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Eyes on the Prize: Patterns of Risk and Resiliency in High School Dropout

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EYES ON THE PRIZE: PATTERNS OF RISK AND RESILIENCY IN HIGH SCHOOL DROPOUT

by

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Abstract

Although there has been extensive research on the independent predictor variables of high school drop out, less research has been dedicated to explaining the relationships among these variables. This exploratory study examined the relationship between socioeconomic status (SES) and academic self-efficacy, specifically to see if delay discounting could be acting as a moderator between the two variables. Participants were 20 high school students from a medium-sized city in Western Canada, all enrolled in a dropout prevention program. Data was collected via surveys on three separate occasions throughout the program. The results indicated a non-significant positive correlation between SES measures and academic self-efficacy. Delay discounting, defined as lack of willingness to wait for larger, but delayed rewards, had a non-significant negative correlation with both academic self-efficacy and two of three SES measures. Delay discounting was a significant moderator of the relationship between SES and academic self-efficacy. Lastly, the early school-leaving sample was found to have significantly higher levels of delay discounting than a college-based comparison sample. These findings suggest that the individual difference variable of delay discounting may help explain inconsistent relationships between socioeconomic background and likelihood of academic success.

Examining the Relationship Between Socioeconomic Status, Delay Discounting, and Academic Self Efficacy in Early School Leavers

Given the increased education level requirements for employment over recent decades, researchers have become particularly interested in the fate of those who do not complete secondary education. Areas of interest in this research include the factors contributing to early school leaving (ESL), consequences of leaving school early, and intervention strategies aimed at reducing the occurrence of ESL.

ESL is associated with a variety of variables that can impact an individual throughout adulthood. In the United States, it has been reported that those who dropout of high school earn, on average, $9,671 less per year than those who go on to obtain their high school diploma (U.S. Bureau of the Census, 2005). Further exacerbating their financial troubles, these individuals are also much more likely to battle unemployment issues over their lifetime as well as live under the poverty line (U.S Department of Labor, 2004). Albeit not as drastic of a difference, more recent findings from Statistics Canada reports similar findings, with early school leavers earning around $70 less per week, or $3,640 per year, than their counterparts with a high school diploma even though they worked, on average, one hour more per week (Gilmore, 2010). Unemployment is also an issue for Canadians who drop out, as the unemployment rate for these individuals was 23.2% compared to 11.9% for high school completers who were not currently enrolled in post-secondary school.

Financial complications are not the only thing to worry about for ESL individuals. Dropping out has also been associated with poorer health outcomes and lower overall life satisfaction (Oreopoulos, 2007). Furthermore, not only does ESL impact the individual, it also has an effect on society as a whole. This is through the loss of potential workers and revenue as well as increased crime, incarceration, and higher demands on social services (Levin, 2009). One

report estimated that a youth who drops out of school and enters a life of crime and drugs could end up costing the U.S. anywhere from $1.7 to $2.3 million (Snyder & Sickmund, 1999), while another estimated that a high school graduate provides a gross public saving of $143,000 to $268,500 (Levin, 2009).

Given the potential negative consequences of ESL to the individual and society, much research and many governmental resources have gone into establishing intervention programs aimed at cutting down the prevalence of dropouts among the high school population. Reviews of intervention programs within the U.S. found that a multimodal approach was common in the middle and high school contexts (Prevat & Kelly, 2003). Among the specific foci of these were academic (e.g. study skills, tutoring), mentoring (e.g. volunteer adults, peer system), psychosocial skills (e.g. conflict resolution, anger management), teacher/parent training (e.g. behavior management), school/classroom structure (e.g. class size, adjusted schedules), vocational/work (e.g. career exploration), and monitoring. The programs with the most empirical support, in terms of efficacy, were found to be either academically oriented or included multiple components (Prevat & Kelly, 2003). Intervention programs are most successful when they implement strategies in multiple settings: within the school, outside of the school, and within the structure of the educational system itself (Lyche, 2010). Success rates are also higher when they include mentoring and tutoring, substance abuse education, after school sports activities, and high quality vocational education and training.

The intervention program explored in the present study is a collaborative effort between the Burnaby, B.C. school district and a local college. The program helps students who are vulnerable to dropping out of high school raise nine occupationally relevant Essential Skills to the levels needed for success in a targeted occupation (Douglas College, 2015). This portion of the program takes place on the college campus, which provides opportunities to engage this

population in the college atmosphere in order to encourage participants to consider the possibility of further education. The program developers believe this to be a relatively unique part of the program. Simultaneously, the participants are also completing any outstanding graduation requirements that they did not complete in the previous school year.

