

The Structural Model of Relationship between Informational Style, Achievement Goals and Cognitive Engagement

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Abstract

As a critical period in people lives, teens' period relies on two special aspects. In one hand it relates to the changes of believes about the ego. On the other hand, it relates to social and upbringing expectations. There is one unifying concept which unifies the changes and it's the *identity*. Based on Brzezinski's socio-cognitive perspective, identity is considered a *theory of self*. The *self-theory* is a conception structure of principles, values and criteria related to *self* which helps the person to adapt and cope with life problems especially the educational life. The *self-theory* may lead the teenager toward adaptive values, goals and motivations to make the teenager use one's cognitive abilities for more success and cooperation. In this way, the purpose of this article is to offer a structural model for cognitive engagement based on informational style, mastery goal and performance-approach goals. The present study is a kind of non-experimental design. To speak more precisely, it is a type of correlations design which has analyzed a structural pattern of variables relationship. The sample size (the number of people taking part in study) is 630. The sample candidates are medical students of Sabzevar and Neyshaboor universities, who have been selected by a multi-stages/steps sampling process. Brzezinski identity style scales (IsI-3), Midgley et al achievement goal (PALS) and also motivational strategies for learning (MSLQ) were used to evaluate the research variables. The data were analyzed by structural pattern of the equations. The results indicated that informational style has got two effects on the cognitive engagement which are 1- A direct positive effect (0/23). 2-An indirect positive effect and more powerful (0/53) that indirect effect between two variable is through mastery goals (which is a mediator variable). Mastery goals make adolescent who have informational identity style and more purposeful in information searching. Mediator variable of mastery goals builds up stronger relationship between informational identity style and cognitive engagement.

Keywords: Informational identity style, mastery goals, achievement goals, cognitive engagement and structural model

Introduction

Identity is considered one of the most important topics and problems of the adolescence – it is the feeling of having a unified and strong sense of identity which is prerequisite of personal optimum growth during the lifetime. The lack of this feeling or sense being formed in the person could lead to socio-psychological damages.

Based on the socio-cognitive perspective, identity is conceptualized as a theory of *self* or related to the person oneself (Berzonsky , 2003).This theory is used as a reference framework to interpret the information related to the person and to cope with the life conditions. The people

theorize differently about themselves. Brzezinski distinguishes three information identity styles: 1- informational identity style 2- normative identity style 3- diffuse-avoidant identity style (Hejazi et al.,2009) .The people, who have an informational style, evaluate the information related to them actively. This style is related to the psychological health, the problematic coping methods, academic autonomy and much need for cognition.

The teenager utilizes the same information to form the *self theory*. He/she applies getting some knowledge and awareness as a result of this exploration. Finally, the teenager incorporates the knowledge and awareness in his/her ego theory and he/she applies the theory coping with different life problems.

The academic assignments, the school problems and the motivational directions cause the most important part of the teenager concerns. The teenager evaluates the *self-theory* based on his/her abilities in solving these problems.

We can use the relationship between one of the achievement motivational model and identity to analyze the role of identity in instructional or educational environments. The base of this subject is that identity is a source of motivation ((Burke,1991) also some specialists emphasize that identity and motivation are interrelated and (Davidson,1996 ; Kaplan & Flum ,2010).

The goal theory is one of the motivational achievements. The achievement goals are defined as the goals of engaging in the assignment the special type of the accepted goal makes a framework based on which the people interpret and perform their attempts related to their success (Dweck, 1986).

Kaplan and Flam found some common potential relations between the identity styles and the achievement goals. They have expressed these relations from theoretical and basic foundational perspectives in their recent article (Kaplan& Flum ,2010).

Two kinds of achievement goals have been introduced based on the research background (Ames & Archer ,1998) .These types are 1-the mastery goals and 2-performance goals. The people with mastery goals emphasize on learning new skills and improving the potential. But people with performance goals emphasize on *self-valuation* feeling. The people who have performance goals try to show their competence by outperforming others and in comparison to others. One of the hypotheses related to the goal theory which has been frequently analyzed indicates the relation between the students' achievement goals and their cognitive engagement

The cognitive engagement is, in fact, engaging the subjective internal processes with the educational assignments and instructional subjects. It is worthwhile that the information procession takes place in these subjective internal processes. The structure of cognitive engagement consists of learning strategies and *self-regular* strategies and in fact it is one of the important aspects of Academic engagement.

