



Reliability and Factorial Study of Writing Self-Regulation Inventory in Iranian EFL Context

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ABSTRACT

Self-regulated learning is leading the way as a self-sustaining technique helping learners go through with a task and make headway. This research attempted to examine the underlying construct of writing self-regulation inventory extrapolated to Iranian EFL university context. A total sample of 116 sophomore EFL university learners attending an essay writing course participated in this study. They were asked to do an in-class writing task assignment and immediately fill in an inventory. Pearson product-moment correlation and confirmatory factor analysis procedure using principal component analysis were applied to ascertain the relationships among the variables and construct validity of the instrument, respectively. The inventory yielded a strong internal consistency as to make the results of the present study reliable and to prove replication studies justifiable. The highest overall means and internal consistency reliability estimates were recorded both for the goal subscale. However, the achievement on task was negatively associated with cognitive, meta-cognitive, motivational, and behavioral dimensions of writing self-regulation. The results of factor analysis disclosed that goal, efficacy, meta-cognitive, cognitive, motivational, and behavioral variables are loaded on a single component; that is, they measured the same underlying theoretical construct. On the whole, the findings imply that the construct of writing self-regulation is consistent in EFL university context.

KEYWORDS: Academic writing; EFL learners; Reliability; Writing self-regulation

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1. Introduction

Self-regulated learning has turned over a new leaf by assisting learners to untangle turns and twists in a course of action toward goal attainment. Self-regulated learning, in its broad concept, is expounded as an iterative, self-steering, and multi-layered process that targets one's cognition, action, and affection, as well as features of the environment for modulation in the pay of one's own goals (Boekaerts et al., 2005). Bernacki et al., (2014) know of self-regulation as meta-cognitive tasks, requiring adequate motivation to initiate and maintain engagement. As Winne et al., (2002) postulate, self-regulation is a situation-related act; that is, the task at hand exposes learners to self-regulation. It enables to handle learning to the utmost of ability to realize goals irrespective of barriers and blockades, either inner or outer issues.

Writing is a complex process that conveys the writer's knowledge, skill, and tactics, which seeks motivation and self-regulation (MacArthur et al., 2015). Writing processes are conspicuously, in essence, self-regulatory, viz., planning textually, establishing goals, revamping, organizing, and redacting, and revamping (Hidi & Boscolo, 2006). Zimmerman and Kitsantas (2007) contend that successful writing seeks a great extent of self-regulation and self-motivation. Ruan (2005) notes that the research on writing, within the cognitive framework, shows that, the skilled writers' composition processes embrace extensive self-regulation and meta-cognitive control.

As Flower and Hayes (1981) put it, success in writing is pertained to the extent that writers have the ability to regulate their writing process. This relation explains the reasons why many instructors focus on the promotion of self-regulatory strategies like planning, reviewing, and editing for advancement of the composition process (Harris & Graham, 1996). Writing self-regulation is the ability to write effectively, using writing instructional tools without regular direction and/or prompting (Schunk & Zimmerman, 2007). Zimmerman and Kitsantas (2007) contend that successful writing seeks a great deal of self-regulation and self-motivation.

Writing self-regulation is theorized under a triad of approaches: cognitive, socio-cognitive, and socio-cultural perspectives. Cognitive perspective was explained by Flower and Hayes (1981) and Hayes (2012), as a problem-solving act comprising a set of complicated planning, translation, and evaluation processes, with regulation being a key factor to monitor one's own cognitive writing behavior. Socio-cognitive perspective suggested by Zimmerman and Schunk (1989) supplements the former cognitive models, the emotion, context, and personal behaviors like motivation, task objectives, and instructional feedback through which writers communicate with each other to modify their output and accommodate their writing self-efficacy beliefs (Sala-Bubare & Castello, 2018). The socio-cultural perspective, reversely, accentuates the importance of the institutional output and socially and historically situated cognition; that is, the socially participated and mediated processes (Prior, 2006), by which meaning is built, modified and transformed, and co-regulated, with the aid of a more skilled writer (Allal, 2018). However, Hidi and Boscolo (2006) point out that motivational constructs in writing can be subdivided into three main domains: self-belief (self-efficacy and self-concept); motives to perform (interest and perceived value in writing), and writing self-regulation.

Goal plays as a road map availing person of pathways as to enter to reach his/her end point. Kaplan et al., (2009) point out that most investigations describe achievement goals and self-regulation as distinct, albeit related, constructs. Performance-goal-orientated learners take unsuccessful attempts as reflections of their ability and would consequently discard effort to learn the new material (Dweck et al., 1989). Students with performance goal orientation are concerned about how others judge their ability. They look after others' approvals (Canfield & Zastavker, 2010). They are concerned about social comparison (Cheung, 2008), seeing people as reference group to outperform in a task. Such students cannot consider themselves successful unless they compare themselves with others (Dinc, 2010). Performance-avoidance-oriented students seek to escape situations that make them appear deficient in ability or less capable than others (Wolters, 2004).

