

Changes in students' self-efficacy, academic emotions and motivation: a longitudinal study on a sample of middle school students

M. Bahrani

Abstract

The purpose of this study was to investigate the developmental probable changes in students' academic self-efficacy, emotions and motivation. The research tools included: Harter's motivation questionnaire, Usher and Pajars' Scale of math self-efficacy, Golightly's School feeling scale and, Wolters et al.'s scale of positive and negative affects. The sample included 448 middle school students who were completed the survey questionnaire on two stages for two years (in seventh and eighth grades). The results showed that self-efficacy and academic motivation in students have decreased over time, and this change is significant in most scales. Comparing boys and girls showed that there was only a significant difference mean in self-efficacy scale scores. The relationship between scores of motivational indices and self-efficacy in most scales was negligible and insignificant. There was some evidence for relative relationships between family socio-economic statuses of students with variability of certain variables, such as negative relationships between parents' education, positive affects and external motivation.

Key words: Self-efficacy; Academic motivation; Academic emotions; felling to school; longitudinal study.

Introduction

Motivational and emotional factors have an important role in the educational processes. Educational practices associated with motivational and emotional consequences that have a basic role in individuals' lives. Much research has been done on academic motivation, however, the consequences of emotional and motivational changes over time has been less attention. Self-efficacy is a motivational variable that has get researchers attention in recent years. Academic self-efficacy represents individual's attitude toward his academic affairs.

Recent research and social-cognition theories on motivation have emphasized on importance of educational processes (Bandura, 1986; Dweck & Leggett, 1988; Weiner, 1986), and in this regard, they posited the beliefs which formed on social interaction as an important component of their analysis. Especially the belief in self-efficacy (Bandura, 1977, 1997) is very important, because it is the basis of many people's self-evaluating on an action and their follow up next efforts. Perceived self-efficacy, as individual perceptions about the ability to perform a specific job (Bandura, 1997), is one of the most important concepts in the field of psychology.

1 - Assistant professor of Shiraz University, Shiraz, Iran : mbahrani@shirazu.ac.ir

For theories of self this construction has a special status and much researches have been grown about that in different dimensions. The role of perceived students' self-efficacy in academic activities often has been proposed as a mediating motivational factor for cognitive processes associated with learning, emotional and motivational phenomena. The aim of this study was to investigate probability longitudinal changes of these variables. Because self-efficacy refers to special tasks, here students' mathematics self-efficacy had been studied.

Problem statement

Changes of educational motivation and garlic of its processes always have been of interest to educational researchers, among them, academic motivation and self-processes such as self-efficacy are those that their effects on engaging learning, perseverance and continuity in the work to learn has been approved. However, the probability longitudinal changes over years of schooling has been less attention paid. It is assumed that depending on the educational, environmental and personal circumstances that students have been experienced, this garlic could be descending or ascending from year to year.

It is also important in regard of the periods that students have been spent. Self-efficacy is individual agency in determining the level of actions and targets associated with developmental issues and crises. Through developmental transitions during adolescence, children test their adequacy in regard to the educational skills, and this will be done by self-assessment of their academic adequacy, so finally estimate their aptitudes. This assessment which is reinforced by the feedback of learning, also affect environments, academic motivation and emotional factors related to educational activities and would be expected to have an effect on adolescence's personality and future goals.

According to Bandura (1993) Student's beliefs about their cognitive efficacy, is a reflection of the period of social and intellectual growth. Students, who have trust to their abilities to dominate to academic skills and learning adjustment, have more chances to be socially acceptance, more be known and less rejected than others who is self-doubts about further attempt on academic course. Bandura also believes that a sense of poor cognitive efficiency not only reduces positive relationships with classmates, but increases aggressive behavior, social alienation and defiance. Negative cognitive dysfunction increases in social development as children growth and may expose them to several problems. Accordingly, follow-up development of motivational, emotional and sufficiency factors is important and informative in the education of children and adolescents.

How the beliefs and motivations of academic ability are formed and changed over time is of fundamental topics of interest to researchers. pointing to the students' difficulties in basic academic skills Pajares (2002) believes that they often refers to their beliefs that they couldn't learn well, even when those are not really through, and adds that most of students have difficulty not really because they are not able to be succeeded, but they couldn't believe that they could be succeed.

People generally will only attempt things they believe they can accomplish and won't attempt things they believe they will fail. However, people with a strong sense of efficacy believe they can accomplish even difficult tasks. They see these as challenges to be mastered, rather than threats to be avoided. Efficacious people set challenging goals and maintain strong commitment to them. In the face of difficult or threatening situations with confidence that they

have control over them. Having this type of outlook reduces stress and lowers the risk of depression (Bandura, 1994). Conversely, people who doubt their ability to accomplish difficult tasks see these tasks as threats. They avoid them based on their own personal weaknesses or in the obstacles preventing them from being successful. They give up quickly in the face of difficulties or failure, and it doesn't take much for the risk of depression.

The successes and failures of others can affect one's own efficacy and motivation through perceived similarity (Bandura 1995: 206). Harter (1985) found developmental declines in perceived scholastic competence from sixth through eighth grades, but not among younger elementary school children. However, other researchers using self-competence scales for specific subject matters, such as reading and math, found declines from the first through the fifth grades (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Nicholls, 1979). In contrast to these developmental declines in perceived competence, students display an increasing trajectory in perceived efficacy from the fifth through the eleventh grades (Zimmerman & Martinez-Pons, 1990). In that research, the children's perceived math and verbal efficacy was assessed in terms of perceived capability to solve problems of increasing complexity.

Ping (2003) examines whether a change in motivation occurred from 5th-grade elementary school to 6th-grade middle level school for students in the People's Republic of China. He found that significant main effects were found between students in the 5th and 6th grades, while no significant difference was reported between male and female students. Specifically, a significant difference was found in two out of eight subcategories: performance approach goal orientation and cultural dissonance between home and school. 6th-grade students tended to become more goal-oriented and take a performance approach, showing a stronger emphasis on competition with their peers, but the change in task goal orientation was not significant. In addition, the causes of the increase in the performance approach goal orientation did not seem related to perceptions of the classroom goal structure, since no significant difference was found in subcategory 4 (task goal structure in the classroom) and 5 (performance goal structure in the classroom) between the two groups. On the other hand, within a context that the Chinese students experienced little change in classroom structure between elementary and middle level school, the findings, to a certain extent, also imply that the change in school organization and policy could very much affect students' motivation.

