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# Designing a Causal Model for Fostering Academic Engagement and Verification of its Effect on Educational Performance

**Molouk Khademi Ashkzari, PhD***
Department of Educational Psychology
Alzahra University
mkhademi@alzahra.ac.ir

**Salehe Piryaei, PhD Candidate**
Department of Educational Psychology
Alzahra University

**Leila Kamelifar, PhD**
English Department
Refah Humanitarian College & University

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Academic engagement explains the extent to which learners identify with and value academic conclusions, and take part in academic and non-academic activities. The present study explores, quantitatively, a causal model of both psycho-social and motivational factors in academic engagement and their potential impacts on academic achievement outcome. The sample of this research consisted of 480 undergraduate students at Alzahra University, Tehran, Iran who were selected by stratified random sampling method. The instruments which used in this study were The Academic Success Inventory, Boekaerts' Motivation control scale (1987), Kuhl's Action Control scale (ACS-90) (1994), Pintrich et al.'s Motivated Strategies for Learning Questionnaire (MSLQ) (1991), Schraw & Dennison's Metacognitive awareness inventory (MAI) (1994), Boekaerts' Intended/actual goals scale (1987), Zimbardo & Boyd's future time perception inventory (ZPTI) (1999), & Schaufeli, et al's Academic Engagement scale (2002). Structural equation modeling (SEM) through AMOS-22 was used for data analysis. The results indicated that motivational control–emotional states & competencies, self-efficacy, metacognition, action control–initiative persistence & disengage persistence- had significant effects on academic engagement. Also academic engagement can affect academic performance mediating

by learner's intended/actual goals and future time perception in the current model. There is credence then, from our point of view, that policymakers and educators should consider advancing conceptualized complex psychosocial-motivational models to verify.

***Keywords:*** academic engagement, motivational/action control, self-efficacy, metacognition, future time perception, academic performance

Improving the quality of learning in higher education is a significant research inquiry in academic achievement literature. The higher education system is an open, accessible and responsive system that consists of a diverse student population with varied preparedness profile, enrolled in flexible degree programs where engaged pedagogies aim to deliver a reformed curriculum which is measured in competencies and outcomes (Schreiber & Yu, 2016, Walker, Bush, Sanchagrin, & Holland, 2017).

There is growing evidence that individual differences in academic performance cannot be explained as the result of differences in general ability alone, but as the consequence of complex and dynamic interactions between both psychosocial (e.g., learning environment) and motivational (cognitive and affective) factors (Phan, 2014). Undoubtedly, such studies provide a basis for the design and creation of educational-social programs which may broaden positive consequences, both academically and non-academically in the educational systems (Pekrun, Lichtenfeld, Marsh, Murayama, & Goetz, 2017, Lavasani, Malahmadi, & Amani, 2010, Fenollar, Román, & Cuestas, 2007,). As stated by Knight, Buckingham Shum and Littleton (2014), measurement of learning should go beyond the threshold of academic performance. The significance of general and task-specific cognitive and affective variables on the

students' management of learning has been emphasized in many studies.

Academic engagement provides a useful framework to examine the promotion of student's persistence and retention in academic contexts (Strydom, 2014) in higher education. Various factors have been connected with an effective learning disposition including academic engagement, a comprehensive the ability to self-regulate, setting learning goals, persistence, conscientiousness and sub factors of openness, creativity and open-mindedness (Suárez-Orozco, Pimentel, & Martin, 2009). Kuh (2009) defined academic engagement as the amount of time and effort that students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities. According to Csikszentmihalyi (1990), engagement is a growth-producing activity where an individual allocates attention and interest in active response/reaction to the environment. It has become an important variable that is engaged with several educational outcomes. Academic engagement, concentrating on the contexts of motivation, is explained as the extent to which learners are connected with learning and also the extent to which they take part in academic and non-academic activities (Williams, 2003). For example, researches indicate that academic engagement is crucial for learning, personal development, and institutional performance (Carini, Kuh, & Klein, 2006), and will lead to effective educational practices such as utilizing human resources institutions, curricular programs, and the number of hours per week one devotes to academic work (Jimerson, Renshaw, Stewart, Hart, & O'Malley, 2009). Academic engagement, specifically, as a progressive process, academic engagement operates in a student's life and impacts the final decision to

withdraw from the educational system (Jimerson et al., 2009). Numerous studies have linked academic engagement with improved academic performance. It has repeatedly demonstrated to be a robust predictor of achievement and behavior in the academic settings (Appleton, Christenson, & Furlong, 2008, Shernoff & Schmidt, 2008). However academic engagement, as a theoretical construct, is a multifaceted and relatively varied concept in scope and coverage (Trowler, 2010). Phan (2014) argued that in the last 70 years, the engagement idea has developed to involve varied theoretical facets, such as the importance of quality of efforts (Pace, 1980), academic involvement (Astin, 1984), social and academic integration (Tinto, 1987), and good practices in undergraduate education (Chickering & Gamson, 1987).