Academic engagement was for the first time offered as a theoretical pattern to understand the educational downfall but it is considered as one of the most convincing intervention approaches to prevent the educational and increase the students' psychological health (Appleton et al.,2006) .

The higher level of social welfare is higher in the adolescent age range of communities. And this age range also will included early student period. Often our students, especially in the first years of university still have not adopted a specific identity and this task brings a great responsibility for education stakeholders especially universities to provide features and options that will lead students to the Informational Identity Style. The question that arises is whether the informational Identity Style can always cause academic success and ultimately lead to long-life learning? If not, can we help students to adopt more adaptive educational goals to be more involved in academic assignments?

Most researches in this area suggest that the students having the mastery goals are reported to use deep cognitive strategies to deep meta-cognitive strategies as well as *self*-regular strategies. However, the relationship between performance-approach goals and the learning strategies is not clear and it is different from no relationship to a positive relationship (Green et al.,2004 ; McWhaw & Abrami , 2001). Hence, more researches are necessary to illustrate the problem and to attract the Stakeholders of education attention to learning, motivational factors and the related cognitive factors (Simons et al., 2004).

Exerting some instructional and motivational interventions and also guiding the plans toward making some general or directing principles in upbringing environments which supports discovery and mediation could set the scene to make everything ready to invest student's time and energy in modifying behavior and learning cognitive potential resources.

In other words, doing instructional and motivational interventions can be motivator for the academic engagement because the lack of attention and commitment to education among teenager students could lead to very serious and dangerous outcomes such as school run away or escape from the school , committing hazardous and for example drug abuse , cigar and alcohol Abuse and getting into trouble with some criminal activities. Therefore, based on the existing assumptions about the achievement goals theories and the identity styles and the analysis of the previous researches, a pattern was planned. The pattern included variables informational style, mastery goals, performance-approach- goals and also cognitive engagement. Then, the relationship among the variables was evaluated by using structural equations model and also by the Lizerel software.

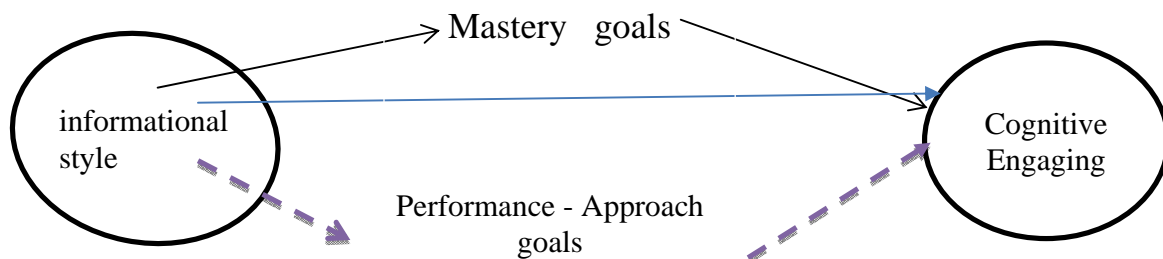


Figure 1. Conceptual model of cognitive engagement regard to informational style, mastery goals and performance-approach goals

Materials and Methods

This research is a kind of non-experimental design. To speak more exactly, it is correlation design which analyzes the relationships between the design variables by a structural equations model (SEM) or the multi – variable analysis with the latent variable. The research hypothesis in this method is a special causal structure or collection of unobservable constructs. These constructs are measured by using a collection of indicator (observable) variables. The research statistical sample size included the medical students who were studying in Sabzevar and Neyshaboor universities in the academic year 89-90. In this research, the students in grade 2, 3 and 4 were selected. The sample size was determined based on the common way of $N : q$ for the studies based on modeling the structural equations. N represented the number of observation and q represented the number of parameters which should be estimated in the model. This proportion was determined as 15-20 to 1 in most of the studies. Based on these characters , the sample size was determined 630 by taking the possibility of the number of parameters in the most preferred model into consideration and also by assuming kind of same of the

questionnaire The sample was selected by the multi -stage sampling method. In this method ,people are selected based on a hierarchy of different sample units(Hejazi et al., 2003). The big size of sample contributes to the sample group to define the population as well as possible and also the bigness of sample helps to the with the validation operation the scales and suit sample with the factor analysis method which is the main validity method (Khosrojerdi.,2012). In this research Three questionnaires were used to Collect the data.

