

SINGLE-ITEM SELF-REPORT MEASURE OF LEARNING ENGAGEMENT: WHAT DOES IT MEASURE?

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SINGLE-ITEM SELF-REPORT MEASURE OF LEARNING ENGAGEMENT: WHAT DOES IT MEASURE?

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Abstract

This article presents the results of a research examining the validity of single-item, self-reported measure of students' subjective learning engagement. The study took place in April 2019 on a sample of 148 female second year early education students from the University of Gdańsk. Indicators of different aspects of learning engagement were used as predictors of the answer to the question: "How engaged in learning are you?" with a 9-point Likert type response format ranging from 1 - *Very weakly* to 9 - *Very strongly*. The regression model including several independent indicators of engagement explained 52% of the variance of the single-item measure. The gathered data support validity of the single-item measure of learning engagement. The results are congruent with previous research on validity and reliability of the scale.

Keywords: *learning engagement, academic engagement, student engagement*

1 INTRODUCTION

The term *learning engagement* has been used interchangeably with terms such as *school engagement, academic engagement* or *student engagement*. Although the idea of learning engagement itself might appear rather straight-forward, various definitions of the concept highlight different nuances of the phenomenon (Gasiewski, Eagan, Garcia, Hurtado & Chang, 2012). On the basis of a literature review, Fredricks, Blumenfeld and Paris (2004) state that learning engagement is a multidimensional concept that could be divided into three primary dimensions. The first one is behavioral engagement, which is based on the idea of involvement and participation. This type of engagement involves taking up specific activities and is perceived as crucial in academic success and school dropout's prevention. The second dimension is emotional engagement, which refers to students' emotions towards teachers, other students, school etc. The third aspect is cognitive engagement based on the idea of investment. It is associated with readiness to undertake mental effort in order to understand complicated concepts and develop complex abilities (Fredricks et al., 2004). In the presented study the term *learning engagement* is understood as a conscious and voluntary commitment of time and energy of a person to activities related to studying with the belief of rightness of such effort.

Research on learning engagement is conducted on different education levels, including primary schools (Marks 2000; Bodovski & Farkas, 2007), secondary schools (Smyth & Fasoli, 2007; Shernoff, Csikszentmihalyi, Schneider & Shernoff, 2014) and universities (Krause & Coates, 2008; Carini, Kuh & Klein 2006). The engagement of kindergarten children has also been investigated (Brock, Rimm-Kaufman, Nathanson & Grimm, 2009; Chien, Howes, Burchinal et al., 2010), however, due to the nature of kindergarten classes, it cannot be associated with learning engagement at school. School engagement receives large research interest for several reasons. Firstly, there is an association between learning engagement and academic achievements (Carini et al., 2006; Finn & Voelkl, 1993). Secondly, much attention has been paid to the relationship between learning engagement and socialization of children and adolescents (Hawkins & Weis, 1985; Finn & Voelkl, 1993), and to the relationship between learning engagement and higher quality of life and well-being

(Reschly, Huebner, Appleton & Antaramian, 2008). Currently, one of the major efforts of education reform in the United States is to increase learning engagement, as it is perceived as a possible solution for students' boredom, alienation, low achievements and high dropout rates (Wang & Eccles, 2013).

In the recent years, there is a growing recognition that high involvement into learning/studying is not always productive and healthy, but some individuals develop compulsive need to devote substantial amount of time and effort into studying to the exclusion of other spheres of life. This pattern of behaviour was conceptualized as study addiction (Atroszko, 2015; 2018; Atroszko, Andreassen, Griffiths & Pallesen, 2015; Lawendowski, Bereznowski, Wróbel, Kierzkowski & Atroszko, 2019) and a potential early form of work addiction, which is a more established construct in the addiction literature (Atroszko, 2019a; Atroszko, Demetrovics & Griffiths, 2019). Study addiction was shown to be related to work addiction in longitudinal research (Atroszko, Andreassen, Griffiths & Pallesen, 2016a) and showed similar temporal stability to work addiction (Atroszko, Andreassen, Griffiths & Pallesen, 2016b). Both addictions show seven core addiction symptoms: salience, mood modification, tolerance, withdrawal, conflict, relapse, and problems (Atroszko, Andreassen, Griffiths & Pallesen, 2015). Moreover, both of them are related to higher engagement in studying/working, longer time devoted to studying/working, crucial personality traits (higher neuroticism and conscientiousness), lower academic performance levels, deteriorated general health, decreased quality of life, poor sleep, and higher perceived stress (Atroszko, Andreassen et al., 2015; Griffiths, Demetrovics & Atroszko, 2018; Atroszko, 2019b). Furthermore, study addiction and work addiction show similar prevalence rates, which are typically around 8-10% (Atroszko, 2015; Griffiths et al., 2018). It was emphasized that due to the fact that high involvement into learning may include negative addictive components in the cases of some individuals, it is crucial to control for study addiction whenever study engagement is investigated. At the same time, because healthy engagement shows opposite relationships to psychosocial functioning variables than study addiction, it is necessary to control for learning engagement whenever study addiction is investigated. In this context, a single-item measure of learning engagement may prove very useful. Some initial studies confirm its usefulness (Atroszko, Andreassen et al., 2015; Lawendowski et al., 2019). However, systematic research should provide more data on what is in fact measured with such a measure. The current study is among the first attempts to shed more light on this issue.