Inconsistent definitions of academic engagement have led to a variety of nebulous measures. According to Appleton et al. (2008), the definition of academic engagement consists of affective, behavioral, and cognitive engagement as the main facets of the construct. *Affective* engagement-psychological and emotional engagement-depicts a learner's feelings toward her academic surrounding (university), tutors, and classmates. *Behavioral* engagement is constituted of observable academic performance or engagement and is investigated through a student's positive conduct, effort, and contribution (e.g., participation in extracurricular activities, attendance, and work habits, (Fredricks, Blumenfeld, & Paris, 2004). *Cognitive* engagement includes students' perceptions and beliefs that are associated with academic setting and learning. It refers to the cognitive processing a student employs during academic tasks as well as the amount and type of strategies a studen utilizes (Walker, Greene, & Mansell, 2006). Schaufeli, Salanova,

González-Romá, & Bakker (2002) defined engagement as a multi-aspect construct that include effort, resiliency, and persistence while facing obstacles (vigor), passion, inspiration, and pride in academic learning (dedication), and involvement in learning activities and tasks (absorption) as the main facets of this construct. As an adaptive outcome in educational context, these three facets of academic engagement usually lead to motivation and proactivity with academic activities (Phan, 2014).

Given the priority of the academic achievement in post-modern pedagogy, the dynamic model of cognitive and affective processes in academic learning (Volet, 1997) and background precedents (attitudinal/motivational and cognitive/metacognitive factors) have received great emphasis. They affect the choice of targets, activities, effort put, and perseverance of learners. Hence, based on *dynamic model of cognitive and affective processes*, this research aim to design a model of academic learning, where the precedents of the engagement are known and be able to promote the model by detecting its different aspects. Brief introductions of the main variables in this model have been presented below.

The impacts of students' instant cognitive and motivational evaluations of learning on their management of learning have been empirically recommended (Elliot, Dweck, & Yeager, 2017). Self-regulated learning theories (Pintrich & Garcia, 1991) have emphasized the importance of general and task-specific cognitive and affective variables regarding the actual impact of learner's appraisals of learning, specifically when students have to do discrete tasks in class, under strict instructions and teacher control on academic outcomes. Also, in the university learning context, the ability to manage learning is expected to play a

critical role in the quality of students' learning outcomes. Based on self-regulated learning in the university, Boekaerts (1996) proposed that in situations where tasks are complex, identifying requirements, generating appropriate goals, allocating the necessary time and effort, sustaining motivation and controlling the enactment of learning intentions, despite competing tendencies are essential for academic success. *Motivation control* is described as cognitive and affective appraisal of learning which has effects on subjective cognitions and emotions of a learner's effort that are put into learning. Action control as defined by Kuhl (1994) consists of all processes that mediate the persistence and enactment of intentions. As a stable personality disposition, action control can be identified in learners as a state –versus- action- oriented (Volet, 1997). On the other hand, literature has broadly investigated the significance of general and situation-specific appraisals of self-competence and self-efficacy in the recent years. On the subject of motivational variables, Vancouver and Kendall (2006) stated that a high level of self-efficacy, an opinion about oneself on achieving success in a special field- is vital in choosing goals, selecting techniques and strategies, perseverance, and the amount of effort devoted for an activity (Kyllonen, Walters, & Kaufman 2011). This can lead to confidence about exam preparedness, which in turn can have a positive impact on academic performance. According to Phan (2014) prior research investigations seem to indicate that improving self-efficacy beliefs with respect to academic learning would relate positively to absorption, dedication, and vigor. In this study, the self-efficacious students were more likely to be involved with their learning and, hence, expended more effort on the learning activities (Schunk, 1991). *Metacognition* as another factor in