Changes in students' motivation also have been conducted in the United States, by a number of studies when they make the transition from elementary school to middle school (Anderman & Midgley, 1997; Anderman & Anderman, 1999; Midgley, Feldlaufer, & Eccles, 1988, 1989;). Accordingly, decline of motivation is associated with pubertal change, cognitive maturation, and the change in classroom environment. Other studies () have attributed the decline of motivation to the deterioration of student/teacher relationships and less favorable interpersonal relationships with teachers. This is caused by changes in learning environment not only in the classroom but also school wide. Among the three identified factors (i.e., pubertal change, cognitive maturation, and school environment), the last one seemed to be more culturally specific (Ping, 2003).

In a study Corpus, Lepper, & Iyengar, (2005) used a diverse sample of 797 children who were 3rd to 8th grade. Using the self-report scale of intrinsic versus extrinsic orientation in the classroom developed by Susan Harter, researchers have found a significant and progressive decline in intrinsic motivation across the elementary and middle school years. According to

them, it is not surprising, given the excessive use of extrinsic incentives in many American classrooms and the escalating importance attached to grades and test scores in American schools. This lack of intrinsic motivation is correlated to declines in children's dedication to their class-work, their enjoyment of academic activities, their valuing of effort, their perceived competence, their pursuit of learning, their ratings of the importance, usefulness of school, and their mastery behaviors of challenging tasks.

Yu-Ping (2002) investigated the effect of being multimedia designers on middle school students' learning of design knowledge, their cognitive strategy use, and their motivation toward learning. The findings showed that such an environment could facilitate the development of cognitive skills for the middle school students and actively engage them in learning. Students significantly increased their understanding of the importance of the cognitive skills involved in a design task from pre to post treatment. They have internalized the design knowledge to some extent. However, sustaining these middle school students' motivation toward learning while they are engaging in a series of "boring" activities (e.g., planning, testing) for an extensive period of time presents a challenge and calls for creative teaching techniques. However, the results on motivation were mixed. On the one hand, the findings showed that students recognized the value of learning multimedia skills, and liked what they were able to accomplish. They were particularly excited about the opportunity of learning multimedia professional software, and working like a multimedia professional, and felt confident about their abilities. On the other hand, the data indicated that these students became less interested and motivated toward the end of the semester, both intrinsically and extrinsically.

The Feedback which received from teachers and classmates in classes would have a considerable cognitive function. In fact, social incentives is one of the four sources of that Bandura referred to as self-efficacy resources. As Promote personal beliefs could be of positive encouragement, negative persuasion also causes impressing of self-esteem and weaknesses. Even undermine the efficacy by negative evaluations is easier than reinforcing such beliefs by positive incentives (Pajares, 2002).

Students' Self-efficacy beliefs about mathematics is one of the most important issues. Previous performances and perceived ability are most important for successful in mathematics (Campbell and Hackett, 1986, Hackett, Betz, O'Halloran, & Romac, 1990). Yong (1999) found that, when a student enrolls in high school advanced math courses, her/his judgments related to perceived mathematical ability act as the bases of his performance.

Many studies showed that math anxiety is a very common problem for students (Ashcroft, 2002). Other studies have shown the mediate effects of efficacy on anxiety-like behaviors (Pajarz and Miller, 1994) and shows an average relationship between self-efficacy and mathematics performance ($r=.38$). Even a relationship between performance, efficacy and mathematics anxiety, has been approved (Lee, 2009). However, the lack of research evidence on changes of Student motivation over time, especially in Iran, is the main reason to conduct the research in this field. Accordingly the following questions is to be considered.

Research Questions:

1. What changes may be occur to students' efficacy over time?
2. What changes may be occur to students' academic motivation over time?

3. Is there any relationship between the probably changes of emotion, motivation and self-efficacy?
4. Is there any relationship between the probably changes of any of these variables (self-efficacy, motivation and emotions) and academic scores, gender, and socioeconomic status?

Method

This research is a correlational survey which conducted by longitudinal method. The data were collected in two stages of two consecutive academic grades (7th and 8th) on a single group of subjects.

Sampling: The first phase were included 604 middle school students (307 males and 297 females) who selected randomly by random cluster sampling, and on the second phase 448 of them were studied again.

Measures: The instrument consisted of four scales and a general demographic section, including participant's gender, grade point averages (GPAs) and parents' educational status.

SELF-EFFICACY: The Math Self-Assessment (Usher and Pajarz, 2009) was used to assess participants' self-efficacy. The Math Self-Assessment consists of 24 items which are measured on a 6-point likert scale (1 representing; totally false for me, to 6 representing; very true for me). The construct validity of this scale has been reviewed and approved by the authors. Alpha coefficients were reported .91 to .93 (Usher and Pajarz, 2009). In this study the test-retest reliability within ten days calculated 82.0, and alpha coefficient was .90, Also factor analysis confirmed validity ($KMO = .92, \chi^2 = 501, P < .001$).

Intrinsic and Extrinsic Motivational Orientations: Motivational orientations were assessed with reliable and valid scales from Corpus et al. (2009), which were based on Lepper et al. (2005). These scales have been derived from Harter's (1981) classic research on intrinsic versus extrinsic motivational orientations and are built on a tradition that has been prominent in research with child populations (e.g., Hayenga & Corpus, 2010; Lepper et al., 2005; Tzuriel, 1989; Wong, Wiest, & Cusick, 2002). The intrinsic motivation scale included 17 items focusing on the dimensions of challenge-seeking (e.g., "I like to go on to new work that's at a more difficult level"), independent mastery (e.g., "I like to do my schoolwork without help"), and curiosity-driven engagement (e.g., "I ask questions in class because I want to learn new things"). Children responded to each item using a five-point scale and scores were averaged together to form a composite variable of intrinsic motivation. The extrinsic motivation scale included 16 items focusing on an orientation toward pleasing authority figures (e.g., "I answer questions because the teacher will be pleased with me"), a desire for easy work (e.g., "I like school subjects where it's pretty easy to just learn the answers"), and a dependence on the teacher for guidance (e.g., "I like the teacher to help me plan what to do next"). Again, a five point response scale was used and scores for each item were averaged together to form a composite variable of extrinsic motivation (Corpus & Stephanie, 2011). In this study the test-retest reliability within ten days calculated .82, and alpha coefficient was .90. Also factor analysis confirmed validity ($KMO = .90, \chi^2 = 465, P < .001$).

