

Impact of Grade Sensitivity on Learning Motivation and Academic Performance

Salwa Aftab, Sehrish Riaz

Abstract—The objective of this study was to check the impact of grade sensitivity on learning motivation and academic performance of students and to remove the degree of difference that exists among students regarding the cause of their learning motivation and also to gain knowledge about this matter since it has not been adequately researched. Data collection was primarily done through the academic sector of Pakistan and was depended upon the responses given by students solely. A sample size of 208 university students was selected. Both paper and online surveys were used to collect data from respondents. The results of the study revealed that grade sensitivity has a positive relationship with the learning motivation of students and their academic performance. These findings were carried out through systematic correlation and regression analysis.

Keywords—Academic performance, correlation, grade sensitivity, learning motivation, regression.

I. INTRODUCTION

THE concept of learning motivation and academic performance has been put forth by many researchers [1], [2], [4], [7] who have identified certain factors which affect the learning motivation and academic performance of students. Innumerable researches [21]-[23], [28], [29] have been put forth by various psychologists on motivation which covers the learning aspect primarily starting from Maslow's Hierarchy of Needs. In recent years, however, many findings have also been laid down by researchers [9]-[11], [24] on students' motivation to learn and their academic performance. A five key ingredient theory on learning motivation of students was proposed including learning factors like Student, Teacher, Content, Method/Process and the Environment [1]. Furthermore, it was found that the students' intention to learn and the strategies they use for learning along with the tasks that they are assigned in a particular academic environment according to the methods used by teachers also plays a major role in their motivation [2], [3]. Another important factor that contributes to the learning motivation is that of self perceived academic competence, self – efficacy and self – concept on self regulated learning (SRL) strategies used by students which has greatest impact on their academic performance [4]-[7]. It was also proposed that students who scored relatively higher in SRL strategies tend to pursue a unique learning approach rather than focusing on grades and performing better than others [8]. So, here it is implied that students who prefer learning over grades achieve a better academic performance. On the contrary, some researchers have further found out that

students who did not use SRL strategies were lower in terms of motivation but were stronger in acquiring a high cumulative grade point average [9]. It entails that some students' primary motivation to learn is to secure a high cumulative grade point average. Learning skills, intrinsic motivation and extrinsic motivation of students have also been identified as major factors for an improved academic performance [10], [11]. A very unique factor that has been identified by psychologists is that of Psychopathology also known as psychological distress that negatively affected the students' motivation to learn and have considerably reduced their academic performance by experiencing stress and anxiety related to their academics thus relying on the external academic assistance [12].

After scrupulously reading the existing literature on the related topic, it is deduced according to our level of knowledge that not much research has been conducted on the impact of grade sensitivity on learning motivation and academic performance of students. Although many studies are conducted on learning motivation and academic performance [4]-[7], [11], [24]; not many studies have explicitly described the impact of being grade sensitive on the motivation and performance of students. Although there has been some research on the idea of being grade sensitive between males and females [13] but up to our knowledge and research none has adequately illustrated the impact it causes on the motivation and performance of students. The idea in which the topic of grade sensitivity has previously been researched [13] is quite different from what we want to achieve through this study. We want to investigate whether the students who are grade sensitive have a higher learning motivation and do they perform better than those who are not grade sensitive.

The scope is to conduct this study in Pakistani context. As mentioned that this topic has not been researched in any context, let alone Pakistan. The analysis will be conducted on Pakistani students currently enrolled in their undergraduate program in Pakistani universities. This analysis will give us the results regarding whether the Pakistani students get motivated and perform better academically when they score high grades or on the contrary if they think that grades are not the predictor of their motivation and academic performance.

It is very essential to know what causes students to get motivated and excel in their academic performance. It is pertinent to be aware of all those causes through which students get motivated and perform productively so that we can create many more bright examples by reinforcing those sources which causes motivation among students to learn and perform brilliantly.

