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Self-Efficacy, Achievement Goals and Depression, Anxiety, and Stress: A Structural Equation Modeling

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Abstract: The aim of this study is to examine the relationships between self-efficacy, achievement goals and depression, anxiety, and stress. Participants were 646 university students who completed a questionnaire package that included Self-efficacy Scale, 2X2 Achievement Goal Orientations Scale and Depression Anxiety Stress Scale (DASS). The Structural Equation Modeling supported the hypothesis model and all proposed paths were significant. According to results learning-approach goals were predicted positively and learning-avoidance, performance-approach/avoidance goals, depression, anxiety, and stress negatively by self-efficacy. Also depression, anxiety, and stress are indirectly and negatively predicted by self-efficacy through the achievement goals. Further learning-approach goals predicted depression, anxiety, and stress negatively and the other achievement goals predicted them positively. Results were discussed in the light of literature.

Key words: Self-efficacy · achievement goals · depression · anxiety · stress

INTRODUCTION

The achievement goal theory has developed within a social-cognitive framework and "is emerging as a useful construct for understanding how people develop, attain or demonstrate competence in learning and performance" [1].

Ames [2] defines achievement goals as an "integrated pattern of beliefs, attributions, and affect that produces intentions of behavior" (p. 261). Generally researchers have proposed two achievement goals: Learning goals and performance goals [3].

These two different goals relate to important differences in behavior. Learning goals are characterized as the most positive approach and generally include a desire to increase competence and continually improve oneself. Students with learning goals are interested in learning new skills and improving their understanding and competence [3].

Students with performance goals, on the other hand, are more concerned with social comparisons, proving their ability, receiving desirable or avoiding negative judgments about their performance. These students focus on doing better than others, outperforming all other students, and avoiding appearing unable. They also view errors as indicative of a lack of ability, give up easily when they fail, and are concerned with being judged able [4, 3].

Results have typically indicated that while having a learning goal has motivational advantages, having a performance goal can be harmful and maladaptive [5]. For example learning goals were found positively related to numerous adaptive motivational variables, such as perceived ability, task engagement, and attributions of success to effort [3, 6, 7]. On the contrary, studies demonstrated that performance goals were positively associated with maladaptive behaviors such as lack of persistence and negative affectivity [6, 8].

However, some researchers (Elliot and Church [9], Kaplan and Maehr [10] and Midgley [11]) have questioned the maladaptive nature of performance goal orientation and claimed that performance goals do not always have negative effects and in some conditions they could lead students more adaptive patterns of achievement than do learning goals. As a result, achievement goals theory has been revised and performance goals have been divided into approach and avoidance components. According to this model, while students who hold performance-approach goals are more concerned with demonstrating competence and outperforming other classmates, students with performance-avoidance goals are interested in avoiding the demonstration of incompetence.

Although this approach-avoidance distinction is widely accepted and empirically supported, recently, most researchers (Elliot and Church [9], Elliot [12], Elliot

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and Harackiewicz [13], Elliot and McGregor [14] and Pintrich *et al.* [15] have suggested that learning goals can partitioned into approach and avoidance orientations and that learning-avoidance goals may be operating for some individuals. They claimed that there may be occasions when students are focused on avoiding misunderstanding. Some perfectionist students may use standards of not getting it wrong or not doing it inaccurately relative to the task. These students strive to avoid deterioration, losing their skill, or leaving the task incomplete or un-mastered [14]. They would not be concerned about doing it wrong on account of comparisons with others, but rather in terms of their own high standards for themselves [15]. The feasibility of quaternary achievement goals model was tested and in factor analyses empirical support was found for the differentiation of the four goals [14].

Self-efficacy can be defined as the judgment of a person's ability to perform a task within a specific domain [16]. Individuals who have high self-efficacy are more likely to attribute their failure to low effort rather than low ability, whereas low efficacy individuals attribute their failure to low ability. Dweck [4] suggested that while students who believe in intelligence as a fixed trait or entity tend to orient towards performance goals, students who believe intelligence is incremental and malleable tend to orient towards learning goals. Students who adopted a learning orientation increased perceptions of self-confidence (self-efficacy) and success in their courses [3]. In their research Malpass *et al.* [17] investigated the relationships between gender, self-efficacy, learning goal orientation, self-regulation, and worry and found that learning goal orientation is not related to self-efficacy. However, Garcia and Pintrich [18] examined the relationships between self-efficacy, intrinsic motivation, and self-regulated learning and found that intrinsic motivation (comparable to learning goals) had a substantial effect on self-efficacy. These differences can stem from a variety of sources including differences in measures, samples, or variables.

