

Self-Concept About Mathematics and Achievement Motivation as Correlates of Academic Achievement of Students at Elementary Level

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Abstract

A relationship was investigated among the three variables such as self-concept about mathematics, achievement motivation, and academic achievement of learners at elementary level schools of Sargodha. Two questionnaires were used while academic achievement was measured in the form of students' annual results of mathematics. 150 students were taken through a convenient sampling technique. Self-concept, academic achievement, and achievement motivation were highly correlated with each-others because students who were highly ambitious and have strong self-expectations may impact their academic achievement. It was also found that work avoidance attitude among students showed no parallel link between achievement motivation and academic achievement. Similarly, learners were not opposing in their self-concept about their academic subjects as well as in general self. So, no gender and sector (public & private) wise differences were found in the learners' achievement motivation and self-concept about mathematics while academic achievement of students in both public and private sectors was different. Primarily the study is confined to the school level only; it can be conducted at universities and college levels also. Secondly, the study is confined to the Punjab province of Pakistan, it can be extended to many institutions and provinces.

Keywords: self-concept about Mathematics, achievement motivation, elementary school level, academic achievement

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Introduction

Human beings hold certain conventions about themselves and that plays a major role in determining their behavior. The ways in which they distinguish and in particular they communicate with others are included in these assumptions which are part of their mindset and directly affected by their actions. Their mentalities standardize how they operate themselves in a proficient way. Due to new challenges and demands of modern words, a specific need for development is required in our students. They develop their inner strength to covenant proficiently and efficaciously day after day with trials and difficulties they encounter. This propensity to handle and impression of competencies is known as achievement motivation. The prominent intellectual constituent of human enthusiasm is self-reflective and self-directive processes (Fatima, 2017). Achievement motivation was defined as one's best to achieve something in the social, mastery, and performance-oriented areas of interactions. It is considered as a psychosomatic intention in man and known as achievement motivation (Barker, 2003). So, it can be said that "a genuine interpretation of us is indispensable to intellectual health and to an affirmative behavior in which we fail when we expect to fail and succeed when we expect to succeed" (Froehlich, 2007). An acceptance in one's personal capability to do something or to accomplish an aspirational outcome, the acquaintance and proficiency they hold, expectations, their curiosity, and the explanations that they have for behaving are considered as the prognostic of academic achievement. If compulsory expertise and familiarity are not present in a learner, then individuals' self-confidence or self-appreciation cannot help in getting any type of achievement. Achievement in any aspect of life is related to consistent behaviors (Fatima, 2019). "Self-concept is considered by many researchers as the central theme of life which affects all relationships, performances, and achievements either positively or negatively" (Fatima & Ali, 2020). An elementary hypothesis is that a person who has confidence and feels good about themselves; is the one who is the most likely to succeed. Another important point is that hypothetical achievement or disappointment seems to be as profoundly rooted in the concept of self. This type of thinking is cognitive in nature because it was found that a strong relationship between learning and motivation existed in an individual. So, when a higher level of needs of academic success arose within an individual then the urge to learn increases but the absence of any motivative drive is considered as an immense barrier in the way of learning (Wilkins, 2006). Therefore, the current study was a try to discover a connection among achievement

motivation, self-concept about mathematics, and academic achievement of the students at elementary level schools of Sargodha.

Objectives

The objectives of this study were to;

1. Discover students' opinions about the self-concept of mathematics, achievement motivation, and academic achievement at the elementary level
2. Determine a relationship among achievement motivation, self-concepts and academic achievement of the students.
3. Measure an effect of demographic factors (gender & sector) over achievement motivation, self-concept, and academic achievement of students at the elementary level.

Hypotheses

1. Self-concept, achievement motivation, and academic achievement motivation of students have no positive association with each-others.
2. Gender and sectors of elementary students have no significant effect on Self-concept, achievement motivation, and academic achievement motivation.

