, 37, 42	**.3873**	.479**	-.308**	.596**
Cluster 21	7	7, 14, 19, 20, 21, 37, 42	**.3828**	.433**	-.225**	.637**
Cluster 12	5	12, 13, 20, 41, 47	**.3794**	-.046	.088	.378**
Cluster 48	6	3, 16, 19, 37, 43, 48	**.3768**	.443**	-.274**	.587**
Cluster 39	9	3, 17, 18, 20, 31, 34, 39, 41, 49	**.3567**	.096	-.030	.593**
Cluster 14	5	7, 14, 21, 42, 50	**.3514**	.235**	-.128*	.462**
Cluster 43	5	11, 16, 29, 43, 48	**.2987**	.178**	-.172**	.274**
Cluster 11	4	6, 11, 16, 43	**.2767**	.084	-.032	.136*
Cluster 37	9	3, 7, 18, 21, 24, 37, 42, 48, 50	**.2761**	.233**	-.158**	.665**
Cluster 47	5	12, 20, 33, 45, 47	**.2736**	.167**	-.027	.486**
Cluster 29	2	29, 43	**.2667**	.036	-.067	.026
Cluster 44	5	26, 28, 44, 45, 46	**.2586**	.125*	-.061	.385**
Cluster 13	6	12, 13, 18, 24, 41, 45	**.2325**	.098	-.060	.520**
Cluster 6	2	6, 11	**.1989**	.065	-.022	.064
Cluster 10	2	10, 46	**.1922**	.	.	.178*

Cluster 49	2	39, 49	**.1818**	.091	-.082	.252**
Cluster 33	2	33, 47	**.1608**	-.007	.049	.101
Cluster 26	5	3, 26, 32, 42, 44	**.1582**	.147**	-.053	.432**
Cluster 46	3	10, 44, 46	**.1411**	.018	.008	.229**
Cluster 28	3	17, 28, 44	**.1275**	-.019	.018	.184**
Cluster 8	1	8	.	.112*	-.085	.129*
Cluster 27	1	27	.	.012	.044	.096
Cluster 40	1	40	.	.027	-.002	.095

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 49 presents STS subscales derived from all positively significantly correlating STS items, sorted by GPA. The 6 clusters that correlate strongly (.600 to .699) to GPA are (descending): 50, 1, 34, 19, 45, and 32. These clusters all contain at least 2 of STS items 1, 19, or 45. Cluster 50's strong correlation to the original STS is surpassed by that of 5 other clusters. The 2 clusters that correlate moderately strongly (.500 to .599) to GPA are (descending): 23 and 7, with both clusters containing at least 1 of STS items 1, 19, or 45. The 5 clusters that correlate moderately (.400 to .499) are: 3, 16, 42, 48, and 21. Each cluster has 1 of STS items 1, 19, or 45. The single cluster that correlates moderately lowly (.300 to .399) is Cluster 31 and contains STS items 19 and 45. The 3 clusters that correlate lowly (.200 to .299) are: 24, 14, and 37. Cluster 24 contains STS item 1. Clusters 14 and 37 do not contain STS items 1, 19, or 45. The 5 clusters that correlate very lowly (.100 to .199) to GPA are: 43, 47,

26, 44, and 8. Clusters 47 and 44 both contain STS item 45, and Clusters 43, 26, and 8 do not, although Cluster 8 is the single STS item 8. The remaining 17 clusters or items correlate zero to marginally (0 to .099) to GPA: 13, 39, 49, 20, 11, 6, 41, 12 (negatively), 18, 29, 40, 17, 28 (negatively), 46, 27, 33, and 10.

Table 49

Rank Ordering by GPA (in Bold Print) of STS Subscales ("Clusters") Derived from All Positively Significantly Correlating STS Items (N = 338).

STS Subscales	N of Items	Significant Positively Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
Cluster 50	7	1, 14, 16, 19, 37, 45, 50	.5115	**.667****	-.327**	.690**
Cluster 1	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	**.657****	-.335**	.709**
Cluster 34	5	1, 19, 31, 34, 39	.4913	**.647****	-.340**	.611**
Cluster 19	9	19, 21, 31, 32, 34, 42, 45, 48, 50	.4526	**.631****	-.389**	.757**
Cluster 45	12	1, 3, 13, 16, 19, 23, 31, 32, 44, 45, 47, 50	.3984	**.626****	-.271**	.768**
Cluster 32	4	19, 26, 32, 45	.3925	**.623****	-.354**	.608**
Cluster 23	3	1, 23, 45	.3896	**.584****	-.264**	.507**
Cluster 7	6	7, 14, 19, 21, 37, 42	.3963	**.530****	-.331**	.566**
Cluster 3	8	3, 16, 19, 26,	.4658	**.485****	-.298**	.703**

.		37, 39, 45, 48				
Cluster 16	8	1, 3, 11, 16, 43, 45, 48, 50	.3915	**.479****	-.226**	.641**
Cluster 42	7	7, 14, 19, 21, 26, 37, 42	.3873	**.479****	-.308**	.596**
Cluster 48	6	3, 16, 19, 37, 43, 48	.3768	**.443****	-.274**	.587**
Cluster 21	7	7, 14, 19, 20, 21, 37, 42	.3828	**.433****	-.225**	.637**
Cluster 31	10	17, 18, 19, 20, 24, 31, 34, 39, 41, 45	.4678	**.362****	-.190**	.715**
Cluster 24	7	1, 13, 20, 24, 31, 37, 41	.4081	**.267****	-.050	.620**
Cluster 14	5	7, 14, 21, 42, 50	.3514	**.235****	-.128*	.462**
Cluster 37	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	**.233****	-.158**	.665**
Cluster 43	5	11, 16, 29, 43, 48	.2987	**.178****	-.172**	.274**
Cluster 47	5	12, 20, 33, 45, 47	.2736	**.167****	-.027	.486**
Cluster 26	5	3, 26, 32, 42, 44	.1582	**.147****	-.053	.432**
Cluster 44	5	26, 28, 44, 45, 46	.2586	**.125***	-.061	.385**
Cluster 8	1	8	.	**.112***	-.085	.129*
Cluster 13	6	12, 13, 18, 24, 41, 45	.2325	**.098**	-.060	.520**
Cluster 39	9	3, 17, 18, 20, 31, 34, 39, 41, 49	.3567	**.096**	-.030	.593**
Cluster 49	2	39, 49	.1818	**.091**	-.082	.252**
Cluster 20	8	12, 20, 21, 24,	.4947	**.084**	.013	.526**