Ruan (2005) notes that the research on writing within the cognitive framework evidences that the skilled writers' composition processes embrace extensive self-regulation and meta-cognitive control. Writing self-regulation is also related to students' self-efficacy to perform writing tasks (Zumbrunn et al., 2016). However, cross-cultural tapping and model replicating of self-regulated learning for the internal consistency and reliability underlying its component constructs in the context of EFL classroom structures is sought. Contingent on the aforesaid points and the upshots of the studies being reviewed above, this study endeavored to bridge the void as per the construct of writing self-regulation between Iranian EFL and target-language contexts. Thus, to assay the factor structure and psychometric properties of writing self-regulation inventory among Iranian EFL learners, the following question was constructed to be answered:

Q: Does factorial structure of writing self-regulation demonstrate evidence of internal consistency and reliability in Iranian EFL context?

Likewise, pursuant to the posed research question, the following hypothesis was formulated:

H: The factorial structure of writing self-regulation empirically demonstrates substantial evidence of internal consistency and reliability in Iranian EFL context.

2. Literature Review

Self-regulation is a self-sustaining technique serving individuals to mend their ways and make headway. A burgeoning body of research prevails that deals with self-regulated learning. Malpass et al., (1999), through structural equation modeling techniques, examining the relationship between math achievements of high school students and their self-regulation, self-efficacy, goal orientation, and worry found that learning goal orientation, commonly called as mastery goal orientation, was positively related to students' self-regulatory behaviors. Meece and Miller (1999), in a study, exploring writing goal orientations of 431 elementary learners, evidenced that goal orientations and the use of writing self-regulation strategies were positively correlated to writing mastery goals and negatively associated with writing performance-avoidance goals. Pajares and Cheong (2003), examining the achievement goals and writing self-efficacy of 1266 K-12 (kindergarten to 12th grade)

school students (aged 9-17), evidenced positive relationships between mastery goals and students' self-efficacy for self-regulation.

Linnenbrink (2005), in a quasi-experimental study, during five weeks, examined the impacts of goal-conditioned math classroom (mastery, performance-approach, spliced mastery/performance-approach goals) and personal goal orientations on 237 upper elementary students' motivation, emotional well-being, help-seeking, cognitive engagement, and achievement. The classroom goal condition had a significant effect on help-seeking and achievement, while the spliced condition proving the most beneficial pattern. Personal mastery goals were innocuous for eleven of twelve upshots including achievement; personal performance-approach goals were nocuous for achievement and test anxiety and disconnected to the rest of outcomes. Based on the entering personal goal orientation, the effect of the classroom goal condition did not change. Mastery goals benefited the learners while performance-approach goals were debilitating to the achievement.

Kozlowski and Bell (2006), investigating a large sample of college students' goal orientation in relation to self-regulation, found that mastery and performance goals had a link with cognitive self-regulatory activity, whereas learning goals are significantly linked with upper self-regulatory practice. Kitsantas et al., (2009) conducted a study on 81 fifth graders' academic achievement contingent upon their erstwhile achievement, self-regulation strategy use, and goal. The findings indicated significant variance of prior achievement and self-regulation predicting achievement, whereas performance upshots across diverse courses are not significantly accounted for by goal orientation. Self-regulation is endorsed to fall utile in context of second language learning for fertile learning (Harrison & Prain 2009). However, Tseng et al., (2006) substantiated applicable extrapolation of self-regulation to vocabulary domain at university and high school levels.

Kozlowski and Bell (2006), investigating the relationships between goal orientation and self-regulation of a large sample of college students, observed that mastery and performance goals were positively related to cognitive self-regulatory activity, whereas learning goals were significantly associated with higher self-regulatory activity. Harris et al., (2008) regarded self-regulation as a sine qua non for a writer to appear goal-oriented, reflective, and resourceful by bringing into work cognitive processes and appropriate strategies for planning, text production, and revision.

Pratontep and Chinwonno (2008) scoured 30 Thai university learners' reading self-regulatory tactics. Frequent use of meta-cognitive and performance regulation tactics were evidenced for group of lower level while group with higher level illustrated active uses of self-regulated learning tactics for adjustment of their meta-cognition and performance more often than the lower level did. Additionally, verbal protocols evinced more self-regulated tactics in performance and volitional than forethought or self-reflection phases.