fostering academic learning is the knowledge used to learn, ponder, and effectively solve problems (Kliegl & Philipp, 2002). According to Kyllenon et al. (2011), metacognition is divided into two parts, monitoring and regulating. Monitoring refers to being aware of what one knows or what one has done in a problem solving situation. Regulating refers to the selection of methods, such as planning or setting sub-goals, for studying or solving problems. Researchers have examined metacognition and how it relates to measures of academic achievement. It is noteworthy to mention that if students have well developed metacognitive knowledge and metacognitive regulatory skills and they use their metacognition, they will excel academically. Consequently, it is important to be able to assess metacognition of college students to determine if their knowledge and skills are related to academic achievement. More specifically, intended and actual efforts have been defined as two complementary aspects of university students' learning goals, namely the direction of their goals and their effort or commitment to achieve their goals (Boekaerts, 1987). Goals refer to the nature of a student's direction of learning or the focus of their learning effort, either being surficial or comprehensive (Boekaerts, 1994). Volet (1997) stated that the concept of goal, labelled as learning intentions or intended effort at task on-set and effort expenditure at task off-set, refers to a student's degree of willingness to invest time and energy into a particular task and is significantly related to study strategies and performance.

Horstmanshof & Zimitat (2007) claim that the significance of future time perception has been acknowledged in educational psychology in relation to desired educational outcomes, specifically among college students. Based on the theory of time perception (TP) (Zimbardo & Boyd, 1999), orientations to the

past, present and the future are the basic dimensions of human performance. Time perceptions can be considered as cognitive frames for encoding, storing and retrieving past experiences. They also used in the formation of expectations and goals (Zimbardo & Boyd, 1999). Due to the impact of past experiences on current actions and future expectations, time perception has a dynamic influence on many important judgments, decisions, and actions. In this regard, learners can influence the balance among these temporal orientations, depending on situational demands, resource assessments or personal and social appraisals (Zimbardo & Boyd, 1999, p. 1272), to negotiate strategies that satisfy new goals and avoid adverse consequences. In other words, students who are confident in their abilities (Positive Past) and who believe that their efforts produce results (low Present Hedonistic) are more likely to work towards a future goal (Future) to which they are committed and with which they identify than those who do not. Thus, by harnessing their time perceptions, they are able to regulate their behavior to persist with their studies and achieve their educational goals (Horstmanshof & Zimitat, 2007, p. 706).

Simons, Vansteenkiste, Lens, and Lacante (2004) reported that students who perceived academic activities as valuable for their future performance showed a higher level of motivation and had better examination outcomes. They argued that having a profound future time perception is associated with a deep conceptual thinking, better performance, more intensive persistence, and finally more intrinsically motivated learners that employ comperhensive approaches to their academic learning.

Finally, a model of cognitive and affective processes for academic learning is proposed in the current research where

academic engagement plays a central role in an individuals' stable characteristics, appraisals of the situation (as attitudinal/motivational–control, action control, & self-efficacy & metacognitive factors) and their academic performance considering intended/actual goals and future time perception in college students (see Figure. 1).

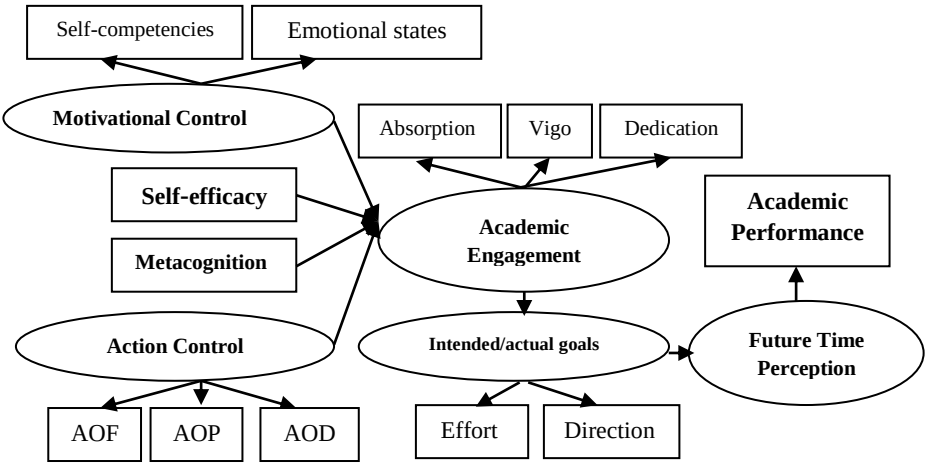


**Figure 1. The Hypothetical Model of the Present Study**

Note: Action orientation subsequent to failure vs. preoccupation (AOF), prospective and decision-related action orientation vs. hesitation (AOD), action orientation during (successful) performance of activities (intrinsic orientation) vs. volatility (AOP).

