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PSYCHOMETRIC QUALITIES OF THE SCALE FOR GOAL-ORIENTED LEARNING MOTIVATION ON TWO ROMANIAN SAMPLES

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Abstract: *Goal-oriented learning motivation is one of the key factors underling teaching and learning sequence, as different type of goals lead to differences in effort investment for achieving task in students. Analysing the data from a large sample (N=1875) of Romanian students and from a sample of Romanian teachers (N=190), the current paper discusses the psychometric qualities of an instrument built to assess the concept. Results shows a three factors structure (learning, social approval and avoidance goals), with good reliability for the first and the second factor.*

Key words: *goal oriented learning motivation, learning goals, social approval goals, avoidance goals, confirmatory factor analysis.*

1. Introduction

The development of knowledge and competence become relevant for students as they need to accomplish complex tasks and to face various challenges in school or real-life situations. Only knowledge is not sufficient to acquire competence. Motives, goals and self-regulation also have an impact on competence development (Baumert & Kunter, 2006; Keller-Schneider, 2010). In learning contexts, the perception of learning opportunities as challenges by the learners leads to actively and intensive engagement in learning processes (Keller-Schneider, 2010). Alongside teachers input, the effectiveness of a teaching and learning sequence is also determined by this perception which, in its turn, is based on individual resources such as knowledge, beliefs and motives.

Goal oriented learning motivation reflects the cognitive representation of the motives behind learning activities. In line with previous research on achievement goals (Elliot & McGregor, 2001; Spinath & Steinmayr, 2008), in the current study we took into consideration several types of goals, that are relatively stable over time (Spinath &

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Steinmayr, 2012; Keller-Schneider, 2014). Learning goals focus on the development of competence, students oriented toward this goal tend to invest effort in learning so that they learn an understand new and complex things, and, therefore, improve their own abilities and competences. Performance goals, first conceptualize by Elliot and McGregor (2001) as students thrive on demonstration competence in front of others, are defined as social-approval goals (Keller-Schneider, 2013) (striving to show others competence or striving to avoid a negative impression as low competent). Finally, a third type of goal is the tendency to avoid work, avoidance goals, which orient students toward investing as little effort as possible in learning activities while still demonstrating competence relative to others.

On overall, prior research (Utman, 1997) showed that an orientation toward learning goals leads to a better performance, a social approval orientation may lead to achievement (Elliot & McGregor, 2001), while avoidance goals are negatively correlated with achievement (Spinath, Stiensmeier-Pelster, Schöne, & Dickhäuser, 2002). In a more specific domain setting (students in teacher education classes), Keller-Schneider (2014) found that learning goals have a significant impact on learning outcome as measured by ratings of achievement, while the others types of goals do not.

Most of the literature on the topic of goals orientation in learning is based on samples of German speaking students or teachers. The present study tries to add to the existent literature data and findings regarding measurement of goal-oriented learning motivation from a different population, namely Romanian. The research questions that guided our study were: (1) Is the adapted version of the scale for assessment of goal-oriented learning motivation a reliable measurement of the construct for Romanian sample? and (2) Is the three factors structure identified in the literature (learning, social approval and avoidance goals) similar on Romanian population? To address these questions, a sample of students (filling in self-reports) and one of teachers (filling in items regarding their students) were used, as presented in the Methods section.

2. Methods

2.1. Participants and Procedure

Data for the current study was collected from participants included in the JOBS research study. The study was based on a Solomon experimental design aimed to test the effect of a career counselling program designed for gymnasium and technical highschool students (called JOBS Program) on several variables related to learning outcomes, self-concept, beliefs about learning, and motivation assessed on students and teachers from schools included in the program. The students sample included 796 participants (415 males and 381 females) in the intervention group (called Jobs group) and 1077 participants (561 males and 518 females) in the control group (called NonJobs group). The teachers sample included 111 teachers (from which 99 females) in the intervention group and 190 teachers (from which 163 females) in the control group. All participants came from gymnasiums and technical highschools in Brasov County, Romania. Both students and teachers, from Jobs and NonJobs groups, filled in a set of questionnaires in two times, pretest (time 1, at the beginning of the academic year) and post-test (time 2, at the end of the academic year); the intervention lasted for one academic year.

2.2. Instrument

The *Scale for Goal-Oriented Learning Motivation* (Keller-Schneider, 2013) was used in the current study. The scale was originally developed following the German Scales for the Assessment of Learning and Performance Goals (SELLMO) (Spinath et al., 2002). The current instrument consists of 11 items evaluating goal orientations on a general level (*In school, it is important to me…*).