Al-Harthy et al. (2010) probed relation of students' total scores on 12 exams for academic achievement to self-efficacy, task value, goal orientations, meta-cognitive self-regulation, and self-regulatory learning strategies. Results of path analysis proved achievement mastery goals directly and positively influence deep learning, meta-cognitive self-regulation, and self-regulatory strategies. Likewise, a strong relation of task-value, self-efficacy, self-regulation, and elaboration to academic achievement was recorded. Academic achievement directly was not significantly affected by mastery goals, meta-cognitive self-regulation, and deep learning strategies. Scores strongly, mastery goals positively, but avoidance goals were negatively accounted for by self-efficacy.

Bernacki et al., (2012), in a structural equation modeling analysis, explored goal orientations and self-regulation behaviors of college students exposed to technology designed to enhance reading comprehension. The results indicated that mastery goal students had more proclivity for information attainment, note-taking, and acquisition monitoring. Performance-approach goals did not predict self-regulation behaviors, and performance-avoidance orientation was a negative predictor of note-taking and information-seeking.

El-Henawy et al., (2012) explored the effectiveness of the self-regulated strategy development instruction on thirty junior teachers' argumentative writing. The upshots disclosed the quality of argumentative essays in three domains viz., content, organization, and argumentation improved in all experimental groups. Development of the students' writing performance was preserved over time and generalized to untaught writing genres. Syafitri (2020) evidenced that senior eleventh-grade high-school students' self-regulation and writing skills were not correlated.

3. Method

A cross-sectional method was adopted for conducting the present study in the form of immediate administration of self-report inventory after taking a sample of the university students' in-class essay performances. To make sure the learners had undergone enough of argumentative essay-writing instructions, the one-shot single-session data collection from different classrooms with different teachers was scheduled for the final weeks of the spring semester. Ensuring the participants of the confidentiality of their responses, the questionnaire administration came immediately after they had completed their five-paragraph argumentative essay task during their regular class time. The data gathered out of this cross-sectional study were

imported to SPSS 20 software for examining the reliability estimates and principal component analysis to apprehend the underlying factor structure of the inventory.

3.1. Participants

The data were collected from a sample of 116 sophomore undergraduate state-run university learners, aged 19-23 years (37/6% male & 62/4% female) attending essay writing course. The sampling was based on the accessibility of classrooms for single-session assignment of an essay writing task followed by questionnaire administration. The participants had already undertaken three two-credit courses, just to name them, English Grammar (1) and (2), and Paragraph Writing. Notably, the Oxford Quick Placement Test (OQPT) (2004) was administered to make sure of the homogeneity of the learners in the light of general language proficiency so as to reduce variations of data for the intended analyses. As for English language proficiency, intermediate level the attendees were ranked based on their scores one standard deviation above and below the mean.

3.2. Instruments

A self-report instrument developed by Lichtinger et al., (2006), anchored by 1 “not at all true of me” to 7 “very true of me”, was administered in this study (See the Appendix). This measure was designed by validating through correlation with Motivated Strategies for Learning Questionnaire originated by Pintrich et al., (1991), to rate various employments of cognitive, meta-cognitive, motivational, and behavioral strategies in writing. It also comprised efficacy and goal orientation subscales adapted from Patterns of Adaptive Learning Survey developed by Midgley et al. (2000).

Meta-cognitive component, which assesses the use of strategies that help students control and regulate their own cognition, consists of 7 subsections. The motivation section includes three measures: task value encouragement, success encouragement, and administering self-praise. Behavioral segment includes only help-seeking subscale. The cognitive dimension includes reader awareness, eliciting context, and verbalization strategies. The efficacy subscale includes sample items. The goal orientation dimension aims to measure seven subcomponents.

3.3. Data collection

Data collection was based on the administration of a self-report instrument immediately following the participants' completion of an in-class essay task. The instructions on how to approach the writing performance were given by one of the researchers. The students were assigned to write within 40 minutes an argumentative essay on “Gender Differences” in the classroom. They were directed to write at least a five-paragraph argumentative essay (including a general introduction paragraph, three detailed body paragraphs, and a general concluding paragraph). Likewise, they were offered to consider issues like sports, social life, and co-education in their arguments. To promote their participation, they were assured of the confidentiality of their information. The sampling was completed within one-session class time under the supervision of one of the researchers who gave guidance and assistance.

3.4. Scoring of writing

International English Language Testing System (IELTS) rubric (Shaw & Falvey, 2008) was adopted for guiding the rating of the overall quality of the essays in this study. This scoring profile is an extensively well-used and -researched benchmark for the assessment of an individual's ability in writing of clear formal English as the requirement in academic settings (Uysal, 2009). Through the application of an internationally recognized standardized grading protocol like the IELTS, this study sought to increase the external validity. Two raters, both with PhD degree in Applied Linguistics, were invited to rate the essay performances. The average of the scores obtained from the raters was considered as the final score for each participant for data analysis.

