

## ENGAGEMENT IN LEARNING AS MEDIATOR BETWEEN MOTIVATIONAL BELIEFS AND SCHOOL ACHIEVEMENT: A PATH ANALYSIS

VIOREL-BENIAMIN MIH<sup>1</sup>, CODRUȚA-ALINA MIH<sup>2</sup>

**ABSTRACT.** This study applied the Expectancy-Value Theory to explore the directionality of the associations among academic self-efficacy, motivational beliefs (e.g., expectation of success, task value), procrastination, and engagement in learning as well as the impact of these constructs on educational attainment. The data analysis was done by using structural equation modeling. The results reveal important associations among students' personal variables. Correlational and path analyses show that: (a) self-efficacy is consistently found to predict both expectation of success, task value and procrastination, (b) the associations between self-efficacy and engagement are mediated by motivational beliefs and procrastination, (c) different facets of engagement (class participation, homework completion, absenteeism) in high school predict educational attainment, and (d) class participation had stronger effects on educational attainment than homework completion. The data analysis provided empirical evidence to better understand the mechanism that mediates self-efficacy and school achievement. Also, the study provides empirical evidence supporting the multifaceted nature of school engagement and demonstrates its utility relative to educational success. The implications of these findings for teaching and learning a specific subject matter in formal classroom contexts are discussed.

**Keywords:** *self-efficacy, engagement in learning, expectation of success, valuing of school, procrastination.*

---

<sup>1</sup> Babeş-Bolyai University, Cluj-Napoca, Romania, viorelmih@psychology.ro

<sup>2</sup> Babeş-Bolyai University, Cluj-Napoca, Romania, codruta.mih@ubbcluj.ro

**ABSTRAKT.** In dieser Studie wurde die Erwartungswerttheorie angewendet, um die Richtungsabhängigkeit der Assoziationen zwischen akademischer Selbstwirksamkeit, Motivationsüberzeugungen (z. B. Erfolgserwartung, Aufgabenwert), Aufschiebung und Engagement für das Lernen sowie die Auswirkungen dieser Konstrukte auf die Bildung zu untersuchen. Die Datenanalyse wurde unter Verwendung der Strukturgleichungsmodellierung durchgeführt. Die Ergebnisse zeigen wichtige Assoziationen zwischen den persönlichen Variablen der Schüler. Korrelations- und Pfadanalysen zeigen, dass: (a) die Selbstwirksamkeit konsistent sowohl die Erwartung des Erfolgs als auch den Aufgabenwert und den Aufschiebung vorhersagt, (b) die Assoziationen zwischen Selbstwirksamkeit und Engagement durch Motivationsüberzeugungen und Aufschiebung vermittelt werden, (c) Unterschiedliche Aspekte des Engagements (Teilnahme an der Klasse, Abschluss der Hausaufgaben, Fehlzeiten) an der High School prognostizieren das Bildungsniveau, und (d) die Teilnahme am Unterricht hatte stärkere Auswirkungen auf das Bildungsniveau als der Abschluss der Hausaufgaben. Die Datenanalyse lieferte empirische Belege, um den Mechanismus, der Selbstwirksamkeit und Schulleistung vermittelt, besser zu verstehen. Die Studie liefert auch empirische Belege für die Vielschichtigkeit des schulischen Engagements und zeigt seine Nützlichkeit für den Bildungserfolg. Die Implikationen dieser Ergebnisse für das Lehren und Lernen eines bestimmten Themas in formalen Unterrichtskontexten werden diskutiert.

**Schlüsselwörter:** *Selbstwirksamkeit, Engagement für das Lernen, Erfolgserwartung, Wertschätzung der Schule, Aufschiebung.*

## INTRODUCTION

Research into student's transition from middle-school to high school is gaining increasing attention, particularly in the context of difficult transitions. This process of changing can lead to disengagement, negative attitudes towards school, reduced self-confidence, and reduced engagement in learning (Fuer & Skinner, 2003). Some of the more frequently cited difficulties that can impact on motivation and that are reduced with entry into the ninth grade are that: (a) attitudes towards learning, achievement, and school; (b) beliefs about themselves; (c) approach to their schoolwork;

and (d) reasons for learning (Maehr & Midgley, 1996). As such we aim to analyse some of the facets of motivation and engagement that need to be sustained as students move from middle-school to high school. In particular, we aim to get an overview of how motivational beliefs (expectation of success, valuing of school), and engagement are adaptive dimensions to monitor at this critical transition time.

Several decades of research have demonstrated that an important contributor to school performance is an individual's *self-efficacy* about whether he or she has any control over academic successes and failures. Students who believe that they can produce the responses that lead to desired outcomes (Bandura, 1997), or who believe that they possess high ability (Stipek, 1996) perform better academically. These students score higher on tests of achievement and earn better grades in school than students who do not hold these beliefs (Eccles & Wigfield, 2002; Findley & Cooper, 1983). Students need to believe they can be successful if they are going to try. Their self-competence perception influence their willingness to engage in learning. For example, a student who believes that he is good at writing is more likely to spend his time elaborating and revising his essay than a student who does not have confidence in his writing skills. Numerous studies have shown that students with confidence in their abilities to succeed on a task work harder, persist longer, and perform better than their less efficacious peers (Eccles, Wigfield, & Schiefele, 1998; Pintrich & De Groot, 1990; Schunk, 1991; Stipek, 1996).