Common among various intervention programs is the desire to raise the individual's belief in their capacity to organize and execute the necessary behaviors to produce specific educational performances, an entity which has come to be known as academic self-efficacy (Bandura, 1986). High academic self-efficacy is thought to affect an individual's effort levels and persistence, as well as their aspirations and levels of interest in their academic achievements and pursuits, which ultimately lead to a higher level of accomplishment (Bandura, 1997). As a result, recent research examining the relationship between self-efficacy and ESL has been increasing, showing that there is a clear link between the two (Peguero & Shaffer, 2015; Usher & Pajares, 2008). This association may be due to the correlation between low academic self-efficacy and low academic achievement, which happens to be one of the most significant predictors of ESL (Audas & Willms, 2001). What remains uncertain, however, are the relationships among academic self-efficacy and other variables associated with ESL. This is the central focus of the present study.

Another variable of interest in the context of ESL risk is socioeconomic status (SES). Previous research among major variables associated with dropout indicates that individuals coming from a low socioeconomic background have a significantly greater chance of leaving school early (Sirin, 2005; Branson et al., 2013). Despite the fact that both SES and academic self-efficacy are significant predictors of ESL, the relationship between the two is far less clear. Furthermore, research on this relationship is somewhat sparse, especially within the ESL population. Some studies found positive correlations between family SES and general self-

efficacy in adolescents or college students (Mazur, Malkowska-Szkutnik, & Tabak, 2014; Tong & Song, 2004). Other studies showed a negative correlation or no relationship between SES and self-efficacy scores (Alivernini & Lucidi, 2011; Jurecska et al., 2012). The inconsistent findings in this area, to date, suggest that other factors may moderate the relationship between SES and self-efficacy.

One possible type of moderator between SES and academic self-efficacy could relate to the individual differences in response to the social environment. The lack of willingness to wait for a more substantial reward, or delay discounting, could represent a key individual difference variable in whether a background of poverty can influence outcomes like self-efficacy and thus the decision to drop out of school. Previous research on delay discounting has shown that those in an unpredictable, unstable environment are more likely to have higher levels of discounting compared to those in a stable environment (Hill, Jenkins, & Farmer, 2008; Ramos, Victor, Seidl-de-Moura, & Daly, 2013). Individuals in such environments may have, over time, developed high levels of delay discounting as an adaptive strategy to their impoverished surroundings. Thus, it seems reasonable to believe that an individual who comes from an impoverished family background would be more inclined to accept smaller, more immediate sums of money rather than waiting to gain a bit more in the delayed (and uncertain) future. To our knowledge, previous research on delay discounting and other variables related to ESL is very limited. One study found delay discounting to be a significant, yet modest, predictor of school dropout among U.K. high school students, and it also found an association between SES and delay discounting scores (Freeney & O'Connell, 2012). If delay discounting is indeed more extreme in ESL individuals, this may indicate that these students perceive the decision to leave school early as a rational one. On the other hand, the ability to resist delay discounting could serve as a protective factor in the impact of SES on self-efficacy, and thus on dropout risk.

Therefore, we first hypothesize that delay discounting will be negatively correlated with academic self-efficacy and SES measures, and that SES measures will be positively correlated with academic self-efficacy. Secondly, we hypothesize that delay discounting will act as a moderator in the relationship between SES and academic self-efficacy. Lastly, we hypothesize that there will be a significant difference between delay discounting scores in our ESL sample as compared to the comparison group from another study with young adults. We will investigate the roles these factors play in contributing to ESL risk through qualitative case studies of selected participants.

Method

Participants

Data from 20 participants (17 males, 3 females), between the ages 17 - 21 (M = 18.1, SD = 1.11), from a local school district was used in the study. Participants, all of whom either had already dropped out or were at risk of dropping out of high school, were recruited from an in-person program orientation for a dropout intervention program at Douglas College. Those who agreed to enter the program were then asked if they would also like to participate in the research program as well. If they volunteered to participate in the research, they were given a consent form that entailed a brief description of the program and explained the purpose of the consent form, confidentiality, storage of information, and potential implications of the research findings.

The delay-discounting comparison group data was from a sample of 21 Douglas College students collected during a previous research study. All procedures were approved by the Douglas College Research Ethics Board.