4. Results

Cronbach's alpha reliability was utilized to identify the internal consistency of the subcomponents of writing self-regulation inventory. The reliabilities of all the variables are presented in Table 1.

Table 1. Internal Consistency Reliability of the Factors

Cronbach's Alpha	Number of Items
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Goal	.917	34
Efficacy	.837	5
Metacognition	.847	23
Motivation	.854	8
Cognition	.636	9
Behavior	.865	4

Cronbach's alpha coefficients were analyzed to assess the internal consistency reliability of each subscale. The reliability analysis using Cronbach's alpha coefficients revealed that the overall internal consistency reliabilities of all the subscales were substantially adequate. Reliability analysis indicates that all alpha coefficients were well within the acceptable range, with actual values of .63 to .91, thereby verifying the reliability of the constructs. As indicated in Table 1, the results exhibit the strongest overall internal consistency for goal subscale (.917). The results of Cronbach reliability estimates exhibit a strong overall internal consistency for the meta-cognitive, motivational, behavioral (.847, .854, & .865, respectively), and cognitive ($\alpha = 0.636$) subcomponent variables. Descriptive statistics, including mean and standard deviations of all the subcomponents, are reported in Table 2.

Table 2. Descriptive Statistics of the Scale Variables

	Means	Std. Deviation
Goal	154.2537	34.38016
Efficacy	25.8103	6.51141
Metacognitive strategies	114.7586	23.38696
Motivational strategies	40.1724	9.75908
Cognitive strategies	37.6034	10.40642
Behavioral strategies	18.7586	6.86468

Based on the results of descriptive statistics, the mean score of goal variable was the highest (154.2537). However, the mean score of meta-cognition (114.7586) was much higher than that of motivation, cognition, and behavior categories (40.1724, 37.6034, and 18.75.86, respectively). This suggests that the students were more meta-cognitively involved. Likewise, the standard deviation of meta-cognition scores was higher than that of the rest, indicating that meta-cognition scores were more widely spread.

Confirmatory factor analysis using principal component analysis procedure was carried out to examine the structural construct validity of model of writing self-regulation composed of goal, efficacy, and cognitive, meta-cognitive, motivational, and behavioral variables. Before doing this, Kaiser normalization and Bartlett test of Sphericity were calculated so as to identify the data's appropriateness for the factor analysis. With respect to the data's adequacy for the factor analysis, the Kaiser-Meyer-Olkin (KMO) coefficient index needs to be greater than .50 and the Bartlett Sphericity test has to be significant (Field, 2013; Kaiser, 1974). The factorial validity results for the items of the measurement tool are reported below. Table 3 displays the results of the Kolmogorov-Smirnov and Bartlett sphericity tests.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.811
Bartlett's Test of Sphericity Approx. Chi-Square	248.913
df	15
Sig.	.000

As shown in Table 3, the value of the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .81, demonstrating a high level of inter-correlations among the factors. Furthermore, KMO index (0.811) and also the Bartlett sphericity test ($X^2 = 248.913$, $df = 15$, $p < .000$) showed to be significant, providing evidence that the data collected were appropriate for performance of factor analysis. Table 4 lists the upshots.

Table 4. Squared Loadings Extraction Sums

Component	Eigenvalues			Squared Loadings Extraction Sums		
	Total	Variance	Cumulative	Total	Variance	Cumulative
1	3.163	52.716	52.716	3.163	52.716	52.716
2	.916	15.264	67.979			
3	.653	10.892	78.871			
4	.597	9.943	88.813			
5	.368	6.131	94.944			
6	.303	5.056	100.00			

Table 4 shows that one component was only extracted with eigenvalues 3.163, meeting the criterion of being larger than 1 as for a factor to be acceptable, and accounting for 52.716 percent of the total variables, which is sufficient as an acceptable variance ratio needs to be between 40 and 60 percent (Tavşancıl, 2014).

The factorial structure and construct validity of the inventory subcomponents was explored through principal component analysis using varimax rotation in which the minimum-eigenvalue criterion of 1.00 was set as the threshold to determine the number of factors and find underlying pattern of relationships between the intended variables. Table 5 evinces the upshots.

Table 5. Component Matrix^a

	Component
	1
Goal	.739
Metacognition	.817
Motivation	.857
Cognition	.679
Behavior	.589
Efficacy	.638

Extraction Method: Principal Component Analysis.

a. 1 component extracted.

Rotated Component Matrix^a

a. Only one component was extracted. The solution cannot be rotated.