While a great deal research has examined the associations between achievement goals and a large spectrum of educationally relevant measures, there has been relatively little attention given to psychological variables. However, more recently, researchers have started to consider how achievement goals relate to affect. Because learning goals are more learner driven, intrinsically motivating, and focus on improvement and promote learning as an end itself [19], learning goals were generally found associated with increased positive affect [4, 3, 10, 20, 21] and decreased negative affect [10, 21, 22]. Further, because students with performance goals see intelligence as fixed, avoid challenging tasks in an effort to avoid negative evaluations, and are less likely to be intrinsically motivated to learn, performance goals were found either to lessen [10] or be unrelated according to Roeser *et al.* [20] positive affect.

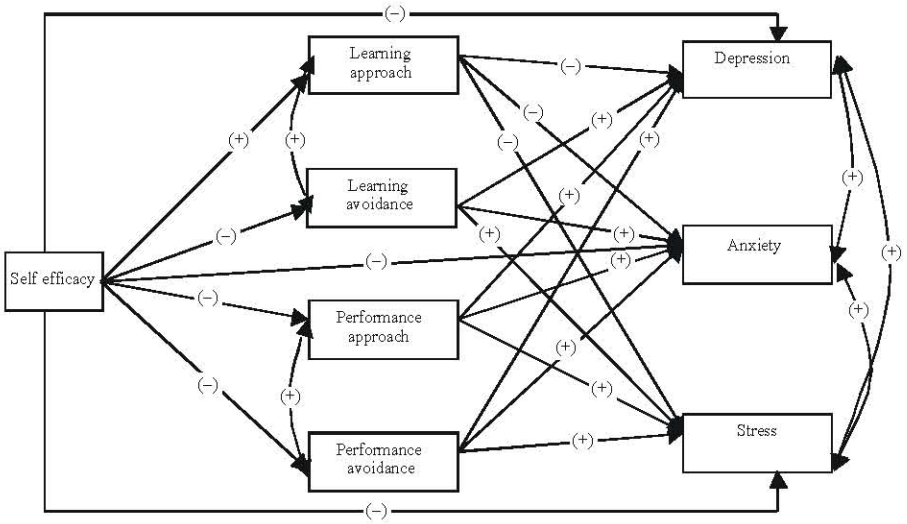

Fig. 1: Hypothesized model of the relationship among self-efficacy, achievement goals and depression, anxiety and stress

The Present Study: Although these findings, to date learning-avoidance goals and stress has not been considered in research on relationships between achievement goals and psychological variables. Thus, the purpose of the present study is to examine the relationships between self-efficacy, achievement goals and depression, anxiety, and stress, using structural equation modeling. In this study stress is operationalized as an emotional state of bodily or mental tension resulting from factors that tend to alter an existent equilibrium and anxiety is operationalized as an emotional state of subjective worry, along with heightened arousal of the autonomic nervous system. Based on the relationships of achievement goals with on the one hand self-efficacy [18] and on the other hand depression [23, 24] and anxiety [25], I hypothesized that learning-approach goals would be associated positively and learning-avoidance, performance-approach/avoidance goals, depression, anxiety, and stress would be associated negatively with self-efficacy. I also hypothesized that learning-approach goals would be related negatively and the other goals positively to depression, anxiety, and stress. This model is represented schematically in Fig. 1.

MATERIALS AND METHODS

Participants: Participants were 646 university students (331 (51.2%) were male, 315 (48.8%) were female) enrolled in various undergraduate programs at the Sakarya University, Turkey. The students provided information on their age, gender, year in school, and GPA. Of the participants, 163 (25.2%) were first-year students, 147 (22.8%) second-year students, 178 (27.6%) third-year students, and 158 (24.4%) fourth-year students. Their ages ranged from 17 to 22 years (M= 20.11, SD=1.84) and GPA scores ranged from 1.38 to 3.97 (M=2.68, SD=.64).

Instruments

Self-efficacy Scale: Self-efficacy was measured by using Turkish version of Self-efficacy subscale of Motivated Strategies for Learning Questionnaire [26]. This scale assesses the judgments about one's ability to accomplish a task as well as one's confidence in one's skills to perform a task. Turkish adaptation of this scale had been done by Büyüköztürk *et al.* [27]. Self-efficacy subscale consists of eight items and each item was rated on a 7-point scale (1=*not at all true for me* to 7= *very true for me*). Example of items included, "I expect to do well in this class". Alpha coefficient was calculated .86.