Design

Surveys were collected on three separate occasions from each participant. The paper-based introduction survey was collected at the time of recruitment into the program and consisted

mostly of open-ended questions that measured variables relating to early school leaving (demographics, SES, employment status, motivation, attitudes towards school, social support, and electronics use). Because of low intercorrelations among measures that would otherwise allow for one total measure of SES, three separate measures of SES were used: participant guardian education level, participant employment status, and participant government assistance. Guardian education level was calculated by summing the education level of the participants' guardian(s), after assigning values from 1 for no education up to 5 for post-secondary education. Employment status was separated into two levels, with those who did not work and those who work but do not contribute to household expenses being rated as higher in SES, while those who work and contribute to household expenses being rated as lower in SES. Government assistance was separated into those who either were (lower SES) or were not (higher SES) receiving government assistance.

To measure academic self-efficacy, we adapted a version of the Academic Self-Efficacy Scale to fit a high school rather than university sample (Chemers, Hu, & Garcia, 2001). The final version of the scale consisted of eight items rated on a five-point Likert scale (e.g. "I know how to study to perform well on tests," with 1 being strongly agree and 5 being strongly disagree).

The second round of surveys was collected midway through the program on a secure website and included the Kirby Monetary Choice Questionnaire to measure delay discounting (Kirby, Petry, & Bickel, 1999). This 27-item monetary choice questionnaire has been used in adolescents as well as adults (Konecky & Lawyer, 2015; Hanoch, Rolison, & Gummerum, 2013). The point of indifference, or the point in which there is no difference in perceived value between immediate and delayed rewards (*k* value), was estimated for each participant using the calculation tool provided by Kaplan, Lemley, Reed, & Jarmolowicz (2014). The natural log-transformed *k* values were used for analysis. For example, for the question of, "Would you

prefer $27 today, or $50 in 21 days?" the *k* value would be high for an individual who prefers the $27 option. Alternatively, for the question of, "Would you prefer $22 dollars today, or $25 in 136 days?" the *k* value would be low for an individual who prefers the $22 option.

The third round of surveys was paper-based and collected at the conclusion of the program. This round included a subset of previously mentioned measures and also included program evaluation components.

Results

To examine the relationships between delay discounting (Time 3) and both academic self-efficacy (Time 1) and SES measures (Time 1), pairwise Pearson correlations were calculated (Table 1). Although none of these correlations were statistically significant, the direction of most of the relationships among variables was consistent with our hypotheses. Delay discounting (natural log transformed *k* scores) was non-significantly negatively correlated with academic self-efficacy (r = -0.310, p = 0.184), suggesting that greater impulsivity is associated with lower academic self-efficacy. Delay discounting was also non-significantly negatively correlated with two of the three measures related to SES: participant employment status (r = -0.155, p = 0.515) and government assistance (r = -0.333, p = 0.151). The one measure of SES that was inconsistent with our hypothesis was guardian education level, which had a slight non-significant positive correlation with delay discounting (r = 0.061, p = 0.830).

Pairwise Pearson correlations were also used to test the relationships between academic self-efficacy (Time 1) and SES measures (Time 1). Academic self-efficacy was negatively correlated with all three SES measures: guardian education level (r = -0.207, p = 0.459), employment (r = -0.243, p = 0.303), and government assistance (r = -0.074, p = 0.756). The directions of these relationships, although not statistically significant, were inconsistent with our hypothesis.

A multiple regression was used to more directly test our hypotheses regarding the relationship among the variables of interest, with academic self-efficacy (Time 1) as the criterion variable and the SES measures (Time 1) and delay discounting (Time 3) as the predictor variables. As shown in Table 2, a significant proportion of the variability in academic self-efficacy scores at the third round of surveys could be accounted for by knowing the values for the three different measures of SES and delay discounting (Adjusted $R^2 = 0.721$, $F(7, 7) = 5.951$, $p = 0.037$). In particular, guardian education level was a significant predictor of academic self efficacy scores ($\beta = -2.930$, $R^2 = .632$, $F(1, 7) = 12.025$, $p = 0.010$), as was the interaction between guardian education level and delay discounting ($\beta = -0.605$, $R^2 = 0.541$, $F(1,7) = 8.238$, $p = 0.024$). The interaction effect supports the possibility that delay discounting could be acting as a moderator between SES measures and academic self-efficacy.

