Class Placement and Academic and Behavioral Variables as Predictors of Graduation for Students with Disabilities

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Abstract: This study investigated the impact of specified variables related to academic history, behavioral history, and availability of inclusive systems as potential risk factors for dropouts, impacting students with disabilities. Results indicated that a successful academic history was the only significant predictor of graduation potential when statistically controlling all the other variables.

The national propagation of inclusion has impacted the field of education significantly (Hehir, 2005). Inclusive ideology supports the notion that every student can learn and that those with disabilities benefit greatly from increased interactions with non-disabled peers and direct exposure to the general education curriculum (Fisher & Frey, 2003; Huefner, 2000; Lee-Tarver, 2006). Given the relatively young history of inclusive practices, it is still unclear how it impacts the graduation rates of students with disabilities. Inclusion advocates assert that students with disabilities have the legal right to be educated alongside their non-disabled peers (Rea, McLaughlin, & Walther-Thomas, 2002) and point out that the educational outcomes and graduation rates of students with disabilities educated under the self-contained or pull-out models are generally poor (Rea et al., 2002). Yet, dropout rates for students with disabilities have remained steady even after inclusive practices were put into place (Bost, 2006).

The failure of students with Specific Learning Disabilities (SLD) or Emotional Behavioral Disturbances (EBD) to graduate prevails nationally. As evidence, 51.4% of students with EBD and 34.1% of students with SLD drop out (Bost, 2006), indicating the need for further investigation and continuous evaluation of the dropout phenomenon amongst these student populations. The purpose of this study was to investigate the school-related variables that predict the graduation potential of students with SLD or EBD; as well as the impact of inclusive settings on their graduation potential. The study attempted to answer three questions: (a) Do specified school-related variables contribute to the graduation potential of students with SLD or EBD? (b) Do the variables primary exceptionality, gender, ethnicity/race, grade, current enrollment, academic history, behavioral history, standardized test performance, and educational setting contribute to the graduation potential of students with SLD or EBD? and (c) Do the variables educational setting, primary exceptionality, academic history and behavioral history show first order interactions?

Literature Review

The gradual disengagement of students with disabilities from school occurs due to a myriad of social, academic, and behavioral factors that are exacerbated by limiting perceptions of what a disability status constitutes. These often result in the students' removal from the general culture of the school and the failure to view and treat them as contributing members of the school's milieu (Hehir, 2005). Operationally defining *dropout* has become difficult due to lack of consistency in the methods used to determine dropout rates (Kemp, 2006). This lack of objectivity in measuring the magnitude of the problem potentially adds to its propagation.

School attrition in special education is most prevalent in populations of students with SLD and/or EBD (Bost, 2006; NLTS 2, 2003). As empirically supported by the existing

literature, academic and behavioral variables have been consistently found to contribute to school attrition (Bear et al., 2006; Bost, 2006; Cobb et al., 2006; Dunn et al., 2005; French & Conrad, 2001; Scanlon & Mellard, 2002; Suh & Suh, 2007). Given the academic and behavioral problems students with SLD and EBD often experience and manifest, both populations are considered at a greater risk for dropping out.

Researchers have arguably identified the factors that lead to dropout, but have failed to apply these to existing inclusive models, and have generally ignored the student perspective, particularly students with disabilities. The few studies that have included student voice reported that students with disabilities do not feel they belong or are valued in school, have generally negative opinions of their relationships with teachers, and the existing educational constructs are designed to flush them out (Bear et al., 2006 ; Kortering & Braziel,1999). A significant number of studies related to dropout also revealed that regardless of any existing disability, students who drop out disengage from the school's culture (Baken & Kortering, 1999; Bost & Riccomini 2006; Dunn et al., 2004; Lee & Burkman, 2003; Rea et al., 2002). This process typically involves extreme absenteeism or truancy and, consequently, poor academic success.

School attrition in special education is a complex issue requiring further research, an increase in advocacy efforts, and a myriad of prevention-based solutions. Inclusive settings have the potential to become part of these solutions since they can provide students with disabilities special education services within the context of general education. Related research has shown that students with disabilities in inclusion classes increase academic performance as well as pro-social behaviors (Rea et al., 2002). Based on these preliminary findings, this study investigated the impact of inclusion on the graduation potential of students with disabilities. When compared to dropout rates in general education, the steadily increasing school attrition rates in special education have become a chronic reality across the nation, particularly in the categories of SLD and EBD. Given the educational system's legal, educational, and social responsibilities to these students and society at large, every potential avenue to provide relief must be explored. The findings of this study provide some viable solutions to this very complex situation.

