

# Changes in Psychology students' workload due to alignment with the EHEA

## Cambios producidos por la adaptación al EEES en la carga de trabajo de estudiantes de Psicología

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### Abstract:

Alignment with the European Higher Education Area (EHEA) has involved changes in teaching methodology and in the learning process, which have led to a change in student workload. The main aim of this study is to evaluate and compare the perception of the workload of undergraduate and graduate psychology students and to analyse the nature of the changes produced by this adaptation. The sample comprised 845 students (497 readings for the licentiate's degree and 348 for the bachelor's degree). To measure perceived workload, the NASA-TLX scale was used. This evaluates the following dimensions: mental demand, physical demand, temporal demand, performance, and frustration/dissatisfaction; these variables were evaluated for the follow-

ing academic activities: attending theoretical classes, attending practical classes, conducting group work outside the classroom, searching for material and bibliography, studying and personal work, attending tutorials, and other activities (seminars, conferences, etc.). The results show a significant increase in the perceived load of attendance in practical classes, in the performance of group work outside the classroom and in total perceived workload for bachelor's degree students. It is concluded that adjusting to the EHEA has involved an increase in perceived workload for students. This points to a need to work in the classroom on developing interpersonal skills and planning and organization of teamwork, as well as greater coordination between teachers in the evaluation systems.

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**Keywords:** European Higher Education Area, workload, NASA-TLX, students, psychology, higher education.

## Resumen:

La adaptación al Espacio Europeo de Educación Superior (EEES) ha supuesto una importante modificación en la metodología docente y en el proceso de aprendizaje, lo que ha generado un cambio respecto a la carga de trabajo del alumnado. El principal objetivo de este estudio es evaluar y comparar la percepción de la carga de trabajo de estudiantes de Psicología de la licenciatura y del grado y analizar la naturaleza de los cambios producidos por esta adaptación. La muestra utilizada estuvo formada por 845 estudiantes (497 de licenciatura y 348 de grado). Para la medida de la carga percibida se empleó la escala NASA-TLX, que evalúa las siguientes dimensiones: demanda mental, demanda física, demanda temporal, rendimiento y frustración/insatisfacción; estas variables fueron evaluadas para las siguientes

actividades académicas: asistencia a clases teóricas, asistencia a clases prácticas, realización de trabajos en grupo fuera del aula, búsqueda de material y bibliografía, estudio y trabajo personal, asistencia a tutorías y otras actividades (seminarios, jornadas, etc.). Los resultados muestran un aumento significativo en la carga percibida de la asistencia a clases prácticas, en la realización de trabajos en grupo fuera del aula y en la carga total percibida para los estudiantes de grado. Se concluye que la adaptación al EEES ha supuesto un incremento en la percepción de carga de trabajo de los estudiantes, lo que apunta a la necesidad de trabajar en las aulas el desarrollo de competencias interpersonales y de planificación y organización del trabajo en equipo, así como una mayor coordinación docente entre los sistemas de evaluación.

**Descriptor:** Espacio Europeo de Educación Superior, carga de trabajo, NASA-TLX, estudiantes, psicología, Educación Superior.

## 1. Introduction

The objectives of the European Higher Education Area (EHEA), which is the result of the Bologna Declaration (1999), include obtaining high employability rates, improving the competitiveness of the higher education system in Europe, and promoting mobility with the ultimate aim of promoting a European dimension in the higher education system (Ariza, Quevedo-Blasco, Bermúdez,

& Buela-Casal, 2013). To achieve these objectives, a transformation in the structure of teaching was proposed through the European Credit Transfer and Accumulation System (ECTS), a system that distributes the student's workload over estimated hours, some face-to-face (classes, evaluations, etc.), some outside class with tutoring (guided work and tutorials) and some independent outside class (individual study and activities).

The adjustment to the EHEA has involved important changes at the institutional level and in syllabuses (Ariza, Bermúdez, Quevedo-Blasco, & Buela-Casal, 2012; Ortega & Zych, 2013), and in the teaching methodologies used, with the incorporation of more active methods (such as attending seminars, solving problems as a team, doing projects and presentations, etc.) that give students more autonomy in a learning style with less face-to-face work and more personal work. These modifications also involve a change to a more constructivist teaching and learning process (Tejada & López, 2012), focussed on the acquisition of competences and on continuous work by the student (De Miguel, 2006; Rodrigo & Almirón, 2013), which involves a greater load of work outside class (Díez, García, & IPDDA, 2010; Ortiz et al., 2012).

One of the fundamental issues in the new syllabuses is the students' workload (Roca-Cuberes, 2013). Workload can be defined as the hours students spend working on academic tasks at the educational centre (attending classes, tutorials, seminars) and away from it (groupwork, study, bibliographic consultations, etc.). In other words, it relates to the time required to complete an academic year and acquire the competences established as the learning outcomes.