Despite there being considerable evidence to support the positive effects of self-efficacy beliefs on academic achievement, studies that have explored the *motivational mechanism* which mediates self-efficacy-achievement relationship are desirable, and are necessary to understand how and why self-efficacy affects students' academic achievement. This can allow instructional actions and programs to improve academic achievement to be designed (Doménech-Betoret et al., 2017). One of the most well-grounded proposals that integrate these mediational variables is the expectancy-value model of achievement motivation (EVT; Eccles, 2009; Eccles & Wigfield, 2002; Wigfield and Eccles, 1992, 2000).

EVT posits that achievement-related performance are most directly influenced by the individual's *expectancies of academic success* and a subjective assessments of the inherent *value of academic tasks*. In other words, an adolescent who believes a successful result when engaging in

the task is possible, but does not have a compelling reason to do so will refrain from putting in a great deal of effort. Vice versa, if the task is important but is viewed as unlikely to be accomplished, the adolescent might choose to engage in another task with higher expectancy of success (Meyer et al. 2019).

Expectancies for success is conceptualized as the task-specific beliefs about the possibility of experiencing future success in that task, which is directly linked to ability self-concept in an academic domain (Guo et al., 2015). Empirically, however, the two constructs: expectancies and self-concept, are indistinguishable (Eccles, 2009; Eccles & Wigfield, 2002). For this reason, we are used academic self-concept as a measure of the expectancies of success (e.g., Wang & Eccles, 2013; Simpkins, Fredricks & Eccles, 2012; Wang & Eccles, 2013). In turn, subjective *task value* is defined in terms of multiple components: *intrinsic value*, *utility value*, *attainment value*, and *cost* (Eccles & Wigfield, 2002). In the current study, we focus on two value components: intrinsic value and utility value of learning. *Intrinsic value* refers to the subjective interest in an educational domain or the enjoyment a person gains from engaging in a task. In the case of high intrinsic value, positive psychological outcomes are the reward. Thus, the intrinsic value component can be viewed as similar to intrinsic motivation (Eccles & Wigfield, 2002). In contrast, *utility value* relates to how school tasks fits an individual's future plans and objectives describes the perceived individual usefulness of engagement and achievement in a task or domain (Wang & Eccles, 2013). Because of the stronger importance of extrinsic performance rewards, utility value can be conceptualized as similar to the extrinsic motivation component (Trautwein et al., 2012). For example, utility value includes the perceived extent of how succeeding in this task can impact a student's future life (Guo et al., 2015).

We aim to this study to considerate differential effects of expectancy and value on different component of behavioral engagement (*class participation, homework completion, absenteeism*) in two domains (mathematics and Romanian language). Further, and following Trautwein et al., 2012, we focus on behavioral engagement and its relationship with expectancy value beliefs, taking into account the two subcomponents (intrinsic value, and utility) together. Moreover, EVT provides a theoretical foundation for a mediational model that links self-efficacy to engagement

and performance. According to EVT, school engagement are influenced by the individual's expectation for success and subjective valuing of the academic work (Eccles, 2007). Students need to believe they can be successful if they are going to try. Also, they likely to engage in school learning place higher value and have greater expectation of success about their academic abilities than those who do not (Wang & Eccles, 2013). Consequently, we predict that these motivational beliefs influence student engagement in various educational activities (Simpkins, Davis-Kean, & Eccles, 2006).

Another candidate that has a negative impact on engagement is *procrastination*. Few studies have considered both motivational beliefs and procrastination simultaneously when exploring directionality of the associations between these constructs and educational engagement. In the current study, procrastination was taken into consideration to explore the nature of the relations between self-efficacy and engagement. Estimates indicate that 80%–95% of students engage in procrastination (O'Brien, 2002), approximately 75% consider themselves procrastinators, and almost 50% procrastinate consistently and problematically (Day, Mensink, & O'Sullivan, 2000; Onwuegbuzie, 2000). The absolute amount of procrastination is considerable, with students reporting that it typically occupies over one third of their daily activities, often enacted through sleeping, playing, or TV watching (Pychyl, Lee, Thibodeau, & Blunt, 2000). Furthermore, these percentages appear to be on the rise (Kachgal, Hansen, & Nutter, 2001). The prevalence and availability of temptation, for example, in the forms of computer gaming or internet messaging, continue to exacerbate the problem of procrastination. There are simply more activities with desirable features competing for student attention. Procrastination can be defined as unreasonable postponement of academic activities (Simpson & Pychyl, 2009). When, students delay in completing academic work and submitting assignments in last minutes considered as an academic procrastination. It is a common problem and consequences are lower level of learning and academic achievement. This is a critical issue which is required to be addressed, because if procrastination became students' habitual behavior, that can seriously impact their engagement in learning. Consequently, in this study we are interested in investigating the impact that procrastination has on different components of engagement (class participation, homework completion, absenteeism).