		31, 39, 41, 47				
Cluster 11	4	6, 11, 16, 43	.2767	**.084**	-.032	.136*
Cluster 6	2	6, 11	.1989	**.065**	-.022	.064
Cluster 41	7	12, 13, 20, 24, 31, 39, 41	.5224	**.055**	.034	.506**
Cluster 12	5	12, 13, 20, 41, 47	.3794	**-.046**	.088	.378**
Cluster 18	5	13, 18, 31, 37, 39	.4111	**.044**	-.039	.412**
Cluster 29	2	29, 43	.2667	**.036**	-.067	.026
Cluster 40	1	40	.	**.027**	-.002	.095
Cluster 17	4	17, 28, 31, 39	.4105	**.020**	.015	.281**
Cluster 28	3	17, 28, 44	.1275	**-.019**	.018	.184**
Cluster 46	3	10, 44, 46	.1411	**.018**	.008	.229**
Cluster 27	1	27	.	**.012**	.044	.096
Cluster 33	2	33, 47	.1608	**-.007**	.049	.101
Cluster 10	2	10, 46	.1922	.	.	.178*

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Table 50 presents STS subscales derived from all positively significantly correlating STS items, sorted by DIN. It is noteworthy that no cluster correlated significantly strongly to moderately. Correlating clusters are in descending order by absolute value. The 7 clusters that correlate significantly moderately lowly (.300 to .399) are: 19, 32, 34, 1, 7, 50, and 42. Each of these clusters contains at least 1 of STS items 1, 19, or 45. Cluster 19's very strong correlation to the original STS is surpassed by only cluster 45's. The 6 clusters that correlate significantly lowly (.200 to .299) are: 3,

48, 45, 23, 16, and 21. Each cluster contains at least 1 of STS items 1, 19, or 45. The 4 clusters that correlate very lowly (.100 to .199) to DIN are: 31, 43, 37, and 14. Cluster 31 contains STS items 19 and 45. Clusters 43, 37, and 14 do not contain STS items 1, 19, or 45. The remaining 22 clusters or items correlate zero to marginally (0 to .099) to DIN: 12, 8, 49, 29, 44, 13, 26, 24, 33, 27, 18, 41, 11, 39, 47, 6, 28, 17, 20, 46, 40, and 10. Clusters 44, 13, and 47 contain STS item 45.

Table 50

Rank Ordering by DIN (in Bold Print) of STS Subscales ("Clusters") Derived from All Positively Significantly Correlating STS Items (N = 338).

STS Subscales	N of Items	Significant Positively Correlating STS Items	Alpha	GPA *r*	DIN *r*	Original STS *r*
Cluster 19	9	19, 21, 31, 32, 34, 42, 45, 48, 50	.4526	.631**	**-.389****	.757**
Cluster 32	4	19, 26, 32, 45	.3925	.623**	**-.354****	.608**
Cluster 34	5	1, 19, 31, 34, 39	.4913	.647**	**-.340****	.611**
Cluster 1	8	1, 16, 19, 23, 24, 34, 45, 50	.5205	.657**	**-.335****	.709**
Cluster 7	6	7, 14, 19, 21, 37, 42	.3963	.530**	**-.331****	.566**
Cluster 50	7	1, 14, 16, 19, 37, 45, 50	.5115	.667**	**-.327****	.690**
Cluster 42	7	7, 14, 19, 21,	.3873	.479**	**-.308****	.596**

		26, 37, 42				
Cluster 3	8	3, 16, 19, 26, 37, 39, 45, 48	.4658	.485**	**-.298****	.703**
Cluster 48	6	3, 16, 19, 37, 43, 48	.3768	.443**	**-.274****	.587**
Cluster 45	12	1, 3, 13, 16, 19, 23, 31, 32, 44, 45, 47, 50	.3984	.626**	**-.271****	.768**
Cluster 23	3	1, 23, 45	.3896	.584**	**-.264****	.507**
Cluster 16	8	1, 3, 11, 16, 43, 45, 48, 50	.3915	.479**	**-.226****	.641**
Cluster 21	7	7, 14, 19, 20, 21, 37, 42	.3828	.433**	**-.225****	.637**
Cluster 31	10	17, 18, 19, 20, 24, 31, 34, 39, 41, 45	.4678	.362**	**-.190****	.715**
Cluster 43	5	11, 16, 29, 43, 48	.2987	.178**	**-.172****	.274**
Cluster 37	9	3, 7, 18, 21, 24, 37, 42, 48, 50	.2761	.233**	**-.158****	.665**
Cluster 14	5	7, 14, 21, 42, 50	.3514	.235**	**-.128***	.462**
Cluster 12	5	12, 13, 20, 41, 47	.3794	-.046	**.088**	.378**
Cluster 8	1	8	.	.112*	**-.085**	.129*
Cluster 49	2	39, 49	.1818	.091	**-.082**	.252**
Cluster 29	2	29, 43	.2667	.036	**-.067**	.026
Cluster 44	5	26, 28, 44, 45, 46	.2586	.125*	**-.061**	.385**
Cluster 13	6	12, 13, 18, 24, 41, 45	.2325	.098	**-.060**	.520**
Cluster 26	5	3, 26, 32, 42, 44	.1582	.147**	**-.053**	.432**
Cluster 24	7	1, 13, 20, 24,	.4081	.267**	**-.050**	.620**