To assess the moderator hypothesis more specifically, an additional regression model was built with academic self-efficacy as the criterion and just guardian education and the delay discounting x guardian education interaction as predictors. As shown in Table 3, this model accounted for less variance than the full regression model, but it was still significantly significant (Adjusted $R^2 = 0.317$, $F(2,12) = 4.255$, $p = 0.04$. Guardian education level alone accounted for a significant amount of variability in academic self-efficacy scores at the first round of surveys ($\beta = -1.734$, $F(1,12) = 6.978$, $p = 0.022$). The interaction between guardian education and delay discounting also accounted for a significant portion of the variability in academic self-efficacy scores ($\beta = -0.365$, $F(1,12) = 7.63$, $p = 0.017$). This significant predictive value of the interaction of guardian education and delay discounting suggests that delay discounting acts as a moderator in its relationship with academic self-efficacy. Greater delay discounting is associated with lower academic self-efficacy, and that relationship is even stronger for those with more educated guardians.

To test our hypothesis regarding a difference between the ESL and comparison groups in delay discounting scores, an independent groups *t*-test was used. Delay discounting scores were significantly higher in the ESL sample (M = -4.030, SEM = 0.398) as compared to the college-based control group (M = -4.924, SEM = 0.262, $t(39) = 1.893$, $p = 0.033$). This was consistent with our hypothesis that on average, the students at risk of leaving high school early would choose smaller, more immediate hypothetical rewards more often than the college students.

Unrelated to the hypotheses of the study, but of interest to the researchers, was the change in academic self-efficacy scores over the course of the intervention program. A paired-samples t-test revealed that academic self-efficacy scores were significantly lower at the first round of surveys than at the third round of surveys (M *difference* = 4.400, SEM = 0.762, $t(19) = 5.772$, $p < 0.001$). This indicates that on average, participant academic self-efficacy scores significantly increased over the course of the program. Pairwise Pearson correlations were also calculated to determine which variables were associated with the change in academic self-efficacy. As shown in Table 1, there was a significant correlation between participant employment status and academic self-efficacy change ($r = 0.452$, $p = 0.046$), which indicates that those who either did not work or who worked but did not contribute to household expenses had the greatest amount of change in academic self-efficacy levels.

Discussion

The present study examined the relationship among socioeconomic status, delay discounting, and academic self-efficacy in students at risk of dropping out of high school in a medium-sized Western Canadian city. The results of this study replicate findings from the UK (Freeney & O'Connell, 2012), in that delay discounting scores were higher on average in the ESL group than the college-based comparison group. This indicates that the ESL group had a greater preference for smaller, more immediate rewards when compared to the college group.

These findings are consistent with the notion that students with difficulties valuing and working toward longer-term goals may be more likely to make the decision to leave school early.

Consistent with findings from Freeney and O'Connell (2012), this study also shows that there is a negative correlation between delay discounting and measures of SES, specifically participant employment status and whether or not they were on government assistance. These correlations indicate that individuals who work and contribute to their family household expenses, as well as individuals who are on government assistance, tend to be more impulsive and have higher delay discounting scores. Government assistance was further found to be a significant predictor of academic self-efficacy scores. In contrast to these, the parental education measure of SES was not related to delay discounting in the current sample. Furthermore, there was a negative correlation between delay discounting and academic self-efficacy, which suggests that the more impulsive students, who prefer more immediate rewards, have lower academic self-efficacy scores.

Previous research has found that there are inconsistent results when examining the relationship between SES and academic self-efficacy (Alivernini & Lucidi, 2011; Jurecska et al., 2012; Mazur, Malkowska-Szkutnik, & Tabak, 2014; Tong & Song, 2004). In this study, the three SES-related measures were weakly negatively correlated with baseline academic self-efficacy, which was the opposite of the predicted direction. This could be partially explained by the apparently fairly high levels of SES observed in this sample. Our sample was limited to the ESL students who opted to join the intervention program, and thus do not necessarily reflect the general ESL population from this community. Regardless, this study has helped to explain some of the contradictory findings reported in the relationship between these SES measures and self-efficacy by measuring delay discounting, which appears to act as a moderator in this relationship. Students who come from a low socioeconomic background but are able to assign high value to

delayed gratification are likely to have fairly high academic self-efficacy. The converse seems to also be the case: students with high SES backgrounds who are more impulsive in their immediate reward seeking are likely to have relatively low academic self-efficacy.

