

Environmental impacts on GPA for accelerated schools: A values and behavioral approach

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Abstract

This research explores the impact of students' ability to adjust to school environment at a residential accelerated upper-level high school for math and science. Students in their junior and senior years were given the DISC (Dominance, Influence, Steadiness, Conscientiousness) behavioral instrument and tracked over a two year period. The DISC has been used in job profiling to help companies make better hiring decisions such that employee retention and job success are maximized. The DISC identifies a person's adapted behaviors based on what he or she believes about the environment, and also identifies the person's natural or preferred behaviors. Stress from the environment can be measured by reviewing the difference between the adapted and natural behaviors. Dissimilarity between the adapted and natural behavioral styles would indicate more stress related to the environment. The individual difference scores for the four DISC components were added to create a new variable, TotalD. The study used multiple regression analysis to assess the impact of TotalD scores on the outgoing GPA of the student. Results indicate that the greater the TotalD score, the lower the outgoing GPA. Further analysis showed via t-tests that students with an outgoing GPA of 3.60 or higher were most affected by this TotalD score. This research illustrates that the DISC can be used with relatively young subjects to determine how well they are adjusting to the environment. Findings can also be used to help improve retention at the institution and better predict those who may be most at risk for attrition.

Keywords: adapted behaviors, natural behaviors, attrition, retention

Introduction

The DISC has been used in job profiling (Furlow, 2000) to help companies make better hiring decisions such that employee retention and job success are maximized. Support for hiring practices that intentionally result in a closer match between an employee's behavior preferences and job skills are found in companies as diverse as Walt Disney's the Magic Kingdom and Southwest Airlines (Connellan, 1996; Freiberg & Freiberg, 1997; Sartain & Finney, 2003). Companies use these practices because their employees generally have higher levels of motivation and a lower turnover rate while the companies themselves tend to have better overall organizational performance with significant reductions in the cost of doing business (Collins, 2001 and Curphy, 1988).

An upper-level residential school for accelerated learners faces many of the same concerns as employers. The school administration wants to attract and retain students who have both the social and academic skills needed to be successful in the residential school environment (Brody & Benbow, 1986; Caplan, Henderson, Henderson & Fleming, 2002; Lupkowski, Whitmore & Ramsey, 1992; Muratori, Colangelo & Assouline, 2003; and Noble & Drummond, 1992). As in industry, when the fit between student social and academic skills is strong, the students potentially have a greater likelihood of persisting and being more successful while the cost to the school in lost funding opportunities for other potentially successful students decreases.

Despite the best efforts of the institution, students in the program sometimes drop out. Other than academic criteria, there are no additional predictors of success used by the institution to evaluate prospective students. There is significant investment of time and money in selecting high school juniors and seniors to attend an accelerated residency school for gifted and talented students. Furthermore, students who drop out cannot be replaced, which can impact future school funding.

The purpose of this study is to identify additional variables that would predict student retention or provide an early warning of students at-risk for leaving. Success in this study was measured as the outgoing grade point average (endGPA) of the student. Multiple regression analysis was used to determine predictors of this dependent variable.

Identification of predictor variables (e.g., sex, grade rank, incoming GPA, outgoing GPA) could assist the school administration in screening students for admission and providing an early warning of students at-risk for dropping out. Retention is a significant component of state funding. Furthermore, it would reduce the emotional stress of both students and parents created by the student's dropping out of school before graduating.

Theoretical Background

Identifying and selecting gifted and talented students has been researched for over 40 years (Johns Hopkins University, 1999). Joseph S. Renzulli, Director, The National Research Center on the Gifted and Talented, University of Connecticut, has indicated that highly productive people have three interlocking clusters of ability that can be applied to gifted and talented students: above average ability, task commitment, and creativity (Renzulli, 1986). Sternberg and Wagner (1982) have described giftedness as a kind of mental self management with three characteristics: adapting to environments, selecting new environments, and shaping environments. They also describe three skills typically used: separating relevant from irrelevant

information, combining isolated pieces of information into a unified whole, and relating newly acquired information to information acquired in the past.