Two forms of the instrument, the form for students and the form for teachers, were translated and adapted into Romanian language. For the students' sample, the instrument assessed students' goal-oriented learning motivation with 11 items on a 5-points Likert scale (item example: *I work in class because I want to learn new things*). For the teachers' sample, the instrument assessed teachers' beliefs about students' goal-oriented learning motivation, using also 11 items on a 5-points Likert scale (item example: *Students work in class because they want to learn new things*).

By factor analysis on Swiss samples of students and teachers, three scales were identified (Keller-Schneider, 2013): learning goals (item example: *In school I like best the tasks where I really have to think* – form for students/ *Students like best in school the tasks where they really have to think* – form for teachers); social approval goals (item example: *I participate in class so the others do not think that I know less than them* – form for students/ *Students participate in class so that others do not think that they know less than them* – form for teachers); avoidance goals (item example: *In school it is important to me to invest as little as possible* – form for students/ *It is important for students to invest as little as possible* – form for teachers). The three scales indicate three different learning orientations of students along three different kind of goals.

3. Results

Presentation of results follows the data analysis on the two samples, the students and the teachers sample, separately for the Jobs group and for NonJobs group.

3.1. Reliability

In order to test the reliability of the *Scale for Goal-Oriented Learning Motivation,* two types of analysis were computed: the analysis of internal consistency by computing Alpha Cronbach coefficients (table 1) and the analysis of stability by computing test-retest correlation coefficients (table 2 and table 3).

Alpha Cronbach coefficients in time 1 (T1) and time 2 (T2) Table 1

Scales (Number of items)	Sample	Jobs T1	Jobs T2	NonJobs T1	NonJobs T2
Learning goals (4)	Students	.84	.80	.83	.81
	Teachers	.76	.73	.84	.85
Social approval goals (4)	Students	.75	.73	.70	.67
	Teachers	.75	.78	.80	.78
Avoidance goals (3)	Students	.51	.61	.60	.52
	Teachers	.62	.74	.61	.63

Learning goals and social approval goals scales have acceptable to good internal consistency for both forms, for the students and for the teachers, while for the avoidance

goals dimension the internal consistency is questionable. Alpha Cronbach coefficients were computed separately for time 1 and time 2 to eliminate a possible effect of the intervention.Stability was computed only for NonJobs group, again in order to eliminate the possible effect of the intervention. As noticed, only learning goals scale has good stability for students' sample.

Table 2

Correlation coefficients between time 1 and time 2 for NonJobs group (students' sample)

Scales/ Time	Learning goals T2	Social approval goals T2	Avoidance goals T2
Learning goals T1	.543**		
Social approval goals T1		.466**	
Avoidance goals T1			.360**

** Correlation is significant at the 0.01 level.

Table 3

Correlation coefficients between time 1 and time 2 for NonJobs group (teachers' sample)

Scales/ Time	Learning goals T2	Social approval goals T2	Avoidance goals T2
Learning goals T1	.434**		
Social approval goals T1		.439**	
Avoidance goals T1			.023

** Correlation is significant at the 0.01 level.

3.2. Factor Structure

Confirmatory factor analysis was used to prove the three factors structure identified by the author of the *Scale for Goal-Oriented Learning Motivation* (Keller-Schneider, 2013).

For the students sample, for time 1 data, several models were tested (table 4):

- a first order model – without correlated factors and without correlated errors (1);
- a first order model – with correlated factors and without correlated errors (2);
- a first order model – with correlated factors and with correlated errors suggested by the modification indices (3).

Table 4

Goodness-of-fit measures for the tested models – First order and second order CFA (students' sample)

Model	**Correlated errors**	**χ^2(df)**	**GFI**	**CFI**	**AIC**	**RMSEA (90% CI)**
1.	-	971.50 (44) $p < .001$	.834	.688	1015.5	.162 (.153-.170)
2.	-	215.51 (41) $p < .001$	.957	.941	265.51	.073 (.063-.082)
3.	err10↔err11 ; MI = 54.78 err7↔err10 ; MI = 15.56 err6↔err10 ; MI = 12.03	128.37 (38) $p < .001$	.974	.970	184.37	.054 (.044-.065)

Note. GFI: Goodness-of-Fit Index, CFI: Comparative Fit Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

For the first and the second model, the modification indexes related to the covariances showed evidence of misspecification associated with the pairing of error terms of several items (Figure 1). Thus, the model fit was better for the third model including the correlated errors. However, the third factor, avoidance, showed low loadings for two items, 11 and 12 (Fig. 1), as expected given the low stability of this dimension.