Positive and negative affects at school: Scales assessing positive and negative affects at school were developed by Wolters, Garcia, and Pintrich (1992, cited by Wolters and his colleagues) reported that these scales demonstrated strong reliability and validity in studies with elementary and middle school students. The positive affects at school scale assesses students' feelings of enjoyment, enthusiasm, and happiness while at school. Positive affects Scale consisted of 5 items and negative affects scale consisted of 6 items. In this study the test-retest reliability within ten days calculated .82 and .77, and alpha coefficient was .70 and .66 respectively for positive and negative Affects scales. Example items are: "I like being in school" and "I enjoy school." The negative affect at school scale assesses students feelings of frustration, anger, and loneliness at school and includes items such as "I often feel frustrated when I am doing school work" and "I often don't feel good about myself when I am in school." (Urduan & Midgley, 2003).

Feelings about School: My Feelings about School (Golightly, 2007) was used to assess participants' feelings about school. It is a 12-item, self-report measure in a five-point, Likert response format designed to assess students' levels of emotional arousal in school/academic settings. Response options ranged from 1 = does not describe me at all, to 5 = describes me very well. In this study the test-retest reliability within ten days calculated .70, and alpha coefficient was .72. The correlation coefficient of its score with GPA ($r = .22, P < .001$) confirmed its validity. Sample items of My Feelings about School are, "I almost never get nervous when taking tests" and "I am comfortable talking about my grades with teachers."

Academic Performance: To assess the academic performance three index were used: GPA scores, the last class math scores and an exam conducted by researcher. The first two scores were reported by students and math exam developed by highly qualified teachers that also were confirmed by some other teachers. The scores on all of them could vary from 0 to 20.

Socio-economic criteria: To assess the socio-economic status, education level of parents was used. In Iran, there isn't a trustable index for household socioeconomic status but, parents' education is used in a lot of research on this issue. Our own experience shows that father education is a better indicator for this purpose.

Statistical analysis: Data were analyzed using SPSS for Windows. Analyses included descriptive statistics, charts, independent samples t-tests, one-way ANOVAs, and correlations.

Results

The summary statistics for the sample are given in Table 1. By transition from grade 7 to grade 8, some reducing change in students' average score have happened so that the means of scales of self-efficacy, motivation and positive affects toward school were declined slightly, and on the other hand, mean of scale of negative feelings toward school increased (table 1). These changes can be better shown in graphs form.

Table 1 *Summary Statistics of Measures Administered*

variables statistics	Slef- effic acy in Grade 7	Slef- effica cy in Grade 8	External motivati on in Grade 7	External motivati on in Grade 8	Internal motivati on in Grade 7	Internal motivati on in Grade 8	Sens es to scho ol G.7	Sens e to scho ol G.8	positi ve affect in Grade 7	Pos. aff. in Gra de 8	Neg. aff. G.7	Neg. aff. G.8
n	430	394	458	408	444	396	490	409	526	414	513	410
mean	4.52	4.22	2.55	2.53	3.84	3.61	3.47	3.44	3.82	3.60	1.16	2.24
median	4.63	4.23	2.50	2.50	3.90	3.65	3.55	3.46	4.00	3.66	2.11	2.17
SD	.88	.90	.90	.66	.69	.67	.63	.20	.92	.85	.86	.85
low	1.42	1.40	1.40	1.00	1.53	1.47	1.27	1.55	1.00	1.00	1.00	1.00
high	5.96	6.00	5.00	4.25	5.00	5.00	4.82	5.00	5.00	5.00	5.00	5.00
Skew.	-.51	-.24	.38	.10	-.70	.38	-.56	-.08	-0.77	-.49	.64	.56
kurtosis	-.37	-.30	-.46	.66	.34	.03	.18	-.24	0.13	.01	-.18	.05

To respond to the first research question, the distribution of student's math self-efficacy scores in grade 7 and 8 are presented (see Fig. 1 and 2). Comparing these graphs shows that the distribution for students in grade 7 tended to high score, while for grade 8 it tended to the mean. It is also documented from the scores mean of self-efficacy scores in Table 1, as mathematics self-efficacy scores were reduced from 4.52 for the students of grade 7 to 4.22 for the students in grade 8. Moreover, the negative skewedness reduced from -0.51 to -.024. In other words, mathematics self-efficacy is reduced.

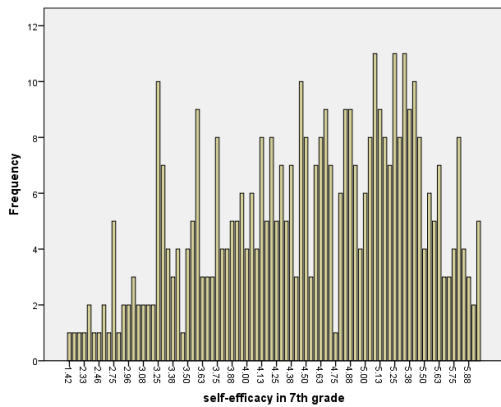


FIGURE 1

Distribution of student's math self-efficacy scores in grade 7

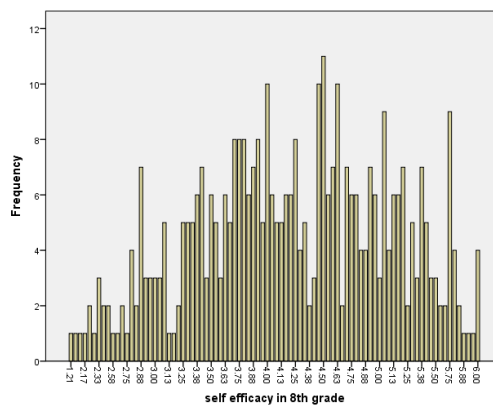


FIGURE 2

Distribution of student's math self-efficacy scores in grade 8

To respond to the second research question, the distribution of student's intrinsic and extrinsic motivation scores in grade 7 and 8 are presented (see Fig. 3 to 12). Comparing graphs in Fig. 3 with Fig. 4 shows that the distribution for students in grade 7 tended to high score, while for

grade 8 it tended to the mean. It is also documented from the scores mean of scores in intrinsic motivation in Table 1, as intrinsic motivation scores were reduced from 3.84 for the students of grade 7 to 3.61 for the students in grade 8. Moreover, the negative skewedness reduced from -0.70 to .38. In other words, intrinsic motivation is reduced.