## Method

Participants for this research were 480 undergraduate students that were selected by stratified random sampling method from 10 faculties of Alzahra University. After incomplete questionnaires were eliminated, 443 questionnaires were obtained over the eight-week period (a response rate of 92.29%). All participants were female and 84.5% were 20–28 years of age.

**Motivation Control**

An adapted and reduced version of Boekaerts' (1987) motivation questionnaire was given on the two occasions. This questionnaire measures student task-specific cognitions and emotions at task on-set and task off-set as well as learning intentions in terms of planned effort expenditure at task on-set and report of effort expenditure at task off-set. In this study, students were asked to rate on a scale of 5 (very) to 1 (not at all) their perceptions of learning at the university, in terms of their self-competence and interest in the course (single item). Students also rated their emotional state regarding the course, in terms of enthusiasm (single item) at the beginning of the course, and enthusiasm and happiness (two items) at the end of the course (Cronbach's alpha, .80). At the current research, the internal consistency of the items was satisfactory, as reflected in the separation indices (Cronbach's alpha) ranging from .71 to .93.

**Self-efficacy**

Eight items of the self-efficacy subscale by Pintrich, Smith, Garcia, & McKeachie (1991) were used in this study. The Motivated Strategies for Learning Questionnaire (MSLQ) was used to measure academic self-efficacy beliefs of learning. It was rated on a 7-point rating scale (1 (not at all true for me) to 7 (very true for me), the items included, for example: 'I believe I will receive an excellent grade in this class' and I'm confident I can learn the basic concepts taught in this unit'. According to Phan (2014) the reliability of this scale was supported by the high coefficients of Cronbach's alpha (.76). Also the CFA results showed that the MSLQ was a good data fit in the current

study. In addition, the overall self-efficacy subscale yielded a Cronbach's alpha coefficient of .80 in this study.

**Metacognitive Awareness**

The metacognitive awareness inventory (MAI) (Schraw & Dennison, 1994) was used to measure students' metacognitive awareness. The MAI consists of 52 statements which rate students as being false or true on a 5-point Likert scale. The two components of metacognition discussed above are represented within the scale, metacognitive knowledge and metacognitive regulation. Higher scores correspond to greater metacognitive knowledge and greater metacognitive regulation. According to Schraw & Dennison (1994) two experiments supported the two factor model of this scale and factors were reliable (Cronbach's alpha: .90) and inter-correlation were significant (r= .54). Test-retest reliability of the MAI has been reported as between .86 and .90 and the internal consistency of the subscales as between .72 and .83.

**Action Control**

The action control scale (ACS-90) developed by Kuhl (1994) used to assess the students' ability to maintain and enact their learning intentions in academic learning. The action control scale consists of 36 items and three subscales: Action orientation subsequent to failure vs. preoccupation (AOF), prospective and decision-related action orientation vs. hesitation (AOD), action orientation during (successful) performance of activities (intrinsic orientation) vs. volatility (AOP). Each scale consists of 12 items which describe a particular situation and has two alternative answers (A or B), one of which is indicative of action orientation and the other of state orientation. Example of an

Initiative/Hesitation item: "When I don't have any assignments pending: A. I have trouble getting motivated to do any study at all. B. I quickly find something to do that will assist me in my study or course generally", Example of a Disengagement/Preoccupation item: "When something in my study really gets me down: A. I have trouble doing anything at all. B. I find it easy to put it into perception and get on with other things. For scoring the test values, using the action-oriented answers is recommended. The sum of the action-oriented answers for each scale is between 0 and 12. The internal consistency of the items was satisfactory, as reflected in the separation indices (Cronbach's alpha) of .63 on the first occasion and .73 on the second.

**Academic Engagement**

The student version of Schaufeli, et al.'s (2002) Engagement Scale was chosen to assess the student's academic engagement, as these have been found to demonstrate good construct validity, relevance, and applicability to classroom learning (Phan, 2014). The 17 items, answered on a 7-point rating scale (1 (Strongly disagree) to 7 (Strongly agree)), defined three distinct dimensions: Vigor (e.g., "When I get up in the morning, I feel like going to class [for mathematics]"), Dedication (e.g., "To me, my studies are challenging"), and Absorption (e.g., "When I am studying, I forget everything around me"). In addition, the overall academic engagement questionnaire has yielded a Cronbach's alpha coefficient of .87 in this study.