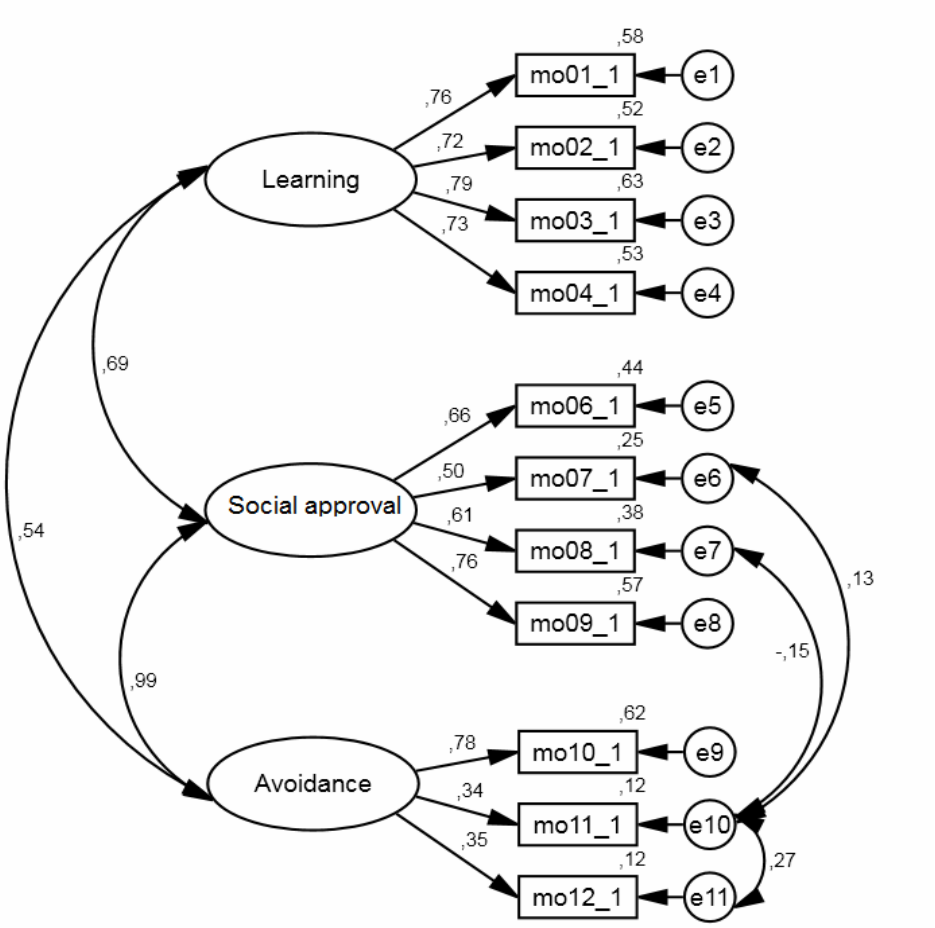

Fig. 1. *Confirmatory Factor Model – first order CFA – standardized coefficients (students sample)*

For the teachers sample, for time 1, the following models were tested (table 5):
- a first order model – without correlated factors and without correlated errors (1);
- a first order model – with correlated factors and without correlated errors (2).

The modification indexes related to the covariances did not show evidence of misspecification associated with the pairing of error terms of items (figure 2). Thus, the model fit was better for the second model including only the correlated factors. Although, the model fit is unsatisfactory due to the small sample size. Item 12 had the lowest loading on the third factor, avoidance, but higher than for the students sample.

Table 5

Goodness-of-fit measures for the tested models – First order and second order CFA (teachers' sample)

Model	Correlated errors	χ^2(df)	GFI	CFI	AIC	RMSEA (90% CI)
1.	-	971.50 (44) $p < .001$	.834	.688	1015.5	.162 (.153-.170)
2.	-	71.49 (41) $p = .002$	.921	.936	121.49	.066 (.040-.091)

Note. GFI: Goodness-of-Fit Index, CFI: Comparative Fit Index, AIC: Akaike Information Criterion, RMSEA: Root Mean Square Error of Approximation, 90% CI: 90% confidence interval for RMSEA.