Based on Table 5, the variables display loadings on one component. Principal component analysis with varimax rotation ended up in a one-factor solution for the goal, efficacy, cognitive, meta-cognitive, motivational, and behavioral variables. All of these subcategories were loaded on a single factor, accounting for 52.716 percent of the total variance. The fact that 52.716 percent of the scale was explained is deemed to be sufficient since an acceptable variance ratio should come between 40% and 60% (Tavşancıl, 2014).

Confirmatory factor analyses using principal component analysis with varimax rotation indicated a six-factor final solution. On a practical note, Cronbach's alpha value for goal subscale was higher than the other ones. Cronbach's alpha estimate for help-seeking variable was ranked second in order of magnitude. However, Cronbach's alpha reliability coefficient for cognitive subcomponent was lower than the rest. The results of principal component analysis established the hexa-factor model exhibiting the best fit to the data. PCA results portrayed that all the six sub-factors examined had moderate to high factor loading values, ranging from 0.589 to 0.857, to the corresponding factor. The outcomes proved that the instrument makes one component construct forming six factorial sub-dimensions.

Table 6 illustrates the results of descriptive analyses of goal, writing self-regulation, and task achievement.

Table 6. Descriptive Statistics of Self-regulation, Goal, & Task Achievement

	Task Achievement	Self-regulation	Goal
Mean	6.1963	213.8507	154.2537
Std. Deviation	1.46971	39.23680	34.38016

Variances	2.160	1539.526	1181.995
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According to the results of descriptive statistics, the mean score of total self-regulation (213.8507) was much higher than that of both goal orientations (154.2537) and grade (6.1963). This suggests that the students' concerns for self-regulation were higher than goal orientations. Likewise, the standard deviation of self-regulation scores was higher than that of the rest, indicating that self-regulation scores were more widely spread.

In order to discern the strength and direction of the association between the components of the inventory examined in the present study, component correlation was computed. Table 7 showcases the results.

Table 7. Correlation Matrix

Goal	-						
Metacognition	.481**	-					
Motivation	.623**	.652**	-				
Cognition	.422**	.394**	.470**	-			
Behavior	.330**	.401**	.387**	.407**	-		
Efficacy	.298**	.548**	.490**	.303**	.148	-	
Grade	.048	-.070	-.007	-.008	-.092	.067	-

Note. ** At the .01 level correlation is significant (2-tailed).

Table 7 showcases the associations among the variables. Accordingly, the strongest association can be observed between meta-cognition and motivation (.652, $p < .01$). A strong correlation can be also seen between motivation and total goals (.623, $p < .01$). Goal was not significantly correlated with task achievement (.048). Efficacy was correlated with meta-cognitive, motivational, and cognitive subcomponents. However, efficacy was not significantly related to both help-seeking and task achievement (.148 and .067, respectively). Help-seeking, except for efficacy, was correlated with the other variables of self-regulation in writing. Goal, cognitive, meta-cognitive, and motivational variables were significantly correlated with each other. In the light of the findings from the correlation analysis, a negative correlation was evidenced between meta-cognitive, motivational, cognitive, and behavioral ($r = -.070$, $r = -.007$, $r = -.008$, and $r = -.092$) and achievement on task. The greater the report of self-regulation in writing, the lower the achievement on task of academic writing in foreign language is, whereas the size of the value of the correlation coefficient was found not to be statistically significant.

5. Discussion

The purpose of this study was to measure the reliability and psychometric properties of writing self-regulation inventory embracing goal, efficacy, and cognitive, meta-cognitive, behavioral, and motivational dimensions. The focus of the study design was on the results of Cronbach's alpha and the principal component analysis (PCA). Also, the study aimed to assay the construct validity of the six-factor structure of writing self-regulation. The results denoted that the proposed hypothesis for this study can be supported. The theoretical model accounting for the self-regulation in writing was found to be a good fit to the observed data. The outcomes demonstrate that the instrument forms a component construct listing six subscales with high internal consistency reliability in Iranian academic writing context. Thus, the application of the instrument in this study yields support for the theoretical foundation for the cross-cultural function of self-regulation across writing domain.

The overall internal consistency of the inventory was found to be satisfactory, recording a high value for the observed variables. These findings take note of the fact that self-regulation in writing construct is multi-layered, embracing several independent variables. The results indicated that all six dimensions constituting the instrument were distributed into one component construct for the purpose of appraisal of Iranian EFL learners' writing self-regulation features. The psychometric quality of the subscales showed that this instrument is cross-culturally valid and reliable for the determination of the level of writing self-regulation practice of the university learners in Iranian context, which literally warrants the precision of upcoming research in EFL writing settings.