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Based on the gap in existing literature and the significance of filling those gaps, several objectives have been identified to carry out this study, the first and foremost being; to test whether the grade sensitivity has any impact on learning motivation and academic performance of Pakistani students. Secondly, is to resolve the general difference of opinion among students regarding the cause of learning motivation and enhanced academic performance. Furthermore, it is also essential for Pakistan to recognize the cause behind the learning motivation to improve the productivity of its academic sector. Besides, this study will also help us in providing implications to the educational policy makers of Pakistan. The final objective of the study is to gain more knowledge regarding this phenomenon since it has not been adequately researched.

II. LITERATURE REVIEW AND HYPOTHESES

A. Grade Sensitivity

The concept of grade sensitivity can be explained through the concept of Gray's [14]-[17] Reinforcement sensitivity theory (RST) which according to [18] is defined as; "Reinforcement sensitivity theory of personality is based upon the reactions to rewarding and punishing stimuli in typical animal learning paradigms." RST has three neuropsychological paradigms [14]; one of which is Behavioral Activation System (BAS) demonstrating the characteristics like extraversion, impulsivity and sensation seeking [19], [20]. It was further proposed that BAS type is sensitive to rewards and thus activate their behavior in reward seeking situations. Now grades are considered to be external rewards [21]. Since they provide benefits to students and are one of the strong predictors of their academic achievement success and feedback [22], students believe in acquiring high grades in order to compete with their fellow students [21] thus making them sensitive to grades. Grade sensitivity is synonymous to reward sensitivity, reward responsiveness and incentive responsiveness [20] which initiates them to receive a high grade in order to avoid punishment from parents [23]. Reference [21] shows that being grade sensitive can help students in their undergraduate degree program but at a graduate level educational institute; self determination theory (SDT) through the use of SRL strategies is considered of utmost importance.

B. Learning Motivation

Reference [24] defined motivation as; "the person's effort to accomplish his/her duties, dedicating the needed effort and continuing it". Reference [25] said motivation is "goal directed" while according to [26] motivation is; "what causes people to behave as they do". Many researchers are of a different view regarding the idea behind motivation but the definition given by [24] is more relevant as it actually triggers the behavior towards the achievement of goals [22]. According to [27], extrinsic motivation is a construct that is relevant whenever an activity is done in order to attain some reward. Intrinsic motivation is defined as; "it occurs when the

activity is done out of the free choice of the individual" [27]. Intrinsic and extrinsic motivations are the two that have an effect on our learning. Intrinsic factors are those which come from within the student while the extrinsic factors are those which come from the external sources. Intrinsic factors influence our life-long learning. According to a recent study [1], the primary factors behind the students' motivation to learn are student, teacher, content method/process and the environment. Furthermore, it was found that the students' intention to learn and the strategies they use for learning plays a major role in their motivation rather than the environment in which they are taught [2]. Another important factor that contributes to the learning motivation is that of self perceived academic competence, self – efficacy and self – concept on SRL which has greatest impact on the academic performance of students [4]. It was also proposed that students who scored relatively higher in SRL strategies tend to pursue mastery goals rather than performance goals which significantly improve their academic performance. Mastery goals basically include constant improvement, unique learning and hard work while on the other hand performance goals primarily focuses on achieving high grades, competitive ability, doing better than others, being grade sensitive [8]. A study conducted on Student motivation [3] suggested that the student learning motivation is mainly caused by factors like students' willingness to learn, classroom learning environment, goal orientation, classroom structures, challenging tasks, proper evaluation of tasks, timely feedback given by instructors and the learning strategies used by teachers.