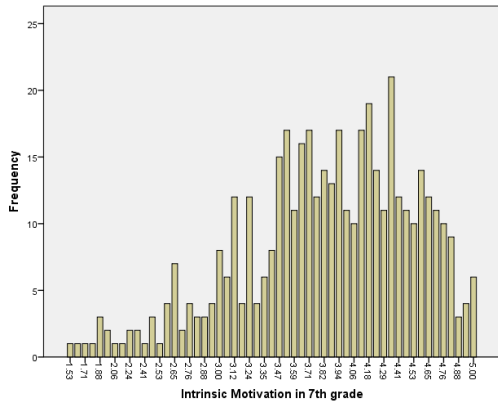


FIGURE 3

Distribution of student's intrinsic motivation scores in grade 7

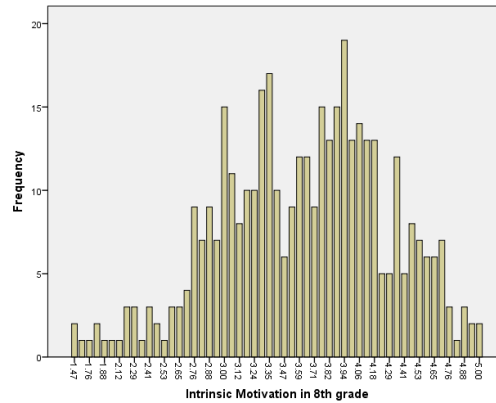


FIGURE 4

Distribution of student's intrinsic motivation scores in grade 8

On the other hand, for extrinsic motivation comparing graphs in Fig. 5 with Fig. 6 shows that the distribution for students in grade 8 tended to high score, while for grade 7 it tended to the mean words, intrinsic motivation is reduced.

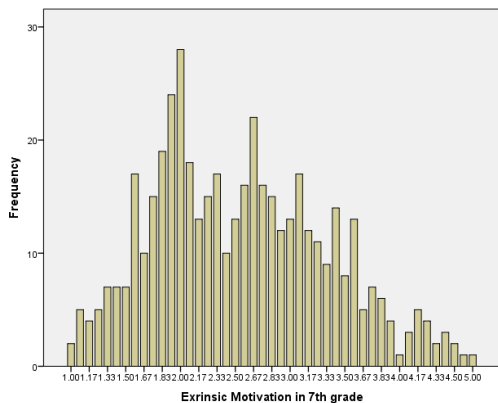


FIGURE 5

Distribution of student's extrinsic motivation scores in grade 7

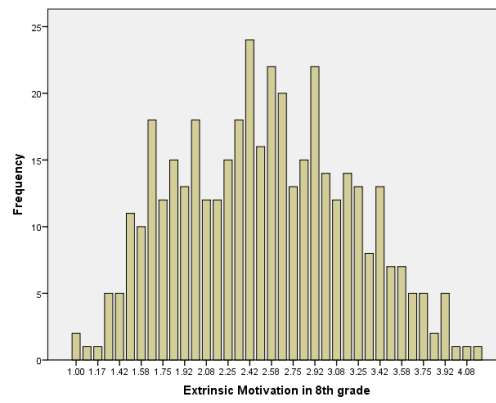


FIGURE 6

Distribution of student's extrinsic motivation scores in grade 8

Also, comparing graphs for the distribution of student's negative and positive affects scores in grade 7 and 8 (see Fig. 7 to 10) shows some additional documents for reducing motivation from 7th to 8th grade. As you can see in Fig. 7 and Fig. 8, the positive affects distribution scores for students in grade 7 tended to high score, while for grade 8 it reduced somewhat. It is also documented from the scores mean of scores in positive affects in Table 1, as positive affects scores were reduced from 3.82 for the students of grade 7 to 3.60 for the students in grade 8. Moreover, the negative skewedness reduced from -0.77 to -0.49. Therefore, positive affects were reduced.

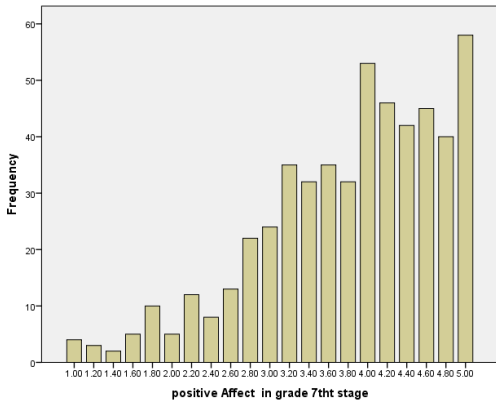


FIGURE 5

Distribution of student's positive affects scores in grade 7

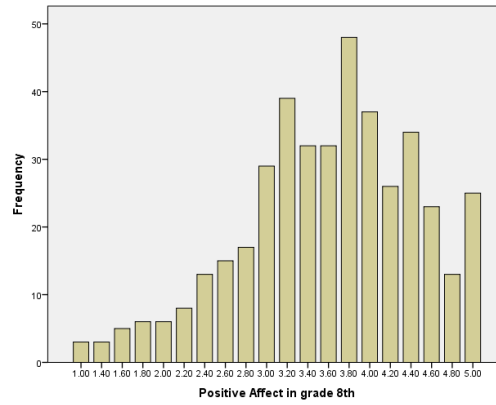


FIGURE 6

Distribution of student's positive affects scores in grade 8

On the other hand, negative affects increased from 7th to 8th grade (see Fig. 7 and Fig. 9).