Method

This study implemented quantitative methods to identify likely predictors of graduation for students with SLD or EBD. A logistic regression was utilized because its implementation does not assume a linear relationship between the dependent and independent variables and thus handles non-linear effects. The design features included random assignment and random selection. Specifically, the sample investigated included all of the students with SLD or EBD from the four participating schools. To support the reliability of the instrument employed, in this case logistic regression, the test-retest format was followed. Specifically, three trials of all the regressions and interactions were conducted in order to assess if the results were consistent. To facilitate internal consistency linear regressions were implemented to answer all of the research questions.

The sample consisted of a heterogeneous group of 573 students with SLD or EBD. This study was not designed to include only racial or ethnic minority students in the sample. However, due to the demographics of the participating schools and the phenomenon of overrepresentation in the high incidence categories of SLD and EBD (Donovan & Cross, 2002; Harry & Klinger, 2006; Hart, 2003), the entire sample consisted of minority students. Similarly, although the population was heterogeneous by design, due to the over-representation of boys in the EBD category (Sugai & Horner, 1999; U.S. Department of Education, 2007) most of the subjects were male.

Miami-Dade County, Florida, houses the fourth largest school district and the second largest population of racial and ethnic minority students in the nation. Miami-Dade County Public Schools (M-DCPS) is a vast urban district that provides services for 339,087 students. In comparison to other states, Miami-Dade County has the greatest percentage of immigrants as residents and one of the highest poverty rates amongst big cities; the cost of living in Miami-Dade County is 29.32% higher than the national average (Watnick & Sacks, 2006). As of 2008, M-DCPS housed 45 high schools, 12 of which are magnet schools, and are divided into four geographic regions. For the purposes of this study, the following conditions were established in selecting participating schools: (a) school grade of C or lower as determined by scores on the state's standardized test, the Florida Comprehensive Assessment Test (FCAT), (b) students with SLD or EBD represent 20% or more of the dropout population, and (c) students with SLD or EBD make up more than 50% of the students with disabilities population. Accordingly, one school per demographic region was selected, totaling four.

M-DCPS produces yearly reports depicting graduation and dropout rates for all its public schools. Students from the participating schools, with SLD or EBD, who graduated in the 2008-2009 school year, were compared to those who dropped out with the purpose of identifying differentiating factors, based on academic and behavioral histories. A logistic regression was conducted using (a) primary exceptionality, (b) gender, (c) ethnicity/race, (d) grade, (e) current enrollment, (f) academic history, (g) behavioral history, (h) FCAT performance, (i) educational setting, and (j) behavioral history as likely predictor variables of graduation potential. The dependent variable consisted of enrollment (i.e., in-school or dropped out).

The data categories were extracted using archived information from yearly reports provided by M-DCPS. The independent variables were regressed onto the dependent variables using the $Y = b + b^1 x$ equation. The standardized regression weight implemented to interpret results in linear regression or Beta weight was interpreted as a log odd estimate and compared to the odds ratio estimate, which is generally thought to be a more efficient way to show the relationship between the independent and dependent variables (Meyers et al., 2005). To interpret the overall validity of the model proposed, the Cox and Snell's R and the Nagelkerke R^2 were considered. For the purposes of this study the Nagelkerke R^2 was used because it can achieve a maximum value of 1 which is generally preferred (Meyers et al., 2005).

Interaction is the test of the multiplicative of and above the additive effects. It suggests that the effect of one variable depends on the value of one or more other variables. This study investigated the potential existence of first- order interactions between (a) educational setting and academic history, (b) educational setting and behavioral history, (c) primary exceptionality and academic history, and (d) primary exceptionality and behavioral history. These variables were tested for possible first-order interactions in the regression. Both variables were multiplied together to create the interaction variable and were coded as follows: (a) Educational Setting * Academic History, (b) Educational Setting * Behavioral History, (c) Primary exceptionality * Academic History and (d) Primary exceptionality * Behavioral History. To provide a clearer picture of the relationship between these variables correlations were also conducted.

