

The comparison of 8th grade Iranian high, medium and low family's income performance in student's psychological factors

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Abstract: The purpose of this study is to find out the comparison of high, medium and low families' income students' performance in student's psychological factors; general self-concept, science self-concept, self-efficacy, science self-efficacy, self-esteem, anxiety, and science anxiety among guidance school students. The participants in the study were 680 guidance school students, (317 male and 363 female, in the age 14 years old) at Tehran and Shahriar City, the province of Tehran, Iran. Five valid and reliable instruments were used to assess general self-concept, science self-concept, self-efficacy, science self-efficacy, self-esteem, anxiety, and science anxiety. Descriptive statistics and MANOVA were used to analyze the data. The result has demonstrated that there is significant differences between groups in science anxiety, self-esteem and self-efficacy ($p < 0.01$).

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1. Introduction:

Students who believe in their abilities tend to perform successfully (Bandura, 1993). One of the most important issues of development, education and academic achievement is to consider the psychological dimensions in the curriculum. One of these dimensions is *self-efficacy* (first introduced in Bandura & Adams, 1977), where it is the belief, whether accurate or not, that one has the power to produce an effect upon something. For example, a person with high self-efficacy may engage in a more health-related activity when an illness occurs, whereas a person with low self-efficacy would harbor feelings of hopelessness (Sue, Sue, & Sue, 1986), and following, science self-efficacy is the belief in one's own capability to do science, in terms of organizing and executing the skills and knowledge needed to manage science content and processes (Miller, 2006). Self-concept refers to the global understanding a sentient being has of him or herself. It presupposes, but can be distinguished from, self-consciousness, which is simply an awareness of one's self. It is also more general than self-esteem, which is the purely evaluative element of the self-concept (Fleming & Courtney, 1984), and science self-concept is a term used to describe one's perception of self in relation to achievement in science (Byrne & Shavelson, 1987) and one's confidence in science (Campbell, 1992). Self-esteem can generally be defined as the set of attitudes and beliefs that a person bears in relation to the outside world, which includes expectations of success/failure, the effort required for possible success

and the reaction to possible failure (Coopersmith, 1967, 1981). Spielberger et al. (1983) state that anxiety is a psychobiological process involving stressors that evoke perceptions of threat, which culminate in an unpleasant emotional reaction. As its name would suggest, science anxiety in students is a debilitating fear of learning science—but with the emotion processed on a cognitive level, and lastly, science anxiety manifests itself primarily during examinations, but is distinct from an apprehension towards examinations in general, since students who exhibit science anxiety often react normally in their non-science subjects (Mallow, 1994). Therefore, Socioeconomic status can be defined as 'a person's overall social position to which attainments in both the social and economic domain contribute' (Ainley, Graetz, Long, & Batten, 1995). When used in studies of children's school achievement, it refers to the SES of the parents or family. Socioeconomic status is determined by an individual's achievements in: education; employment and occupational status; and income and wealth (Ainley, et al., 1995). SES is topical to the study of educational outcomes as it is believed that families with higher SES enable their children to access support, materials, and opportunities that put them ahead of their peers who do not have similar access (Bradley & Corwyn, 2002). Research on human development has repeatedly and consistently identified a relationship between people's health and well-being and socio-economic factors such as income, occupational prestige, and level of education (Willms, 2002). Children who grow up in