Review of Related Literature

“A goal-oriented behavior of an individual is called achievement motivation and it is mostly measured through individual's social, personal and performance-oriented interactions” (Fatima, Zamir, Ali & Fatima, 2018). David McClelland's theory is considered as the beginning of the modern study of achievement motivation that states, “beneath applicable circumstances, people will do what they have been remunerated for liability”. Similarly, Atkinson's expectancy –Value theory says that inclination to engross in any precise accomplishment-oriented comportment be contingent on the prospect to success and the inducement values of achievement, as well as the need for achievement. Spence and Helm Reich's Achievement Theory has three achievement dimensions which are following;

1. Gratification in exertion itself
2. A sagacity of accomplishment
3. A sagacity of effectiveness (Westling, 2006).

Similarly, Weiner proposed a theory that was known as the attribution theory that deals with the professed foundations of accomplishment and catastrophe, the physiognomies of causative philosophy, and consequent passionate involvements in relation to accomplishment behavior.

In this study, achievement goals are related to the academic works of the students because they mostly show strong concern with their academic work during their study periods or the reasons that students have for doing their academic work. There are two general types of achievement goals which are following:

1. Learning/task/Mastery goals
2. Ability /Performance goals

Learning or task goals or mastery are basically the same types of achievement goals in which basically a person improves his/her effectiveness by commanding or attaining the new knowledge while ability or performance goals also called ego goals are basically related to a person's better usefulness concert than others. Students with an enactment/mastery alignment are affianced more recurrently and frequently involved in teamwork, integrative learning, and practical profound learning approaches (Ali, Zamir, Fatima & Fatima, 2018).

Self-Concept

Personage's cognizance of her/his own distinctiveness is called Self-concept. It was explained in three different facets which were following:

1. "What the individual is" is called self-perception or self-image.
2. "What the individual poverties to be" called as superlative self.
3. "What the individual impressions about the inconsistency between what she/he is and what she/he would like to be" is called self-esteem (Sullivan, 2009).

As the result of these three phases of self-concept, another point was highlighted that self-concept be contingent not only on unprejudiced settings and statuses but also on the individual's personal clarification of aforementioned life proficiencies. Self-concept acts as an aftermath or as a prognosticator/expounding variable that is centrally convoluted in the learning process (Fatima & Ali, 2020). Enhancement of a learner's self-concept is treasured as an instructive product in the learning process because it is an important prognosticator of forthcoming comportment including academic achievement. The success and educational attainments are related to a degree of confidence (Fatima & Zamir, 2015). The school enactment and learner erudition are important aspects of self-regulation or Metacognitive control of understanding and learning behavior of the

individuals. The role of self-concept in the education or learning process is explained in three ways that are based on the three fundamental conventions under the humanist manner.

1. A universal confidence was directly linked with the academic life of the learner was seen as self-concept.
2. The behavior or functions of the individual in a real-world setting in which academic performance is also included was considered as the self-concept of an individual.
3. The undeviating interpolations that lead to an increase in academic performance were considered as ones' self-concept (Fatima, 2014).

Self-Concept, Academic Achievement and Achievement Motivation

Self-concept and academic achievement were accorded on two points related to specificity and correspondence. "First, when self-beliefs were universally evaluated then the prophecy is contracted and when valuations are domain-specific or particularly when they are task-specific then extrapolation is enhanced. Second, when self-beliefs do not resemble with the accomplishment ending with which they are compared then their prognostic value is condensed or can even be nullified" (Fatima & Ali, 2016). Subject-specific self-concept cannot compare with different subjects because the performance of one subject is related to the self-concept of the same subject like mathematical self-concept cannot relate to the verbal self-concept and these findings came out from the research of Barker and his associates in 2003. According to him and his associates that "the relationship between subject-specific self-concepts like mathematics, self-concept related with the mathematics performance which is stronger than academic self-concept and academic achievement which in turn is stronger than global self-concept and achievement and the strength of relationship decreased as mathematics achievement was compared with academic self-concept, and it decreased even further when compared with verbal self-concept"(Fatima, 2016). Through various studies, it was found that males were more confident and had a strong self-concept about their capabilities than females. Due to this, they had high achievement motivation and academic success in practical life. It was also found that "specific self-concept and academic achievement on the basis of gender difference showed variations in results that boys are exclusively probable to rate their capabilities more exceedingly than girls in subjects that are professed as "masculine" such as mathematics and the sciences" (Barker, 2003). Conversely, when gender differences were noted in verbal self-concept then these have characteristically preferred women. "Lads