Results

The results of the logistic regression conducted will be discussed in relation to answering the two research questions posed which sought to investigate: Do specified school-related variables contribute to the graduation potential of students with SLD or EBD? Do specified school-related variables show first order interactions?

Results for Research Question 1

Only academic history accounted for a significant amount of unique variance in predicting graduation when controlling for (a) exceptionality, (b) ethnicity, (c) gender, (d) grade, (e) FCAT reading, (f) FCAT math, (g) educational setting, and (h) suspension (see Table 1). The student's academic history (i.e., passing or failing grades) was found to be the strongest predictor of graduation when including all the other variables. Only the variable ethnicity approached significance and indicated that Blacks were more likely to graduate than Hispanics when holding all the other variables constant. Since one of the main goals of study was to explore the significance of inclusive settings on graduation potential, it is important to note that educational setting (self-contained or inclusion) did not account for significant variance when holding all other variables constant or statistically controlling them.

Results for Research Question 2

A significant association between (a) educational setting and academic history, (b) educational setting and behavioral history, (c) primary exceptionality and academic history, and (d) primary exceptionality and behavioral history was found (see table 2). As also portrayed, all of the independent variables except primary exceptionality are associated with the dependent variable (i.e., enrollment). The results also yielded a significant association between being in inclusion classes and having a successful academic history, $r = .267$, $p < .001$. Specifically, 93% of the students in the sample educated in inclusive settings obtained passing grades, while in comparison, 72% of students in the sample from self-contained settings obtained passing grades. In addition, a significant association was found between being in inclusion classes and having a successful behavioral history, $r = -.289$, p<001. Specifically, 79% of the students from self-contained settings were suspended, in comparison to 22% of the students from inclusive settings.

A logistic regression was conducted to determine the effect of the dependent variable (i.e., enrollment) on the independent variables: (a) academic history, (b) behavioral history (i.e., suspensions), and (c) educational setting. This was done in two steps (i.e., model 1 and model 2). As shown in Table 3, the overall model without the interactions (i.e., model 1) was significant. Although model 2 was also significant (see Table 4), there was not a significant change between model 1 and model 2, χ^2 (3) = 3.66, *n.s.* The Nagelkerke R^2 was used to interpret the overall variance of the model; accordingly, the R^2 was .84. This indicates that 84% of the variance of the dependent variable is explained by the independent variables.

The only significant variable for model 2 was academic history (see Table 4). Despite the associations between the independent variables illustrated (i.e., academic history, behavioral history, and educational setting) and the dependent variable (i.e., enrollment), when the other variables were controlled, the only significant variable was academic history. This indicates that the variance between academic history and enrollment overlaps with the variance between behavioral history and enrollment (i.e., it explains overlapping variance). Similarly, the relationship between educational setting and academic history overlaps with the relationship between educational setting and enrollment. Given that one of the goals of this study was to investigate the effect of educational setting (i.e., self-contained and inclusion) on academic history, it is important to note that it was not significant. However, the interaction between educational setting and academic history did approach significance. Therefore, the effect of academic history on enrollment might depend on the educational setting. Specifically, students in inclusive settings are more likely to have a successful academic history when compared to students in self-contained settings, which was the only significant predictor of graduation potential when statistically controlling the other specified variables.

Conclusions

This study aimed to identify the school-related variables that predict the graduation potential of students with SLD or EBD within the current educational climate which mandates inclusive practices. A critical analysis of the results yielded will be discussed throughout this section and substantiated based on the existing literature.

Dropout continues to affect students with disabilities at alarming rates (National Center for Statistics [NCES], 2007), and intensifies in EBD populations (Blackorby & Wagner, 1996; & Cobb et al., 2006). The results yielded by the quantitative component of this study not only support the latter statement, but also suggest that even within the current inclusive climate, students with EBD are still not making adequate progress within the context of graduation potential.

Based on the sample investigated, the only significant predictor of graduation across both exceptionalities was a successful academic history or achieving passing grades, when statistically controlling all the other school-related variables. Since one of the main goals of this study was to investigate the effect of inclusive settings on graduation potential, it is important to clarify that it was not found to be significant when statistically controlling all the other school-related variables. However, it is also important to note that when testing for possible interactions among the specified variables, students in inclusive settings were found to obtain better grades. Specifically, this study found the existence of a first order interaction between inclusive settings and obtaining passing grades. The latter as stated was the one significant predictor of increasing graduation potential.