Of particular interest to the researchers was the significant increase in academic self-efficacy scores over the course of the intervention program, which indicates its effectiveness in raising the efficacy of students and thus presumably helping to decrease the risk of dropout. Overall, the program seems to provide greater benefit for the more impulsive individuals, as those with higher delay discounting scores generally seemed to have the greatest amount of change in academic self-efficacy scores. The program also appears to work best for those from higher levels of SES, as indicated by the positive correlations between the SES measures and change in academic self-efficacy. The reasons for this are unclear, but our results suggest that a future goal of the program should be to help better assist the individuals who are working and contributing to their household finances, perhaps through more flexible scheduling.

This study is not without limitations, and there are several to be noted. Firstly, because the sample size was quite small, the findings may not be an accurate representation of the true ESL population, and a larger sample size may garner different results. Furthermore, the study would have benefited from adding the delay discounting measure to the first round of surveys, as several participants did not continue on to complete the final surveys. These individuals could have provided a more accurate representation of the true ESL population. As is the case with many intervention programs, attrition was an issue with the ESL group used in this study. Approximately 49 individuals completed intake surveys at the beginning of the program, however, only 28 ultimately ended up registering into it. Attrition afterwards was relatively minor. However, this could still serve as a barrier in interpreting results, since some of the participants who left the program could have been systematically different from those who

stayed. The cohort in the program was incredibly diverse in terms of how close they were to secondary school completion, levels of academic proficiency, levels of SES, and mental and physical health. The resulting variability in all measures was a barrier to finding reliable trends predictive of school completion. Another issue to consider is the use of parental education level as a measure for SES. Seeing as ESL students are generally underprivileged group, there are a variety of circumstances that could affect the responses and outcomes of this open-ended measure. Some students, for example, may not live with their biological parents or could live by themselves, and therefore, some of the results may not be considering the complex information from the individuals' social and economic contexts. The low intercorrelations between the SES measures was also somewhat concerning, and further indicates the complexity involved in accurately determining an individual's true SES through different measures.

Future research should address the issues noted above. Larger sample sizes are needed in order to gain a more accurate representation of the ESL population. It would also be useful to gather comparison data from ESL individuals not involved in an intervention program, as these individuals could possibly have higher delay discounting scores, lower SES, and lower academic self-efficacy than those who are not registered in an intervention program. This, as well as a larger sample size, would allow for more generalizable results that could possibly be attributed to the ESL population as a whole. An alternate measure for SES that considers the individual's psychosocial context as a whole could also be useful. Future research should also look to examine the relationship among these variables in other populations to determine how they interact, while also considering how the individuals' unique circumstances affect them.

Given the current findings, future studies on the predictive or explanatory factors in ESL should take into account the individual difference variable of delay discounting. This variable is likely influenced by the developmental environment (Hill, Jenkins, & Farmer, 2008; Ramos et

al., 2013), but also reflects personality traits such as impulsivity (Hirsh, Morisano, & Peterson, 2008). It appears likely that individuals from a low socioeconomic background who nevertheless have the tendency to delay smaller immediate rewards for larger rewards in the future are likely to have higher academic self-efficacy and thus greater resilience to setbacks in the academic context.