In school setting *engagement* is important because function like behavioral pathway by which students' academic motivational beliefs contribute to their subsequent learning and development. Although an extensive literature dating from the 1960s has investigated school and classroom engagement, the construct of engagement has experienced something of a revival in recent years, stimulated by the growing recognition that student disaffection with school increases with additional years in school and is a major factor in student achievement (Fredricks et al., 2004). More, school engagement has received increasing research attention as teachers search solutions for problems such as declining academic motivation and achievement and increasing school absenteeism (Fredricks, Blumenfeld, & Paris, 2004). School engagement has been seen as a potential answer to these problems because it encompasses processes that, theoretically, serve to promote learning and achievement and, practically, can be fostered in students. For children to profit from schooling, they must do more than simply attend school or be present in classrooms (Ladd & Dinella, 2009). They must engage the classroom environment in ways that promote learning. Because researchers studying the effects of school engagement on achievement have differed in their definitions and measures of engagement, it is difficult to integrate findings across studies. Often, researchers incorporated a wide variety of constructs in their measurement of engagement, an inclusiveness that makes it difficult to determine the unique precursors and consequences of different types of engagement (Skinner et al., 1998; Skinner et al., 2009). Drawing on these theoretical frameworks, school engagement results from a prediction of the individual motivational characteristics and is responsive to variations of these factors. In the current study, we explored the specific facets of students' behavioral engagement that are related to students' performance (Hughes, Luo, Kwok, & Loyd, 2008). Behavior engagement refers to participation in the learning environment, and although defined in different ways, we operationalized in terms of the *class participation, homework completion and school attendance* aspects of involvement in instructional activities (see, Green et al., 2012). Also we predict that students' behavioral engagement has a direct effect on their performance. Hence, it is reasonable to expect direct links from class participation, homework completion, and absenteeism to academic performance (Green et al., 2012; Martin, 2017). Effects of active classroom

participation on academic performance are supported in different empirical research (Valiente et al., 2008). Conversely, a lack of *class participation* leads to problematic educational outcomes and processes such as emotional withdrawal and poor identification with school, poor academic performance (Finn, 1993; Finn, Pannozzo, & Voelkl, 1995). Thus, empirical evidence supports a link between class participation and academic performance. Also, *homework completion* was found to positively predict achievement (Green et al., 2012). However, findings on the relationship between *time spent* on homework and achievement were inconclusive; research either demonstrated weak links (Trautwein & Köller, 2003) or no significant relationship (DeJong, Westerhof, & Cremmers, 2000). It seems that the amount of homework actually completed by students (rather than the time spent on homework) is associated with higher achievement (Cooper et al., 1998). *School non-attendance* has detrimental effects on academic outcomes because absentees receive less hours of instruction (Green et al., 2012; Rothman, 2002). Supporting evidence shows that absenteeism is a predictor of early school leaving (Reid, 2005) and poor achievement (e.g., Sutton & Soderstrom, 1999). Absenteeism, then, is likely to be a proximal negative predictor of academic performance (Green et al., 2012; Martin, 2017).

## STUDY OBJECTIVES AND APPROACH

The hypothesized predictive model (see Figure 1) was built on the basis of the EVT framework (Eccles, 1994, 2009) and empirical research reviews. The present investigation, focuses on the process through which individuals develop personal qualities, such as motivational beliefs, that subsequently lead to behavioral engagement and educational attainment. As such, we propose the following objectives:

We firstly analyze how student's self-efficacy are related to our measure of components of EVT framework (academic expectation of success and valuing of school).

Second, we expect that expectation of success and valuing of school would significantly mediate the relationships between self-efficacy and components of behavioral engagement (Eccles & Wigfield, 2002; Marsh et al., 2013; Nagengast et al., 2011; Trautwein et al., 2012).

Third we anticipated the multiplicative effect of expectation of success and value on engagement variables to be significant, indicating that students with both high expectation and valuing of school would be likely to have higher behavioral engagement (Green et al., 2012).

Fourth, we anticipated different effects of components of behavioral engagement on educational outcome.

### **Participants**

The sample included 143 (53% female) adolescents, attending nine classes in four schools from Cluj-Napoca. The mean chronological ages were 15.76 (SD = .88). Participants' gender did not have any significant effects on the dependent variables; hence, it is omitted from further consideration. Although no other demographic information was collected, we had no reason to expect that the groups differed in socio-economic background, given that all participating classrooms were from predominantly middle-class, urban schools. All children were in the 9th grade. There were no substantial differences across schools with respect to previous grades. In general, students in different schools and classes had similar characteristics and experienced similar learning environments. Participation was voluntary, and scores were confidential and anonymous. We collected the questionnaire data during the semester and the achievement data (semester grade) after the semester ended.

### **Instruments**

The measures of the student expectancy-value constructs and achievement-related and aspiration outcomes were selected from the student-background questionnaire.

*Academic Self-efficacy Scale* consisted of five items regarding perceived competence and confidence in performance of class work. Subject-level academic self-efficacy items were adapted from the Patterns of Adaptive Learning Survey (PALS; Middleton & Midgley, 1997; Roeser et al., 1996) and the Self-Efficacy subscale of the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich & De Groot, 1990). Students report

answers on a 5-point scale ranging from *not at all true of me* (1) to *very true of me* (5) (five items; e.g., "I'm certain that I can do an excellent job on the problems and tasks assigned for a class";  $\alpha=.84$ ).

*Academic Self-Concept Scale.* In the current study, self-concept was measured using the ASCS (Reynolds, 1988), which is a 40-item self-report measure. The questionnaire used a 4-point Likert-type scale that ranges from strongly disagree (1) to strongly agree (4), to measure aspect of academic self-concept. Thus, within the ASCS, the seven constructs of academic self-concept include: grade and effort dimension, study habits/organization self-perceptions, peer evaluation of academic ability, self-confidence in academics, satisfaction with school, self-doubt about ability, and self-evaluation with external standards. A revision of specific terms was necessary to explore the unique experiences of junior high students. The ASCS yields one global score; sample item include: "If I try hard enough, I will be able to get good grade. The overall ASCS alpha coefficient was .86.