As regards the results of the validity study, the factors tied to the theoretical construct of writing self-regulation were found to be well-knotted into one component. The findings parallel to the study by Kanlapan and Velasco (2009), contextualizing and validating 115-item scale of self-regulation in written communication skills, endorse the adapted model of self-regulated learning (Pintrich, et al., 1993), extended to the domain-specific context of Iranian EFL writing. A one-factor structure clustering all the variables into one component construct made a good fit for the observed data. To put it another way, the findings indicated that the intended measurement variables were all unified making common cause in

gauging the same construct. The factor structure of the writing self-regulation served adequately to appraise the level of writing self-regulation of Iranian EFL learners, congruent with the study by Lichtinger et al., (2006), making it plausible to proffer strong empirically-based evidence on the applicability of this construct to Iranian EFL writing context. Taken together, the results confirm that the writing self-regulation extrapolated to Iranian EFL context elicit similar pattern in course of writing self-regulation analogous to the original measurement.

The results of factor analysis disclosed that goal, efficacy, meta-cognitive, cognitive, motivational, and behavioral variables are loaded on a single factor; that is, they, together, multi-dimensionally tested the same underlying construct. Moreover, the results provided cultural and contextual support for the stability and applicability of one-factor model of writing self-regulation; that is, goal, efficacy, meta-cognitive, cognitive, motivational, and behavioral variables are collapsed into one unitary construct. The self-regulatory factors were found to be closely threaded with goal ordination on which development and sustainability of writing behaviors are based. The strong loading of goal orientation listed in writing self-regulation framework does yield support for the theoretical perspective of achievement goal as an inalienable ingredient of self-regulation practice. The findings from factor analysis convey that teachers seeking to uplift and revamp learners' motivated writing self-regulation need to act out to boost their planned and goal-related behaviors as to their engagements in the subject matter.

It is encouraging to note that the highest overall mean score was observed for the goal subscale and the lowest one was evidenced for the help-seeking as a behavioral strategy. The Iranian EFL learners reported frequent goal endorsements for self-regulation of their writing. It sounds that goal-orientation serves as feeding source for learners to adjust their motivations, cognitions, meta-cognition, and behaviors to successfully fulfill the writing task. Based on the results of descriptive statistics, the mean score of meta-cognition (114.7586) was much higher than that of motivation, cognition, and behavior (40.1724, 37.6034, 18.75.86, respectively), consistent with Bailey's (2016) work evidencing the association between meta-cognitive strategies for writing and self-regulated learning behavior. This suggests that the students were more meta-cognitively involved. Likewise, the standard deviation of meta-cognition scores was higher than that of the rest, indicating that meta-cognition scores were more widely spread.

Significant correlational findings were released from the current study. The outcomes of correlation analysis demonstrated positive relationship among all the subscales. The findings provided ecologically valid data on writing performances in academic settings in support of a general model of self-regulation. The findings bolstered the theoretical foundations for self-regulation that acknowledge the integration of goal, self-efficacy, cognitive, meta-cognitive, motivational, and behavioral variables in its construct.

Iranian EFL learners in this study demonstrated to be fairly cognitively-engaged in trying to figure out their readers envisage and visualize things about which they wrote, and speak out the words they put into print through the use of reader awareness, eliciting context, and verbalization, respectively. Magno (2008) evidenced cognition-regulation is a significant predictor of written proficiency. The findings for the cognitive variable provide ecologically valid empirical data on academic performance on actual classroom in support of a general model of self-regulation in writing. Cognitive strategies can be scaled as the yardstick of proficiency in writing. Self-regulation in writing inventory can be exploited to palpate learners' performances for the use of cognitive strategies to prescribe remedial teaching.

The Iranian EFL learners' scores on the uses of meta-cognitive strategies were related to their goal orientations, supporting the study carried out by Al-Harthy and Was (2010) who evidenced the direct positive effect of achievement mastery goal on meta-cognitive self-regulation in a path analysis study. The highest correlation of relationship was reported between meta-cognition and motivation variables. This outcome suggests that the higher the level of motivation the learners enjoy, the more they are expected to exercise more control over their cognitive processes.

Based on the results of Pearson correlations, motivation was demonstrated to be significantly linked with all of the subcomponents of goal orientations and writing self-regulation. This suggests that students enthusiastically knuckle down to cognitive, meta-cognitive, and behavioral strategies, corresponding with the study by Teng and Zhang (2016) reporting that motivational regulation strategies such as interest enhancement, performance self-talk, mastery self-talk, emotional control, and environment structuring are antecedents of the perceived use of self-regulation tactics, particularly cognitive and meta-cognitive strategies, in EFL students' writing performances. The strong link between the motivation and goal orientation scales reminds teachers of the significance of the goal-situated setting in contribution to learners' motivations and as a result self-regulation of their writing.