2 LEARNING ENGAGEMENT MEASUREMENT

According to Jimerson, Campos & Greif (2003), the dissimilarity of the school engagement definitions is accompanied by similar diversity in measurement of the construct. Firstly, the indicators of student engagement might differ. Secondly, there are various sources of information about the engagement; from the students themselves, from teachers or basing on school's records (students' grades, absences, participation in optional courses etc.). Thirdly, there are different measurement tools (Jimerson et al., 2003).

There are many questionnaires measuring learning engagement. Although it is impossible to name and discuss all of them, it is worth mentioning some of the most popular ones. *Utrecht Work Engagement Scale for Student* (UWES-S) is a tool for measuring learning engagement and was created on the basis of *Utrecht Work Engagement Scale* (UWES), which is used to measure work engagement. The differences between UWES and UWES-S questionnaires are minute, since the items in the second tool are equivalent to the first one, except that they refer to studying instead of working (Schaufeli, Martínez, Pinto, Salanova & Bakker, 2002).

According to this approach, learning engagement, similarly to work engagement, consists of three components: vigor, dedication and absorption. *Student Engagement Instrument* (SEI) is a tool that explores two types of engagement: cognitive and psychological (Appleton, 2005). More comprehensive discussion on tools to assess learning engagement was presented by Wang, Willett & Eccles (2011).

3 SINGLE-ITEM SCALES

The questionnaires used so far usually consist of many items. For instance, UWES-S has 17 items, SEI 36 items and *The National Survey of Student Engagement* (NSSE) survey instrument, the Collage Student Report, has approximately 70 items. Using such long instruments is problematic, time-consuming and creates a risk of respondents choosing random answers without reading the question due to being too overwhelmed by the number of items. Meanwhile, single-item scale measuring learning engagement has shown good validity and reliability in certain research circumstances. Therefore, at least in some cases, long scales can be successfully replaced by a single question. This is particularly significant when learning engagement is just one of many variables measured, and is not a variable of the primary interest. Ultra-short instruments, and therefore single-item scales as well, have many assets: they are simple, take little time to complete (Zimmerman, Ruggero, Chelminski et al., 2006) and moreover, they proved to be valid and reliable instruments (Atroszko, Bagińska, Mokosińska, Sawicki & Atroszko, 2015; Atroszko, Krzyżaniak, Sendal & Atroszko, 2015; Atroszko, Pianka, Raczyńska, Sęktas & Atroszko, 2015; Atroszko, Sawicki, Mąkinia & Atroszko, 2017; Atroszko, Sawicki, Sendal & Atroszko, 2017).

The question: “How much engaged in learning are you?” with 9-point response scale, from 1 - *Very weakly* to 9 - *Very strongly* may be considered a single-item, self-reported scale examining subjective learning engagement among students in higher education. The aim of this paper is to present the results of the research on the relationship of subjective learning engagement among the university students (measured with the question above) with other indicators of learning engagement. The assumption of the research was to explore the learning engagement indicators related to the single-item measure of engagement. The data obtained in such way can substantiate the assertion about the validity of the tool. The paper is a continuation of research on validity and reliability of single-item scale of learning engagement (Atroszko, 2014; Łukowicz, Choynowska, Świątkowska et al., 2017). It is worth mentioning that single-item learning engagement scale was previously successfully used in educational and psychological research (Atroszko, Andreassen, Griffiths & Pallesen, 2015; Atroszko, Wróbel, Bereznowski, Lawendowski, 2019; Lawendowski, Bereznowski, Wróbel, Kierzkowski & Atroszko, 2019).