**Intended/actual Goals**

The learning intentions measure called Intended and Actual Effort by Boekaerts (1987) in this study was the sum score of

three items: self-report of aspiration level (grade), amount of effort (4 levels) and amount of time (4 levels) intended to spend/spent on the course. A student's score on this subscale is seen as an indicator of that person's self-related commitment to the task (Boekaerts, 1994). Cronbach alphas for this three-item scale at the current study were .61 at the beginning and .68.

**Future Time Perception**

The Zimbardo time perception inventory (ZTPI) used to indicate the students future time perception (Zimbardo & Boyd, 1999). ZTPI consists of 56 items on a 5-point Likert scale ranging from very uncharacteristic (1) to very characteristic (5). Reported the reliability coefficients of this inventory ranging from .74 to .84. Convergent, divergent, and discriminant validity are shown by Zimbardo & Boyd (1999) confirm the power of this inventory. The CFA indices of this scale at the current research ($\chi^2/df$ = 42.769 ($p$ > .05), CFI=.80, NFI = .84, TLI= .65, & RMSEA = .06) showed that the original first-order factor structure had acceptable goodness of fit and Cronbach's alpha coefficient showed that the 56 items had acceptable reliability coefficient (.93).

**The Academic Success**

The Academic Success Inventory for College Students (ASICS) (Prevatt et al., 2011) is a self-report measure that assesses college academic success incorporating many of the important factors related to a student's success in college (Festa-Dreher, 2010). The ASICS is a 50-item measure that answered by 6 point Likert scale with the following subscales: general academic skills, career decidedness, internal motivation/confidence, lack of anxiety, external

motivation/future, concentration, socializing, personal adjustment, efficacy of the instructor, and external motivation/current (Prevatt et al., 2011). Inventory is strong and has subscale Cronbach alphas ranging from .93 to .77 (the extrinsic motivation/current time subscale has an internal consistency of .62) and there is strong support for criterion and construct validity as evidenced by comparisons of honors students to students who are on academic probation (Prevatt, et al., 2011). In the current study, results of CFA and Cronbach's alpha coefficient showed that the 10 factors had acceptable reliability coefficients, with Cronbach's alpha coefficients ranging from .74 to .92 as for the construct validity, and the CFA results (CFI = .82, GFI = .81, TLI= .66, & RMSEA = .02) showed that the original first-order factor structure had acceptable goodness of fit indices.

**Procedure**

The conceptual model detailed in Figure 1 was analyzed using path analytical procedures with the statistical software package, AMOS-22. Path analytical procedures are more advantageous in enabling researchers to test and compare competing *a priori* models. Decomposition of effects, similarly, provides clarity into the direct and indirect interrelations between variables**.** In relation to the goodness-of-fit index values, we chose to use the following: (i) the Chi-square statistics ($\chi^2$) and degree of freedom (*df*), (ii) the Comparative Fit Index (CFI)(CFI value ≥ .90), (iii) the Non-normed Fit Index (NNFI)(NNFI value ≥ .90), and (iv) the Root Mean Square Error of Approximation (RMSEA)(RMSEA value ≤ .080).

## Results

Descriptive statistics, involving the means and standard deviations for the total sample and similarly the bivariate correlations of the variables under statistical testing are presented in Table 1.

The Kaiser-Meyer-Olkin Index (.93>.6) confirmed the adequacy of the sample size. The variables did not exhibit problematic univariate skew (i.e., absolute values of the skewness index were<3.00., Kline, 2011), nor did the variables exhibit problematic univariate Kurtosis (i.e., absolute values of the kurtosis index were<10.00., Kline, 2011). The critical ratio of .95 for Mardia's Coefficient (1.09) proved the multivariate normality (Ghasemi, 2010). The results of structural equation modeling for the hypothesized model indicated a moderately acceptable model fit, as shown by the goodness-of-fit index values: $\chi^2/df$ = 42.769 ($p$ > .05), CFI= .80, NFI= .80, TLI= .66, & RMSEA = .08. The positive The goodness-of-fit index values for the modified model yielded an good model fit after considering a new path from intended goals to academic performance: $\chi^2/df$ = 37.686 ($p$ > .05), CFI = .83, NFI = .82, RMSEA = .04. Table 2 seems to indicate that alongside the direct effects of motivational control, self-efficacy, metacognition, action control on the three facets of academic engagement (dedication, vigor, & absorption) and the effects of academic engagement on academic performance mediated by intended/actual goals and future time perception.