The results of the study showed that efficacy significantly had the highest association with meta-cognition. It appears that students who believed they were capable of learning are more likely to report the use of cognitive and meta-cognitive strategies. These findings are in line with the studies by Pintrich and Garcia (1991) and Zimmerman and Bandura (1994), evidencing that students with high efficacy beliefs apply more cognitive and meta-cognitive strategies. This relation also corroborates the findings of the study by Bouffard-Bouchard et al., (1991) showing that self-efficacy significantly and positively influences the occurrence of some aspects of self-regulation like monitoring of working time and resolving conceptual problems. The results of the present study also support the study done by Artino and Stephens (2007) in online

courses that self-efficacy is significantly related to students' use of elaboration, critical thinking, and meta-cognitive learning strategies. Self-efficacy in this study was found to relate to goal orientation, corresponding to the study done by Pajares et al., (2000), which evidenced that writing self-efficacy is associated with learners' achievement goal orientations.

This study revealed some significant findings in terms of the relationship between Iranian EFL learners' goal orientations and writing self-regulation. The significant relationship observed between self-regulation in writing and goal orientation implies that writing self-regulation and goals are intermingled to control and steer students' writing performances. As Elliot (1999) proposes, goal orientation represents cognitive-dynamic forms of self-regulation. When students are goal-oriented to perform writing tasks, they are more likely to adjust their motivations, cognitions, meta-cognition, and behaviors to successfully fulfill the writing task. It can be inferred that the goals EFL learners set have a directive effect on their practices of writing self-regulation. Thus, Iranian EFL learners' writing self-regulation proves to be closely tied to their goal orientation. This suggests that students' levels of writing self-regulation are closely geared to the goals toward which they endorse. The consistent link between the goal orientation scale and all the other five self-regulation scales suggests that teachers can benefit from building a goal-conditioned environment to encourage students' stays on the subject matter. Taken together, the findings of the present study are also in line with the statement made by Elliot (1999) that goals represent cognitive-dynamic forms of self-regulation.

The findings also show that students' goal orientation is associated with their self-regulation in writing in the academic setting, which is in line with the results of previous studies (Kaplan et al., 2009; Farsani et al., 2014). The outcomes re-echo the clangor of confluence of goal-setting and self-regulation in advancement of writing practice. The outcomes highlight the integral value of multiple theoretical frameworks functioning in the cause of self-regulation; that is, socio-cognitive and achievement goal perspectives, represented in the model of self-regulation and goal orientation, respectively.

These findings provide insight regarding the importance of learners' goal endorsement in propulsion of motivational, cognitive, meta-cognitive, and behavioral strategies. The findings especially endorse the suitability of the intended goal types to be situated in the process of self-regulation in writing. Moreover, these findings imply that any self-regulation attempt is doomed to come up with failure unless a least degree of goal endorsement comes into effect. No matter how writing activities are hampered by obstacles, interior or exterior to a learner, the vicinity of goal and self-regulation gives learners a head start over by enabling them to balance their efforts for moving forward to secure much-desired outcome.

The scores on help-seeking measures were correlated with goal orientation and writing self-regulation. Goal orientation is mediated and invigorated as the result of assuming responsibility which effectuates engagement. Previous studies have also established the linkage between achievement goals and help-seeking (Ryan et al., 1998; Huang, 2011). This suggests that Iranian EFL learners go to any length irrespective of other learners' judgments about their requests for help as to achieve their writing performance objectives, reminding the notion made by Wolters (2010) that help-seeking stands as indicator of the social dimension of self-regulated learning in which learners reach out teachers, parents, peers, and others for the management of their learning. Traditional classroom research shows that high-achieving students with well-developed self-regulatory beliefs and behaviors incline to make use of their teachers and peers as social supports (Zimmerman & Martinez-Pons, 1986).

It is considerable to note that the non-significant correlation between achievement on task and self-regulation in writing is consistent with the findings of the study done by Farsani et al., (2014), likewise. The potential reason for this fact is that self-regulation is more the act of self-adjustment than that of real-task execution. The fact that writing self-regulation was not related to task achievement is because self-regulation is more about the problems in event of writing to be solved than task properties. Self-regulation is more subsidiary to act of writing that helps learners keep the task and self-processes on the right track.

The findings are also incongruent with the study carried out by Kitsantas et al., (2009), evidencing goal orientation not as a significant predictor of students' outcome measures across different subject areas. Noteworthy, the results showed that achievement on task is negatively related to cognition, meta-cognition, motivation, and behavior. The non-existence of a significant link between achievement on task and writing self-regulation could explain the fact that taking a self-regulation inventory is a retrospective act of finding and facing the reasons for failure or triumph in its own place as to prospectively open a venue to success. This is an act of aftermath, surfacing experiences of breakthrough or blockage from which one learns to control future attempts as situations arise, not that of in-context performance in which situated task-specific attempts could be palpable.