The revised scale of Identify styles (IST-3): (Berzonsky.,1997) , this scale was for the first time designed in 1989 by Brzezinski. This scale of 40 indices (item) of which eleven (Simons et al., 2004))indices is about informational identity style. The responses are adjusted based on a five degree scale of Likeret. In this research, composite reliability method is used to evaluate the reliability scale. The traditional method to evaluate a collection of indices is called the Alfa method which is introduced by Cronbach.

Although using this method is easy and widespread, there are some cautions in using it properly .The lack of attention to these precautions could lead to make incorrect evaluations. One of the cautions and considerations which should be taken into account is the main assumption of this method. Hence, the Alpha method is proposed because of the difficulty of estimation and analysis of the bounding limited assumption in which the methods of structural equations model is used. One of these methods is composite reliability method in which there are less assumed parameters and also there is a more precise analysis of the essential assumptions and finally this method leads to estimations of validity (Kabiri, 2012). Therefore, the quantity of composite reliability is reported as 0/71 for the informational sub-scale. The validity of this scale of measurement has been investigated by different researches (Hejazi, Borgalilo & Nagsh, 2009). The confirmatory factor analysis is used to validate the identity styles scale and the confirmatory factor analysis indicates the measurement model in structural equations model. The factor analysis results (RMR = 0/01, AGFI = 0/96 GFI = 0/97 CFI = 0/94) indicate that all the indicators are in an acceptable level.

2-Scale achievement goals: (Midgley, Kaplan, Middleton& Maehe, 1998) this scale has 14 questions and 3 sub-scales in which there is a degree scored Likeret range of measurement. This questionnaire is obtained from Midgley and etal questionnaire1998. The validity and reliability of this scale has been examined by different researches (Midgley et al., 1998; Hejazi, Gholamali Lavasani, Gharomi, & Rastegar, 2008) . In this research, the composite reliability method is used to evaluate the reliability scale. The results (Mastery = 0/78, performance approach = 0/80) indicated that the reliability scale is very well. The confirmatory factor analysis is used to validate the identity styles scale. The factorial analysis results (RMR = 0/14 AGFI = 0/99 GFI = 0/99 , CFI = 0/99) indicate that all the indexes are in an acceptable level.

Motivational strategies for learning Questionnaire (MSLQ) (Pintrich& Degoot,1994): it has ranged the scares or degrees based on a five-degree scale of measurement for all the questions. The validity and reliability of this scale have been investigated by different researches (Hejazi, Gholamali Lavasani, Gharomi,&Rastegar, 2008, Abedini, 2007) In this research, the composite reliability method (0/77) is used to evaluate the reliability questionnaire and confirmatory factor analysis is used to validate the questionnaire (RMR = 0/09, AGFI = 0/97, CFI = 0/98, CFI = 0/97). The researcher distributed the questionnaires to the university students. Then the analyses were done after scoring and storing the data. The structural equations model was used for test and the indicators were estimated. The analyses were done by the Lisrel 8/7 software (Pintrich, & Degrowth, 1994).

Results

The recent research has used structural equations model to analyze the data. Base for analyzing data in lisrel software is relied on Co-Variance matrix or Correlation matrix between latent and obvious Variables.

Correlation matrix among the latent Variables show that the most quantity for Correlation Coefficient is related to Cognitive engagement and Mastery goals (0/84) which is significant ($p < 0/01$).

As mentioned earlier, structural equations model was used to analyze the relations among informational identity with style variables achievement goals and cognitive engagement (which is indicated in table number 1)

The modeling of structural equation is a very general and vigorous (strong) multivariate analytic technique. This kind of modeling is a member of the multivariate regression family, to speak more exactly, this modeling is an extension of a general linear model, that lets the researcher test a set of regression equations simultaneously (Joreskog& Sorbom,1989).

After factor analysis of the measurement models for the latent variables by using from maximum likelihood method and the previously mentioned indexes, structural function model (table 1) was fit with the collected data. Results were reported in table 1.

Table 1. Examined paths in structural function model

Standardized total effect	Standardized indirect effect	Standardized direct effect	Examined routes
0/78** 0/31** 0/74**	0/51**	0/78** 0/31**	From informational style on Mastery goals Performance-approach goals Cognitive-engagement
0/67**		0/67**	From in mastery goals on Cognitive engagement
-0/03		-0/03	From Performance-approach goals on Cognitive engagement

All direct effects of exogenous latent variable on the endogenous variables are positive. The most effect is related to the effect of informational identity style on mastery goals (0/78) which is significant ($p < 0/01$). Also, among the direct effects from endogenous latent variables on exogenous variable, mastery goals has a direct and strong effect on cognitive engagement.