*Valuing of school.* The scale of students' positive school attitude was used to assess the effect students experienced when studying in school (e.g., "Learning at school is important to me"), in line with the notion of *intrinsic value* in the EVT (Eccles, 2009; Guo et al. 2015). The utility value scale that assesses how important studying hard in school was used (e.g., "Are you studying hard to get good grades in school? "). A Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) is used to rate each item. The overall scale alpha coefficient was .88.

*Procrastination.* The 16-item of Procrastination Scale (PS) (Tuckman 1991) measures procrastination tendencies in students. Participants rated items on a Likert scale from 1 (That's really not me) to 4 (That's me for sure). Sample items include "I postpone starting on things I don't like to do" and "When I have a deadline, I wait till the last minute". In the present sample, the Cronbach alpha reliability estimate for PS was 0.85.

*Student engagement.* Students' behavioral engagement was assessed by way of participation in class, homework completion, and school absence (inversely).

*Class participation.* Students were administered items that explored their involvement in various class activities (four items; e.g., “I get involved in things we do in class”). These measures were rated on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and were adapted from Green et al. (2012) and Martin (2009). The Cronbach alpha reliability estimate was 0.83.

*Homework completion* (“How often do you do and complete your homework and assignments?”) was a single item assessed on a scale ranging from 1 (*never*) to 5 (*always*).

*Absenteeism* (“About how many days were you absent from school last term?”) was a single item.

*Academic performance.* To assess academic achievement, we used the actual school record of each student’s overall semester grade, scored at the end of the semester on a 10-point scale.

## **Results**

Prior to conducting the analyses, we examined the data for univariate and multivariate outlying cases by using the procedure devised by Tabachnik & Fidell (2007). Before conducting the main analyses, all of the major variables were checked for missing data. Since the pattern of missing values was random for the present data, cases with missing values more than 5% were deleted (Tabachnick & Fidell, 2001). Among 143 participants, 5 data were detected with missing values more than 5% of the total endorsement. Hence, 138 data were left for the main analyses after this deletion. In order to prevent additional subject loss, cases with missing data less than 5% were replaced with mean of the given variable. Second for the preliminary analyses, outlier analyses over the data were conducted. In this respect, in order to check the univariate outlier, the data was converted into z-score and 3 problematic outlier values higher or smaller than  $\pm 3.29$  (Tabachnick & Fidell, 2001) was detected. As a result 3 cases were treated as outlier and excluded from the data set. Hence, the analyses were performed with data obtained from 135 cases.

Table 1 presents the means and standard deviations for each construct measured in this study. Bivariate correlations were computed to depict the interrelationships among all of the study variables. The correlation matrix on the Table 1 showed the relationships among the predictors, mediator and criterion variables. The relationships also assess the presence of multicollinearity. The results showed that none of the partial coefficients exceeded .50 that the multicollinearity among the study variables was not severe (Tabachnick & Fidel, 2001). Table 1 presented the mean and standard deviation for each construct measured in this study.

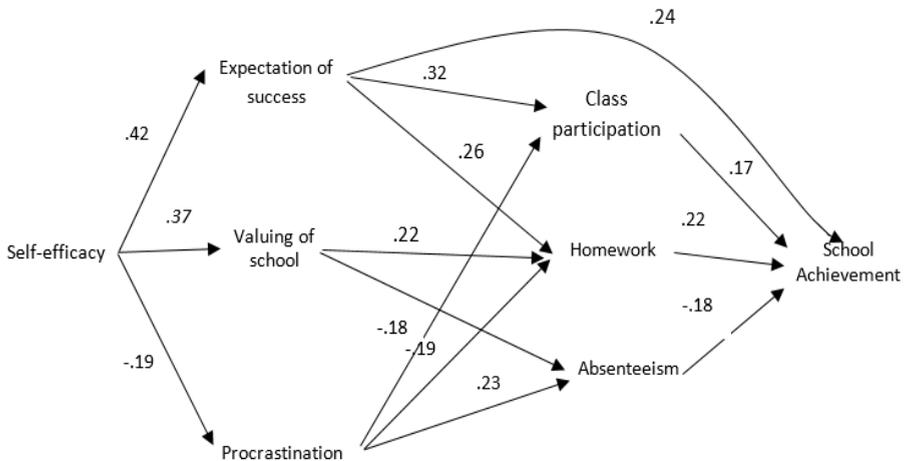
**Table 1.** Descriptive statistics and intercorrelations among all the measures

	M(SD)	1	2	3	4	5	6	7	8
1. Academic self-efficacy	3.67(.91)	-							
2. Expectation of success	2.87(.77)	.35**	-						
3. Academic valuing	3.91(1.1)	.29**	.33**	-					
4. Procrastination	2.78(.57)	-.21**	-.17*	-.07	-				
5. Class participation	3.73(.89)	.13	.34**	.09	-.13*	-			
6. Homework	4.12(.52)	.12*	.27**	.24**	-.25**	.27**	-		
7. Absenteeism	3.77(1.18)	-.20**	-.11*	-.19*	.23**	-.21**	-.11*	-	
8. Educational attainment	7.94(1.22)	.17*	.37**	.13*	-.08	.31**	.23**	-.07	-

\* = p<.05, \*\* = p<.01

The path analyses that were employed in the present investigation rely on assumptions including linearity, causal closure and unitary variable. Overall the assumption checks were conducted in the frame of preliminary analysis. In this respect, linearity assumption was controlled by conducting the correlation analysis. As suggested by Wright (1968) all relationships between variables should be linear. In order to perform a path analysis he also suggested causal closure in that all direct influences of one variable on another must be included in the path diagram. Final specific assumption for conducting path analysis includes unitary variables for which variables should not be composed of components that behave in different ways with different variables (Fig 1).