When gifted and talented students were compared with students of the same age group, personality and behavioral differences were found (Mills, 1993). In this case the Myers-Briggs Type Indicator dimensions were used for comparison resulting in the gifted and talented students conveying greater preferences for introversion, intuition, and thinking. Additionally, the academically talented students expressed a preference for a perceptive style. These students gave emphasis to thinking over feeling. They tended to score higher on achievement drive and lower on interpersonal and social concerns.

Dealing effectively with people through self-awareness has been identified as important to success for both students and employees. Drucker (2005), recognized for his consulting and writing related to effective management practices said, "History's great achievers – a Napoléon, a da Vinci, a Mozart – have always managed themselves." Part of managing oneself as proposed by Drucker includes understanding oneself and building on one's strengths. This includes understanding how one gets things done and how this is similar to or different from how others get things done. Goleman (2004) argues, "People who have a high degree of self-awareness recognize how their feelings affect them, other people, and their job performance."

One approach to increasing self-awareness and the impact one has on others that is recommended by Rehling (2004) is improving understanding of conversational styles. The DISC approach is one way to improve dyadic and team relationships (Bjorseth, 2004).

Stress can be significant for gifted and talented students (Kaplan & Geoffroy, 1993; Macham, 1991). Kaplan (1990) describes the impact of stress in gifted students as the following: "Many gifted youngsters have a heightened sensitivity to their surroundings, to events, to ideas, and to expectations. Some experience their own high expectations for achievement as a relentless pressure to excel. Constant striving to live up to self-expectations--or those of others-- to be first, best, or both can be very stressful. With every new course, new teacher, or new school questions arise about achievement and performance, since every new situation carries with it the frightening risk of being mediocre. Striving becomes even more stressful when unrealistic or unclear expectations are imposed by adults or peers. The pressure to excel, accompanied by other concerns such as feeling different, self-doubt (the "imposter" syndrome), and the need to prove their giftedness can drain the energy of gifted students and result in additional stress."

Kaplan then suggests that stress can hinder the gifted student's thinking, concentration, and decision making:

"It leads to forgetfulness and a loss of ability to focus keenly on a task, and it makes students overly sensitive to criticism. Under these conditions, they perform less well and are more upset by their failures."

When gifted students are placed in direct competition with other gifted students, self-concept can decrease which sometimes leads to an increase in stress. (Kaplan & Geoffroy, 1993). Renzulli & Park (2007) have suggested that schools must identify and pay attention to signs of frustration and discontent in gifted students. They also suggested that schools should change school culture to provide challenging curriculums to accommodate the student's learning needs and interests. Earlier Silverman (1993) recommended that schools should provide learning communities by factoring into the classroom various kinds of students. Renzulli and Park (2007) cautioned schools to "Find ways to affirm students who don't fit the 'good student' mold" (p. 40).

The literature related to effectiveness in communication and in work skills shows both commonalities and differences when approaching this topic. Four style-based factors frequently identified as being closely related to effective communications and work skills are D or Dominance, I or Influencing, S or Steadiness or Supportiveness, and C or Compliance or Conscientiousness (Bonnstetter & Suiter, 2007; Straw, 2002; Wittmann, 2008; Zigarmi, Blanchard, O'Conner & Edeburn, 2005). Four other somewhat similar style-based factors related to effective communication and relationships use terminology such as Driver or Director, Expressive or Socializer, Amiable or Relater and Analytical or Cautious (Alessandra, O'Connor & Alessandra, 1990; Bolton & Bolton, 1996; Merrill & Reid, 1981).

Style Insights – DISC is produced by Target Training International – Performance Systems, Ltd. TTI “uses the term ‘style’ as originally suggested by Fritz Perls to relate more to the specifics of how someone does something (Watson & Klassen, 2004, p. 4).” The Style Insights - DISC (Dominance, Influencing, Steadiness, Compliance) behavioral instrument produced by TTI has made changes to newer versions of their instrument as a means of keeping pace with current terms and descriptors being used (Watson & Klassen, 2004). The material produced by TTI also includes measures of behavioral hierarchy factors which relate to the ability to call upon many or fewer behavioral skills (Bonnstetter, 2006) and measures both natural and adapted behaviors (Watson & Klassen, 2004).