poverty are more vulnerable, are more likely to experience poor health, have learning and behavioural difficulties, underachieve at school, become pregnant at an early age, have lower skills and aspirations, receive lower wages, and be unemployed or welfare dependent (United Nations Children's Fund [UNICEF], 2007). Socioeconomic status (SES) is the relative social and economic position of an individual (or his/her family), in terms of income, education and occupation. There is a slight difference between an individual's belief and a family's SES. Previously, it is measured by education, income and occupation level and occupation, while now a family's SES, which is the combination income of all its earners are also taken into account ("National Center for Educational Statistics," 2008). SES is usually broken into three categories: high, middle and low SES. Exactly, which category an individual or a family falls into is dependent on the three variables stated above (education, income, and occupation); Barid (2008) indicates that differences in class, teacher and school resources among low and high SES students can be quite large in some countries and he also stated the differences in standard deviations of average resources for low versus high SES students. Forming equity indicators based on IEA Reading Literacy and TIMSS data is sometimes difficult, because it is complicated by the interaction of SES with proficiency (i.e., the number of books a student has in the home) and ceiling effects (i.e., the highest education level a student can receive in his/her particular social and economic context) (Baye & Monseur, 2006). Mokshien (2002) in her study asserts that, the effects of SES variables explain, about 50 percent of the variation in the school means achievement. She has also indicated that, the emphasis on conducting experiments on achievement are significant even after controlling the effects of SES and the effects of self-concept in science, and awareness of social implications of science are significant even after controlling the effects of socioeconomic status. Lynch et al., (1979) also found a significant relationship between SES and science achievement ($r = 0.14$) among 1,635 students in Tasmania. The results of Özdemiş (2003) study showed that, there is a strong relationship existed between science achievement and SES of students. Yet, the results from a meta-analytic review showed that, socioeconomic status and self-esteem has a small but positive correlation which increased over time for women, while concurrently showing a decrease over time for men (Krieger, Williams, & Moss, 1997). The results of Rosenberg and Pearlin (1978) investigation showed that there is no consistent relationship between SES and self-esteem. And, they suggested that socioeconomic status had little to no effect on the

self-esteem of children or adolescents. There is no relationship between income of the sample group students and their science self-concept total score means (Baran & Maskan, 2011). But, significant relationships and differences were found in students' self-concepts with respect to financial state of the family (Baran & Maskan, 2011). Likewise, they noted that there is no relationship between science self-concept and the financial state of family ($p = 0.042$) Çakır, Şahin and Şahin (2000) found out that the socio-economic level does not have any relationship with the student's academic self-concept. White (1982) and Sirin (2005) findings for socioeconomic status and academic achievement, the analysis of science self-efficacy and science self-concept matters if analysis occurs at the student level or country level. Both White and Sirin found a smaller correlation between socioeconomic status and academic achievement at the student level (i.e., $r = .22$ and $.28$) than at the school level ($r = .73$ and $.60$). Based on the results of the research carried out by Janjetovic and Malinic (2004), there are *positive* correlations between family variables (i.e., income) and self-concept. There is a telling relationship between achievement in science subjects and the socioeconomic status of students (Özdemiş, 2003). Numerous research studies have shown that children from lower socioeconomic backgrounds have lower self-esteem compared to children from higher socioeconomic backgrounds (Covington, 1989; Drummond, McIntire, & Ryan, 1977; Lockett & Harrell, 2003). Engweiler (2005) examined the effects of socioeconomic status (SES) on standardized test scores, using the National Educational Longitudinal. Results indicated that the strongest influence on a student's academic achievement is their socioeconomic placement. Whereas, a meta-analysis study on SES and academic achievement showed a medium to strong SES-achievement relation. This relation, however, is moderated by the unit, the source, the range of SES variable, and the type of SES-achievement measure (Sirin, 2005).

2. Objectives

To investigate the differences of socioeconomic status in the students' psychological factors.

3. Hypothesis

There are significant differences between high, medium and low family's income in the students' psychological factors.

4. Material and Methods

4.1. Sample

Six hundred and eighty Iranian guidance school students in Tehran and Shahriar city, the province of

Tehran, Iran (317 male & 363 female age 14 years) were recruited as participant in this study. They were recruited at random sampling, and their participation was voluntary and anonymously done.

4.2. Procedure

Data were collected by means of structured questionnaires and by taking class as a unit. Based on verbal agreements of the training lecturers and participants, the questionnaires forms were distributed to the 680 guidance school students. Participants were asked to complete the questionnaires simultaneously at the start of a core lecture and return them to their lecturer on the spot. All completed questionnaires were passed on to the researchers. All participants were informed that the participation was voluntary and anonymous based.