2X2 Achievement Goal Orientations Scale (AGOS): The 2x2 AGOS [28] is a 26-item self-report scale using a 5-point Likert scale (1=*strongly disagree* to 5=*strongly agree*). This instrument has four sub-scales: Learning-approach goal orientation (LPGO-8 items, e.g., "I like school work that I'll learn from"), learning-avoidance goal orientation (LVGO-5 items, e.g., "I do my best to avoid making mistakes"), performance-approach goal orientation (PPGO-7 items, e.g., "It is important for me to perform better than others"), and performance-avoidance goal orientation (PVGO-6 items, e.g., "I worry about the possibility of getting bad grades"). Internal consistencies were .92, .97, .97, and .95 for LPGO, LVGO, PPGO, and PVGO. Three-week test-retest reliability estimates were .77, .82, .84, and .86, respectively.

Depression Anxiety Stress Scale (DASS): Depression, anxiety, and stress were measured by using Turkish version of DASS [29]. Turkish adaptation of DASS had been done by Akın, and Çetin [30]. DASS is a 42-item self-report inventory and consists of three scales relating to how much general stress (14 items, e.g., "I found it difficult to relax", α = .92), anxiety (14 items, e.g., "I felt terrified", α = .92), and depression (14 items, e.g., "I felt I was pretty worthless", α = .90) has been experienced. Each item was rated on a 5-point scale (0= *didn't apply to me at all* to 4= *applied to me very much*). Language validity findings indicated that correlation between Turkish and English forms was .96. Test-retest reliability scores after three weeks were found .98 for three sub-scales. Related with criterion-related validity of the scale, correlation coefficients between DASS and Beck Depression Inventory [31] and Beck Anxiety Inventory [32] were computed as .87 and .84, respectively.

Procedure: The research was conducted in the fall term of 2006-2007 academic year. The measures were administered to students during 50-minute class periods and in groups of 30-35. The measures were counterbalanced in administration. Prior to administration of measures, all participants were told about purposes of the study. Permission for participation of students was obtained from the university and students voluntarily participated in research. Completion of the questionnaires was anonymous and there was a guarantee of confidentiality.

RESULTS

Descriptive Data and Inter-correlations: Table 1 shows the means, standard deviations, inter-correlations, and internal consistency coefficients of the variables used.

As expected, self-efficacy was positively and strongly related with LPGO and negatively with LVGO, PPGO, PVGO, depression, anxiety, and stress. On the other hand, LPGO was negatively associated with PPGO, PVGO, depression, anxiety, and stress whereas LVGO, PPGO, PVGO, depression, anxiety, and stress were positively correlated with each other. Among all other variables, PPGO showed the strongest positive associations with depression (r=.95), anxiety (r=.98), and stress (r=.91).

Structural Equation Modeling: The hypothesized model was examined via structural equation modeling (SEM), employing LISREL 8.54 [33]. According to this model, achievement goals are predicted by self-efficacy, and depression, anxiety, and stress are predicted by achievement goals. Figure 2 presents the results of SEM analysis, using maximum likelihood estimations. The model demonstrated excellent fit (χ^2 = 13.32, df = 8, p = .10140, GFI = .99, AGFI = .96, CFI = 1.00, NFI = 1.00, RMSEA = 0.045), and also accounted for 46% of the LPGO, 4% of the LVGO, 8% of the PPGO, and 6% of the PVGO variances. Further the model accounted for 74% of the depression, 78% of the anxiety, and 69% of the stress.

The standardized coefficients in Figure 2 clearly showed that self-efficacy predicted positively LPGO and negatively LVGO, PPGO, PVGO, depression, anxiety, and stress. Also depression, anxiety, and stress are indirectly

Table 1: Descriptive statistics, alphas and inter-correlations of the variables

Variables	SE	LPGO	LVGO	PPGO	PVGO	Depression	Anxiety	Stress
Self-efficacy	-							
LPGO	0.70**	-						
LVGO	-0.22*	0.40**	-					
PPGO	-0.32**	-0.52**	0.11*	-				
PVGO	-0.27*	-0.38**	0.25*	0.93***	-			
Depression	-0.28*	-0.46**	0.16**	0.95***	0.93***	-		
Anxiety	-0.37**	-0.59**	0.11*	0.98***	0.88***	0.93***	-	
Stress	-0.18*	-0.31**	0.27**	0.91***	0.86***	0.87***	0.86***	-
Mean	33.63	27.32	17.83	15.15	11.40	34.37	29.25	32.88
SD	11.08	7.23	3.35	4.12	3.17	8.61	8.19	6.39
Alpha	0.91	0.93	0.82	0.79	0.83	0.93	0.86	0.90