The DISC theory was originally developed by Marston (1928) and published in *The Emotions of Normal People*. Using DISC terminology Marston described people as behaving along two axes, passive or active, depending on the individual's perception of the environment as either antagonistic or favorable (Bonnstetter & Suiter, 2007). These can be grouped into four quadrants as follows:

1. Dominance (D) generates activity in an antagonistic environment;
2. Inducement (I), later changed to Influencing, generates activity in a favorable environment;
3. Steadiness (S) generates passivity in a favorable environment; or
4. Compliance (C) generates passivity in an antagonistic environment (Bonnstetter & Suiter, 2007).

Vrba (2008, pp. 9 - 10) defines each of the DISC factors as follows:

Dominance. Dominance style of behavior is direct and decisive. This individual feels that it is important to achieve goals, they do not need to be told what to do, and they set high standards. When projects take too long they grow impatient: they enjoy competition and want to win. They are sometimes blunt and come to the point directly. “D” individuals tend to be direct, controlling, risk-taking, pessimistic, judging, extroverted, change-oriented, and fight-oriented.

Influencing. The Influencing behavior style reflects outgoing, optimistic individuals who love to communicate, and are people persons. These individuals tend to participate in team and group activities; they like the limelight though may not want to lead. “I” individuals prefer to be direct, accepting, risk-taking, optimistic, perceiving, extroverted, change-oriented and flight-oriented.

Steadiness. The Steadiness behavior style shows sympathetic, cooperative behavior. Helping others and fitting in are important to these individuals though they are hesitant to implement change and do not like to be in the limelight. “S” individuals tend to be indirect, accepting, risk-assessing, optimistic, perceiving, introverted, continuity-oriented, and flight-oriented.

Compliance. Compliance behavior style tends to be reliable and trustworthy. These individuals will plan out a strategy considering all the facts and possible malfunctions, and they prefer to work alone. “C” individuals prefer to be indirect, controlling, risk-assessing, pessimistic, judging, introverted, continuity-oriented, and fight-oriented.

Marston did not develop the DISC instrument, but his work did lay the foundation for the current DISC behavioral instrument (Bonnstetter & Suiter, 2007). Walter Clarke developed the first DISC related instrument entitled Activity Vector Analysis (Personality Insights, 1940). The Style Insights – DISC instrument used in this study was developed and validated by Bonnstetter (2007) and Target Training International, Ltd. Over 20 years of research and validation studies have been completed. The most recent validation study was conducted by Klassen (2006).

Use of the DISC model provides a behavioral framework to help people understand their behavior preferences, learn to identify behavior preferences of others, and learn to identify specific behaviors best suited for various organizational environments (Warburton, 1983). According to Warburton (1983, p. 2), “this is the information which they require for maximum productivity and to build multiform, harmonious relations with others.” Working with a model such as that provided by the DISC approach helps overcome the belief that only people who are like me are the best choice for work positions or team members for a school project (Hymowitz, 2004; May & Gueldenzoph, 2003).

Personality and the relating behaviors have been found to predict job satisfaction (Judge, Heller & Mount, 2002). Another study found that personality and job satisfaction were significantly correlated in intensive care, non-intensive care and perioperative nurses (Hart, 1986). The importance of helping people in organizations understand and use behaviors effectively can be directly related to turnover. According to Schoeck (2007), “85% of turnover is due to behavioral incompatibility.” Shepherd (2005) has reported increased profits when employee work styles are compatible with the work styles preferred by the organization. Part of the increase in profits could be related to a decrease in employee turnover because of the improvement in person/job fit.

A number of studies have researched the value of using the DISC instrument to predict success. One study found that it can be useful in predicting the success of sales managers (Devine, Naidu, Kleimenhagen, 1997). Bonnstetter (2006) studied 670 top performing sales people from companies in both the U.S. and Germany. He found that behavior, particularly behaviors related to D, S, and C, were shared by top performers in sales in both countries.