**Table 1**

**Descriptive Statistics and Bivariate-Correlations for Research Variables**

| | Variables | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Motivational Control | 9 | 1.4 | ___ | | | | | | | |
| 2 | Self-efficacy | 5.25 | 1.49 | .36* | ___ | | | | | | |
| 3 | Metacognition | 206.8 | 20.99 | .80* | .42* | ___ | | | | | |
| 4 | Action control | 8.4 | 1.7 | .63* | .51* | .35* | ___ | | | | |
| 5 | Intended/actual goals | 76.7 | 7.2 | .41* | .91* | .32* | .97* | ___ | | | |
| 6 | Future time perception | 112.5 | 11.7 | .55* | .56* | .28* | .65* | .43* | ___ | | |
| 7 | Academic performance | 80.36 | 12.58 | .71* | .89* | .29* | .84* | .77* | .46* | ___ | |
| 8 | Academic engagement | 58.66 | 18.88 | .37* | .46* | .53* | .29* | .32* | .16* | | ___ |

Note: * p< .05

**Table 2**

**The Standardized Effects: Direct, Indirect, & Total**

| Predictors | Direct effects | Indirect Effects | Total |
|---|---|---|---|
| **On Academic Performance** | | | |
| of motivational control | .000 | .179* | .179* |
| of self-efficacy | .000 | .26* | .26* |
| of metacognition | .000 | .16* | .16* |
| of action control | .000 | .87* | .87* |
| of academic engagement | .000 | .89* | .89* |
| of intended/actual goal | .000 | .26* | .26* |
| of future time perception | .98* | .000 | .98* |
| **On Academic Engagement** | | | |
| of motivational control | .85* | .000 | .85* |
| of self-efficacy | .187* | .000 | 187* |
| of metacognition | .126* | .000 | .126* |
| of action control | .99* | .000 | .99* |
| **On Intendant/ Actual Goals** | | | |
| of academic engagement | .98* | .000 | .98* |
| of motivational control | .000 | .198* | .198* |
| of self-efficacy | .000 | .184* | .184* |
| of metacognition | .000 | .025 | .025 |
| of action control | .000 | .98* | .98* |
| **On Future Time Perception** | | | |
| of academic engagement | .000 | .84* | .84* |
| of motivational control | .000 | .169* | .169* |
| of self-efficacy | .000 | .157 | .157 |
| of metacognition | .000 | .022 | .022 |
| of action control | .000 | .83* | .83* |
| of actual/ intended goals | .85* | .000 | .85* |

Note: * p<.001

Table 3 seems to indicate that alongside the direct effects of motivational control, self-efficacy, metacognition, and action control on academic engagement, and the effect of academic engagement on academic performance mediating by intended and actual goals. Figure 2 presents the final model and standardized regression weights for the paths.