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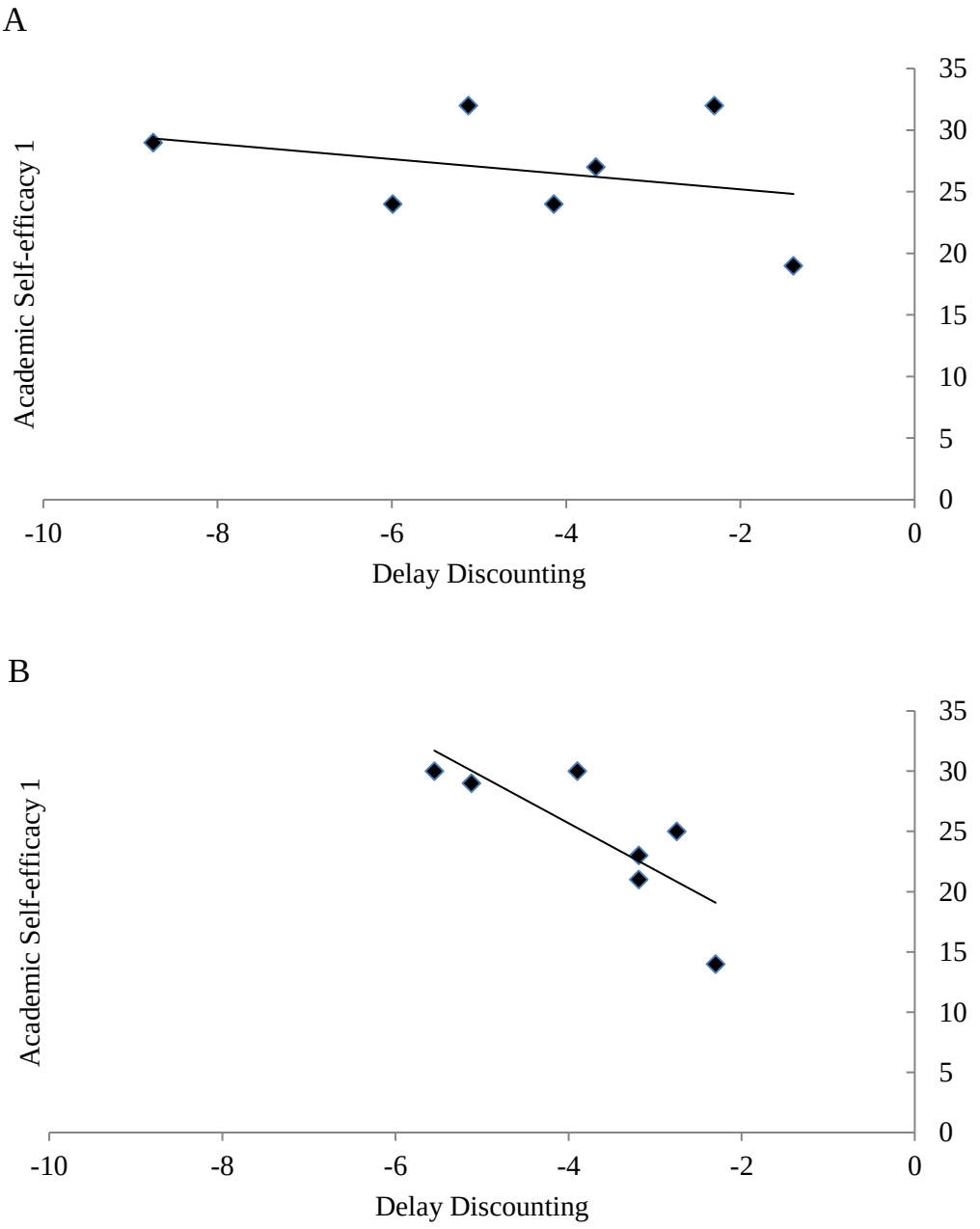

Figure 1. Relationship between Delay Discounting and Academic Self-efficacy 1 for Participants with Low (*A.*) vs. High (*B.*) Guardian Education.

Table 1

Correlation Coefficients for Relationships among Survey Variables

	Delay Discounting	**Guardian Education**	**Employment**	**Government Assistance**	**Academic Self-Efficacy 1**	**Academic Self-Efficacy 3**	**Academic Self-Efficacy Change**
Delay Discounting	-	0.061	-0.155	-0.333	-0.310	-0.261	0.221
Guardian Education		-	-0.061	-0.095	-0.207	-0.259	0.002
Employment			-	0.000	-0.243	0.007	0.452*
Government Assistance				-	-0.074	0.028	0.173
Academic Self-Efficacy 1					-	0.846*	-0.709*
Academic Self-Efficacy 3						-	-0.223
Academic Self-Efficacy Change							-

* $p < .05$

Table 2

Regression Analysis Predicting Academic Self-efficacy 1

	Regression coefficient	**Standardized coefficient**	**R^2**	**Sig. (*p*)**
DD	1.484	0.455	0.178	0.258
Empl	0.127	0.146	0.007	0.827
GovAsst	0.884	0.613	0.130	0.341
G.Ed.	-2.930	-1.422	0.632	0.010*
DD*Empl	0.087	0.433	0.067	0.502
DD*GovAsst	0.477	1.080	0.383	0.076
DD*G.Ed.	-0.605	-1.457	0.541	0.024*

* $p < .05$

Table 3

Moderator Regression Analysis Predicting Academic Self-efficacy 1

	Regression coefficient	**Standardized coefficient**	**R^2**	**Sig. (*p*)**
G.Ed.	-1.734	-0.842	0.364	0.022*
DD*G.Ed.	-0.365	-0.880	0.337	0.017*

* $p < .05$