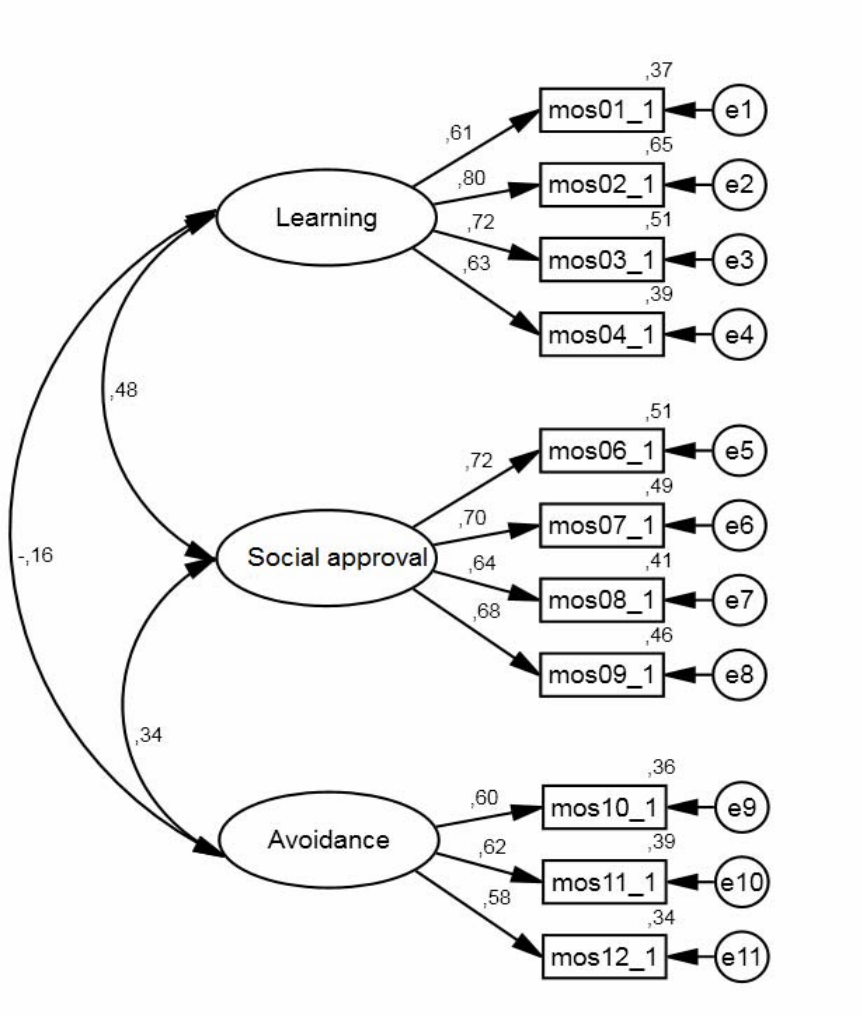

Fig. 2. *Confirmatory Factor Model – first order CFA – standardized coefficients (teachers' sample)*

4. Discussion

The *Scale for Goal-Oriented Learning Motivation* proves to be a reliable instrument for assessing Romanian students' representations of the reasons behind learning tasks (form for students), and also teachers' beliefs about these reasons (form for teachers). The Romanian forms follow the three factors structure identified by Keller-Schneider (2013), with learning goals dimension having the highest reliability and a good stability. As previous studies (Utman, 1997; Keller-Schneider, 2013) showed that this dimensions is most relevant relative to achievement, the findings of the present study give us several ideas for further studies. A possible direction is to identify which educational and personal factors contribute to development of these goals. Are teachers responsible for helping students to focus mainly on developing their competencies? Or are there personal factors that differentiate between students with high learning goals orientation and those with low learning goals orientation. A second possible direction of research is to clarify the underling mechanisms by which learning goals leads to better performance. Spinath and Steinmayr (2012) explain the effect by the strong association between this type of goals orientation and intrinsic motivation, while others types of goals orientations have weaker or non-significant correlation with intrinsic motivation. Could it be that students with learning goals are better in term of stating the goals, have clear and achievable goals, and also standards to rate achievement of goals? Those students orientated toward social approval or avoidance of work have difficulties in establishing clear goals or standards to rate achievement.

The weak stability of the social approval and avoidance goals scales may be due to the long interval between the two measurement, which is a limitation of the current study. A better approach would be a few weeks to a few months interval between measurement, as motivation and beliefs seems to be sensitive to changes over time. On the other hand, the avoidance scale needs further examination in order to find the aspects leading to the low loadings and stability. This scale has the lowest number of items (3) and the lowest reliability coefficient for both students and teachers forms. It may be that the measurement on a general level of this dimension is less relevant for students. Changing the level of measurement to a more specific domain related level (*In Math it is important to me/ In Psychics I like best…*) might lead to different results.

Overall, the findings of the current study sustain further research on the topic of goal-oriented learning motivation at both students and teachers level. The instrument can easily be used to assess how students perceive their own goals orientation and also, how teachers perceive their students goals orientation. Both assessments are highly relevant as both students and teachers engage actively in the learning context according to their individual resources, as stated by the model mentions beforehand (Keller-Schneider, 2010).

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