boys advanced self-concepts in physical abilities and physical appearances than girls, but they do not differ from girls in their self-concepts about relationships with parents and peers, or in general self". "Learners' insights of themselves and their self-worth play an important role in their level of personal aspirations and in their self-expectations and also influence their academic achievement" (Froehlich, 2007). Correlation analysis of different studies about Self-concept and achievement motivation described that both variables act as independent variables. These two variables together brand a constructive involvement to learners' notches on profound dispensation and a destructive influence on their grooves on imitating alignment, extravagance, and traveling (Wilkins, 2006). Similarly, the present study tries to discover a connection among self-concept, achievement motivation, and academic achievement of the students in the Pakistani context.

Methodology

Population & Sample

All the students of both private and public sector schools of the Sargodha district at the elementary level were considered as the population of the study. Through conveniently sampling three schools were taken as samples. From three schools total of 150 students of 6th Grade were taken as samples in which 67 students belong to "Sani School System", 41 from "MC Girls School" and 42 students from "Muslim Ambala School" of Sargodha District.

Research Design & Instrumentation

The descriptive research design was used by the survey method. Two questionnaires such as "Academic Self-Description Questionnaire II (ASDQ II)" that was constructed by Marsh (1990) and the "General Achievement Goal Orientation Scale (GAGOS)" that was constructed by McInerney (1997) were used. Students responded to the items on a five-point Likert scale ranging from "strongly disagree" to "strongly agree". 20 items for self-concept about Mathematics were used while 15 items were associated with achievement motivation. The questionnaire was translated into the Urdu language. Both forward and back-translation method was used. The Urdu translation process was approached by 05 bilingual professionals. They were used parsimonious language and they were more

focused on conceptual rather than factual translation. For ensuring the accuracy and efficacy of Urdu and English language, 05 new professionals were approached. Both types of experts didn't know each other as well as Urdu or English versions of questionnaires. Content validity of translated instruments was carefully checked by experts before their final shape and administered to the sample of the study. All these had been done during pilot testing. The instrument was found to be reliable with reliability coefficient Cronbach Alpha method (Self-concept of Mathematics = .831; Achievement Motivation = .513).

Results

Table 1.
Mean Scores of Students' Opinions

<i>Sr. No</i>	<i>Variables</i>	<i>Mean Scores</i>
1	Self-Concept about Mathematics	20.67
2	Achievement Motivation	21.45
3	Academic Achievements	15.23

Table shows that students were believing that they had positive opinions about their self-concept about mathematics and achievement motivation, but they were neutral about their academic achievement at the elementary level.

Table 2.
Correlations among the Self Concept of Mathematics and Achievement Motivation (N=150)

<i>Variables</i>	<i>SCM</i>	<i>GAM</i>	<i>AA</i>
SCM	1	.754	.321
GAM	.754	1	.212
AA	.321	.212	1

(SCM= Self- concept of math, GAM= Goal Achievement Motivation, AA= Academic Achievement)

Table 2 shows that self -concept (SC) of mathematics and achievement motivation are strongly correlated with each-others ($\alpha = .754$) while academic achievement is not strongly correlated with self-concept ($\alpha = .321$) and achievement motivation ($\alpha = .212$).