4.3. Measures

All participants responded to an Iranian translation of the instrument in this study include: Self-concept Attribute Attitude Scale (SaaS), State-Trait Anxiety Inventory (STAI), Coopersmith Self-Esteem Inventory (CSEI) General Self-Efficacy (GSE), and lastly, Science Self-Efficacy Questionnaire (SSEQ).

4.3.1. Self-concept Attribute Attitude Scale (SaaS);

The SaaS instrument was developed by Campbell (1991). The response format is a five-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = uncertain; 4 = agree, 5 = strongly agree). The first version of SaaS was developed by factor analyzing the data from 1300 high achieving high school students, with exploratory and confirmatory factor analyses determined for each sample. These factors were extracted by using the Principal Component Analyses with iterations. The three factors that were produced from the factor analyses are math self-concept, science self-concept, and general self-concept. In the present study, only general self-concept and science self-concept are been used which includes 6 and 14 items related to general self-concept and science self-concept, respectively.

4.3.2. State-Trait Anxiety Inventory (STAI);

The STAI developed by Spielberger (1970) contains self-report scales for measuring both state and trait anxiety. The S-Anxiety Scale (STAI Form Y-1) used in this study consists of twenty statements designed to evaluate how a respondent feels at that particular time. Trait anxiety (T-Anxiety) refers to the relatively stable-individual differences in anxiety proneness, i.e., the tendency of an individual to perceive stressful situations as a threat, and to then respond to these situations with a heightened S-anxiety reaction (O'Neil & Spielberger, 1979). The S-Anxiety Scale required the respondent to determine how he or she feels at a particular moment in time. The items are rated, on a four-point scale, according

to the intensity of their feelings at that particular moment - (1) "not at all"; (2) "somewhat"; (3) "moderately so"; and (4) "very much so". In responding to the T-Anxiety Scale, on the other hand, examinees indicate how they "generally" feel on another four-point scale, this time indicating the frequency with which their feelings of anxiety appear: (1) "almost never"; (2) "sometimes"; (3) "often"; (4) "almost always".

4.3.3. Coopersmith Self-Esteem Inventory (CSEI);

The CSEI measures general self-esteem. Coopersmith's (1967) own inductive work examined CSEI scores as they related to other personality constructs. The present study has used the Adult Form of the CSEI, which is adapted from the School Short Form for children. The CSEI-A is a 58-item questionnaire completed by respondents by way of answering a five-point Likert scale: 1 = "Not at all Like me"; 2 = "Unlike me"; 3 = "Somewhat Like me"; 4 = "Like me"; 5 = "Very much like me" (1 and 2 are negative, while 3-5 are positive). As Coopersmith (1967) claims, the questionnaire is designed to measure "the evaluation a person makes and customarily maintains with regard to him or herself". The CSEI has been the subject of many validity research studies (Taylor & Reitz, 1968).

4.3.4. General Self-Efficacy (GSE);

General Self-Efficacy (GSE) developed by Sherer et al. (1982) is designed to gauge self-efficacy in clinical, educational, and organizational settings (Chen, Gully, & Eden, 2001). The measure contains items assessing GSE and social self-efficacy, but only GSE items be considered in the present study. As Sherer et al. (1982) claim, these items tap a "general set of expectations that the individual carries into new situations." The GSE Scale contains is 17-point scale, while the response format is a five-point Likert scale (from 1 = "strongly disagree" to, 5 = "strongly agree"). The sum of item scores reflects general self-efficacy, meaning that the higher the total score, the more self-efficacious the respondent.

4.3.5. Science Self-Efficacy Questionnaire (SSEQ);

The SSEQ was developed by Smist (1993) to assess students' self-efficacy in science by measuring beliefs about competence in school science tasks (Smist, 1993). The SSEQ-A is a 27-item questionnaire completed by respondents by way of answering a five-point Likert scale: 1 = "Very little"; 2 = "Little"; 3 = "Not sure"; 4 = "A lot"; 5 = "Quite a lot". The SSEQ was developed to assess students' self-efficacy in science by measuring students' own beliefs about their competence to perform or complete science-related tasks. This questionnaire includes physics, chemistry, biology, and laboratory. The researcher has used science totally. In the present study, only science

self-efficacy has used which includes nine items related to science.