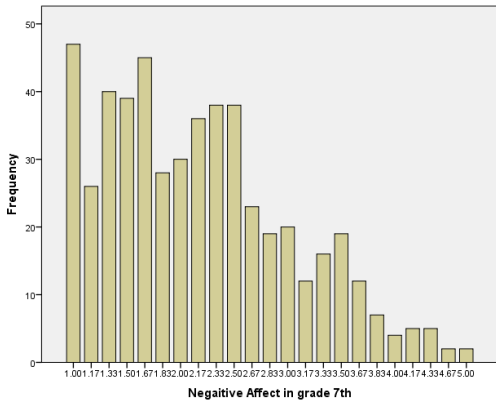


FIGURE 7

Distribution of student's negative affects scores in grade 7

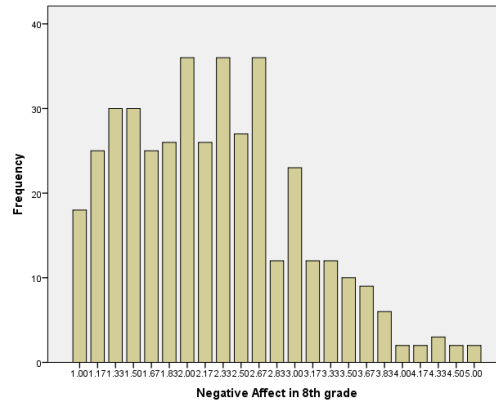


FIGURE 8

Distribution of student's negative affects scores in grade 8

Finally, sense to school is reduced from 7th to 8th grade (see Fig. 9 and Fig. 10).

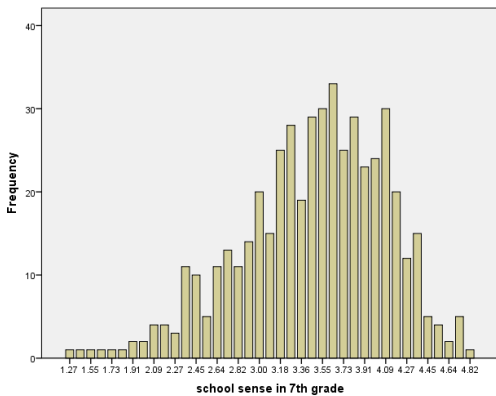


FIGURE 9

Distribution of student's negative affects scores in grade 7

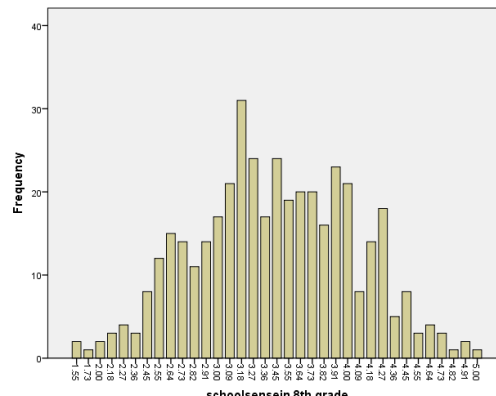


FIGURE 10

Distribution of student's negative affects scores in grade 8

To assess signification of the differences in the scales scores among 7th and 8th grade, the means of variables were compared using t-test. Results are showed in Table 2. According to these results, there is a significant difference between students' mean scores of the two grade

on scales of intrinsic motivation ($t = 5.65, p < .001$), positive affects ($t = 4.91, p < .001$) and math self-efficacy ($t = 5.31, p < .001$). But there is no significant difference between the mean scores of the two grade on scales of felling to school, extrinsic motivation and negative affects.

Table 2 comparisons of means differences between-group scores

Variable	Grade	Mean	SD	T-value	df	Sig.
felling to school	7th	3.45	.63	.75	334	.45
	8th	3.43	.62			
extrinsic motivation	7th	2.47	.79	.02	311	.99
	8th	2.49	.66			
intrinsic motivation	7th	3.86	.69	5.65	295	.001
	8th	3.62	.67			
positive affects	7th	3.84	.92	4.91	360	.001
	8th	3.59	.85			
negative affects	7th	2.18	.86	.12	347	.91
	8th	9.19	.80			
math self-efficacy	7th	4.52	.88	5.31	288	.001
	8th	4.24	.90			

Bivariate correlations were calculated to answer to the third research question about relationship between changes in self-efficacy, motivation and felling to school. Table 3, contained the correlation coefficients among the scores of differences of variables between the two grades.

Table 3 correlation coefficients of differences scores of variables within the two grades

Variables		intrinsic motivation	negative affects	extrinsic motivation	extrinsic motivation	positive affects
math self-efficacy	<i>r</i>	.428	-.206	-.268	.365	.245
	<i>P</i> <	.000	.002	0.000	.000	.000
	<i>n</i>	227	24	248	240	247
positive affects	<i>r</i>	.334	-.056	-.437	.372	
	<i>P</i> <	.000	.355	.000	.000	
	<i>N</i>	261	278	312	296	
felling to school	<i>r</i>	.239	.003	-.302		
	<i>P</i> <	.000	.965	0.000		
	<i>n</i>	247	258	285		
extrinsic motivation	<i>r</i>	-.265	.179			
	<i>P</i> <	.000	.004			
	<i>n</i>	239	264			
negative affects	<i>r</i>	-.165				
	<i>P</i> <	.013				
	<i>n</i>	253				

The results show that changes of efficacy variable between the two grades is significantly correlated with the changes in the other variables, and this relationship is in line with the nature of the relationship between variables so that the intrinsic motivation, positive affects toward school are in forward direction, and negative affects and extrinsic motivation is in the opposite direction. Likewise, positive affects are positively correlated with intrinsic motivation and felling to school, but had a significant negative relationship with external motivation, although its association with negative affects is insignificant. There is also a positive relationship between negative affects and extrinsic motivation, and a negative relationship between extrinsic motivation and intrinsic motivation.

Academic achievement indexes (GPA and math scores) were significantly correlated with each other ($r = .36, p < .001$), but not with motivational variable, expect extrinsic motivation ($r = .13, p < .02$). There was a significant negative relationship between father's education and reduction of positive affects ($r = -.20, p < .001$); and there was a significant negative relationship between father's education and changes of extrinsic motivation ($r = -.14, p < .03$).

Compare girls and boys

The effect of gender on subjects' scores changes were evaluated using *t*-test (table 5).