The only other variable that came close to significance was the student's ethnicity. Based on the sample investigated, Black students with SLD or EBD were significantly more likely to graduate than Hispanic students under the same disability categories. This particular finding coincides with current national dropout trends that indicate Hispanics are the ethnic group at greatest risk for dropout (NCES, 2007). Within the context of school-related variables that increase dropout among Hispanic students,(a) being held back a grade, (b) having been suspended from school often, (c) spending little time engaged in homework assignments, and (d) not being enrolled in a dropout prevention program significantly increased the likelihood of dropping out (Carpenter & Ramirez, 2007). Interestingly, having English as a second language did not significantly impact dropout. Accordingly, Hispanic students born outside of the United States were less likely to drop out than those born here (Carpenter & Ramirez, 2007).

In addressing the first set of interactions, educational setting and academic and behavioral history, this study found that there is a significant interaction between educational setting and academic achievement. Specifically, students in inclusive settings were more likely to pass their classes or achieve academically than students in self-contained settings. As evidence, only 6% of the students in the sample educated in self-contained settings had a successful academic history. These findings support Rea et al.'s (2002) conclusions, which indicated that students with disabilities in inclusive settings performed better academically, as well as this study's contention that inclusion can be implemented as a potential dropout prevention variable for students with disabilities. Moreover, given previously stated findings which indicated that low academic achievement increases dropout (e.g., Bear et al., 2006; Blackorby & Wagner, 1996; Dunn et al., 2004; Suh & Suh, 2007), extensive consideration must be given to the idea that students in inclusion classes experience significantly better academic results than their self-contained counterparts.

The investigator gave extensive consideration to the idea that students in self-contained classes may be different than students in inclusion classes. Based on the perspectives of some of the participants, being in inclusive settings prompted them to want to learn because they saw other students display this behavior. In addition, other participants expressed that the overall environment in inclusion classrooms was more conducive to learning because there were fewer behavioral problems. From the lens of this study, the effects of inclusive settings on the students' academic behaviors can potentially curtail existing differences among students in self-contained and inclusive settings. The potential existence of psychological factors which may potentially differentiate the two groups (i.e., students in inclusive settings and students in self-contained settings) must also be considered. This suggests the potential need for another related study with longitudinal properties, addressing the long-term academic and behavioral history of both groups. In line with studies previously cited (e.g., Bost, 2006; Cobb et al., 2006; Rea et al., 2002), which indicated that inclusive settings promoted pro-social behaviors, this study found that inclusive settings have a significant interaction with behavioral history, or a student's behavioral record.

In analyzing the second set of interactions, exceptionality and academic and behavioral success, the investigator found that there is a first order interaction between exceptionality and academic success. Specifically, based on the sample analyzed, students with EBD were more likely to drop out than all other students. This reaffirms previously discussed findings by Blackorby and Wagner (1996) and Cobb et al. (2006), which concluded students with EBD are at the greatest risk for dropout among all other disability categories.

When considering the previous interaction which indicated that students in inclusive settings experienced better academic outcomes, one can imply that students with EBD are not being included as much as students with SLD. Bost (2006) also found that students with EBD were the least included. Given the inherent behavioral problems generally associated with the EBD label and its detrimental effect on graduation potential (Blackorby & Wagner, 1996; Cobb et al., 2006), it was surprising to find that based on the sample analyzed, students with SLD were more likely to be suspended from school than students with EBD. However, in further scrutinizing this finding, when it comes to students with disabilities, school districts are required to determine whether the problem behavior is a manifestation of the student's disability. If the latter is found to be the case, considerable restraint and caution is generally exercised when determining if suspension or possible expulsion applies. Consequently, given the myriad of potentially troublesome behavioral manifestations associated with the EBD label, these can perhaps curtail the type and magnitude of consequences imparted. Moreover, inclusive settings seldom follow the structured behavioral programs oftentimes implemented in self-contained settings, which as stated were most effective in reducing dropout associated with anti-social and/or aggressive behaviors (Cobb et al., 2006).