*p<0.05, **p<0.01, ***p<0.001

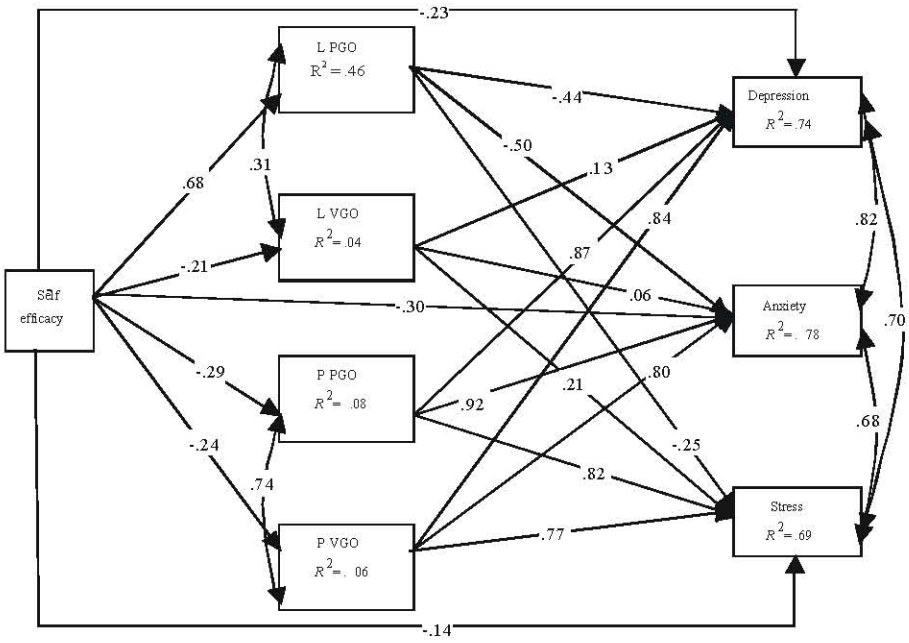

Fig. 2: Path analysis between self-efficacy, achievement goals and depression, anxiety and stress

and negatively predicted by self-efficacy through the four achievement goals. On the other hand depression is predicted by LPGO in a negative way, whereas LVGO, PPGO, PVGO predicted depression in a positive way. Similarly, LPGO predicted anxiety in a negative way, whereas LVGO, PPGO, and PVGO predicted anxiety in a positive way. Finally, while LPGO predicted stress in a negative way, LVGO and PPGO predicted stress in a positive way.

DISCUSSION

The purpose of the present study was to examine the relationships between self-efficacy, achievement goals and depression, anxiety, and stress, using structural equation modeling. The fit indexes indicated that correlations among measures were explained by the model, all path coefficients were significant, and that its formulation was psychometrically quite acceptable [34]. As predicted, the models delineated that LPGO was predicted positively and LVGO, PPGO, and PVGO were predicted negatively by self-efficacy. Also self-efficacy reduced indirectly depression, anxiety, and stress, through LPGO, LVGO, PPGO, and PVGO. Namely, achievement goals served as a critical mediator in linking self-efficacy and depression, anxiety, and stress. Further LPGO predicted depression, anxiety, and stress negatively and the other achievement goals predicted them positively.

Findings of previous research on the relationship between achievement goals and self-efficacy are somewhat contradictory. For example, some studies, Beaubien *et al.* [35] found a strong relationship between learning goals and self-efficacy, in accordance with this research. On the other hand, while Malpass *et al.* [17] found no relationship between self-efficacy and learning goals, Braten *et al.* [36] found that learning and PPGO positively and PVGO negatively associated with self-efficacy. In contrast, one study showed that there was no relationship between PPGO and self-efficacy [37]. Moreover, in some studies PVGO was found negatively associated with self-efficacy [9, 38, 39]. When it was thought that learning-approach oriented students would believe effort is a primary cause of success and they would be more likely to believe that they can eventually develop the necessary competency needed for future success [37], the positive relationship between self-efficacy and LPGO is easily understandable. Further, when it was considered that PPGO and PVGO would undermine self-efficacy, because those with PPGO and PVGO exhibit strong relationship with entity theory of ability which suggested that intelligence is a fixed quantity [37], the negative relationships between performance-approach/avoidance goals and self-efficacy seem plausible. In terms of the relationship between LVGO and self-efficacy, there is no research evidence to demonstrate this relationship. However, because students with LVGO are focused avoiding misunderstanding or avoiding not learning [15], the negative relationship between LVGO and self-efficacy is comprehensible.