The DISC system (Scarbecz, 2007) has also been used as a communication tool to motivate patients to engage in healthy behaviors. By using the DISC system to establish a rapport with dental patients, Scarbecz reports dental professionals having increased success with persuading patients to accept treatment plans that are essential for their health and well-being.

Another study suggests that the DISC system can be used to profile jobs and then hire those persons that match the profile (Furlow, 2000). Hall, in Bonnstetter & Suiter (2007), found that persons with high Dominance and low Steadiness scores have a higher chance of accidents

in certain occupations. Hall also found that persons with a high Steadiness or Compliance score have a greater likelihood of their using safer behaviors.

The DISC report identifies two behavioral styles, Natural (Graph 2) and Adaptive (Graph 1). The Natural Style represents the behaviors one exhibits when they are not under pressure. This is said to be the “real you.” The Adapted Style predicts one’s behaviors when placed in an environment that the person perceives as demanding certain behaviors (Bonnstetter & Suiter, 2007). Warburton, in Bonnstetter & Suiter (2007), found a direct correlation between a person’s DISC Natural Style behaviors and that same person’s match to their environment (job or home) or Adapted Style behaviors. Warburton revealed that the greater the disparity between the DISC natural behavioral style and the environmental adapted behavioral style, the greater the stress. Furthermore, Warburton’s research gives evidence that the DISC natural and adapted behavioral disparity is a predictor of job satisfaction, mental health, physical health, alcohol use and absenteeism (Bonnstetter & Suiter, 2007). Thus, the greater the difference between Graph 1 and Graph 2, the greater the potential for stress.

Students vary in their ability to self-manage the level of stress associated with adapting to a learning environment different from their natural behavioral style and the learning process involved in the environment. The self-generated energy that gives behavior direction toward a particular goal is, according to Zimmerman (1985), a key component of self-motivation. Certainly self-motivation includes the ability of a person to choose to regulate their behaviors as they determine appropriate for effectiveness in specification situations (Smith, 2001).

Artino (2008), studying students in a traditional classroom and an online classroom, did report research findings that showed students with higher self-regulating behaviors tended to have higher GPAs. Research findings reported by Bagamery, Lasik and Nixon (2005) support earlier work of Black and Duhon (2003) related to gender and grades as they relate to student performance. Both groups of researchers have reported that gender and grades are significant determinants of student performance.

Noble and Smyth (1995) reported that females in an accelerated school setting are more likely to earn grades equivalent to males who are participating in a similar academic environment. Females in this accelerated academic environment are also more likely to persist effectively in math and science courses. This level of persistence tends to be higher than that of their peers in a less challenging academic environment or one where peer support for female achievement in the areas of math and science is not strong. One rationale proposed for this difference is that both males and females in the accelerated learning environment provide a support network for each other where high achievement in math and science is encouraged by their peers.

Bagamery, Laski and Nixon (2005) further reported findings that age (or rank in school) was not a significant determinant of student performance. Students who tend to perform well at one age or grade in school have a tendency to continue to perform well as they progress through school.

The methodology used in this research project and the hypotheses evaluated are addressed in the following section.

Methodology & Hypotheses

A two-year, accelerated public residential state high school for students in their junior

and senior years was utilized in this study. The school is located in the south-central US; studies at the institution focus primarily on mathematics, science, computer science and humanities. It is part of that state's flagship university system. Admission to the school is competitive and selective; previous GPA at the student's home high school is used as a criterion, along with ACT or SAT scores.

This research explores the impact environment has on academic performance at an accelerated residential gifted and talented upper-level high school for math and science. Students in their junior and senior years were given the DISC (Dominance, Influence, Steadiness, Conscientiousness) behavioral instrument and tracked over a two year period to identify predictor attributes of success. Data were collected from 211 students, including academic and personal demographic information along with DISC scores. All data collection was completed in a computer lab with online testing; results were provided to the students approximately two months following their participation.