Recommendations for the Practice

In considering the educational ramifications of the findings of this study, which among others included that achieving passing grades was the only significant predictor of graduation, significant measures must be taken when addressing the academic needs of students with disabilities. To achieve this, general education teachers in inclusive settings must become familiar with accommodations[1] and adaptations[2] and must also be given adequate support from

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[1] Accommodations: Supports and services given to students with disabilities without changing the actual curriculum or related expectations.
[2] Adaptations: Changes made to the curriculum expectations to meet the needs of students with disabilities.

administrators and special education experts (Hehir, 2005). It is also recommended that pre-service teachers spend more time at actual school settings (Fisher & Frey, 2003) in order to learn within the context of the demands of daily practice.

Findings of this study also suggest that students with EBD were more likely to drop out than all other students. Consequently, the way in which this population is being educated within the context of current inclusive mandates must be urgently addressed. Results of this study yielded that students with SLD or EBD did receive better academic grades in inclusive settings. Based on this, it is suggested that students with EBD be exposed to inclusive settings more frequently or for longer periods of time. Significant attention must be given to findings that indicate students with SLD were suspended more often than students with EBD, perhaps due to the lack of structured behavioral programs in inclusive settings. Accordingly, a structured behavioral program including a generalization phase is followed in inclusive settings, with the support of the special education teacher (Cobb et al., 2006). Dropout trends have been moderately reduced in general education since the early 1990s (Bost, 2006); it is both a moral and a professional obligation to ensure that the same occurs in special education.

This study was found to have several potential limitations. School districts have significant freedom in selecting which type of statistical procedure they implement to quantify the number of students who drop out, generally the event cohort model is implemented which is often the least accurate method (Kemp, 2006). Consequently, the data analyzed potentially underestimated the number of students with SLD or EBD who dropped out. Lack of longitudinal information can also potentially underscore significant existing differences between the students who made up the educational settings investigated (i.e., inclusion and self-contained). Another potential limitation was that there were no White students in the sample, which can potentially limit the generalization of this study's results to students from primarily Black or Hispanic school districts.

Implications for Future Research

To continue investigating the impact of inclusive settings on students with disabilities, it is recommended that a study with longitudinal properties be conducted where the long-term psychological, academic, and behavioral histories of the sample would be taken into account. Importantly, NTLS (2001) conducted a similar study, but not within the context of the current educational climate where most students with high incidence disabilities are included for most of the school day. To further explore how the general culture of the school affects dropout trends, and given that the sample selected in this study was from schools graded 'C' or lower, a similar study can be conducted in 'A' and 'B' schools. Specifically, the significance of the school's grade as it relates to dropout trends in special education can be investigated.

References

Bakken, T., & Kortering, L. (1999). The constitutional and statutory obligations of schools toward special education school dropouts. *Remedial and Special Education, 20*, 360–366.

Bear, G., Kortering, L., & Braziel, P. (2006). School completers and non-completers with learning disabilities: Similarities in academic achievement and perceptions of self and teachers. *Remedial and Special Education, 27*(5), 293–300.

Blackorby, J., & Wagner, M. (1996). Longitudinal post-school outcomes for youth with disabilities: Findings from the National Longitudinal Study. *Exceptional Children, 62*, 399–413.

Bost, L. W. (2006, July). *Effective interventions in dropout prevention for students with disabilities: Putting the evidence into practice*. Paper presented at the Critical Issues in Urban Education Harvard Summer Institute, Boston, MA.

Bost, L. W., & Riccomini, P. J. (2006). Effective instruction. *Remedial and Special Education, 27*(5), 301–311.

Carpenter, D. M., & Ramirez, A. (2007). More than one gap: Dropout rate gaps between and among Black, Hispanic, and White students. *Journal of Advanced Academics, 19*(1), 32-64.

Cobb, B., Sample, P. L., Alwell, M., & Johns, N. R. (2006). Coginitive-behavioral interventions, dropout, and youth with disabilities. *Remedial and Special Education, 27*(5), 259–275.

Donovan S., & Cross, C. (2002). *Minority students in special and gifted education.* Washington, DC: National Academy Press.

Dunn, C., Chambers, D., & Rabren, K. (2004). Variables affecting students' decisions to drop out of school. *Remedial and Special Education*, *25*(5), 314–323.