The structural equation analysis to firstly test the mediation role of the expectancy-value beliefs and procrastination between the self-efficacy - behavioral engagement in learning relationship, and secondly the mediation role of the components of engagement between expectancy-value beliefs - achievement relationship. The model was first tested (direct effects) for the mediation role of the expectancy-value beliefs and procrastination between self-efficacy and behavioral engagement. The fit indices values obtained by the ML method ( $\chi^2 = 194.52$ ;  $p = 0.0000$ , d.f. = 6; NNFI = 0.91; CFI = 0.94; GFI = 0.93; RMSEA = 0.082) and Robust method of estimation ( $\chi^2 = 168.19$ ;  $p = 0.0000$ , d.f. = 6; NNFI = 0.91; CFI = 0.94; RMSEA = 0.080) indicated that the model satisfactorily fitted the data. According to the data, academic self-efficacy had a significant effect on engagement. So this prerequisite for mediation to exist was met (Baron and Kenny, 1986). Next the mediated model of for the mediation role of the behavioral engagement between both expectancy-value beliefs and procrastination and achievement was tested. The fit indices values obtained by the ML method ( $\chi^2 = 137.37$ ;  $p = 0.0000$ , d.f. = 6; NNFI = 0.92; CFI = 0.94; GFI = 0.94; RMSEA = 0.067) and the ML Robust method of estimation ( $\chi^2 = 293.87$ ;  $p = 0.0000$ , d.f. = 6; NNFI = 0.92; CFI = 0.94; RMSEA = 0.062) indicated that the model fitted the data well.



**Figure 1.** Final model depicting the relationships among constructs. Solid path coefficients are standardized regression coefficients, and all paths represent significant effects ( $p < .05$  at minimum).

According to the data, latent variable expectancy-value beliefs and procrastination had a significant effect on engagement which, in turn, had a significant effect on achievement. In the same time, the path between academic expectation of success and achievement was significant. In accord with the posited structural model, self-efficacy predicted expectancy-value beliefs and procrastination. The effect of self-efficacy on behavioral engagement was totally mediated by self-efficacy predicted expectancy-value beliefs and procrastination. Thus, students who has a high level of self-efficacy will lead to a deep engagement in learning. As we further hypothesized, the impact of expectancy-value beliefs and procrastination on school performance was mediated through different type of engagement. Also, expectation of success was distally linked to achievement both directly and through the mediation of engagement. Overall, behavioral engagement in learning and expectation of success accounted for 24 % of the variance in academic achievement,  $p < .001$ , 95% CI [.44, .71].

## **Discussion**

The study that applied the EVT (Eccles, 2005, 2009) to explore associations between self-efficacy, motivational beliefs, and engagement as well as the impact of these constructs on educational attainment. The results provide empirical support for the subject specificity of self-efficacy, expectation of success (measured by students' academic self-concept), valuing of school, and various behavioral engagement aspects. Path analyses based on a process model revealed that data were consistent with a model in which self-efficacy predict academic self-concept, valuing of school and procrastination, which can in turn promote or undermine engagement and thus affect students' academic performance.

The study of high school learners' engagement could help understand the dynamic interplay between students' beliefs and their subsequent engagement in learning activities. Although no direct paths between self-efficacy and students' different aspects of engagement, like homework and absenteeism were found in the path model, however microanalytic approaches detected the mediational effects of motivational beliefs and procrastination in these relations. Results also highlight that a high level

of each behavioral engagement dimension is important for facilitating academic performance, because *class participation, homework completion and school attendance* aspects of involvement are linked with higher achievement.

A key goal of the study was to explore a possible *mechanism* through which dimensions of behavioral engagement make a difference to high school students' actual academic achievement. Taken together, the pattern of mediational findings suggests that learners' engagement in the classroom, is one likely pathway. Expectation of success and valuing of school may have an energetic function, awakening enthusiasm, interest, and willingness to participate in academic activities. It seems to be more interesting for adolescents to be involved in activities by which are worthy. Valuing of school may also buffer against negative emotions, minimizing feelings of boredom, pressure, or frustration. Moreover, expectation of success may be a psychological resource that adolescents can, to some extent, take with them into new learning situations. Expectation of success was a significant predictor of all three indicators of students' engagement. The findings of this study suggest that adolescents who are high on self-efficacy likely to show participation in school activities, leading to greater opportunities for actual learning and school success.

In line with previous research, our findings indicated that self-efficacy has emerged as the variable that was strongly and consistently related to procrastination (Bandura, 1997; Klassen, Krawchuk, & Ranjani, 2008; Zimmerman et al., 2000). This is consistent with the findings of Ferrari & Tice (2000) that stated that there is an inverse relationship between self-efficacy and academic procrastination. Also, our results show that lack of self-efficacy was significantly predict procrastination. Students who are less confident about the success or their achievement are more likely to become frustrated, bored, and alienated from learning activities, which in turn interferes with engagement in the task and their academic progress.