C. Academic Performance

Academic Performance can be defined through the concept of Examination scores. According to [11], examination scores are defined as; "the measurement in differentiating student's level of knowledge for them to go further in their studies, gaining scholarship and obtain better entry level at top universities". Academic performance of students is basically reflected through their examination marks and scores, cumulative grade point average so in our opinion this definition is most relevant to the concept of academic performance. A great deal of research is also conducted on the factors that essentially affect the academic performance of students. It was also recommended [5] that students who use SRL strategies like; cognition, Meta - cognition and resource management achieve a far better academic performance than those who do not. Some researchers found out that those students who did not rely on SRL strategies and were lower in terms of motivation than other students were stronger in acquiring learning experience and cumulative grade point average [9]. Learning skills and the passion to explore new things is another factor which influences the academic performance of students [10]. In addition, a positive correlation between the motivation and academic performance of students is not very significant but still enhanced motivation and self concept can rigorously improve their academic performance [28]. Psychological distress is another factor that has been identified which negatively affects the students'

motivation to learn and have considerably reduced their academic performance [12].

D. Grade Sensitivity and Learning Motivation

Grade sensitivity can synonymously be used with the terms like reward sensitivity and reward responsiveness. It can now naturally be assumed that grades serve as rewards for students. Few studies have been conducted on the impact of grade sensitivity on the learning motivation in developed countries. Reference [21] explored that being grade sensitive can greatly obstruct the intrinsic level of motivation among students. The three major components of intrinsic motivation: autonomy, competence and relatedness [29] can be diminished in the presence of external rewards like grades [27]. External rewards like being grade sensitive does not allow us to recognize our full potential and exercise our autonomy which are basically tied to our intrinsic motivation and can help us become successful professionals [21]. Moreover, it is believed that efforts originating from internal motivation are long lasting than the efforts generating from the external rewards and motivation [27]. Another important factor highlighted to increase intrinsic motivation is that of the use of SRL strategies. It was also proposed that students who tend to use SRL strategies during their course of studies tend to pursue constant improvement, consistent progress, significant efforts and a unique learning approach rather than being anxious about grades [4]. However, we present on the basis of our own thoughts and observations that students who are high on grade sensitivity are more academically motivated to learn than those who are low on grade sensitivity. For such students, their primary motivation to learn is defined by scoring high grades than others. They believe that by scoring better than others their motivation to learn is further increased which eventually helps them to achieve their desired goal. They consider external rewards and grades as the primary motivator behind the drive of their action to reach their preferred goal.

Based on the findings above and our own personal observations we develop the following Hypothesis:

- *Hypothesis 1. Grade sensitivity has a positive relationship to the learning motivation.*

E. Grade Sensitivity and Academic Performance

Handful of studies as described above have been conducted on the academic performance of students giving rise to new causes that cause student to perform successfully in their academic tenure [5]-[7] but so far up to our knowledge not one study has adequately researched the impact of grade sensitivity on the academic performance of students.

One study on grade sensitivity [13] based on gender has been carried out where a sample of 10,622 students was selected and the results revealed that women were more sensitive to lower grades. Furthermore, it was concluded that women who were grade sensitive had a higher cumulative grade point average than men. To further elaborate our point, we too have observed in our surroundings that females are more anxious about their grades than men and they have a far more better academic performance than men in terms of

marks, examination scores, grades and cumulative grade point average. Based on findings mentioned above, we also think that people who are high on grade sensitivity tend to perform better academically than those who are low on grade sensitivity. Consequently, we develop the following Hypothesis in this case:

- *Hypothesis 2. Grade sensitivity has a positive relationship to the academic performance.*

F. Theoretical Model

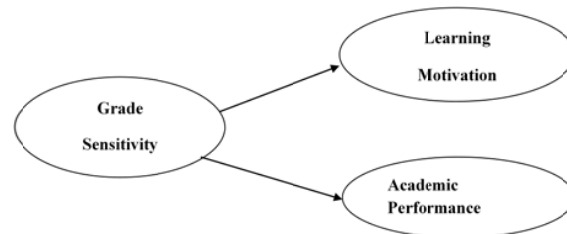


Fig. 1 Grade sensitivity being independent variable impacts two dependent variables i.e. learning motivation and academic performance

III. METHODS

A. Sample Size and Data Collection Procedures

The overall study setting to carry out this research is for the field of academia and is mainly depended upon the responses given by students. A sample size of 208 students was selected in order to conduct the study on the impact of grade sensitivity on learning motivation and academic performance of students. Survey Instruments like questionnaire forms and online surveys were used through social media to record the responses of the respondents regarding the related study. The data was somewhat collected using personal and professional references. The convenience for the targeted audience and respondents was strictly observed.