		31, 37, 41				
Cluster 33	2	33, 47	.1608	-.007	**.049**	.101
Cluster 27	1	27	.	.012	**.044**	.096
Cluster 18	5	13, 18, 31, 37, 39	.4111	.044	**-.039**	.412**
Cluster 41	7	12, 13, 20, 24, 31, 39, 41	.5224	.055	**.034**	.506**
Cluster 11	4	6, 11, 16, 43	.2767	.084	**-.032**	.136*
Cluster 39	9	3, 17, 18, 20, 31, 34, 39, 41, 49	.3567	.096	**-.030**	.593**
Cluster 47	5	12, 20, 33, 45, 47	.2736	.167**	**-.027**	.486**
Cluster 6	2	6, 11	.1989	.065	**-.022**	.064
Cluster 28	3	17, 28, 44	.1275	-.019	**.018**	.184**
Cluster 17	4	17, 28, 31, 39	.4105	.020	**.015**	.281**
Cluster 20	8	12, 20, 21, 24, 31, 39, 41, 47	.4947	.084	**.013**	.526**
Cluster 46	3	10, 44, 46	.1411	.018	**.008**	.229**
Cluster 40	1	40	.	.027	**-.002**	.095
Cluster 10	2	10, 46	.1922	.	.	.178*

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

CHAPTER 5

DISCUSSION

The first purpose of this research was to determine the relationship of the *Success Tendencies Indicator* (STI), which includes the *Success Tendencies Scale* (STS) and the *Positive Impression Scale* (PIS), with freshmen academic achievement, as measured by weighted Grade Point Average (GPA), and with behavioral adjustment, as measured by Discipline Incidents Number (DIN). The STS was expected to positively correlate with GPA. However, as with Karsenti and Thibert's (1995) findings that the correlation of motivation with GPA differed for senior high school students compared to junior high school students, it was anticipated that the findings of this research might differ from those findings of previous research with high school sophomores, general high school students, and college undergraduate and graduate students. Mehrabian (2000) found a moderately low correlation of $r = .38$ ($p < .05$) of achieving tendency with overall success. Although some researchers did not have confidence in people's ability to accurately self-asses (Paulhus, Lysy, & Yik as cited in Mayer, Caruso, & Salovey, 2000, p. 324), several researchers found positive correlations of self-reported GPA to official GPA (Hansford & Hattie, 1982; Richman, Rosenfeld, & Bowen, 1998; and Dornbusch et al., as cited in Chen & Dornbusch, 1998). This research found a strong positive correlation of $r = .695$ ($p < .01$) between self-reported GPA of B or better at some point during the school year and official GPA at the end of the school year. Researchers found that past behavior can predict

future behavior (Armstrong, 2000; Ferguson et al., 2000). Other items of the STS were expected to correlate more or less with GPA.

From the review of literature, prior research suggested that success can be affected by the following factors, which are arguably also either directly or indirectly measured by the Success Tendencies Indicator: emotions (Bagozzi, Baumgartner, & Pieters, 1998; Dolan, 2002; LeDoux, 1996; Holden, 2000; Holden, 2003; Rudolph, Lambert, Clark, & Kurlakowsky, 2001; Bechara, Damasio, Tranel, and Damasio, 1997), satisfaction with life (Mehrabian, 2000; Klohnen, 1996; Block & Kremen, 1996), fairness/honesty (Mehrabian, 2000; Block & Kremen, 1996), leadership (Mehrabian, 2000), physical condition (Mehrabian, 2000), high GPA (Aleamoni & Oboler, 1978; Armstrong, 2000), parental encouragement and help (Neisser et al., 1996; Chambers et al., 1998; Work, Cowen, Parker, & Wyman, 1990), social skills (Mehrabian, 2000; Feist & Baron, as cited in Cherniss, 2000; Agostin & Bain, 1997; Brigman, Lane, & Switzer, 1999; Steinberg, Lamborn, Dornbusch, & Darling, as cited in Gonzalez, 2002; Work, Cowan, Parker, & Wyman, 1990; Dubow & Tisak, 1989; Block & Kremen, 1996; Holden, 2000; Holden, 2003; Bechara, Damasio, Tranel, & Damasio, 1997; Welton, 1999; Topping, Bremner, & Holmes, 2000; Tapia, 1998; Schutte et al., 2001), decision making and problem solving (Dubow & Tisak, 1989; Klohnen, 1996; Holden, 2003; Bechara, Damasio, Tranel, & Damasio, 1997), popularity (Mehrabian, 2000), goals (Mischel, as cited in Mehrabian, 1968; Sternberg, 1996; Shoda, Mischel, & Peake, 1990), being on time (Mehrabian, 2000), and self-rated performance level (Mehrabian, 2000).

This research found for (1) emotions: STS item 6 (needing a lot of excitement in life) and GPA correlated at r = .057 (ns) and DIN at r