4 METHODOLOGY

4.1 Aim of the study

The aim of the study was to investigate what is actually measured with the question “How engaged in learning are you?” This was attempted by testing indicators of different aspects of learning engagement as predictors of the answer to the question. The presented research was a part of a larger project concerning the levels of learning engagement of early education students and factors discouraging students from engaging in learning.

4.2 Sample

The sample comprised of 148 female early education students from University of Gdańsk. All respondents were from the second year of bachelor studies. Seventy-seven participants (52%) studied part-time and 71 (48%) studied full-time. One hundred eleven students (75.5%) were

on early education with pedagogical therapy specialisation, 18 (12.2%) on education with speech therapy, 16 on (10.9%) early education with English language and two (1.4%) on special pedagogy. One person did not respond to the question about specialisation. Two male respondents took part in the study but their results were excluded from statistical analyses due to their number being too low to control gender as an independent variable.

4.3 Instruments

The only instrument used in the study was an original survey questionnaire on learning engagement, comprised of 15 questions (including “How engaged in learning are you?”). The questions were constructed to measure one of four aspects of learning engagement: 1) time investment, 2) behavioural, 3) emotional and 4) pragmatic. The respondents also answered eight questions about demographic variables. Some of the questions were omitted in data interpretation as the response distribution did not allow for statistical analyses, e.g. only four out of 148 participated in student research groups. The present article also does not contain data about factors discouraging students from engaging in learning.

Two indicators of time invested in learning were used: time spent learning at the university and time spent learning at home. They were measured with following questions with open response format:

- “How many hours a week do you spend attending classes (lectures and workshops) at the university as a part of your study course?”
- “How many hours a week do you spend studying at home as a part of your study course (e.g. preparing for university classes, writing coursework, preparing for exams etc.)?”

Four indicators of behavioural aspect were used: number of pedagogy-related books read, activity during classes, professional development in the area of pedagogy and attending scientific conferences organised by ones’ alma mater. They were measured with the following questions:

- “How many of the books you have read in the past 12 months were about the subject of pedagogy?” (open response format),
- “How often do you answer questions or speak up during classes?” (response format from 1 – *Never* to 9 – *Always*),
- “Have you ever took part (excluding as part of your studies) in a different form of professional development (e.g. camp counsellor course etc.)?” (response format: 1 – *No*, 2 – *Yes*),
- “Have you ever attended a scientific conference organised by the University of Gdańsk?” (response format: 1 – *No*, 2 – *Yes*).

Two indicators of emotional aspect were used: feeling of boredom during university classes and satisfaction with chosen field of study. They were measured with following questions:

- “How often do you feel bored while on a lecture or a workshop from your study course?” (response format from 1 – *Never* to 9 – *Always*),
- “Are you satisfied with your chosen study course?” (response format from 1 – *Definitely no* to 9 – *Definitely yes*).

Two indicators of pragmatic aspect were used: Grade Point Average (GPA) from last semester of study and receiving a scientific scholarship. They were measured with following questions:

- “GPA in last semester” (response format: 1 – GPA 2.6 - 3.0, 2 – GPA 3.1 - 3.5, 3 – GPA 3.6 - 4.0, 4 – GPA 4.1 - 4.5, 5 – GPA 4.6 - 5.0),
- “Are you receiving a scientific scholarship for students?” (response format: 1 – No, 2 – At the moment no, but I was receiving it in the past, 3 – I am not but I am attempting to, 4 – Yes).

Response distribution for the question “How many of the books you have read in the past 12 months were about the subject of pedagogy?” was significantly skewed (with substantial outliers), therefore the variable was divided into 3 separate dummy variables representing categories: “Reading 1 to 4 pedagogy books”, “Reading 5 to 9 pedagogy books” and “Reading 10 or more pedagogy books”. Additionally, the receiving scholarship variable was recoded to be dichotomous: all three negative responses were combined into *No* category and juxtaposed to the *Yes* category.

4.4 Procedure

The research was conducted on 14-17 April 2019. Students filled out “paper and pencil” questionnaires during classes at the University of Gdańsk. The study used non-probabilistic, consecutive sampling as it was a part of a larger project concerning the levels of learning engagement of early education students and factors discouraging students from engaging in learning. Participation in the study was entirely anonymous and voluntary. No monetary or other rewards were offered. The participants were informed of the aim of the study.