5. Results

To carry out the main objective of the present study, the obtained data were subjected to a number of statistical analyses by using statistical package for social sciences (SPSS 17.0). Besides, descriptive statistics, MANOVA were also used in this study.

5.1. Descriptive statistics

Table 1 presents the mean and standard deviations of all the observed variables. Descriptive statistics is worked out to know the pattern of score distribution. A perusal of table 1 reveals that the mean and standard deviation on science self-concept, general self-concept, science anxiety, anxiety, self-esteem, self-efficacy, science self-efficacy for students' low family's income are 48.78 & 12.07, 58.54 & 11.39, 20.82 & 4.8, 44.62 & 11.56, 45.63 & 11.28, 184.49 & 26.26, 29.63 & 6.12, respectively, the mean and standard deviation on science self-concept, general self-concept, science anxiety, anxiety, self-esteem, self-efficacy, science self-efficacy for students' medium family's income 47.51 & 9.67, 58.32 & 10.09, 20.31 & 4.21, 44.63 & 11.29, 46.31 & 10.4, 186.47 & 25.28, 28.16 & 6.42, respectively and, the mean and standard deviation on science self-concept, general self-concept, science anxiety, anxiety, self-esteem, self-efficacy, science self-efficacy for students' high family's income 48.69 & 10.3, 59.23 & 9.78, 21.59 & 4.38, 42.62 & 10.99, 43.59 & 10.43, 194.64 & 24.24, 28.62 & 7.27, respectively. (See table 1)

5.2. MANOVA

To compare high, medium and low families' income students' in different variables, MANOVA was used. First, the important assumptions for the method such as, outlier and homogeneity of variance-covariance matrices are investigated.

The results of normality show that science self-concept, self-concept and anxiety in high group have non-normal distribution. The other variables have normal distribution between three groups. Meanwhile, the results of Shapiro-Wilk show that all variables have normal distribution in all the groups. Since, the results of statistics of skewness and kurtosis show that all values of this statistics are common range ± 1 . Therefore, the assumption of normality can be accepted (Meyers, Gamset, & Guarino, 2003). Besides, based on the results of Mahalanobis distances, there was no multivariate outlier data. The results of Box's Test shows that covariance matrix of dependent variable in different levels independent variable of family's income is equal ($p > 0.05$). The results of Levene's test shows that except science self-concept, in the other of independent variables the

error variances between three groups are equal in error variances ($p > 0.05$). Based on the results of Wilk's Lambda, there is a significant difference between groups in linear combination of the dependent variables ($F_{(14, 1342)} = 2.028, P < 0.05$).

Finally, based on the results of table 3, there is a significant difference between groups in science anxiety, self-esteem and self-efficacy ($p < 0.01$).

6. Discussion

The results of Post Hoc Scheffe (table 2) indicate, there is significant difference between medium and high groups family's income in science anxiety. As, we can claim means of high group is more than medium group. Whereas, there is no significant difference between mean of low with medium and high groups. Also, there is significant difference between mean of high and medium groups in self-esteem. Therefore, the mean of medium group is more than high group, only. Finally, there is significant difference between the mean of high group with low and medium groups in self-efficacy that the mean of high group is higher than two other groups. Mokshien (2002) in her study, investigated that the effects of emphasis on conducting experiments on achievement are significant even after controlling the effects of socioeconomic status and the effects of self-concept in science. Yet the results from a meta-analytic review showed that, socioeconomic status and self-esteem had a small but positive correlation which increased over time for women, while concurrently showing a decrease over time for men (Krieger, et al., 1997). The results of Rosenberg and Pearlin (1978) investigated that the relationship between SES and self-esteem is not consistent. And, they suggested that socioeconomic status had little to no effect on the self-esteem of children or adolescents. There is no relationship between income of the sample group students and their science self-concept total score means (Baran & Maskan, 2011). But, significant relationships and differences were found in students' self-concepts with respect to financial state of the family (Baran & Maskan, 2011). Likewise, they noted that there is no relationship between science self-concept and the financial state of family ($p = 0.042$). Çakir, et al., (2000) found out that the socio-economic level does not have any relationship with the student's academic self-concept. In White (1982) and Sirin (2005) findings for socioeconomic status and academic achievement, the analysis of science self-efficacy and science self-concept matter if analysis occurs at the student level or country level. Both White and Sirin found a smaller correlation between socioeconomic status and academic achievement at the student level (i.e., $r = .22$ and $.28$) than at the school level ($r = .73$ and $.60$). Based on the results of the