= -.048 (ns); STS item 11 (wanting to do something thrilling and dangerous) and GPA correlated at r = .037 (ns) and DIN at r = .026 (ns); and STS item 28 (having done something reckless and dangerous) and GPA correlated at r = -.151 (p < .01) and DIN at r = .091 (ns), (2) life satisfaction: STS item 7 (having more bad luck than most people) and GPA correlated at r = .155 (p < .01) and DIN at r = -.142 (p < .01), (3) fairness/honesty: STS item 10 (firing an employee for not reporting theft by another employee); STS item 16 (returning overpaid change for a bad restaurant meal) correlated with GPA at r = .135 (p < .05) and DIN at r = -.052 (ns), (4) leadership: STS item 8 (intelligence as important factor for business management) correlated with GPA at r = .112 (p < .05) and DIN at r = -.085 (ns); STS item 13 (holding student government office in high school) correlated with GPA at r = .010 (ns) and DIN at r = .010 (ns); and STS item 40 (bosses understanding business better than employees) correlated with GPA at r = .027 (ns) and DIN at r = -.022 (ns); (5) physical strength: STS item 18 (being physically stronger than others of same age and gender) correlated with GPA at r = -.069 (ns) and DIN at r = -.007 (ns); (6) high GPA: STS item 19 (having B or better GPA now or previously) correlated with GPA at r = .695 (p < .01) and DIN at r = -.391 (p < .01); (7) parental encouragement or help: STS item 21 (father encouraging and affectionate when you were a child) correlated with GPA at r = .180 (p < .01) and DIN at r = -.117 (p < .05); and STS item 42 (one or both parents spending a lot of time helping with your studies as a child) correlated with GPA at r = .133 (p < .05) and DIN at r = -.103 (ns); (8) social skills: STS item 24 (organizing parties or social affairs now or previously in high school) correlated with GPA at r =

.108 ($p < .05$) and DIN at -.038 (ns); STS item 31 (being an athletic team member now or previously in high school) correlated with GPA at $r = .169$ ($p < .01$) and DIN at $r = -.048$ (ns); and STS item 39 (might enjoy being athletic team coach or manager) correlated with GPA at $r = .066$ (ns) and -.039 (ns); (9) decision-making: STS item 32 (just one right way to do things in business) correlated with GPA at $r = .234$ ($p < .01$) and DIN at $r = -.100$ (ns); STS item 43 (slow decision-makers are more effective than faster decision-makers) correlated with GPA at $r = -.030$ (ns) and DIN at $r = .003$ (ns); and STS item 49 (trying to think of and analyzing as many solutions to problems as possible) correlated with GPA at $r = .074$ (ns) and DIN at $r = -.076$; (10) popularity: STS item 41 (being extremely popular in high school) correlated at $r = -.212$ ($p < .01$) and DIN at $r = .149$ ($p < .01$); goals: STS item 45 (expecting the highest educational level obtained to be graduate school or professional school) correlated with GPA at $r = .405$ ($p < .01$) and DIN at $r = -.230$ ($p < .01$); (11) being on time: STS item 48 (having been late for school or work 0 to 1 time in last year) correlated with GPA at $r = .185$ ($p < .01$) and DIN at $r = -.213$ ($p < .01$); and (12) high performance level: STS item 50 (rating oneself very effective on most recent academic or job performance) correlated with GPA at $r = .176$ ($p < .01$) and DIN at $r = -.042$ (ns).

This research suggested that high GPA is positively correlated with the lack of need for excitement, the absence of having engaged in something thrilling and dangerous, believing that one's luck is no worse than most people's, being honest in returning overpaid change in a restaurant, believing that intelligence is important in business management, having ever had a high GPA, having had parental

encouragement or a lot of help with studies, having organized parties or social affairs, having ever been on an athletic team in high school, believing that there is not just one right way to do things in business, not being extremely popular in high school, expecting to reach graduate or professional school, being on time, and rating oneself very effective on academic or job performance.

This research also suggested that DIN is negatively correlated with not believing that one's luck is worse than other people's, having ever had a high GPA in high school, having had an encouraging and affectionate father as a child, expecting to reach graduate or professional school, and being on time. DIN is positively correlated with being extremely popular in high school.

As expected, the STS negatively correlated with DIN. However, this correlation was low at $r = -.250$ ($p < .01$) compared to the moderately strong negative correlation of GPA with DIN at $r = -.578$ ($p < .01$). Although the weights (from 1 to 4) assigned to the STS and DIN items influence the correlations, it should be noted that the unweighted STS still correlates moderately with GPA at $r = .437$ ($p < .01$) and negatively lowly to DIN at $r = -.232$** ($p < .01$).

The STS mean difference of bottom vs. top 50% GPA was significant at $p < .001$), and the effect size was large at 99.7%. The STS mean differences at 25% GPA were also significant at $p < .001$), with the effect size even larger 151%. The STS mean differences at 10% GPA were also significant at $p < .001$), with the effect size a still larger 201%. The STS had significant large mean differences for the three samples of bottom vs. top percentages of GPA.

The STS mean difference of bottom vs. top 50% DIN was significant at $p < .001$), with effect size near moderate at 48.9%. At 25% DIN, the STS mean difference was significant at $p < .001$), with effect size at a moderate 68.0%. At 10% DIN, the STS mean difference was significant at $p < .05$), with a moderate effect size at 62.6%. The STS had significant near moderate and moderate mean differences for the three samples of bottom vs. top percentages of DIN.

The PIS is a validity scale that suggests a participant's possible deception in order to create a positive image. As expected, the STS does not show a significant correlation with the PIS. There were no significant differences in the means of the PIS scores of students in the bottom vs. top 50% or 10% GPA. However, means of the PIS scores of the bottom vs. the top 25% GPA students show a significant difference of 1.51 ($p < .05$) of small effect size (33.9%). This could be explained by the 5% chance of random error.

The second purpose of this research was to determine the Cronbach alphas of reliability of the STS and PIS and perform factor analyses of the STS. The STS shows a moderately low alpha of .3945, suggesting that the STS is multidimensional. The PIS yielded a moderately low alpha of .3646, suggesting that the PIS is multidimensional.

The third purpose of this research was to determine if there are gender differences in STS and PIS scores. Chen and Dornbusch (1998) found that females correlated higher than males with grades in school. Karsenti and Thibert (1995) found that intrinsic motivation correlated with GPA higher for boys than girls. In this research, females had a mean STS score of 36.54, and males had a mean of 35.55; however, the difference was not statistically significant. The same relationship

applied to GPA: females had a mean GPA of 4.10730; males had a mean of 3.69254. The reverse order applied to DIN: females had a mean DIN of 1.15; males had a mean DIN of 2.02.