Table 2: Goodness of fit indexes of structural model

Index	Estimate
(X^2)Chi-square	659/31
Freedom degree) df(294
Goodness of fit index) GFI(013/98
Adjuste Goodness of fit index	0/98
RMR) (Root means square residual	0/046

As mentioned in table 2, informational identify style has both direct and indirect effect on the cognitive engagement that indirect effect between informational identify style and cognitive engagement is through mastery goals(which is a mediator variable).

The most explained variance by the model is related to cognitive engagement (0/72) and in the second place, mastery goals (0/61).

Data analysis based on maximum likelihood method indicates that designed structural model good fit very well with study data.

Table 2 indicates the model by using the data obtained from this research.

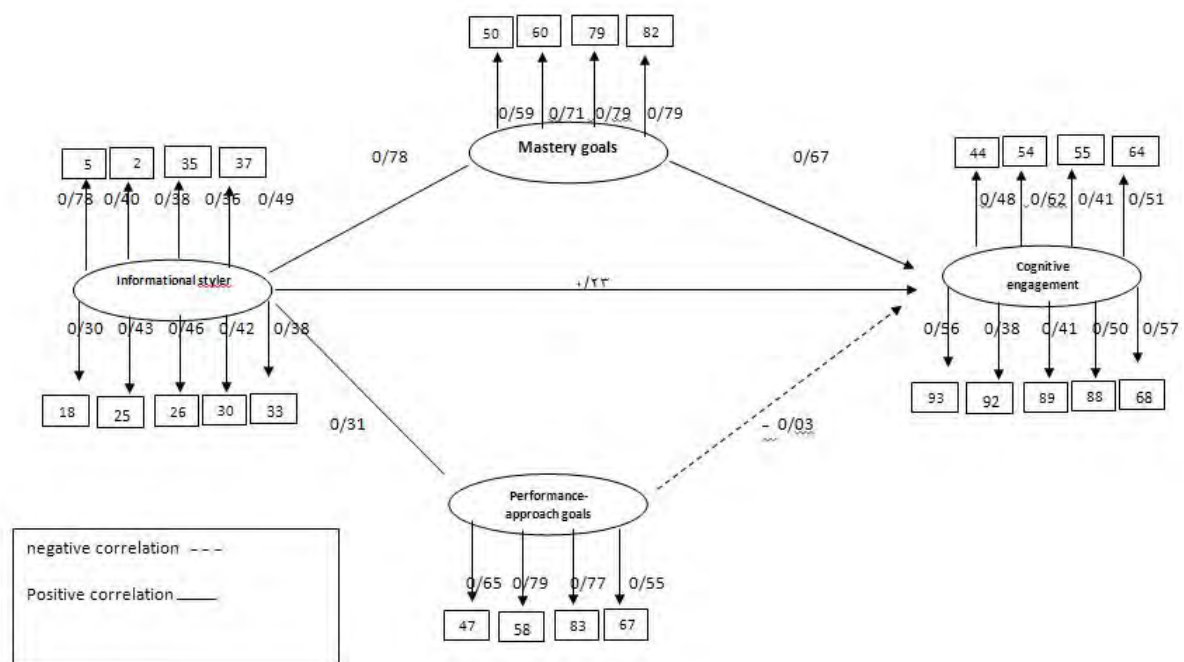


Figure 2. Path diagram good fit model of cognitive engagement regard to informational style, mastery goals and performance-approach goals

Discussion

The results of data analysis using structural model indicate that informational style is the predictor of mastery goals. It should be mentioned that these results are consistent with the previous researches by Zakeri , Kohulat, Babaiee and also Kaplan and Flam (Kaplan & Flum,2010 ; Hooman,2009 ; Zakeri & Kohoulat,2009).

On the other hand the mastery goals have direct positive and strong effect on the cognitive engagement. This result is consistent with the results obtained from previous researches for example researches done by Miess , Bluemanfield and Hoyle; Miller and et al; Velters and et al, Penitrich, MC wa and Abrami; Mohsenpour, Hejazi and Kiamanesh (Babaei sanglaji, 2010; Meece, Blumenfeld & Hoyle, 1988 ; Miller, Greene, Motalvo, Rabindran& Nichols,1996 & Wolters, Yu& Pintrich, ,1996 ; McWhaw& Abrami,2010 ; Pintrich P R,2000).