research carried out by Janjetovic and Malinic (2004), there are *positive* correlations between family variables (i.e., income) and self-concept. There is a

telling relationship between achievement in science subjects and the socioeconomic status of students (Özdemir, 2003).

Table 1: Descriptive Statistics with respect to family's income

	Family's income	Mean	Std	N
Science self-concept	Low	48.78	12.07	56
	Medium	47.51	9.67	419
	High	48.69	10.30	205
	Total	47.97	10.08	680
Self-concept	Low	58.54	11.39	56
	Medium	58.32	10.09	419
	High	59.23	9.78	205
	Total	58.61	10.11	680
Science anxiety	Low	20.82	4.80	56
	Medium	20.31	4.21	419
	High	21.59	4.38	205
	Total	20.73	4.35	680
Anxiety	Low	44.62	11.56	56
	Medium	44.63	11.29	419
	High	42.62	10.99	205
	Total	44.02	11.25	680
Self-esteem	Low	45.63	11.28	56
	Medium	46.31	10.40	419
	High	43.59	10.43	205
	Total	45.43	10.54	680
Self-efficacy	Low	184.49	26.26	56
	Medium	186.47	25.28	419
	High	194.64	24.24	205
	Total	188.77	25.32	680
Science self-efficacy	Low	29.63	6.12	56
	Medium	28.16	6.42	419
	High	28.62	7.27	205
	Total	28.42	6.67	680

Table 2: The results of Post Hoc Scheffe test for comparative of means based on family's income

Dependent Variable	(I) Family's income	(J) Family's income	Mean Difference (I-J)	Std. Error	Sig.
Science anxiety	Medium	High	-1.2820	.36806	.002
Self-esteem	High	Medium	-2.7140	.89385	.010
Self-efficacy	Low	High	-10.1426	3.77848	.028
	Medium	High	-8.1690	2.13587	.001

Table 3: Tests of Between-Subjects Effects with respect to family's income

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
family's income	Science self-concept	230.369	2	115.18	1.133	.323	.003
	Self-concept	115.021	2	57.51	.562	.570	.002
	Science anxiety	226.743	2	113.37	6.080	.002	.018
	Anxiety	579.284	2	289.64	2.297	.101	.007
	Self-esteem	1016.335	2	508.16	4.621	.010	.013
	Self-efficacy	10300.465	2	5150.23	8.201	.000	.024
	Science self-efficacy	117.216	2	58.60	1.317	.269	.004
Error	Science self-concept	68844.548	677	101.69			
	Self-concept	69304.510	677	102.37			
	Science anxiety	12624.674	677	18.64			
	Anxiety	85361.500	677	126.08			
	Self-esteem	74455.435	677	109.97			
	Self-efficacy	425131.471	677	627.96			
	Science self-efficacy	30118.560	677	44.48			

7. Conclusion

The results of the investigation of the difference in psychological variables based on the socioeconomic status in three levels of low, medium, and high indicated that there is difference between these three groups concerning the variables of science anxiety so that the mean score of science anxiety in the high group is larger than that of medium group while, there is no difference between that and the low group. Apparently, the socioeconomic status of extremely high or low, causes the increase in the science anxiety in the students though it is not so in medium group. Also, in the self-esteem variable; the students in the medium group performed better than two groups of high and low so that the mean score of their self-esteem is larger than the other two groups. In the self-efficacy variable, the mean score of high group differs from the other two groups so that the mean score of self-efficacy in high group is larger than the other two groups while there is no significant difference between medium and low groups.

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