Females had a mean PIS score of 23.30, and males had a mean of 23.13, with a difference that was not statistically significant. As expected, the PIS mean differences between all Racial Code groups were not statistically significant.

The fourth purpose was to determine if there are Racial Code differences in STS, PIS, GPA, and DIN. Newmeyer (as cited in McClelland, 1973) found that African-American boys were better able than White boys to communicate and receive certain kinds of emotions. Chen and Dornbusch (1998) found differences between non-Hispanic Whites and African Americans and Hispanic Americans regarding grades in school. They also found differences between African Americans and non-Hispanic Whites regarding deviant behavior, and between Asian Americans and non-Hispanic Whites. In this research, the STS score means, from lowest to highest, were: African Americans (29.77), Hispanics (31.93), Caucasians, Not Hispanic (36.87), and Asians (37.57). There were no statistically significant differences in the PIS means for Racial Code. The GPA score means follow the same order as the STS means from lowest to highest: African Americans (2.78478), Hispanics (3.19577), Caucasians, Not Hispanic (3.89378), and Asians (4.20133). DIN means were the reverse order of STS and GPA: African Americans (5.62), Hispanics (3.23), Caucasians, Not Hispanic (1.17), and Asians (1.10).

The STS mean difference for Asians (37.57) and African Americans (29.77) was significant ($p < .001$), with a large effect size of 148%. The STS mean difference for Asians (37.57) and Hispanics (31.93) was

significant ($p < .005$), with a moderate effect size of 75.8%. The STS mean difference for Asians (37.57) and Caucasians, Not Hispanic (36.87) was not statistically significant.

The STS mean difference for African Americans (29.77) and Hispanics (31.93) was not statistically significant. The STS mean difference for African Americans (29.77) and Caucasians, Not Hispanic (36.87) was significant ($p < .001$), with a large effect size of 129%. The STS mean difference for Hispanics (31.93) and Caucasians, Not Hispanic (36.87) was significant ($p < .001$), with a moderate effect size of 64.5%.

The fifth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) in the bottom vs. top 50%, 25%, and 10% GPA. There were no statistically significant differences in mean N/A Responses. GPA rank did not statistically relate to student frequency of N/A Response.

The sixth purpose was to determine if there are differences in the mean N/A Response (the number of responses left blank and/or deemed not applicable to the student) by Racial Code. There were no statistically significant differences in N/A Number means regarding Racial Code. Racial Code did not statistically relate to student frequency of N/A Response.

The seventh purpose was to contribute possible subscales of the STS that have a higher Cronbach alpha reliability and a higher correlation to GPA and DIN than the original STS scale. Factor analyses determined which STS scale item numbers correlated with GPA, DIN, and PIS. Their correlations to the STS as a whole and STS

possible subscale EW were also considered. The STS scale item numbers were then ranked from highest to lowest correlation with GPA and DIN. Combinations of the highest correlating items were combined into possible subscales to enhance their collective correlation to GPA and DIN. Several subscales with higher alphas than the original STS scale were identified, suggesting greater unidimensionality. The effects on correlations of several STS items, especially that of items 1, 19, and 45, were examined. Addition of any of those 3 items enhanced the positive correlation of the subscale to GPA and the negative correlation to DIN. Subscale EA, consisting of STS item numbers 1 and 19, correlated with GPA at $r = .752$ ($p < .01$), which surpasses the correlation with GPA of either item alone: 1 with $r = .535$ ($p < .01$) and 19 with $r = .695$ ($p < .01$).

Statistically significant STS scale items were intercorrelated with one another in order to determine those items that might be related. Items that positively significantly correlated with one another were grouped into subscales called "clusters." These clusters were also examined for an enhanced alpha and correlation to GPA and DIN. Some sample clusters follow.

Cluster 50 can be described as a freshman student who: (1) is effective in academic or job performance, (2) expects to complete graduate or professional school, (3) at some time was in an honors class, (4) at some time had a GPA of B or higher, (5) is honest about returning too much money in an overpriced restaurant that served a poor meal, and (6) has many interests and activities and is never bored. Cluster 23 can be described as a student who: (1) reads the newspaper rather than watches news on TV, (2) at some time was in an honors

class, and (3) expects to complete graduate or professional school. Cluster 3 can be described as a student who: (1) is bothered by his/her own small mistakes, (2) is honest about returning too much money in an overpriced restaurant that served a poor meal, (3) might enjoy being an archeologist, (4) has many interests and is never bored, (5) expects to complete graduate or professional school, (6) was late to school or work only zero or one time in the last year, (7) at some time had a GPA of B or higher, and (8) might enjoy coaching or managing an athletic team. Cluster 37 can be described as a student who: (1) has many interests and activities and is never bored, (2) had a father who was very encouraging and affectionate when student was a child, (3) had parent(s) who spent a lot of time helping student with studies as a child, (4) is bothered by his/her own small mistakes, (5) rates himself/herself as very effective in academic or job performance, (6) is physically stronger than most people of the same age and gender, (7) has not had more bad luck in life than most people, (8) has done something reckless that could have gotten him/her into trouble if caught, (9) and was/is given the burden of organizing parties and social affairs for the groups he/she belongs or belonged to. Cluster 11 can be described as a student who: (1) would not like to do something a little dangerous, like hang gliding or ski jumping, for the thrill and adventure of it, (2) is honest about returning too much money in an overpriced restaurant that served a poor meal, (3) thinks that people who decide things slowly are more effective than people who decide things more quickly, and (4) and does not need a lot of excitement and variety in life to be happy.

Limitations

Some limitations existed with this study. First, this research involved a single site, a suburban high school in the Mid-Western U.S. and may not be applicable to other high schools. Second, students in the English as a Second Language (ESL) Program did not take the *Success Tendencies Indicator* because it is currently available only in English.