Responses are mainly recorded from the students enrolled in the institution of higher education (university) as the name of topic itself suggests that the academic performance is depended upon grade sensitivity and in this case the academic performance of students is naturally considered to be their cumulative grade point average. Cumulative grade point average is always calculated for university going students that is why our primary focus is to conduct the data from university going students so as to get more accurate responses from them on the impact of being grade sensitive on their learning motivation and cumulative grade point average.

The students who gave responses to our surveys were currently in their freshman, sophomore, junior and senior year. Different departments of study were approached for our research in order to get balanced results and to find out the impact of grade sensitivity from students enrolled in different degrees of education. 71.6% of the responses were recorded from female members. The average age of respondents was found out to be 20.9 with a standard deviation of 1.37.

B. Measures

1. Grade Sensitivity

The grade sensitivity of students was measured by a 12 item questionnaire which was formed through the combination of different questionnaires previously formed by various researchers [8], [24]. Also, we formed some questions regarding the grade sensitivity that were used in our 12 item questionnaire. This part of questionnaire has 12 questions and the 5 point Likert scale ranging from strongly disagree (1) to strongly agree (5) was used to tap responses of students. A sample item for this questionnaire is “I feel anxious about my grades most of the time”. This questionnaire was thoroughly validated by number of experts to ensure its content and criterion validity. We conducted a reliability analysis in order to examine the reliability of 12 item grade sensitivity questionnaire. The results revealed that Cronbach’s Alpha value of this scale is .836 which was above the conventional standards. Therefore, this questionnaire was a reliable tool to measure the grade sensitivity of students.

2. Learning Motivation

The learning motivation of students was measured by a 10 item questionnaire which was formed with the help of “Motivated Strategies for Learning” questionnaire originally consisting of 44 items. This part of questionnaire has 10 questions and the 5 point likert scale ranging from strongly disagree (1) to strongly agree (5) was used to tap responses of students. A sample item for this questionnaire is “I often choose topics though which I will learn something from even if they require more work”. This questionnaire was thoroughly validated by number of experts to ensure its content and criterion validity. We conducted a reliability analysis in order to examine the reliability of 10 item learning motivation questionnaire. The results revealed that Cronbach’s Alpha value of this scale is .825 which was above the conventional standards. Therefore, this questionnaire was a reliable tool to measure the learning motivation of students.

3. Academic Performance

The academic performance of students was measured by an 8 item questionnaire which was also formed with the help of “Motivated Strategies for Learning” questionnaire. Also, some questions were self made. This part of questionnaire has 8 questions and the 5 point likert scale was used again to tap responses from students ranging from strongly disagree (1) to strongly agree (5). A sample item for this questionnaire is “My test/exam scores are relatively better than other students”. This questionnaire was thoroughly validated by number of experts to ensure its content and criterion validity. We conducted a reliability analysis in order to examine the reliability of 8 item academic performance questionnaire. The results revealed that Cronbach’s Alpha value of this scale is .855 which was above the conventional standards. Therefore, this questionnaire was a reliable tool to measure the academic performance of students.

IV. RESULTS

The correlation results in Table I show that grade sensitivity is positively related to learning motivation and the relationship between the two is highly significant ($r = .524, p < .001$). They also show that grade sensitivity is also positively related to academic performance and the relationship between the two is highly significant ($r = .362, p < .001$). They further illustrate that learning motivation is also positively related to academic performance and the relationship between the two is also highly significant ($r = .568, p < .001$).