Table 5 *t*-test results for effect of gender on changes in scores

Variables	gender	Mean of changes	SD	<i>t</i> value	<i>df</i>	Sig.
felling to school	boys	-.23	0.97	1.16	333	.25
	Girls	.06	0.61			
extrinsic motivation	boys	.52	0.97	.89	310	.38
	Girls	-.04	0.87			
intrinsic motivation	boys	.19	0.82	.81	294	.42
	Girls	.26	0.65			
positive affects	boys	.24	1.13	.26	359	.80
	Girls	.26	0.84			
negative affects	boys	-.01	1.00	.02	346	.99
	Girls	-.01	0.84			
math self-efficacy	boys	.09	0.87	2.94	287	.004
	Girls	.40	0.87			

The results in table 5 show that the only significant difference between girls and boys is for change in math self-efficacy ($t = 2.94, p < .004$); reduction of elf-efficacy in girls is higher than boys.

Discussion and conclusion

This study examined the possible changes of academic motivation among students over time. The aim of the project has been looking for by four research questions. The results of the

research in response to the first question about changes of students' efficacy of education (math) over time, showed that students' self-efficacy beliefs has decreased over time, that is, their confidence to perform successfully academic affairs is declining. As Zimmerman and Cleary (2006) said, Self-efficacy refers to personal empowerment that a person's capacity to organize and direct their actions to achieve the desired goals. Self-efficacy beliefs state the effectiveness in performing specific tasks. So it seems that students gradually have been more skeptical about their capacity and their feeling of effectiveness is tepid.

Self-efficacy in any subject play a fundamental role in the pursuit of educational aims. Research has shown that students with high self-efficacy beliefs reported feeling more efficacious than students with low self-efficacy beliefs in managing academic activities during the first, second and third year of junior high school (Bassi, Patrizia and Fave, 2007). Accordingly, academic self-efficacy growth must therefore be more considered and its reduction over time must be taken seriously.

The second research question deals with a change in motivation. The findings showed that, in general, students 'intrinsic motivation as a base of educational activities to satisfy the needs of the learners' curiosity, decreased from one academic year to the next year. In contrast, external motivation that captures the impact of external incentives for education has been rising. This trend of change in academic motivation is worrying because intrinsic motivation are more stable and would cause to perseveration on homework, and therefore it can be expected that this kind of learning motivation empowered more than external incentives. The most common external incentives in schools are grades and competing to outshine peers. The prospect of better grades to better job opportunities which is common in all societies. Educating individuals aims to supply the future working forces, while researches show that 80 percent of young people compete to reach 20% of top jobs (Sharma, 2005). So, today these incentives are natural and could not be ignored; however, reduction of intrinsic motivation is a warning for education.

The results in this area are partly consistent with other studies. Researchers have reported changes in academic motivation at different levels of education. Corpus, McClintic and Hayenga (2009) in study of a large group of students in second to eighth grades found that both internal and external motivation had fallen during a school year, while in adolescent reducing occurred more in internal motivation, but in children more in external motivation.

Changes in efficacy have been confirmed by some other researchers. Niemivirta and Tapola (2007) investigated subjects' self-interest and efficacy during a job. They found that some participants faced with reducing and others faced with an increase in the mentioned variables. Apparently factor in this regard was in progress. Apparently in this regard the factor that affects was amount of progressing.

The third research question dealt with the relationship between variables. The finding about changes in self-efficacy, motivation, and academic emotions showed a drop in positive indicators and increase in negative indicators and that, students felt less motivation and enthusiasm toward the school time. These variables were correlated with each other and correlation between variables changes were significant. Previous researches also have shown correlation between the (Bahrani et al., 2011; Zimmerman and Bandura, 1994; Boufard-Bouchard, 1990; Vallerand, Gauvin and Halliwell, 1986), here the findings also showed that their changes over time (in the form of drops or increases as mentioned above) are consistent

and in relationship with each other in expected direction. Therefore this harmony in results themselves, additionally confirms the obtained results, and shows motivation and emotional losses related to academic affairs in different dimension.

Moreover, some research also reported the same results. Wang and Pomerantz (2009) examined motivational trajectories during early adolescence in the United States and China from 7th to 8th grade. The quality of children's motivational beliefs deteriorated over the 7th and 8th grades (e.g. children became less mastery oriented) in both the United States and China. American children also valued academics less, with declines in their motivational behavior (e.g. self-regulated learning strategies) as well. Chinese children continued to value academics, sustaining their motivational behavior. In both countries, children's motivational beliefs and behavior predicted their grades over time.

Comparing girls and boys in motivational variables drop indicated significant differences between them, so that, the girls showed a greater decrease. In other words, educational (mathematics) self-efficacy has a more significant drop in girls than boys. Because this result was not through for other dimensions and also not through for the math scores, this may be due to the self-efficacy and needed more evidences. It must be mentioned that findings of compare girls and boys in math score and self-efficacy is not consistent, sometime it is in other times no differences was observed (Pajares, F. & Graham, L. ,1999).

Yu-Ping (2002) found that middle school students eventually grew tired of the "long" and repetitive development process, and lost some interest in what they were doing. This finding was in line with other research showing novelty plays a role in middle school students' motivation (McGrath et al., 1997). He concluded that to let the novel opportunities help keep students motivated. Corpus, Lepper, & Iyengar (2005) have discussed that the solution to halting or even reversing the decrease in intrinsic motivation may be to increase the challenge, interest, and relevance of the curriculum. They believe that the reward systems and extrinsic motivations prevalent in schools should be minimized. Children should be encouraged to develop autonomy by giving them more control and choices in their learning goals do that, some evidence exists that democratic parenting practices are positively correlated with academic achievement (Steinberg, Lamborn, Dornbusch, & Darling, 1992). Lower levels of intrinsic motivation represent a societal problem that doesn't seem to be mitigated by internalized forms of extrinsic reasons to take joy in learning. Teachers and parents need to enhance children's intrinsic motivation, and help them find ways to internalize extrinsic motivating factors

Corpus, Lepper, & Iyengar, (2005) believe that the solution to halting or even reversing the decrease in intrinsic motivation may be to increase the challenge, interest, and relevance of the curriculum. The reward systems and extrinsic motivations prevalent in schools should be minimized. Children should be encouraged to develop autonomy by giving them more control and choices in their learning goals. Some evidence exists that democratic parenting practices are positively correlated with academic achievement (Steinberg, Lamborn, Dornbusch, & Darling, 1992). Lower levels of intrinsic motivation represent a societal problem that doesn't seem to be mitigated by internalized forms of extrinsic reasons to take joy in learning. Teachers and parents need to enhance children's intrinsic motivation, and help them find ways to internalize extrinsic motivating factors.