Summary

This research found no statistically significant difference between the *Success Tendencies Scale* (STS) mean scores of males and females, indicating that the STS is gender fair. This research did find that the 39-item STS significantly differentiated between students in the bottom vs. top 50%, 25%, and 10% ($p < .001$) weighted Grade Point Average (GPA) groups, with large effect sizes of 99.7%, 151%, and 201%. It also found that the STS significantly differentiated between students in the bottom vs. top 50% ($p < .001$), 25% ($p < .001$), and 10% ($p < .05$) Discipline Incidents Number (DIN) groups, with near-moderate and moderate effect sizes of 48.9%, 68.0%, and 62.6%.

This research found that the STS had a Cronbach alpha of .3945, indicating almost a moderate unidimensionality. It also found that the Pearson correlation with weighted Grade Point Average (GPA) was a moderate $r = .491$ ($p < .01$). However, this correlation is in the same range of correlations found between GPA and IQ or scholastic aptitude

tests. This correlation compares favorably with Hansford and Hattie's (1982) benchmark mean correlation of $r = .34$ between self measures and measures of performance and achievement. The Pearson correlation with DIN was a negative low $r = -.250$ ($p < .01$). The depressed magnitude of these correlations might be explained by the relative homogeneity of the student population. The school population is skewed along Racial Code lines. It consists largely of Caucasians, Not Hispanic (74.6%), although there are also Hispanics (12.7%), Asians (8.9%), and African Americans (3.8%). A broader spectrum of the population sample might have yielded greater correlational values with GPA and DIN.

The highest single-item STS correlation with GPA was Item 19, with $r = .695$ ($p < .01$). It was expected that student self-report of having a B or greater GPA now or previously would correlate highly with possessing a GPA of B or higher at the end of the school year. The next highest single-item correlation with GPA was Item 1, with $r = .535$ ($p < .01$), and Item 45, with $r = .405$ ($p < .01$). The highest single-item STS to correlate with DIN was Item 19, with $r = .391$ ($p < .01$). The best correlation with DIN was not the STS, its single items, or its subscales, but GPA, with $r = -.578$ ($p < .01$).

Through Method 1, *combining items* that correlated the highest significantly with GPA, the subscale with the highest alpha was the 3-item Subscale EB, with .5715, indicating a moderately strong unidimensionality. The highest significant correlation with GPA found through Method 1 was the very strong $r = .753$($p < .01$), with the 3-item Subscale EB, although 2-item Subscale EA correlated at $r = .752$ ($p < .01$). The highest correlation with DIN found through Method 1 was a moderate $r = -.402$ ($p < .01$), with 13-item Subscale NIP, followed by 7-

item Subscale FA, with $r = -.398$ ($p < .01$).

Through Method 2, combining all items that significantly positively correlated with a given single STS item, the subscale with the highest alpha was the 7-item Subscale Cluster 41, with .5224, indicating a moderately strong unidimensionality. The highest significant correlation with GPA found through Method 2 was a strong $r = .667$ ($p < .01$), with 7-item Subscale Cluster 50. The highest correlation with DIN found through Method 2 was 9-item Subscale Cluster 19, with $r = -.389$ ($p < .01$).

Although the literature conflicts in opinion about the effects of lengthening or shortening a psychometric instrument, these data suggest that both procedures can either increase or decrease the Cronbach alpha or Pearson correlation, depending on the strength of correlation of the added or deleted items to each other or to another variable. Some examples follow. Increasing the 12-item Subscale EV, with an alpha of .4096, by Items 19 and 50 (now 14-item Subscale EW), raises the alpha to .5316. However, increasing the 3-item Subscale EB, with an alpha of .5715, by Items 7, 34, 41, and 48 (now 7-item Subscale FA), lowers the alpha to .4246. Increasing 2-item Subscale NED, with a correlation to GPA of $r = .701$ ($p < .01$), by Items 21, 28, 31, 32, 34, 42, 48, and 50 (now 10-item Subscale II), lowers the correlation to $r = .602$ ($p < .01$). However, increasing 2-item Subscale NED by Item 1 (now 3-item Subscale EB), raises the correlation with GPA to $r = .753$ ($p < .01$).

The results of this research suggest that the multidimensional STS and its subscales, or "clusters," can be used as instruments to indicate personality and other variables associated with high school academic and behavioral success, informing a developmentally-

appropriate and preventive curriculum and allowing counseling resources to be focused more effectively to build on student strengths and to address student weaknesses.

Recommendations

Grade Point Average and Discipline Incidents Number were the only measures employed to measure success in this research. The Success Tendencies Indicator, some of its subscales, or some of its single items may well correlate with other long-term or short-term variables of success, such as standardized test scores, health, occupational, or financial success. It is recommended for future research that these variables be examined with the STI.

Also, the *Success Tendencies Indicator* (STI) might be modified to assess incoming elementary school graduates. The STI contains items that would be confusing or not applicable at that education level. For example, "Were or are you in an honors class in high school?" could be modified to "Were you in an honors class in elementary school?" The applicable items of a shortened STI or "clusters" may well prove useful in assessing the success tendencies of incoming freshmen in a variety of success measures, informing a developmentally-appropriate and preventive curriculum and allowing counseling resources to be focused more effectively to build on student strengths and to address student weaknesses.

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APPENDIX

Intercorrelations Among Success Tendencies Scale (STS) Scale Items and All Other Statistically Significant STS Scale Items (N = 338).