Four independent variables were utilized in this study (TotalD, Sex, Grade, and GPA). TotalD is the sum of the absolute value of the difference between each DISC variable from his or her Adapted Style and Natural Style, and is a measure of stress. Sex is a dummy variable (0 = female, 1 = male), Grade (rank) is the numerical year of their grade level (11 or 12), and GPA (entering) is the earned GPA each student brought with them from the previous high school (freshman and sophomore years). The observed dependent variable was endGPA, the cumulative GPA earned while at this institution.

Based on the literature discussed above, it is hypothesized that the following relationships will exist between the independent variables and the dependent variable endGPA as shown in Table 1.

Results

“Success” at this institution was operationalized as Grade Point Average earned while at the two-year school (endGPA), and was the dependent variable. The mean endGPA was 3.55, while the median was 3.56. Values of three of the independent variables were based on institutional data (sex, grade and entering GPA). The remaining independent variable was calculated post-hoc based on student responses to the DISC instrument.

The DISC reports an individual score for each of the four components, but in both the subject's “natural” and “adapted” or environmental styles. Thus, there are Dn, Da, In, Ia, etc., scores for each student. A third set of four measures was calculated as “difference” scores (Dd, Id, etc.) that is the absolute value of the difference between the adapted and natural states. Finally, a new composite variable, the Total Difference (TotalD) score, was calculated that is the sum of Dd, Id, Sd and Cd. These scores were used in multiple regressions (Table 3) and t-test comparisons of students above or below various endGPA cutoff values (Table 4).

Table 1 shows inter-item correlations between the four independent variables and the dependent variable. There is a significant negative correlation between TotalD and endGPA ($r = -.143$; $p = .041$). Other significant relationships include GPA with endGPA ($r = .717$; $p = .000$) and Grade with endGPA ($r = -.178$; $p = .011$). These indicate that as TotalD and Grade increase, endGPA decreases; while incoming GPA and endGPA are highly correlated. The strength of this latter correlation is so strong as to suggest the possibility of multicollinearity in a regression equation calculated subsequently. GPA and endGPA are independent measures, though, since students effectively begin anew once they start at this institution.

Table 3 shows the results of 7 regression equations that were calculated. A full model (Model 1) was calculated first using all four independent variables (R-square = .540). In this model both Grade and GPA were significant predictors, while TotalD was less than marginally significant. Sex was insignificant and thus not deemed a relevant predictor of endGPA.

In Model 2, sex was removed since it was the least-important variable in the previous model. Overall R-square was virtually unchanged; Grade and GPA remained highly significant predictors, while TotalD improved slightly toward being significant.

Models 3-5 explored different combinations of two of the three remaining independent variables. In Model 3, Grade and GPA were once again shown to be highly significant, with R-square (.534) only marginally less than in Models 1 and 2. Model 4 include Total D (still not significant) and Grade (highly significant), but the exclusion of Grade caused R-square to drop to .520. In Model 5, Grade and Total D were included, and were both significant. It took the removal of GPA to cause TotalD to become a significant predictor, but R-square dropped to 0.050.

Models 6 and 7 were simple regressions with only GPA (Model 6) and TotalD (Model 7) included. Both variables were very significant in their separate models, but Model 6 had a much higher R-square than did Model 7.

The possibility of multicollinearity in the model by virtue of the GPA variable is strong, even though, as indicated above, they are independent measures. Still, the strength of this relationship is both intuitive and supported in the literature. While GPA and endGPA are independent, in one sense endGPA is but a continuation (albeit after a restart) of what a student has already been capable of attaining. Thus, a student who entered with a high GPA will likely continue in a similar fashion.

The role of TotalD only becomes apparent, though, once GPA is removed from the mix. Further analysis of endGPA based on only TotalD showed specifically where the impact is felt the most. Table 4 includes the results of three t-tests for independent means. The first t-test used the median endGPA value (3.56) as the cutoff for analysis, resulting in two equally sized groups. While those at or above the median had lower TotalD scores, the difference in means was not significant. But when the cutoff was increased to 3.60, the difference in means became very significant. Raising the cutoff to 3.65 revealed an even more significant difference. The implication of these findings is that students with higher endGPAs have less stress than their peers with lower endGPAs.