Limitations and suggestions: This study was devoted to mathematics self-efficacy, although mathematics is an important course in general, but it may differ to general efficacy in some aspects. However, inclusive of declaring math self-efficacy is an alarm that could undermine their interests and academic perseverance.

Another limitation of this study was participants loss from first stage to the latter, because of merge or liquidate that happened for some previous schools and we didn't full access to the students who participated in the first stage.

Motivational research field with great welcome from researchers, as well as a wide field for problem solving training and capacity management has a lot of new things. Attention to the results, by repeat this longitudinal study with a broader domain of time and different educational levels is suggested.

References

- Anderman, E., & Midgley, C. (1997). Changes in achievement goal orientations, perceived academic competence, and grades across the transition to middle-level schools. *Contemporary Educational Psychology*, 22,269-298.
- Anderman, L., & Anderman, E. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology*, 24(1), 21-37.
- Ashcraft, M. H. (2002). Math anxiety: Personal educational and cognitive consequences. *Current Directions in Psychological Science*, 11(5), pp. 181-185.
- Ashcraft, M. H. and Moore, A. M. (2009). Mathematics anxiety and affective drop in performance, *journal of psychoeducational Assessment*, 27(3), pp. 197-205.
- Bahrani, M. (2008). The Study of Validity and Reliability of Harter's Scale of Educational Motivation. *Journal of Psychological Studies*, 5 (1), PP.51-72.
- Bahrani, M., Khair M. & Hosseinchari M. (2011). A model for relationships between classroom social variables and motivational, affective and performance outcomes of perceived math self-efficacy. *Journal of Education (Shahid Chamran University, Ahvaz)*, 6 (1 & 2): 125-150.
- Bandura Albert *Self-efficacy in Changing Societies* (1995). Cambridge, UK, Cambridge University Press.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 53, P. 1-26.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, p.191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliff, N.J.: Prentice-Hall.

- Bandura, A. (1994). Self-efficacy. In V. S. Ramachandran (Ed.), *Encyclopedia of human behavior* (4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], *Encyclopedia of mental health*. San Diego: Academic Press, 1998).
- Bandura, A. (1993). Perceived Self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28, 117-148.
- Bandura, A. (Ed.). (1995). *Self-efficacy in changing societies*. New York: Cambridge University Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. Schunk, D. H. (1981). Cultivating competence, self-efficacy and intrinsic interest through proximal self-motivation. *Journal of personality and social Psychology*, 41, PP.586-598.
- Bassi, M., Stec, p., Fave, A. D. (2007), Academic self-efficacy and quality of experience in learning. *Journal of Youth Adolescence*, 36, pp. 301-312.
- Betz, N. E., & Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to the selection of science-based college majors. *Journal of Vocational Psychology*, 23(3), pp. 329-345.
- Bong, M. (1999). Personal factors affecting the generality of academic self-efficacy judgments: gender, ethnicity. *Journal of Experimental Education*, 67(4), pp. 315-332.
- Bouffad-Bouchard, T. (1990). Influence of self-efficacy on performance in a cognitive task. *Journal of social Psychology*, 130, 353-363.
- Campbell, N. K. & Hackett, G. (1986). The effects of mathematics task performance on math self-efficacy and task interest. *Journal of Vocational Behavior*, 28, pp. 149-162.
- Corpus, J. H. & Stephanie S. V. (2011). Profiles of Intrinsic and Extrinsic Motivations in Elementary School. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April 2011, achieved at: 2016/04/06 http://www.reed.edu/motivation/docs/corpus_wormington_aera.pdf.
- Corpus, J. H., McClintic-Gilbert, M. S., & Hayenga A. O. (2009). Within-year changes in children's intrinsic and extrinsic motivational orientations: Contextual predictors and academic outcomes Original Research Article. *Contemporary Educational Psychology*, Volume 34, Issue 2, April 2009, Pages 154-166. From: <http://www.sciencedirect.com/>.
- Corpus, J., Lepper, M., & Iyengar, S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology*, 2005, 97(2), 184-195. Available at: <http://www.thefreelibrary.com>.
- Corpus, J., Lepper, M., & Iyengar, S. (2005). Intrinsic and extrinsic motivational orientations in the classroom: Age differences and academic correlates. *Journal of Educational Psychology*, 2005, 97(2), 184-195. Retrieved Feb 17 2016 from <http://www.thefreelibrary.com>.
- Crane, W. (2002) Growth theories: Concepts and Applications. Translate G. Khoeinejad and A. Rajaei, Tehran: Roshed publisher.
- Dweck, C. S. & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95, 256-273.
- Eccles, J., Wigfield, A., Harold, R. D., & Blumenfeld, P. (1993). Age and gender differences in children self- and task perceptions during elementary school. *Child Development*, 64, 830-847.