TABLE I
CORRELATION ANALYSIS BETWEEN GRADE SENSITIVITY, LEARNING MOTIVATION AND ACADEMIC PERFORMANCE

	1	2	3
1. Grade Sensitivity	(.836)		
2. Learning Motivation	.524***	(.825)	
3. Academic Performance	.362***	.568***	(.855)

Note. N = 208, Cronbach’s alphas reliabilities are presented in parenthesis.
* $p < .05$, ** $p < .01$, *** $p < .001$

TABLE II
REGRESSION ANALYSES FOR GS, LM AND AP

	Learning Motivation		Academic Performance	
	β	R ²	β	R ²
Grade sensitivity	.524***	.275***	.362***	.131***

Note. N = 208; Standardized Coefficients are reported.

* $p < .05$, ** $p < .01$, *** $p < .001$

Hypothesis 1 (H1) was tested using regression analysis as shown in Table II. The results revealed that grade sensitivity has a positive relation with learning motivation and the relationship is highly significant ($\beta = .524, p < .001$). Thus, we say that H1 is accepted. Also, it is revealed, that 27.5% variance is caused in learning motivation due to grade sensitivity. Hypothesis 2 (H2) was further tested using regression analysis as shown in Table II. The results revealed that grade sensitivity has a positive relation with academic performance and the relationship is highly significant ($\beta = .362, p < .001$). Thus, we say that H2 is also accepted. Also, it is revealed, that 13.1% variance is caused in academic performance due to grade sensitivity.

V. DISCUSSION

Hypothesis 1 proposed a positive relationship between grade sensitivity and learning motivation and it was accepted through the results shown in Section IV. It was proved through correlation and regression analysis that there exists a positive relationship between the grade sensitivity of students and their learning motivation. Through the above analysis we can say that students who are more anxious about their grades and who feel worried when other students outperform them have a better learning motivation than those who do not show any sensitivity regarding their grades. Grade sensitive students often try to predict their grades and cumulative grade point average beforehand and usually feel sad and disturbed when they score low in text or examination which in result further increase their motivation to learn.

Hypothesis 2 proposed a positive relationship between grade sensitivity and academic performance and was also accepted through the results as shown in Section IV. It was proved through correlation and regression analysis that there exists a positive relationship between the grade sensitivity of students and their academic performance. In relation to the above data analysis, we can say with most confidence that students who are high on grade sensitivity tend to perform better academically than those who are low on grade sensitivity. As grade sensitive students are more motivated to learn, thus they also tend to outperform others in class by actively participating in class discussions with their test scores being relatively way above than average scores and their Cumulative grade point average was also found to be better than their classmates who were not very sensitive to their grades.

Conclusively, we can say that grade sensitivity serves a benchmark to check the level of learning motivation and academic performance of students. Therefore, educationalists and people in the field of academia should work on their grading policies and educators should design their course content in such a way to promote healthy competition among students to ensure maximum level of student learning motivation and enhanced academic performance. Also, students on their part should also learn to value their grades because it is proved though this study that grade sensitivity is a strong predictor for students' motivation and academic performance.