Sorted First by STS Number, Then Correlating STS Number *(in Bold Print)*			Sorted First by STS Number, Then Correlation (By Descending Absolute Value, *in Bold Print)*		
STS Item Number	**Correlating STS Item Number**	Correlation	STS Item Number	Correlating STS Item Number	**Correlation**
1	**16**	.148**	1	19	**.329****
1	**19**	.329**	1	45	**.304****
1	**23**	.140**	1	34	**.261****
1	**24**	.119*	1	50	**.159****
1	**28**	-.107*	1	41	**-.156****
1	**34**	.261**	1	16	**.148****
1	**41**	-.156**	1	23	**.140****
1	**45**	.304**	1	24	**.119***
1	**50**	.159**	1	28	**-.107***
3	**16**	.189**	3	16	**.189****
3	**19**	.110*	3	26	**.175****
3	**26**	.175**	3	37	**.130***
3	**37**	.130*	3	45	**.130***
3	**39**	.110*	3	40	**-.122***
3	**40**	-.122*	3	48	**.119***
3	**45**	.130*	3	19	**.110***
3	**48**	.119*	3	39	**.110***
6	**11**	.115*	6	28	**-.161****
6	**20**	-.107*	6	11	**.115***
6	**28**	-.161**	6	20	**-.107***

7	14	.121*	7	21	.211**
7	19	.111*	7	42	.165**
7	21	.211**	7	27	-.121*
7	27	-.121*	7	14	.121*
7	37	.115*	7	37	.115*
7	42	.165**	7	19	.111*
8	41	-.168**	8	41	-.168**
10	46	.122*	10	46	.122*
11	6	.115*	11	28	-.241**
11	16	.207**	11	16	.207**
11	17	-.119*	11	31	-.203**
11	18	-.131*	11	39	-.147**
11	26	-.113*	11	18	-.131*
11	28	-.241**	11	43	.122*
11	31	-.203**	11	17	-.119*
11	32	-.116*	11	32	-.116*
11	39	-.147**	11	6	.115*
11	43	.122*	11	26	-.113*
12	13	.141**	12	20	.240**
12	20	.240**	12	29	-.211**
12	29	-.211**	12	13	.141**
12	41	.126*	12	47	.138*
12	44	-.132*	12	44	-.132*
12	47	.138*	12	41	.126*
13	12	.141**	13	41	.184**
13	18	.139*	13	24	.153**
13	24	.153**	13	12	.141**
13	41	.184**	13	18	.139*
13	45	.126*	13	45	.126*

14	7	.121*	14	21	.175**
14	21	.175**	14	42	.137*
14	42	.137*	14	7	.121*
14	50	.119*	14	50	.119*
16	1	.148**	16	11	.207**
16	3	.189**	16	3	.189**
16	11	.207**	16	28	-.185**
16	28	-.185**	16	48	.181**
16	43	.112*	16	1	.148**
16	45	.117*	16	50	.145**
16	48	.181**	16	45	.117*
16	50	.145**	16	43	.112*
17	11	-.119*	17	39	.174**
17	28	.138*	17	28	.138*
17	31	.114*	17	11	-.119*
17	39	.174**	17	31	.114*
18	11	-.131*	18	31	.204**
18	13	.139*	18	39	.172**
18	31	.204**	18	13	.139*
18	37	.118*	18	11	-.131*
18	39	.172**	18	44	-.126*
18	43	-.120*	18	43	-.120*
18	44	-.126*	18	37	.118*
19	21	.173**	19	45	.321**
19	28	-.154**	19	48	.214**
19	31	.111*	19	42	.180**
19	32	.169**	19	21	.173**
19	34	.146**	19	32	.169**
19	42	.180**	19	28	-.154**

19	**45**	.321**	19	50	**.150****
19	**48**	.214**	19	34	**.146****
19	**50**	.150**	19	31	**.111***
20	**6**	-.107*	20	24	**.266****
20	**12**	.240**	20	12	**.240****
20	**21**	.170**	20	21	**.170****
20	**24**	.266**	20	31	**.152****
20	**29**	-.151**	20	29	**-.151****
20	**31**	.152**	20	39	**.132***
20	**39**	.132*	20	41	**.130***
20	**41**	.130*	20	47	**.115***
20	**47**	.115*	20	6	**-.107***
21	**7**	.211**	21	42	**.349****
21	**14**	.175**	21	7	**.211****
21	**19**	.173**	21	37	**.198****
21	**20**	.170**	21	14	**.175****
21	**28**	-.138*	21	19	**.173****
21	**37**	.198**	21	20	**.170****
21	**42**	.349**	21	28	**-.138***
23	**1**	.140**	23	1	**.140****
23	**33**	-.118*	23	45	**.133***
23	**45**	.133*	23	33	**-.118***
24	**1**	.119*	24	20	**.266****
24	**13**	.153**	24	31	**.178****
24	**20**	.266**	24	13	**.153****
24	**29**	-.108*	24	41	**.147****
24	**31**	.178**	24	1	**.119***
24	**37**	.111*	24	37	**.111***
24	**41**	.147**	24	29	**-.108***

26	3	.175**	26	3	.175**
26	11	-.113*	26	32	.130*
26	32	.130*	26	42	.126*
26	42	.126*	26	11	-.113*
26	44	.112*	26	44	.112*
27	7	-.121*	27	7	-.121*
28	1	-.107*	28	11	-.241**
28	6	-.161**	28	16	-.185**
28	11	-.241**	28	48	-.183**
28	16	-.185**	28	6	-.161**
28	17	.138*	28	19	-.154**
28	19	-.154**	28	21	-.138*
28	21	-.138*	28	17	.138*
28	44	.115*	28	44	.115*
28	48	-.183**	28	1	-.107*
29	12	-.211**	29	12	-.211**
29	20	-.151**	29	43	.175**
29	24	-.108*	29	20	-.151**
29	37	-.151**	29	37	-.151**
29	41	-.109*	29	50	-.141**
29	43	.175**	29	46	-.130*
29	46	-.130*	29	41	-.109*
29	50	-.141**	29	24	-.108*
31	11	-.203**	31	39	.483**
31	17	.114*	31	18	.204**
31	18	.204**	31	11	-.203**
31	19	.111*	31	24	.178**
31	20	.152**	31	41	.171**
31	24	.178**	31	47	-.153**