The literature we have consulted agrees that adapting the workload to the credits established in the syllabuses is one of the main problems facing teaching staff (Reyes, Valdés, & Castaño, 2006) and that the ECTS system involves an increase in student

workload (Castaño, Ruiz, Gómez-Alday, & De Manuel, 2006; Roca-Cuberes, 2013; Rodríguez-Izquierdo, 2014).

Although this educational reform was officially introduced in 2010, there are no empirical studies that analyse the effect of this adjustment from the students' perspective, especially in the case of teaching psychology (Ramiro-Sánchez, Bermúdez, & Buela-Casal, 2016). Consequently, there is a clear lack of studies that explore the impact of these changes on the perceived workload of students who are reading for a bachelor's in psychology compared with those studying under previous system (licentiate degree). For example, Ortiz et al. (2012), from a perspective based on studying the time dedicated to each task, found differences in the workloads of licentiate and bachelor's degree students, and they note that the change in teaching-learning methodologies should be considered from the perspective of the students.

Students' perceived workload can have a very important influence on the level of academic performance they obtain and on their psychological wellbeing, as it is one of the main causal factors of academic stress (Cabanach, Souto-Gestal, & Franco, 2016). Excess workload makes it hard to acquire knowledge and promotes superficial learning (Lam, McNaught, Lee, & Chan, 2012; Roca-Cuberes, 2013), failure, and dropout (Cope & Staehr, 2005).

Student workload was evaluated from different perspectives. It has traditionally been linked to how many hours students dedicate to the modules that make

up their degree (Ruiz-Gallardo, Castaño, Gómez-Alday, & Valdés, 2011), although in a small number of cases students' perception of their workload has also been analysed (Kyndt, Dochy, Struyven, & Cascallar, 2011). This second focus assumes that students' perceived workload is shaped by various factors and that this perception is the largest stress creating factor (Ramsden, 1992). On these lines, Kember and Leung (2006) found that many hours of study are not perceived as a large overload when the course design is appropriate, and they underline the limited relationship between time spent on a task and perceived workload (Hertzum & Holmegaard, 2013; Nosair & Handy, 2017).

One of the most frequently used instruments for evaluating perceived workload is the NASA-Task Local Index (TLX) (Hart & Staveland, 1988). González, Moreno, and Garrosa (2005), Hart (2006), and Young, Zavelina, and Hooper (2008) identify the useful features of NASA-TLX as a valid and reliable instrument for analysing perceived workload in different sectors: industrial, psychological, health, aeronautical, and transport. However, it has been used less in the field of education. López-Núñez (2010) analyses the generalisability and validity of each scale with a broad sample of university students and concludes that it is a useful instrument for evaluating workload in an educational setting. Kyndt et al. (2011) use NASA-TLX to evaluate the workload with the objective of analysing its mediating role in student motivation and their learning strategies. Similarly, Kurata,

Bano, and Matias (2015) use NASA-TLX on engineering students, finding significant relationship between workload and academic performance.

Almost two decades after the Bologna Declaration (1999) and in the midst of the changes to accreditation of qualifications adapted to the EHEA, this seems to be an appropriate time to evaluate the effects of this adaption. The change seems to have been positive in regards to the inclusion of new technology (ITC) and methodologies that permit greater interaction with students. However, other aspects such as increased workload, both for teaching staff and students, do not seem to be as positive (Ariza et al., 2013; Quevedo-Blasco, Ariza, & Buela-Casal, 2015).

Therefore, the aim of this study is to analyse and compare the perceived workload of psychology students on the licentiate degree (old system) and of students on the new system adapted to the EHEA (bachelor's) to investigate the nature of the changes in this variable.

## 2. Method

### 2.1. Participants

The sample comprised 845 third-year Psychology students from the Universidad Complutense de Madrid, 497 of whom were licentiate students and 348 bachelor's students. Regarding distribution by sex, there were 415 women on the licentiate degree (83.5%) and 82 men (16.5%), and 282 women (81%) and 66 men (19%) on the bachelor's degree. The mean age of students on the licentiate degree was 21.63

( $SD = 3.33$ ). On the bachelor's degree it was 21.85 ( $SD = 3.53$ ). The data were collected in a single session during one of the third-year classes, for both the licentiate degree and the bachelor's degree, using convenience sampling.

## 2.2. Instrument

The NASA-TLX scale was used to assess workload (Hart & Staveland, 1998). This instrument distinguishes six workload dimensions, each of which is evaluated by the subjects on a scale of 0 to 100. These dimensions are: *effort* (the general level of mental and physical effort required to obtain a suitable level of performance), *mental demand* (the amount of mental and perceptive activity the task requires), *physical demand* (the amount of physical activity the task requires), *temporal demand* (the perceived level of temporal pressure), *performance* (the level of satisfaction with one's own level of performance in the task) and *frustration/dissatisfaction* (the level of insecurity, irritation, or dissatisfaction felt while performing the task). The students had to evaluate the degree to which each of their academic activities demanded each workload dimension from them. Seven academic activities were identified: attending theoretical classes, attending practical classes, conducting group work outside the classroom, searching for material and bibliography, studying and personal work, attending tutorials, and other activities (seminars, conferences, etc.).