Based on the results of the analyses above, we thus retain H1, H2 and H4, while rejecting H3. The incoming GPA is a very strong predictor of endGPA, as supported in the literature. Grade (H3) was significantly and negatively related to endGPA, showing that as students moved from 11th to 12 grades their cumulative GPAs dropped (thus opposing prior research findings). There was no gender-based difference in endGPA, thus affirming prior research findings. Finally, stress, as measured by the TotalD score, was shown to be a significant predictor of endGPA (albeit a weak one).

Discussion

The data used in this research project focuses solely on student scores on the DISC and outgoing GPA's. There has been no involvement of administration/management training in the DISC system that would help them see specific benefits in approaching students and/or employees based on style needs and preferences.

Natural DISC scores reflect a person's preferences for behaviors. Adapted DISC scores reflect the behaviors a person believes are needed for a particular situation (e.g., job or school environment). The greater the disparity between natural and adapted scores, the greater the likelihood that a person's stress level is increasing (Warburton, 1983). While moderate to moderately high levels of stress may help increase productivity, the point at which stress becomes negative and results in nonproductive behavior will vary.

Someone in a new job or who is adjusting to a new school environment may initially have higher differences between their Adapted and Natural scores and thus have a larger overall Difference score. Even someone who tends to use behaviors from each of the four styles to adapt to situational needs will, over time, risk burnout and excessive fatigue if they are not able to use some of their preferred behavior in productive ways.

If the job characteristics (i.e., course requirements) aren't motivating or rewarding, then making a change such as adapting your DISC scores might not always work. Ree and Carretta (1999) implicitly support this concept where research they conducted indicated that lack of ability may not be the problem. Their research indicated that it is possible for the student to simply find the job characteristics (e.g., course requirements) to be demotivating.

DISC style preferences, both Natural and Adapted, can be one factor contributing to a student or employee's success. While style fit (sum of the difference in Adapted and Natural styles) for both the individual and the organization is important, DISC style alone may not be the only predictor of success. The fact that only data relating to the DISC system were used in this project is a limiting factor in the research. Additionally, directionality (direction of the difference scores between the Adapted and Natural DISC scores) should be explored and is a limiting factor.

Also, the data in this research project apply to performance of accelerated junior and senior students at a residential school. Without additional research, it cannot be generalized beyond this one group and setting.

Further research is needed to expand analysis of data related to the DISC system and to include another potentially important component, a measure of attitudes and values. Behaviors typically reflect how a person behaves while values reveal why a person makes specific choices.

This research could be expanded in several ways. One dimension that would add depth would be to involve the administration and faculty of the school in DISC training and get their support for its use by them in interacting with the students. Another would be to determine the specific environmental factors that influence performance for those that had high sum of difference scores. This could lead to a more successful and well rounded learning environment.

Future research should consider directionality of the differences between Adapted and Natural DISC scores. Earlier research has suggested that a higher Adapted D and C score was a predictor of success (Deviney, Mills & Gerlich, 2009). This would suggest that students adapting to a task environment would be more successful than those that cannot.

Finally, future research should incorporate a measure of attitudes and values. If the DISC styles indicate *how* one behaves, and individual attitudes and values measure *why* a person makes various choices, it would seem important to analyze outcomes on attitudes and values independently and to also combine behaviors, attitudes and values measures to see if the overall combination does in fact provide a more complete picture.

Future research needs to address each of these limitations, individually and collectively, to identify possible relationships that could support or even change the direction of findings when examining style based on the single factor with the highest score.