31	**34**	.123*	31	20	**.152****
31	**39**	.483**	31	34	**.123***
31	**41**	.171**	31	45	**.123***
31	**44**	-.116*	31	44	**-.116***
31	**45**	.123*	31	17	**.114***
31	**47**	-.153**	31	19	**.111***
32	**11**	-.116*	32	45	**.187****
32	**19**	.169**	32	19	**.169****
32	**26**	.130*	32	26	**.130***
32	**45**	.187**	32	11	**-.116***
32	**49**	-.111*	32	49	**-.111***
33	**23**	-.118*	33	46	**-.124***
33	**45**	-.112*	33	23	**-.118***
33	**46**	-.124*	33	45	**-.112***
33	**47**	.107*	33	47	**.107***
34	**1**	.261**	34	1	**.261****
34	**19**	.146**	34	19	**.146****
34	**31**	.123*	34	39	**.139***
34	**39**	.139*	34	31	**.123***
34	**46**	-.121*	34	46	**-.121***
37	**3**	.130*	37	21	**.198****
37	**7**	.115*	37	42	**.196****
37	**18**	.118*	37	29	**-.151****
37	**21**	.198**	37	3	**.130***
37	**24**	.111*	37	50	**.129***
37	**29**	-.151**	37	18	**.118***
37	**42**	.196**	37	7	**.115***
37	**48**	.112*	37	48	**.112***
37	**50**	.129*	37	24	**.111***

39	3	.110*	39	31	.483**
39	11	-.147**	39	17	.174**
39	17	.174**	39	18	.172**
39	18	.172**	39	44	-.156**
39	20	.132*	39	11	-.147**
39	31	.483**	39	47	-.141**
39	34	.139*	39	34	.139*
39	41	.125*	39	20	.132*
39	44	-.156**	39	41	.125*
39	47	-.141**	39	49	.125*
39	49	.125*	39	3	.110*
40	3	-.122*	40	3	-.122*
41	1	-.156**	41	13	.184**
41	8	-.168**	41	31	.171**
41	12	.126*	41	8	-.168**
41	13	.184**	41	1	-.156**
41	20	.130*	41	24	.147**
41	24	.147**	41	20	.130*
41	29	-.109*	41	12	.126*
41	31	.171**	41	39	.125*
41	39	.125*	41	29	-.109*
42	7	.165**	42	21	.349**
42	14	.137*	42	37	.196**
42	19	.180**	42	19	.180**
42	21	.349**	42	7	.165**
42	26	.126*	42	14	.137*
42	37	.196**	42	26	.126*
43	11	.122*	43	29	.175**
43	16	.112*	43	48	.126*
43	18	-.120*	43	11	.122*

43	29	.175**	43	18	-.120*
43	48	.126*	43	16	.112*
44	12	-.132*	44	39	-.156**
44	18	-.126*	44	12	-.132*
44	26	.112*	44	46	.127*
44	28	.115*	44	18	-.126*
44	31	-.116*	44	45	.120*
44	39	-.156**	44	31	-.116*
44	45	.120*	44	28	.115*
44	46	.127*	44	26	.112*
45	1	.304**	45	19	.321**
45	3	.130*	45	1	.304**
45	13	.126*	45	32	.187**
45	16	.117*	45	50	.174**
45	19	.321**	45	23	.133*
45	23	.133*	45	3	.130*
45	31	.123*	45	13	.126*
45	32	.187**	45	47	.126*
45	33	-.112*	45	31	.123*
45	44	.120*	45	44	.120*
45	47	.126*	45	16	.117*
45	50	.174**	45	33	-.112*
46	10	.122*	46	29	-.130*
46	29	-.130*	46	44	.127*
46	33	-.124*	46	33	-.124*
46	34	-.121*	46	10	.122*
46	44	.127*	46	34	-.121*
47	12	.138*	47	31	-.153**
47	20	.115*	47	39	-.141**

47	**31**	-.153**	47	12	**.138***
47	**33**	.107*	47	45	**.126***
47	**39**	-.141**	47	20	**.115***
47	**45**	.126*	47	33	**.107***
48	**3**	.119*	48	19	**.214****
48	**16**	.181**	48	28	**-.183****
48	**19**	.214**	48	16	**.181****
48	**28**	-.183**	48	43	**.126***
48	**37**	.112*	48	3	**.119***
48	**43**	.126*	48	37	**.112***
49	**32**	-.111*	49	39	**.125***
49	**39**	.125*	49	32	**-.111***
50	**1**	.159**	50	45	**.174****
50	**14**	.119*	50	1	**.159****
50	**16**	.145**	50	19	**.150****
50	**19**	.150**	50	16	**.145****
50	**29**	-.141**	50	29	**-.141****
50	**37**	.129*	50	37	**.129***
50	**45**	.174**	50	14	**.119***

Note. **. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed). The underlined values under STS Subscale EW indicate that the left-hand STS Scale Item Number is included in Subscale EW.

VITA

Ted Lawrence Bartlett was born in Chicago, Illinois, and has lived here for almost all of his life. He earned the degree of Bachelor of Arts in the Teaching of German from the University of Illinois, Chicago Circle Campus, in 1970, and the degree of Master of Arts with Distinction in Educational Leadership from DePaul University in 1998. Also in 1998, Mr. Bartlett received the type 75 administrative certificate. Mr. Bartlett expects to receive his degree of Doctor of Education in Educational Leadership in March 2004.

Currently employed by the Chicago Public Schools, Mr. Bartlett teaches seventh and eighth grade science at Abraham Lincoln Elementary School. His future may include moving into an administrative position, teaching at the university level, performing educational research, and writing for educational journals.