Meanwhile, high self-efficacy is a positive motivational beliefs associated with low levels of procrastination (Steel, 2007). Learners who perceive themselves as capable of structuring their own learning, who feel confident against his wishes would engage in procrastination to a much lesser extent than other students.

Path analyses of the correlational data supported data that both expectation of success and valuing were significantly related to student engagement in school, but primary relations were with expectation of success. Moreover, the findings show a direct relations between expectation of success and learners' academic outcomes. These direct effects expectation - achievement can interpreted as possible reciprocal effects of students' academic accomplishments on their motivational-related beliefs. Interpreting these findings in the context of the "cyclicity" view yields the following picture: For students, a relatively open system of beliefs and performance exists, in which beliefs about expectation of success are calibrated on the basis of the level of performance. The path analysis suggest that an ongoing task of students is to form a map of the behavioral strategies that lead toward success and away from failure and this success, in turn, will increase expectations (Martin, 2017; Skinner & Belmont,1993). Longitudinal studies of these constructs may confirm these reciprocal effects as well as the other path analytic findings.

As indicated by the present results, both motivational beliefs and procrastination were predicted (positively respectively negative) students' participative behaviors in the classroom. Class-participation refers to learners' effort-based actions including help-seeking behaviors such as questioning, participating in group discussions as well as on task behaviors (Woolfolk & Margetts, 2013). As students see themselves as competent are more likely to value further engagement in it (Wigfield et al., 2016). However, students' academic valuing was not significantly related to their class participation and, to their absence as well. Learners' expectancy beliefs positively predicted their homework completion and negatively predicted absenteeism. Academic self-concept maybe animates their effort, persistence and their ability to recover when faced with setbacks (Schunk & Mullen, 2012).

### **Implications and limitation**

The study holds some implications and limitations for educational theory and research.

First, findings from this study have implications for education and educational practice. Interventions designed to assist struggling learners and specifically to decrease procrastination, would benefit from maintaining a primary focus on developing self-efficacy. Instead of attempting to increase self-efficacy per se, interventions could focus on adaptive motivational attitudes and beliefs, and that help the learner to manage and enhance learning. Adaptive help-seeking and effective management of academic stress within the educational context would also be helpful for the learner.

Second, our findings has shown that key components of the behavioral engagement can be analyze to their specific dimensions. The distinction and hypothesized of behavioral dimensions affirms the multidimensional perspective of engagement (Fredricks et al., 2004; Skinner et al., 2008). Further, the differential effects of class participation, homework completion, and absenteeism on academic outcomes shows the fruitfulness of using these specific dimensions resembling three conceptual categories of behavioral engagement: participation in school activities, involvement with home learning and positive conduct (including school attendance. This analyses demonstrates that some behavioral factors are more critical and more adaptive than others.

These results need to be interpreted in the context of study limitations.

First, although academic self-efficacy and expectancy-value beliefs were measured in the same data collection, we provide enough evidence and theoretical support to consider the expectancy-value belief and a procrastination students' as an antecedent of engagement in the classroom context. Because of both the cross-sectional nature of the study the reciprocal nature of human motivation and behavior (Bandura, 1986), a causal ordering between constructs is not confirmed. Studies of longitudinal design are needed to establish the influence that might exist among these factors and the degree of reciprocity that might be present between adolescent characteristics and behavioral factors.

Second, most of the measures used by researchers to assess motivational beliefs are student self-report measures (see Wigfield & Cambria, 2010). However, self-report measures can be problematic, especially for students who state that school is not important to them.

Consequently, we wish to emphasize the importance of combining quantitative and qualitative methods to reduce biases and to obtain more complete information about students' belief.

Third, the study mainly focused on two value components (intrinsic value and utility value) out of the four value components. The fine-grain analyses of the four value components would provide a more nuanced understanding of the relationships between motivational beliefs and behavioral-related outcomes.

## CONCLUSION

This study provide a rather comprehensive picture and expand understanding of how self-efficacy interact with expectation of success, valuing of school and procrastination to influence engagement and implicit achievement-related outcomes. The findings of this investigation present new insights and opportunities for educators and parents, seeking to enhance the educational outcomes of students - outcomes that rely in large part on the extent to which their students are behaviorally motivated and engaged in academic tasks. Interventions designed to assist struggling learners and specifically to decrease procrastination, would benefit from maintaining a primary focus on developing self-efficacy. Instead of attempting to increase self-efficacy per se, interventions could focus on adaptive motivational attitudes and beliefs (increasing expectation of success, and valuing the academic tasks), and cognitive and metacognitive strategies that help learner to more engage in learning.

## REFERENCES

- Bandura, A. (1997). Self-efficacy towards a unifying theory of behavioural change. *Psychological Review*, *84*, 191-215.
- Cooper, H., Lindsay, J. J., Nye, B., & Greathouse, S. (1998). Relationships among attitudes about homework, amount of homework assigned and completed, and student achievement. *Journal of Educational Psychology*, *90*, 70-83.