Fisher, D., & Frey, N. (2003). *Inclusive urban schools*. Baltimore, MD: Paul H. Brookes.

Harry, B., & Klinger, J. (2006). *Why are so many minority students in special education? Understanding race and disability in schools*. New York, NY: Teachers College Press.

Hehir, T. (2005). *New directions in special education: Eliminating ableism in policy and practice*. Cambridge, MA: Harvard Education Press.

Huefner, D. S. (2000). The risks and opportunities of the IEP requirements under IDEA '97. *Journal of Special Education*, *33*(4), 195–204.

Kemp, S. E. (2006). Dropout policies and trends for students with and without disabilities. *Adolescence*, *41*(162), 235–250.

Kortering, L. J., & Braziel, P. M. (1999). School dropout from the perspective of former students: Implications for secondary school programs. *Remedial and Special Education, 20*, 78–83.

Lee-Tarver, A. (2006). Are individualized education plans a good thing? A survey of teachers' perceptions of the utility of IEPs in regular education settings. *Journal of Instructional Psychology*, *33*(4), 263–272.

Meyers, L. S., Gamst, G, & Guarino, A. J. (2005). *Applied multivariate research: Design and interpretation* (2nd ed.). Thousand Oaks: CA: Sage.

National Center for Statistics. (2007). *Statistical analysis report: Dropout rates in the United States: 2005.* Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.

Rea, P. J., McLaughlin, V., & Walther-Thomas, C. (2002). Outcomes for students with learning disabilities in inclusive and pullout programs. *Council for Exceptional Children*, *68*(2), 203–222.

Sugai, G., & Horner, R.H. (1999). Discipline and behavioral support: Preferred processes and practices. *Effective School Practices*, *17*, 10–22.

Suh, S., & Suh, J. (2007). Risk factors and levels of risk for high school dropouts. *Professional School Counseling*, *10*(3), 297–306.

U.S. Department of Education. (2002). *Executive summary.* Washington, DC: Author.

Walther-Thomas, C., Korinek, L., McLaughlin, V., & Williams, B. (2000). *Collaboration for inclusive education.* Boston, MA: Allyn & Bacon.

Watnick, B., & Sacks, A. (2006). A snapshot of teacher perceptions on full inclusion in an international urban community: Miami-Dade County, Florida. *The Journal of the International Association of Special Education*, 7(1), 67–74.

Table 1

Significant Variables

Variable(s)	B	S.E	Wald	*df*	Significance	Exp (B)
Academic History	7.096	.647	120.276	1	.000	1207.200

Table 2

Correlation of Variables

Variables		Exceptionality	Suspension	Academics	Setting	Enrollment
Exceptionality	Correlation	1.000	.025	.064	.248**	.041
	Sig. (2-tailed)	.554	.128		.000	.324
	N	573	573	573	573	573
Suspension	Correlation	.025	1.000	-.307**	-.289**	-.288**
	Sig. (2-tailed)	.554		.000	.000	.000
	N	573	573	573	573	573
Academics	Correlation	.064	-.307**	1.000	-.267**	.913**
	Sig. (2-tailed)	.128	.000		.000	.000
	N	573	573	573	573	573
Setting	Correlation	.248**	-.289**	.267**	1.000	.240**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	573	573	573	573	573
Exceptionality	Correlation	1.000	.025	.064	.248**	.041
	Sig. (2-tailed)	.554	.128		.000	.324
	N	573	573	573	573	573

Table 3

Model Summary of Change in Statistics for Correlation Variables

Models	X^2	*df*	Significance	Nagelkerke R^2
Model 1	314.28	3	<.009	.83
Model 2	317.94	6	<.009	.84

Table 4

Variables in Model 2

Variables	*B*	*S.E*	Wald	*df*	Significance	Exp *(B)*
Academics	5.694	1.040	29.959	1	.000	297.097
Suspensions	-.197	.407	.234	1	.629	.821
Setting	-1.624	1.231	1.739	1	.187	.197
Setting X Academic History	2.670	1.524	3.070	1	.080	14.446
Academics X Suspensions	-.146	.648	.051	1	.822	.864
Setting X Suspensions	.123	.769	.025	1	.873	1.131
Constant	-1.774	.654	7.361	1	.007	.170

Note. The (X) indicates the variables were multiplied