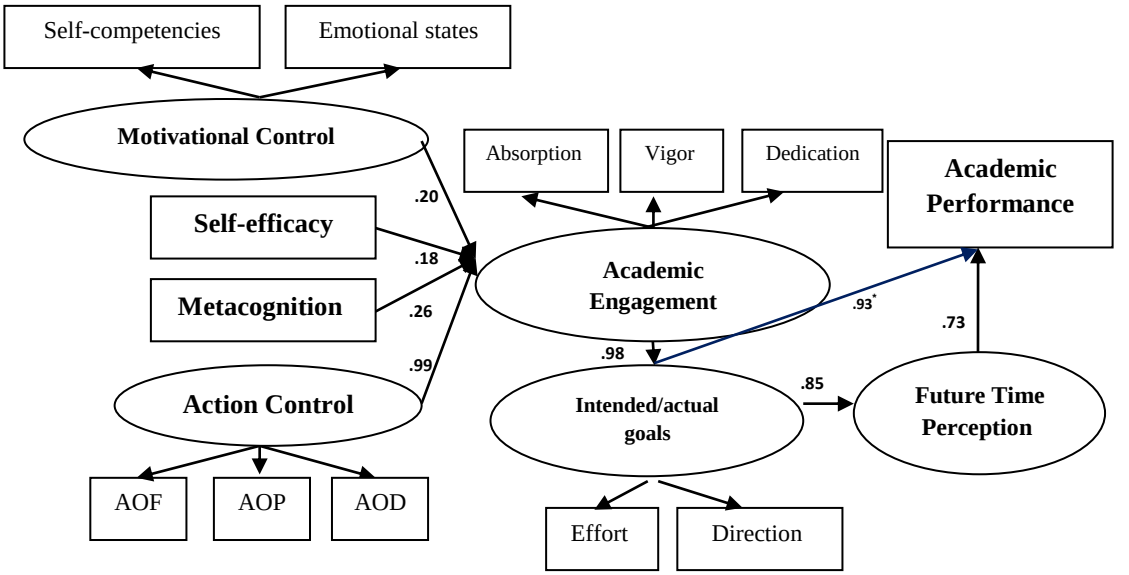


**Figure 2. The Standardized Regression Weights for the Paths of the Final Model**

**Note:** Action orientation subsequent to failure vs. preoccupation (AOF), prospective and decision-related action orientation vs. hesitation (AOD), action orientation during (successful) performance of activities (intrinsic orientation) vs. volatility (AOP).

The present study has introduced a number of key findings, which support the hypothetical model of academic performance regarding the notion of academic engagement as a precedent of future academic achievement. The findings of this study are consistent with the previous researches (Phan, 2014, Horstmanshof & Zimitat, 2007, Volet, 1997). This study

provided empirical support for the significance of cognitive and affective variables in academic learning, and more specifically for the conceptual usefulness of academic engagement as a central factor in this process.

There were four important findings from this study of undergraduate students who were engaged with university. Firstly, according to Boekaerts (1996), motivation control, conceptualized as learner's cognitive and affective appraisals of learning, affected the subjective cognitions and emotions and had a significant impact on students' commitment to invest effort and energy into their learning. Secondly, in the model of cognitive and affective processes in academic learning that is proposed in the present research, intended and actual goals play a central and mediating role between individuals' stable characteristics and appraisals of the situation and their performance during academic activities. Thirdly, metacognition belief as a sub-process facilitates the control aspects of learning and can improve the skills of regulation including planning, information management, self-monitoring, and self-evaluation (Artzt & Armour-Thomas, 1992). They are necessary for engagement in academic activities likewise. According to Kuhl (1994), state-oriented individuals tend to display an impaired ability to initiate action and to change behavior when required. They also display volatility, in the sense of tending to switch prematurely to alternative activities. In contrast, action-oriented individuals appear to remain in control of the enactment of their intentions; therefore, they escape from preoccupation, hesitation and volatility (Volet, 1997). Fourthly, in the context of university, the learner's future time perception was considered as a strong psychological and behavioral aspect of the relationship between engagement and academic performance. According to

Horstmanshof and Zimitat (2007), if students demonstrate future and academic orientation, and they also spend time preparation and use meaningful strategies, they will more likely work consistently, seek advice from teaching staff, be motivated to study and do well in their studies. These are the characteristics of students who complete higher education and highlight the importance of involvement as a process which contributs towards academic and social integration (Astin, 1984, Tinto, 1987).

These findings may be important to understand what drives engagement and the foci of interventions so as to improve the recall and retention of university students. We suggest that institutions consider investing in interventions that enhances every student's motivational constructs, metacognitive awareness and understanding of the orientation of their goals with time together with other strategies for enhancing engagement (e.g. active learning) aiming at improving the academic performance in academic settings.

**Limitation and implications for future research**

This study has established the interrelationships between dimensions of academic engagement and educational behaviors, and the importance of psycho-social factors in a population of undergraduate students who have completed the first year at university. Therefore, it may not be possible to make generalizations to other samples or populations. After all, the present study examined the structural relationship between variables. Causal inferences in this area require more precise control. Evaluation of the interactive effects of individual and academic characteristics on student's engagement can help to validate the findings of this study. The present study was

conducted on a sample of students from Alzahra University in Iran, so further research on other samples can complement the results of this study. It is recommended that future researchers study the effects of other personal characteristics such as big-five, locus of control, and self-centered assessments on academic engagement. Furthermore, investigation of gender differences and age-related variables may also be considered in future research. Finaly, the replication of this study on other samples and other geographic areas will extend the validity of the results.

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