This study provides insight in supporting a model of self-regulation in writing in which goal orientations substantially play a significant part. The results corroborate efficiency findings of the factor analytic study by Kaplan et al., (2009) as for structural properties and satisfactory internal consistency and reliability of the integral elements of the inventory for engagement purposes. It is also an extension to the studies that analyze the factors which are key and quintessential to the delicate and detailed process of self-regulation. It endorses that the extension of self-regulated model of learning, developed by (Zimmerman & Kitsantas, 2002), to domain-specific task of writing applied in EFL context is theoretically valid.

The findings give insight into the generalizability of writing self-regulation patterns across cross-cultural contexts. The present study puts premium on the significance of examining self-regulation in writing in EFL settings. The validation of the writing self-regulation model provides a theoretically sound and methodologically valid and reliable measurement for examining writing self-regulation practice of EFL learners. Using this validated scale paves the way for EFL learners to tailor to their needs for transformation as to secure their efficient stays at the learning programs, improve their engagements, and realize their outcome-related socio-educational objectives.

6. Conclusion

This study aimed to examine the construct validity and factor structure of writing self-regulation of a sample of Iranian EFL state-run university learners in a domain-specific academic writing context. The findings confirmed that goal, efficacy, and writing self-regulation subcomponents load on a single factor, indicating that they all measure the same construct. The confirmatory factor analysis confirms that the inventory is accredited as a promising tool to gauge writing self-regulation. Although writing self-regulation can be taken as a mechanism to uplift performance, Iranian EFL learners' task achievement was not significantly related to their goal orientations and writing self-regulation. Thus, it can be inferred and concluded that understanding from the purpose and function of self-regulation in relation to achievement on task needs to be renovated.

The results provided valid empirical evidence for the importance of goal orientations in the structure of self-regulation in the writing of Iranian EFL learners. Based on the findings of the study, it can be concluded that self-regulation and goal orientation work hand in hand to direct Iranian EFL learners' writing performances in the classroom. Iranian EFL learners purposefully endorse goals and employ cognitive, meta-cognitive, motivational, and behavioral strategies for self-regulation of their writing tasks. Furthermore, the findings imply that entering EFL learners in goal-conditioned setting gives them a sense of direction in their performance, which ipso facto enhances their spirits to apply self-regulation of writing.

In line with the social cognitive theory, the findings proved that goal-conditioned context is germane to self-regulation in writing of EFL learners. It can be implicated that the goal orientations operate in tandem with the motivational, behavioral, cognitive, and meta-cognitive dimensions in the system of self-regulation in writing. The educational implication construed from the outcomes of this study is that teachers can design goal-based learning contexts which bond a close-knit spot of communion with self-regulation of writing. The findings prompt educators and practitioners to reflect more upon the consequence of goal-conditioned structures for writing.

All told, the validation of the self-regulation in writing instrument in this study can render multiple practical applications to Iranian educational EFL programs. This study paves the way for drawing a picture of self-regulated learning for which a single criterion is not necessarily to be met (Zimmerman & Martinez-Pons, 1988). It permits students to better identify and understand the specific nature of key elements in their patterns of writing performances and weight those for their academic and professional benefits. Educators and curriculum developers can also exploit this measure to gauge motifs of goal orientations to deeper discern learners' motivations and accordingly dispense exigent prescriptions that help them become more efficacious.

The findings also provide empirical implicational evidence on the integrity of the six-factor structure of the writing self-regulation model extrapolated to the EFL educational setting in Iran. These results provided strong support for the reliability and validity of the self-regulation in writing inventory, making it convenient for researchers and teachers to use this invaluable research tool to assess writing self-regulation patterns in university-level English classes in Iranian EFL context. This study corroborates the utility of this inventory for university learners to review their strategically goal-oriented, motivated, behavioral, meta-cognitive, and cognitive self-regulatory behaviors in writing environments.

In a nutshell, the results can be adduced to explain the role of goal orientations in guiding writing self-regulation in EFL contexts. Thus, for elevating learners' self-regulation in writing, it is advised educators to help learners establish goal. There it feels a need for introducing writing self-regulation inventory to learners to acquaint them more with the practice of self-survey of their writing performances as to help them turn into independent learners. The inventory validated in the present study can be exploited by Iranian EFL learners for systematic self-appraisal of their writing progress as to pinpoint the areas of strength and weakness for bestowing on improvement in writing. As witnessed, the findings provided cultural and contextual support for consistency and applicability of a seven-factor model of writing self-regulation, namely, goal, efficacy, meta-cognitive, cognitive, motivational, and behavioral variables in domain-specific context of Iranian EFL writing. The findings, also, proving that the inventory is invariant in the EFL context, provide justifiable evidence for future studies.

7. References

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