Table 3.
t-test for Gender and Sectors of Students

<i>Variables</i>	<i>Factors</i>	<i>N</i>	<i>Means</i>	<i>t</i>	<i>df</i>	<i>Sig.</i>
Self-Concept of Mathematics	Males	76	25.14	.465	148	.885
	Females	74	24.82			
	Public	84	24.32	-2.21	148	.924
	Private	66	25.83			
Academic Achievement	Male	84	32.10	-11.58	147	.000
	Female	65	63.77			
	Public	84	24.09	-3.701	148	.000
	Private	66	26.33			
Social Goals	Male	76	1.64	-.764	148	.434
	Female	74	1.67			
	Public	84	1.64	-.667	148	.908
	Private	66	1.67			
Mastery Goals	Male	76	20.63	-1.11	148	.076
	Female	74	21.18			
	Public	84	20.39	-2.343	148	.062
	Private	66	21.56			
Performance Goals	Male	76	28.526	-1.202	148	.165
	Female	74	29.364			
	Public	84	28.44	-1.622	148	.970
	Private	66	29.57			

Table 3 shows that there was no significant effect of gender and sector over the self-concept of English ($p=.717$, $p=.060$), mathematics ($p=.885$, $p=.924$), social goals ($p=.434$, $p=.908$), mastery goals ($p=.076$, $p=.062$) and performance goals ($p=.165$, $p=.970$) while there was significant effect of gender and sector over academic achievement of the students ($p=.000$).

Discussion

Students were believing that they had positive opinions regarding their self-concept about mathematics and achievement motivation, but they were neutral about their academic achievement at the elementary level. This study was quite similar to the research of Fatima and Ali (2015, 2016) and Ali et al., (2018), and Fatima et al., (2018). All three variables such as self-concept about mathematics, achievement motivation and academic achievement are positively correlated with each-others because “generally

learner's discernments about themselves and their self-concept play important role in their level of peculiar ambitions and their self-expectation may influence on their academic achievement" (Fatima & Ali, 2019). It was also found that "students with work circumvention placements attempt to evade catastrophe without hard work but the academic achievement and success can only be attained through the completion of the task with continuous effort and hard work" (Barker, 2003).

There was no significant mean difference w.r.t gender and sectors (public, private) because self-concept is the personage's cognizance of her/his personal distinctiveness and both male and female students are not differing in their parent and peer or in general self. "Self-concept is contingent not only on the unprejudiced circumstances and statuses but also on the individual's personal elucidation of aforementioned life proficiencies" (Westling, 2006). "Achievement motivation or motivational goals are psychosomatic placements, it means that learners recognize themselves and their capabilities influence on their attitude and behavior" (Fatima, 2017). "Achievement-oriented behavior depends on the probability of success and the incentive value of success as well as the need for achievement". Most of them don't know the importance, significance, and implication of research work. These results were quite similar to the work of Fatima and Ali (2020) and Fatima et al., (2021). Similarly, the student's perception of their school and teachers also influences their behaviors and academic life. But some results of this study like no significant correlation among achievement motivation, self-concept, and academic achievement was quite different from the works of Wilkin (2006) and Fatima and Ali (2017).

Conclusion

On the basis of objectives, the following conclusions have been revealed.

1. Students were believing that they had positive opinions about their self-concept about mathematics and achievement motivation, but they were neutral about their academic achievement at the elementary level.
2. Self-concept (SC) of mathematics and achievement motivation were strongly correlated with each-others while academic achievement was not strongly correlated with self-concept and achievement motivation.
3. Gender and sectors (public & private) had no significant effect on the students' opinions about achievement motivation and self-concept

while academic achievement of students in both public and private sectors was different.

Recommendations

1. Teachers should offer additional help to those pupils who seem to point failure in their lives and have a deficiency and practice a different set of actions that highlight constructive capabilities among students. The teacher should also endorse self-exploration and reassure students to move easily around the room and also allowing the students to feel more independent as well.
2. In future research, a more qualitative approach to the affective side of enriching the statistical data and resolving some of the contradictions.
3. Primarily the study is confined to school level only; it can be conducted to universities and college level also. Secondly the study is confined to the Punjab province; it can be extended too many institutions and provinces.

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