4.5 Statistical analyses

Hierarchical regression analyses were conducted where subjective learning engagement was the dependent variable. Independent variables introduced in each step were: age in step 1, time invested studying as indicators of learning engagement in step 2, behavioural indicators of learning engagement in step 3, emotional indicators of learning engagement in step 4, and pragmatic indicator of learning engagement in step 5.

Receiving scholarship was excluded from regression analyses as it is a theoretically and practically overlapping variable with GPA in last semester (scholarship is mostly based on GPA so to large extent it is a measure of GPA from previous academic year) and it was less correlated with learning engagement than GPA in last semester.

Means, standard deviations, percentages, Pearson correlation coefficients (for continuous variables) and point-biserial correlation coefficients for relationships between dichotomous variables and continuous variables were calculated. All tests were two-tailed, and the significance level was set to $\alpha = .05$. All analyses were conducted in IBM SPSS Statistics 25.0.

5 RESULTS

Subjective learning engagement ($M = 5.91$, $SD = 1.46$) correlated positively with time spent on learning at a university ($r = .25$, $p < .01$), time spent on learning at home ($r = .38$, $p < .01$), activity during classes ($r = .39$, $p < .01$), attending a scientific conference ($r = .39$, $p < .01$), reading 5 to 9 pedagogy books yearly ($r = .34$, $p < .01$), reading 10 or more pedagogy books yearly ($r = .25$, $p < .01$), satisfaction with chosen field of study ($r = .36$, $p < .01$), GPA in last semester ($r = .40$, $p < .01$), and receiving a scientific scholarship for students ($r = .28$, $p < .01$). On the other hand subjective learning engagement was negatively correlated with boredom during classes ($r = -.23$, $p < .01$) (see Table 1).

Tab. 1. Mean scores, standard deviations, and percentages of study variables as well as their correlation coefficients with learning engagement

Variable	<i>M</i> / <i>%</i>	<i>SD</i>	Learning engagement
Age	21.91	3.12	.13
Time spent learning at the university	17.67	3.05	.25**
Time spent learning at home	6.21	4.85	.38**
Activity during classes	4.51	2.11	.39**
Attending a scientific conference	31.3% (<i>yes</i>)		.18*
Professional development	40.5% (<i>yes</i>)		.05
Reading 1 to 4 pedagogy books ^a	64.2% (<i>yes</i>)		-.09
Reading 5 to 9 pedagogy books ^a	14.9% (<i>yes</i>)		.34**
Reading 10 or more pedagogy books ^a	6.1% (<i>yes</i>)		.25**
Boredom during classes	5.64	1.29	-.23**
Satisfaction with study course	7.13	1.65	.36**
GPA in last semester	3.71	.68	.40**
Receiving a scholarship ^a	8.8% (<i>yes</i>)		.28**

^a Point-biserial correlation coefficient (0 – *no*, 1 – *yes*)

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

Regression analyses showed that the independent variable in step 1 explained 2% of the variance of learning engagement ($F_{1,139} = 2.797, p = .097$). The explanatory variables added in step 2 explained 19.1% of the variance of learning engagement ($F_{2,137} = 16.624, p < .001$). The independent variables in step 3 explained 23.3% of the variance of learning engagement ($F_{6,131} = 9.142, p < .001$). The explanatory variables in step 4 explained 3.2% of the variance of learning engagement ($F_{2,129} = 3.892, p < .05$). The independent variables in step 5 explained 4.5% of the variance of learning engagement ($F_{1,128} = 11.998, p < .01$). The explanatory variables explained 52.1% of total variance of learning engagement ($F_{12,128} = 11.582, p < .001$). Significant independent variables in step 5 were time spent on learning at the university ($\beta = .16$), time spent on learning at home ($\beta = .21$), activity during classes ($\beta = .17$), attending a scientific conference ($\beta = -.14$), reading from 1 to 4 pedagogy books yearly ($\beta = .28$), reading from 5 to 9 pedagogy books yearly ($\beta = .47$), reading 10 or more pedagogy books yearly ($\beta = .24$), satisfaction with chosen field of study ($\beta = .15$) and GPA in last semester ($\beta = .24$) (see Table 2).