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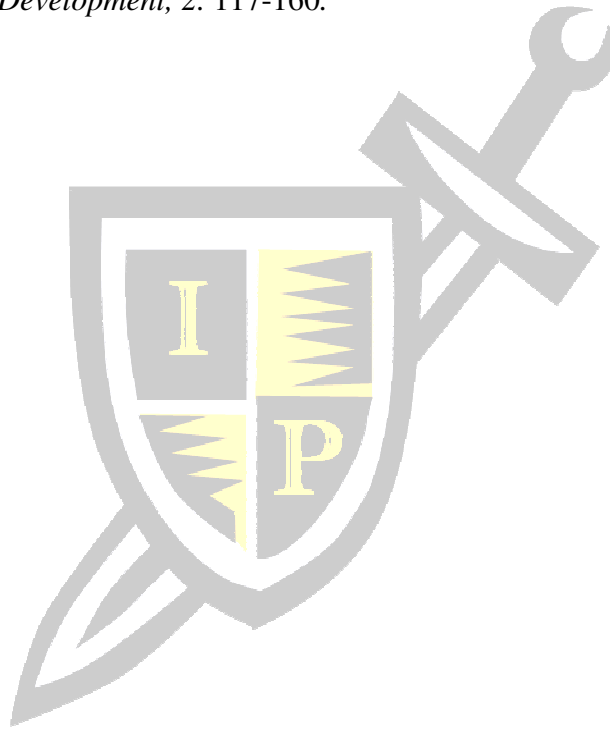


Table 1
Hypotheses Matrix: Effect of Independent Variables on endGPA

Hypothesis	Independent Variables	Directionality
H1	TotalD	s.d. (-)
H2	Sex	n.s.d.
H3	Grade (rank)	n.s.d.

H4	GPA (entering)	s.d. (+)
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s.d. = significant difference and direction of difference
n.s.d. = no significant difference

Table 2: Correlations

		TotalD	endGPA	GPA	grade	sex
TotalD	Pearson Correlation	1	-.143(*)	-.097	.064	.078
	Sig. (2-tailed)		.041	.165	.353	.261
	N	211	205	208	211	211
endGPA	Pearson Correlation	-.143(*)	1	.717(**)	-.178(*)	-.073
	Sig. (2-tailed)	.041		.000	.011	.299
	N	205	205	202	205	205
GPA	Pearson Correlation	-.097	.717(**)	1	-.027	-.122
	Sig. (2-tailed)	.165	.000		.696	.080
	N	208	202	208	208	208
grade	Pearson Correlation	.064	-.178(*)	-.027	1	-.072
	Sig. (2-tailed)	.353	.011	.696		.298
	N	211	205	208	211	211
sex	Pearson Correlation	.078	-.073	-.122	-.072	1
	Sig. (2-tailed)	.261	.299	.080	.298	
	N	211	205	208	211	211

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

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

Table 3: Regression Models

Factor/Model	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TotalD	B= -.001 t= -1.484 p= 0.139	B= -.001 t= -1.446 p= .115		B= - .001 t= - 1.512 p= .132	B= -.001 t= -1.955 p= .052*		B= -.001 t= -2.060 p= .041*
Sex	B= .014 t= .606 p= .545						
Grade	B= -.065 t= -2.811 p= .005*	B= -.067 t= -2.896 p= .004*	B= -.068 t= -2.936 p= .004*		B= - .081 t= -2.487 p= .014*		
GPA	B= .884 t= 14.350 p= .000*	B= .879 t= 14.448 p= .000*	B= .888 t= 14.640	B= .888 t= 14.353		B= .898 t= 14.550	

			p= .000*	p= .000*		p= .000*	
R-squared	0.540	0.539	.534	.520	.050	0.514	0.020

* significant at p = 0.05 level

Table 4: T-tests for Independent Means: TotalD by endGPA groups

endGPA Group/Stats	N	Mean	Std Dev	t	p
>= 3.56	103	57.59	26.793	-1.661	0.098
<3.56	102	64.04	28.749		
>= 3.60	87	55.55	25.252	-2.338	0.020*
< 3.60	118	64.67	29.210		
>= 3.65	70	53.26	22.864	-2.835	0.005*
< 3.65	135	64.71	29.513		

df = 203

* significant at p = 0.05 level