- Day, V., Mensink, D., & O'Sullivan, M. (2000). Patterns of Academic Procrastination. *Journal of College Reading and Learning*, 30, 120-134.
- De Jong, R., Westerhof, K. J., & Creemers, B. P. M. (2000). Homework and student math achievement in junior high schools. *Educational Research and Evaluation*, 6, 130-157.
- Doménech-Betoret, F., Abellán-Roselló, L., & Gómez-Artiga, A. (2017). Self-Efficacy, Satisfaction, and Academic Achievement: The Mediator Role of Students' Expectancy Value Beliefs. *Frontiers in Psychology*, 8, 122-129.
- Eccles, J.S. (2005). Subjective task value and the Eccles et al. model of achievement related choices. In A.J. Elliot & C.S. Dweck, (Eds.), *Handbook of competence and motivation* (pp. 105 – 121). New York: Guilford.
- Eccles, J. S. (2007). Families, schools, and development achievement related motivations and engagement. In J. E. Grusec & P. D. Hastings (Eds.), *Handbook of socialization: Theory and research* (pp. 665–691). New York: Guilford.
- Eccles, J. S. (2009). Who am I and what am I going to do with my life? Personal and collective identities as motivators of action. *Educational Psychologist*, 44(2), 78–89.
- Eccles, J.S. (2009). Who am I and what am I going to do with my life? Personal and collective identities as motivators of action. *Educational Psychologist*, 44, 78 – 89.
- Eccles, J. S. and Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53, 109–132.
- Eccles, J. S., Wigfield, A., & Schiefele, U. (1998). Motivation to succeed. In N. Eisenberg (Ed.), *Social, emotional, and personality development. Volume 3 of the Handbook of child psychology* (5th ed., pp. 1017-1095). New York, NY: Wiley.
- Ferrari, J. R., & Tice, D. M. (2000). Procrastination as a self-handicap for men and women: A task-avoidance strategy in a laboratory setting. *Journal of Research in Psychology*, 34, 73-83.
- Findley, M. J., & Cooper, H. M. (1983). Locus of Control and Academic Achievement: A Literature Review. *Journal of Personality and Social Psychology*, 419-427.
- Finn, J. D., Pannozzo, G. M., & Voelkl, K. E. (1995). Disruptive and inattentive-withdrawn behavior and achievement among fourth graders. *Elementary School Journal*, 95, 421-434.
- Fredricks, J.A., Blumenfeld, P.C., & Paris, A.H. (2004). Student engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74, 59 – 109.

- Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic engagement and performance. *Journal of Educational Psychology, 95*, 148 - 162.
- Green, J., Liem, G.A.D., Martin, A.J., Colmar, S., Marsh, H.W., & McInerney, D.M. (2012). Academic motivation, self-concept, engagement, and performance in high school: A longitudinal perspective. *Journal of Adolescence, 35*, 1111 - 1122.
- Guo, J., Marsh, H. W., Morin, A. J. S., Parker, P. D., & Kaur, G. (2015). Directionality of the associations of high school expectancy-value, aspirations, and attainment: A longitudinal study. *American Educational Research Journal, 52*(2), 371-402.
- Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences, 37*, 161-168.
- Hughes, J. N., Luo, W., Kwok, O. M., & Loyd, L. K. (2008). Teacher-student support, effortful engagement, and achievement: A 3-year longitudinal study. *Journal of Educational Psychology, 100*(1), 1-14.
- Kachgal, M. M., Hansen, L. S., & Nutter, K. J. (2001). Academic procrastination prevention/intervention: Strategies and recommendations. *Journal of Developmental Education, 25*, 14-24.
- Klassen, R. M., Krawchuk, L. L., & Ranjani, S. (2008). Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology, 33*(4), 915-931.
- Ladd G.W., & Dinella L.M. (2009). Continuity and change in early school engagement: Predictive of children's academic achievement trajectories from first to eighth grade? *Journal of Educational Psychology, 101*, 190-206.
- Maehr, M. L., & Midgley, C. (1996). Transforming school cultures. Boulder, CO: Westview Press.
- Marsh, H. W., Aduljabbar, A. S., Abu-Hilal, M. M., Morin, A. J. S., Abdelfattah, F., Leung, K. C., Parker, P. D. (2013). Factor structure, discriminate and convergent validity of TIMSS math and science motivation measures: A comparison of Arab and Anglo-Saxon Countries. *Journal of Educational Psychology, 105*, 108-128.
- Martin, A.J. (2009). Motivation and engagement across the academic lifespan: A developmental construct validity study of elementary school, high school, and university/college students. *Educational and Psychological Measurement, 69*, 794 - 824.

- Martin, T. G. (2017). The roles of motivation and engagement in students' academic achievement at Jamaican schools. Unpublished doctoral dissertation, University of The University of New South Wales.
- Meyer, J., Fleckenstein, J., & Köller, O. (2019). Expectancy value interactions and academic achievement: Differential relationships with achievement measures. *Contemporary Educational Psychology, 58*, 58–74.
- Middleton, M. J., & Midgley, C. (1997). Avoiding the demonstration of lack of ability: An under explored aspect of goal theory. *Journal of Educational Psychology, 89*, 710-718.
- Nagengast, B., Marsh, H. W., Scalas, L. F., Xu, M. K., Hau, K.-T., & Trautwein, U. (2011). Who took the “x” out of expectancy-value theory? A psychological mystery, a substantive-methodological synergy, and a cross-national generalization. *Psychological Science, 22*(8), 1058-1066.
- O'Brien, W. K. (2002). Applying the transtheoretical model to academic procrastination. Unpublished doctoral city of Houston.
- Onwuegbuzie, A. J. (2000). Academic procrastinators and perfectionistic tendencies among graduate students. *Journal and Personality, 15*, 103–109.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*, 33-40.
- Pychyl, T. A., Lee, J. M., Thibodeau, R., & Blunt, A. (2000). Five days of emotion: An experience sampling study of undergraduate student procrastination. *Journal of Social Behavior and Personality, 15*, 239–254.
- Reid, K. (2005) The causes, views and traits of school absenteeism and truancy [Electronic version]. *Research in Education, (74)*, 59-82.
- Reynolds, W. M. (1988). Measurement of academic self-concept in college students. *Journal of Personality Assessment, 52*(2), 223-240.
- Roeser, R. W., Midgley, C., & Urdan, T. C. (1996). Perceptions of the school psychological environment and early adolescents' psychological and behavioral functioning in school: The mediating role of goals and belonging. *Journal of Educational Psychology, 88*(3), 408-422.
- Rothman, S. (2001). School absence and student background factors: A multilevel analysis. *International Education Journal, 2*(1), 59–68.
- Schunk, D. H. (1991). Self-efficacy and academic motivation. *Education Psychology, 26*, 207–231.
- Schunk, D.H., & Mullen, C.A. (2012). Self-efficacy as an engaged learner. In S.L. Christenson, A.L. Reschly, & C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 219-235). New York, NY: Springer.