Tab. 2. Results of hierarchical multiple regression analyses in which learning engagement was the dependant variable

Step	Predictor	Learning engagement	
		β	ΔR^2
1	Age	.14	.020
2	Age	.18*	.191**
	Time spent learning at the university	.19*	
	Time spent learning at home	.36**	
3	Age	.03	.233**
	Time spent learning at the university	.14	
	Time spent learning at home	.28**	
	Activity during classes	.25**	
	Attending a scientific conference	-.12	
	Professional development	-.03	

	Reading 1 to 4 pedagogy books	.36**	
	Reading 5 to 9 pedagogy books	.49**	
	Reading 10 or more pedagogy books	.36**	
4	Age	.01	.032*
	Time spent learning at the university	.12	
	Time spent learning at home	.24**	
	Activity during classes	.21**	
	Attending a scientific conference	-.10	
	Professional development	-.03	
	Reading 1 to 4 pedagogy books	.34**	
	Reading 5 to 9 pedagogy books	.49**	
	Reading 10 or more pedagogy books	.32**	
	Boredom during classes	-.08	
	Satisfaction with study course	.16*	
5	Age	.01	.045**
	Time spent learning at the university	.16*	
	Time spent learning at home	.21**	
	Activity during classes	.17*	
	Attending a scientific conference	-.14*	
	Professional development	-.05	
	Reading 1 to 4 pedagogy books	.28**	
	Reading 5 to 9 pedagogy books	.47**	
	Reading 10 or more pedagogy books	.24**	
	Boredom during classes	-.07	
	Satisfaction with study course	.15*	
	GPA in last semester	.24**	
Total R^2			.521**

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

6 CONCLUSIONS

The results confirm that single-item learning engagement scale has good validity. The behavioral, emotional, time investment and pragmatic indicators of learning engagement explain more than a half of the variance of subjective learning engagement measured with this scale. The results are congruent with previous research on validity and reliability of single-item learning engagement scale (Atroszko, 2014; Łukowicz, Choynowska, Świątkowska et al., 2017). It is worth noting that one of the predictors (attending a scientific conference) explained the dependent variable, but in the opposite way than expected. The result probably can be explained by the fact that it is a common practice to take student groups by the lecturers as part of classes to the conferences at the Faculty. Therefore, it is possible that some students participated in conferences in such a manner, while others did not because they had classes with other lecturers and/or on other occasions. In such a case this indicator could not be considered valid. However, more studies are necessary to explain this effect.

Single-item learning engagement scale has many advantages: it takes little time to complete, it is easy to apply in educational institutions and reduces the risk of respondents choosing random answers without reading the questions due to the monotony of a long questionnaire. It is especially important when measuring many different variables and learning engagement is only one of them. However, further studies on scale's validity and reliability is needed. Future research should be conducted on larger and diverse sample of students.

The strength of the research is the inclusion of indicators that refer to many different dimensions of learning engagement. Krause & Coates (2008) emphasise that while measuring learning engagement, it is important to take into account the multidimensionality of the construct. According to the authors: *The results point to the imperative for developing a broader understanding of engagement as a process with several dimensions. These must be acknowledged in any measurement and monitoring of this construct in higher education* (Krause & Coates, 2008, p. 493). This study shows that while there are multiple indicators of learning engagement, they seem to significantly and independently contribute to one general subjective learning engagement. This is apparently very good brief measure reflecting general engagement which can be effectively used, for example, in the research on study addiction, where this general high involvement into learning needs to be partial out from the compulsive studying in order to have unbiased estimates of the relationships with other variables. Since general high time and effort devoted to learning may have both healthy and unhealthy aspects, it is necessary to control for it statistically in all studies on both study engagement and study addiction. Intuitively, it means that if we measure general engagement, and identify the amount of unhealthy components within it (study addiction), then what is left is the positive aspects/components of the engagement. Previous studies seem to support usefulness and validity of such approach (Atroszko et al., 2015; Atroszko, Wróbel, et al., 2019; Lawendowski et al., 2019). The limitation of the study is a relatively small number of participants (148 persons) and that the sample was exclusively female. This needs to be taken into consideration since women and men differ in terms of learning engagement. Research show that females demonstrate significantly higher levels of learning engagement than males (Atroszko, 2011).

In this study the relation between dimensions and indicators of learning engagement was of a technical and empirical nature. Further research should show more precisely the relationship between the dimensions of learning engagement and indicators of learning engagement.

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