- Feldlaufer, H., Midgley, C., & Eccles, J. (1988). Student, teacher, and observer perceptions of the classroom environment before and after the transition to junior high school. *Journal of Early Adolescence*, 8, 133-156.
- Golightly, Th. R. (2007). *Defining the components of academic self-efficacy in Navajo American Indian high school students*. A dissertation presented for the degree of Doctor of Philosophy, Brigham Young University. An online Article.
- Gottfried, Adele Eskeles; Fleming, James S.; Gottfried, Allen W (2001). Continuity of academic intrinsic motivation from childhood through late adolescence: A longitudinal study. *Journal of Educational Psychology*, Vol 93(1), Mar 2001, 3-13. <http://dx.doi.org/10.1037/0022-0663.93.1.3> .
- Hackett, G., Betz, N. E., O'Halloran, M. S., & Romac, D. S. (1990). Effects of verbal and mathematics task performance on task and career self-efficacy and interest. *Journal of Counseling Psychology*, 37, pp. 169-177.
- Harter, S. (1981). a new self-report of intrinsic versus extrinsic orientation in classroom: Motivational and informational Components, *Developmental Psychology*, 17(3). pp. 300-312.
- Harter, S. (1985). *Manual for the self-perception profile for children* (revision of the Perceived Competence Scale for Children). Denver, CO: University of Denver Press.
- Hirsch, B. J., & Rapkin, B. D. (1987). The transition to junior high school: A longitudinal study of self-esteem, psychological symptomatology, school life, and social support. *Child Development*, 58, 1235-1243.
- Lapper, M. R., Corpus, J. H. & Iyengar Sh. S. (2005). Intrinsic and extrinsic motivation in the classroom: Age differences and academic correlates. *Journal of Educational Psychology*, 97(2), 184-196.
- Hayenga, A. O., & Corpus, J. H. (2010). Profiles of intrinsic and extrinsic motivation: A person-centered approach to motivation and achievement in middle school. *Motivation and Emotion*, 34, 371-383.
- Lee, J. (2009). Universal and specific of math self-concept, math self-efficacy, and math anxiety across PISA 2003 participating countries. *Learning and Individual Differences*, 19, pp. 355-365.
- Liu, Ping (2003). Transition from elementary to middle school and change in motivation: an examination of Chinese students. *Journal of Research in Childhood Education*. Retrieved Feb 16 2016 from <http://www.thefreelibrary.comTransition+from+elementary+to+middle+school+and+change+in+motivation%3A...-0109904556>.
- McGrath, D., Cumaratunge, C., Ji, Misook, Chen, H., Broce, W., & Wright, K. (1997). Multimedia science projects: Seven case studies, *Journal of Research on Computing in Education*, 30 (1), 18-37.
- Midgley, C., Feldlaufer, H., & Eccles, J. S. (1988). The transition to junior high school: Beliefs of pre- and post-transition teachers. *Journal of Youth and Adolescence*, 17, 543-562.
- Midgley, C., Feldlaufer, H., & Eccles, J. S. (1989). Student/teacher relations and attitudes toward mathematics before and after the transition to junior high school. *Child Development*, 60, 981-992.
- Nicholls, J. (1979). Development of perception of own attainment and causal attributions for success and failure in reading. *Journal of Educational Psychology*, 71, 94-99.

- Niemivirta, M. & Tapola, A. (2007). Self-efficacy, Interest and task performance. *Zeitschrift fur padagogische psychologie*, 21(3/4):241-250.
- O'Connor, J. (1978). Perception of self, ideal self, and teacher feelings in preadolescent children. *Elementary School Guidance and Counseling*, 13, 88-92.
- Pajares, F. & Graham, L. (1999). Self-Efficacy, Motivation Constructs, and Mathematics Performance of Entering Middle School Students. *Contemporary Educational Psychology*, 24, 124–139.
- Pajares, F. (2002). *Self-efficacy beliefs in academics: An outline*. Retrieved, 2010, from http://des.emory.edu/mfp/efft_alk.html.
- Pajares, F. and Miller, M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: a path analysis. *Journal of Educational Psychology*, 86(2), p.193-203.
- Ping, Liu (2003). Transition from elementary to middle school and change in motivation: an examination of Chinese students. *Journal of Research in Childhood Education*. Retrieved Feb 16 2016 from <http://www.thefreelibrary.com /Transition+from+elementary+to+middle+school+and+change+in+motivation%3A...-a0109904556>.
- Seegers, G., & Boekaerts, M. (1996). Gender-related differences in self-referenced cognitions in relation to mathematics. *Journal for Research in Mathematics Education*, 27, 215–240.
- Sharma, T. Ch. (2005). *The motivation for learning and teaching*. New Delhi: Sarup & Sons.
- Steinberg, L., Lamborn, S. D., Dornbusch, S. M., & Darling, N. (1992). Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement and encouragement to succeed. *Child Development*, 63, 1266-1281.
- Tzuriel, D. (1989). Development of motivational and cognitive-informational orientations from third to ninth grades. *Journal of Applied Developmental Psychology*, 10, 107–121.
- Urduan, T. & Schoenfelder, E. (2006). Classroom effects on motivation: Goal structures and competence beliefs. *Journal of School Psychology*, 44, pp. 331-349.
- Urduan, T. and Midgley, C. (2003). Changes in the perceived classroom goal structure and pattern of adaptive learning during early adolescence. *Contemporary Educational Psychology*, 28, pp. 524-551.
- Usher, E. L. and Pajares, F. (2009). Sources of self-efficacy in mathematics: A validation study. *Contemporary Educational Psychology*, 34, pp. 89-101.
- Vallerand R. J., Gauvin L. I. and Halliwell W. R. (1986). Effects of zero-sum competition on children's intrinsic motivation and perceived competence. *The Journal of Social Psychology*, 126(4), PP.465-472.
- Wang Q, Pomerantz EM. (2009). The motivational landscape of early adolescence in the United States and China: a longitudinal investigation. *Child Development*. Jul-Aug; 80(4):1272-87. doi: 10.1111/j.1467-8624.2009.01331.x.
- Wong, E., Wiest, D., & Cusick, L. (2002). Perceptions of autonomy support, parent attachment, competence and self-worth as predictors of motivational orientation and academic achievement: An examination of sixth and ninth grade regular education students. *Adolescence*, 37(146), 255–266.
- Weiner, B. (1988). An attribution theory of achievement motivation and emotion. *Psychological Review*, 92, pp. 548-573.

Yu-Ping, Hsiao (2002). Middle school students as multimedia designers: a project-based learning approach. Middle school students as multimedia designers: a project-based learning approach. (n. d.) > *The Free Library*. (2014). Retrieved Feb 17 2016 from <http://www.thefreelibrary.com/Middle+school+students+as+multimedia+designers%3a+a+project-based...-a095765020>.

Yu-Ping, Hsiao (2002). Middle school students as multimedia designers: a project-based learning approach. Retrieved Feb 17 2016 from <http://www.thefreelibrary.com/Middle+school+students+as+multimedia+designers%3a+a+project-based...-a095765020>.

Zimmerman, B. J. & Bandura A. (1994). Impact of Self-regulatory influences on writing course attainment, academic attainment. *American Educational Research Journal*, 31, 845-8862.

Zimmerman, B. J. & Cleary, T. J. (2006). Beliefs of adolescents. *Information Age Publishing*. From: <http://www.sciencedirect.com/>.

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning. *Journal of Educational Psychology*, 82, 51- .