Another result of the recent research is significance of indirect effect of informational identity style on cognitive engagement by mastery goals(mediator variable) Which is consistent with results obtained from research done by Miess , Blueman field and Howell (Babaei Sanglaji,2010).These researchers expressed that internal motivation and attitude are indirect

effect on cognitive engagement. On the whole, we can express our idea so that the people with informational identity style engage very actively in the process of exploring *self* and form their identity by critical thinking. These people get some valuable goals and motivational sources during the process of being formed and also in their academic goals selection, they choose some directions that focus on growing their competence by mastering on assignment. They value on skill in the assignment very much because the skill in the assignment means development "*self*" for them.

These people engage in the assignment with much effort. They also use all their cognitive resources and they use deep cognitive strategies and *self*-regular strategies in this way. Interesting point that obtained from the study results is that; although informational Identity Style is a adaptive style but not always leads to Cognitive Engagement in the assignment. In fact, students may take informational Identity style but getting trouble in choosing the right option or being confused in information searching. Therefore, their businesses will not be successful. So the task of the educational systems, whether in universities or in the training and education system is conducting of student towards Adaptive motivational orientations, and purposivism of their exploration and success achievement through the assignment involving and Finally help them to gain more mental health.

Other results of analyzing model are that the informational style has got a direct and positive effect on the performance – an approach goal which is not consistent with the results obtained from other researchers (Kaplan & Flum,2010 ; Hooman.,2009 , and Zakeri & Kohoulat.,2009).On the other hand, the performance-approach goals does not have any significant effect on the cognitive engagement. This is so, although the offered conception model of performance – approach goals has a negative effect on the cognitive engagement. This result is justified in this way that in the research the cognitive engagement scale include deep learning strategies but it doesn't include shallow learning strategies. Of course, this result is correlated with the results obtained from the research, by Elliott, MC Gregory and Wolters (Mohsenpoor, Hejazi & Kiyamanesh.,2006; Wolters,2004).

These researchers concluded that there are no significant relationships between deep cognitive strategies, self -regular strategies and the performance-approach but the relationship between the performance- approach goals and shallow cognitive strategies is changed from lack of relationship to a positive relationship.

Regarding the widespread research done by Midgley, Kaplan and Middleton, we can claim that relationship between performances-approach and cognitive strategies depend on the nature of learning outputs, the people characteristics and the environment conditions (Elliot & McGregor, 2001).

As an example, there are some evidences that performance-approach goals are more facilitator for boys rather than for girls and for university student rather than for school pupils in a more competitive environment (the sample includes high school female students).So, investigation performance-approach goals effects on the learning outputs should be done in a more analytic way.

One other result of this research is that informational identity style has got a direct and positive effect on cognitive engagement. This result is consistent with the offered conceptual model and also with the previous researches (Midgley, Kaplan & Middleton,2001; Duriez & Soenens B.2006). As an example, Doorize ,Suinez, Bresienzki and Sullivan express their result so that informational identity style is related to the dire need of cognitive complexity and health.

The informational identity style is recognized with a need for cognition. The need to cognition means some levels that people desire to enjoy or are motivated to engage in cognitive attempts and informational process. As the results of the recent research indicated the mastery goals is a good predictive factor for the cognitive engagement of university students. therefore, the kind of

achievement goals for student can influence deeply on their cognitive activities and finally this can lead to their success and health.

Hence, faculties of universities, school teachers and trainers should pay attention to students' improvement of the mastery goals. On one hand, based on results of the recent research one of the effective factors on forming of achievement goals is identity styles. Clear information is essential to guide students to information identity engagement for the mentioned reason. In this way, offering the informational identity patterns by family, schools and media makes it possible to analyze the options consciously. Of course, the time spent for extra curriculum activities and non-auxiliary activities help the teenagers to get a good knowledge about themselves.

In recent years, the extra- curriculum activities in universities have been turned indirectly into some formal and ordering programs which lack the essential efficiency to provide the information. These activities have no outcome for teenagers and young generation except for loading heavy formal programs on them.

Delay in paying enough attention to teenagers' identity problems could lead to non-adaptive results in their life. This lack of enough attention could lead the students to improve in behavioral problems such as alcohol or drug abuse and criminal activities. Therefore, educational programs and timely interventions can solve this crisis and it could be some facilitating socio – psychological successful experience for the next stages of life. This success is just brought by the educational system and guiding students toward adaptive directions to achieve "*self* development" by engaging in and dominating on their assignments.

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