Research on the relationship between achievement goals and emotions generally suggested that LPGO result in an increase in positive emotions and a decrease in negative emotions [23, 41, 42]. In his study Sideridis [24] found that learning and PPGO were associated negatively and PVGO positively with anxiety and depression. However, in a second study the correlations between learning goals and anxiety/depression were negative, whereas the correlations between performance orientation and anxiety/depression were strong and positive [23]. The findings of the present study are consistent with the latter and with achievement goals literature. Because learning-approach goals are typically self-set and challenging but attainable, it is likely that students with LPGO will generally feel that they are making sufficient progress toward their goals and therefore, they don't tend to feel negative emotions such as depression, anxiety, and stress. However, Dykman's study was based on traditional model of achievement goals (learning and performance) and Sideridis's study was based on tripartite model of achievement goals (learning, PPGO, and PVGO). So, LVGO wasn't assessed in their studies. But if it is thought that students with LVGO strive to avoid absolute or intrapersonal incompetence, to not do worse than one has done previously, and would experience negative emotions at least when they couldn't avoid undesired outcomes [40, 41], the positive relationships between LVGO, depression, and anxiety are seems reasonable.

On the other hand, the results for PPGO and PVGO are quite mixed. For example while some studies, Linnenbrink *et al.* [42] and Linnenbrink *et al.* [43] showed a positive relationship between PPGO and negative emotions, some studies demonstrated an inverse correlation. Finding of this study that PPGO and PVGO positively predicted depression and anxiety supports Linnenbrink and Pintrich's [41] suggestion that "because performance-oriented students' sense of self and views of their ability are directly tied to their progress toward this goal, they should feel more anxious" (p. 73). Further

they asserted that both LVGO and PVGO were associated with heightened anxiety when students were not making adequate progress away from the outcomes they desire to avoid. Nevertheless, students with LVGO have more control over whether they can make sufficient progress away from undesired outcomes [41]. Thus they may experience less negative emotions. Conversely, students with PVGO evaluate progress by comparing themselves with other students and have less control over others' progress, and therefore they may experience more negative emotions. Consistent with these suggestions, in present study PVGO more strongly correlated with depression and anxiety than LVGO.

While studies have shown a relation between achievement goals and anxiety and depression, no study examined the relationship between achievement goals and stress. But because students who adopted performance goal orientation are concerned with social comparisons and are not based on self-set standards [4, 3] and students with LVGO are concerned with not being perfect, not fully understanding the material, or falling short of their own self-set standards for mastery [41], they might experience more stress than students with LPGO. Consistent with expectations, LPGO predicted negatively and LVGO and PPGO predicted positively stress.

Strengths and Limitations: This study makes several contributions. First, it demonstrates that self-efficacy associated with achievement goals and the latter associated with depression, anxiety, and stress. Second, to my knowledge, this study was the first to examine the relationships between LVGO and self-efficacy, and between achievement goals and stress, because it adopts 2X2 achievement goal approach. Also, the sample size was quite sizeable overall and it includes equal proportion of females and males.

Several limitations of the study should be noted, to provide direction for future research. First, the analyses reported here should be regarded as exploratory because they concentrate upon model building rather than testing. As such, these findings could be subject to sampling error and cannot be regarded as definitive until replicated with a fresh sample. Second, participants were university students and replication of this study for targeting other student populations should be made in order to generate a more solid relationship among constructs examined in this study, because generalization of the results is somewhat limited. Another interesting direction for future research would be to explore self-efficacy as a possible mediator in the relation between achievement goals and affect. Finally, as correlational statistics were utilized, no definitive statements can be made about causality.

CONCLUSION

This investigation reports that self-efficacy affects achievement goals directly and depression, anxiety, and stress indirectly. Students low in self-efficacy are more likely to adopt LVGO, PPGO, and PVGO than are students high in self-efficacy. In turn, LVGO, PPGO, and PVGO appear to be a direct vulnerability factor for depression, anxiety, and stress, whereas LPGO appears to decrease vulnerability for depression, anxiety, and stress. So, the current findings increase our understanding of the relationships between self-efficacy, achievement goals and depression, anxiety, and stress.

In conclusion, students' perception of high self-efficacy is theorized to provide an effective buffer against negative cognitions, motivations, emotions, and behaviors [3]. Thus, it is necessary to promote students' self-efficacy levels. Also, because students with LVGO and PVGO didn't trust their own abilities, it is essential to increase their strategic effort to cope with study demands and avoid looking awkward in front of others. This can be achieved by changing students' way of thinking about their capabilities and by designing educational environments to help to support development of LPGO. Lastly, teachers may structure their environment to encourage interest in academic tasks and value mastery and improvement rather than competence, to decrease adoption of performance goals.

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