REFERENCES

- [1] Williams, K. C., & Williams, C. C. (2011). Five key ingredients for improving student motivation. *Research in Higher Education Journal*, 12, 1.
- [2] Kyndt, E., Dochy, F., Struyven, K., & Cascallar, E. (2011). The direct and indirect effect of motivation for learning on students' approaches to learning through the perceptions of workload and task complexity. *Higher Education Research & Development*, 30(2), 135-150.
- [3] Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of educational psychology*, 84(3), 261.
- [4] Ferla, J., Valcke, M., & Schuyten, G. (2010). Judgments of self-perceived academic competence and their differential impact on students' achievement motivation, learning approach, and academic performance. *European Journal of Psychology of Education*, 25(4), 519-536.
- [5] Sung, H. S., Kim, E., & Kim, Y. S. (2009). Relationships of the Self-regulated Learning Strategies used in Both Science and English Classes and Motivation to Academic Performance by Science-gifted High School Students. *Journal of Gifted/Talented Education*, 19(1), 95-117.
- [6] Mirzaian, B., Hassanzadeh, R., & Shirdel, K. (2012). The Relation between Self-Regulation Learning Strategies and Achievement Motivation with Academic Performance among High School Students in Sari.
- [7] Javdan, M., Samavi, S. A., Sezide, K., & Qasmi, N. (2014). The Pattern of Structural Relationships between Perceptions of Constructivist Learning Environment, Academic Self-efficacy, Intrinsic Motivation and Academic Performance.
- [8] Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of educational psychology*, 80(3), 260.
- [9] Ning, H. K., & Downing, K. (2012). Influence of student learning experience on academic performance: the mediator and moderator effects of self-regulation and motivation. *British Educational Research Journal*, 38(2), 219-237.
- [10] Griffin, R., MacKewn, A., Moser, E., & VanVuren, K. W. (2013). Learning skills and motivation: Correlates to superior academic performance. *Business Education & Accreditation*, 5(1), 53-65.
- [11] Remali, A. M., Ghazali, M. A., Kamaruddin, M. K., & Kee, T. Y. (2013). Understanding academic performance based on demographic factors, motivation factors and learning styles. *International Journal of Asian Social Science*, 3(9), 1938-1951.
- [12] Brackney, B. E., & Karabenick, S. A. (1995). Psychopathology and academic performance: The role of motivation and learning strategies. *Journal of Counseling Psychology*, 42(4), 456.
- [13] Rask, K., & Tiefertaler, J. (2008). The role of grade sensitivity in explaining the gender imbalance in undergraduate economics. *Economics of Education Review*, 27(6), 676-687.
- [14] Gray, J. A. (1970). The psychophysiological basis of introversion-extraversion. *Behaviour research and therapy*, 8(3), 249-266.
- [15] Gray, J. A. (1987). *The psychology of fear and stress* (Vol. 5). CUP Archive.
- [16] Gray, J. A. (1991). Neural systems, emotion and personality. *Neurobiology of learning, emotion, and affect*, 4, 273-396.
- [17] Gray, J. A., van Goozen, S. H. M., Van de Poll, N. E., & Sergeant, J. A. (1994). Framework for a taxonomy of psychiatric disorder. *Emotions: Essays on emotion theory*, 29-59.
- [18] Corr, P. J. (2002). JA Gray's reinforcement sensitivity theory: Tests of the joint subsystems hypothesis of anxiety and impulsivity. *Personality and individual differences*, 33(4), 511-532.
- [19] Scott-Parker, B., Watson, B., King, M. J., & Hyde, M. K. (2012). The influence of sensitivity to reward and punishment, propensity for sensation seeking, depression, and anxiety on the risky behaviour of novice drivers: a path model. *British journal of psychology*, 103(2), 248-267.
- [20] Carver, C. S. (2009). Threat sensitivity, incentive sensitivity, and the experience of relief. *Journal of personality*, 77(1), 125-138.
- [21] Cabrera, C. M., & Miller, D. I. The value of grades in graduate school.
- [22] Shim, S., & Ryan, A. (2005). Changes in self-efficacy, challenge avoidance, and intrinsic value in response to grades: The role of achievement goals. *The Journal of Experimental Education*, 73(4), 333-349.
- [23] Pilcher, J. K. (1994). The value-driven meaning of grades. *Educational Assessment*, 2(1), 69-88.
- [24] Muhammad, A. S., Bakar, N. A., Mijinyawa, S. I., & Halabi, K. A. Impact of motivation on students' academic performance: A case study of University Sultan Zainal Abidin students.
- [25] Lawler III, E. E. (1973). Motivation in work organizations.
- [26] Yang, K., Denhardt, R. B., Denhardt, J. V., & Aristigueta, M. P. (2002). Managing Human Behavior in Public and Nonprofit Organizations.
- [27] Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological bulletin*, 125(6), 627.
- [28] Emmanuel, A. O., Adom, E. A., Josephine, B., & Solomon, F. K. (2014). Achievement motivation, academic self-concept and academic achievement among high school students. *European Journal of Research and Reflection in Educational Sciences Vol*, 2(2).
- [29] Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational psychologist*, 26(3-4), 325-346.