- Simpkins, S. D., Davis-Kean, P. E., & Eccles, J. S. (2006). Math and science motivation: A longitudinal examination of the links between choices and beliefs. *Developmental Psychology, 42*(1), 70-83.
- Simpkins, S., Fredricks, J. A., & Eccles, J. S. (2012). Charting the Eccles' expectancy value model from parents' beliefs in childhood to youths' activities in adolescence. *Developmental Psychology, 48*, 1019-1032.
- Simpson, W. K., & Pychyl, T. A. (2009). In search of the arousal procrastinator: An investigation of the relation between procrastination, arousal-based personality traits and beliefs about procrastination motivations. *Personality and Individual Differences, 47*, 906-911.
- Skinner, E. A., Kindermann, T. A., Connell, J. P., & Wellborn, J. G. (2009). Engagement as an organizational construct in the dynamics of motivational development. In K. Wentzel & A. Wigfi eld (Eds.), *Handbook of motivation at school* (pp. 223-245). Mahwah, NJ: Erlbaum.
- Skinner, E. A., Zimmer-Gembeck, M. J., & Connell, J. P. (1998). Individual differences and the development of perceived control. *Monographs of the Society for Research in Child Development, 63*(2-3), v-220.
- Skinner, E.A, Furrer, C., Marchand, G., & Kindermann, T. (2008). Engagement and disaffection in the classroom: Part of a larger motivational dynamic? *Journal of Educational Psychology, 100*, 765 - 781.
- Skinner, E.A., & Belmont, M.J. (1993). Motivation in the classroom: Reciprocal effects of teacher behaviour and student engagement across the school year. *Journal of Educational Psychology, 85*, 571 - 581.
- Steel, P. (2007). The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin, 133*(1), 65-94.
- Stipek, D. J. (1996). *Motivation and instruction*. In D. C. Berliner & R. C. Calfee (Eds.), *Handbook of educational psychology* (p. 85-113). Macmillan Library Reference USA; Prentice Hall International.
- Sutton, A., Soderstrom, I. (1999). Predicting elementary and secondary school achievement with school-related and demographic factors. *Journal Education Ressource, 92*, 330-338.
- Tabachnick, B. G. & Fidell, L. S. (2007). *Using multivariate statistics* (2nd ed.). Boston: Pearson.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate analysis*. Boston: Allyn and Bacon.
- Trautwein, U., & Koller, O. (2003). The relationship between homework and achievement-still much of a mystery. *Educational Psychology Review, 15*(2), 115 - 145.

- Trautwein, U., Marsh, H. W., Nagengast, B., Ludtke, O., Nagy, G., & Jonkmann, K. (2012). Probing for the multiplicative term in modern expectancy-value theory: A latent interaction modeling study. *Journal of Educational Psychology, 104*, 763–777.
- Tuckman, B. W. (1991). The development and concurrent validity of the Procrastination Scale. *Educational & Psychological Measurement, 51*, 473–480.
- Valiente, C., Lemery-Chalfant, K., Swanson, J., & Reiser, M. (2008). Prediction of children's academic competence from their effortful control, relationships, and classroom participation. *Journal of Educational Psychology, 100*(1), 67–77.
- Wang, M.-T., & Eccles, J. S. (2013). School context, achievement motivation, and academic engagement: A longitudinal study of school engagement using a multidimensional perspective. *Learning and Instruction, 28*, 12-23.
- Wigfield, A., & Cambria, J. (2010). Expectancy-value theory: Retrospective and prospective. *Advances in motivation and achievement, 16*, 35 - 70.
- Wigfield, A., & Eccles, J. (1992). The development of achievement task values: A theoretical analysis. *Developmental Review, 12*, 265–310.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy - value theory of motivation. *Contemporary Educational Psychology, 25*, 68–81.
- Wigfield, A., Tonks, S., & Klauda L. (2016). Expectancy-value theory. In K.R. Wentzel & D.B. Miele (Eds.), *Handbook of motivation at school* (pp. 55 – 74). New York, NY: Routledge.
- Woolfolk, A. & Margetts, K. (2013). *Educational psychology*. Frenchs Forest, NSW: Pearson Australia.
- Wright, B. D. (1968). Sample-free test calibration and person measurement. *Proceedings of the 1967 Invitational Conference on Testing Problems, 85–10*. Princeton, N.J.: Educational Testing Service.
- Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*, 82-91.