These activities were chosen taking into account the changes imposed by the EHEA and the importance it gives to au-

tonomous work by the student and the competence acquisition, including specific competences ones relating to the qualification and transversal ones, for students' integration into the social and workplace environment.

Using the evaluations given by each student, an overall workload index was calculated for each activity by calculating the arithmetic mean for the scores from each dimension (Hart, 2006).

Additionally, each participant answered a brief demographic questionnaire to collect information on sex and age.

## 2.3. Design and Procedure

This is a non-experimental, ex post facto to study.

The NASA-TLX scale, in its implementation phase initially had two sections: a weighting section and a scoring section. The weighting section was intended to reveal the subjects' initial perceived workload and the relative importance of each of the six dimensions in this perception. However, many studies have underlined that it is not necessary to do the weighting stage (López, Rubio, Martín, & Luceño, 2010), showing high correlation values between weighed and unweighted scores (between .93 and .97). For this reason, we only used the scoring section. All of the students took part anonymously and completely voluntarily, having first signed an informed consent form to agree to participate in the study and agreeing to the use of the data for research-related ends exclusively.

## 2.4. Statistical analysis

All of the analysis was done using the Statistical Package for the Social Science (SPSS) version 22.00 software. Firstly, the descriptive statistics for all of the variables considered were calculated. Next, the equivalence of the two groups by average age and distribution by sex was tested using the  $\chi^2$  statistic (for sex) and Student's *t* test (for age). After this, a comparison of means analysis was performed on the workload scores obtained for both groups (licentiate degree vs. bachelor's) for each of the academic activities. To do this, Student's *t* value was calculated along with its level of significance *p* (set at .05) and partial  $\eta^2$  to test the effect size.

## 3. Results

Firstly, the means and standard deviations (SD) were calculated for the workload scores (for each workload dimension and for the overall score) in both groups (licentiate and bachelor's degrees) (Table 1). The total workload scores were obtained by averaging the workload scores for all of the dimensions and activities.

The results showed that the groups were equivalent in distribution by sex ( $\chi^2 = 1.70, p = .430$ ) and by mean age [ $t(913) = -0.66, p = .508$ ], as neither figure was significant.

Once compliance with the assumption of homogeneity of variance had been tested using Levene's test ( $P > 0.5$  in all cases), comparisons of means for the overall scores for each activity were done for each type of degree. The results of this analysis

are shown in Table 1. Analysing this table shows that bachelor's students perceive a higher workload than the ones on the licentiate degree in all of the activities considered other than «studying and personal work». The differences in the «conducting group work outside the classroom» and «attending practical classes» activities were statistically significant, as were the scores for overall workload. In the three activities, the group of students on the bachelor's degree displayed considerably higher workload scores. The  $\eta^2$  values show that the effect size is higher for the «conducting group work outside the classroom» activity, indicating that the difference is most evident with this activity.

With the aim of analysing in greater detail which workload dimension or dimensions cause these differences, comparisons of means were carried out between bachelor's and licentiate degrees for each of the 6 dimensions of the NASA-TLX for the activities in which significant results were found in the previous analysis. The results of this analysis are shown in Table 2.

For the «attending practical classes» activity, the results only show large and statistically significant differences in the *mental demand* dimension, indicating that bachelor's degree students regard this academic activity as rather more demanding from a cognitive perspective than their licentiate counterparts. For «conducting group work outside the classroom», the results show greater differences than for the previous activity. In this case, the differences between both groups were statis-

tically significant in all of the dimensions except in *performance*. These results suggest that doing group work outside class hours is a much more demanding activity at all levels for bachelor's students, who

have to make a greater effort to achieve very similar levels of performance. This in turn creates more marked feelings of frustration. The results for the total workload score are similar.

TABLE 1. Mean (M) and standard deviation (SD) for the overall workload for each activity and results of the comparison of means across qualifications.

	Licentiate	Bachelor's			
	M (DT)	M (DT)	t(843)	p	$\eta^2$
Attending theoretical classes	52.86 (12.29)	53.35 (13.09)	-0.55	.581	.000
Attending practical classes	47.80 (13.82)	49.80 (13.00)	-2.11	.035	.005
Conducting group work outside the classroom	49.63 (14.81)	55.01 (13.44)	-5.38	.000	.033
Searching for material and bibliography	40.28 (15.23)	40.62 (14.51)	-0.32	.744	.000
Studying and personal work	57.05 (12.51)	56.79 (11.50)	0.31	.756	.000
Attending tutorials	25.68 (11.82)	26.97 (12.87)	-1.49	.135	.003
Other activities (seminars. conferences. etc.)	28.72 (14.46)	29.42 (14.29)	-0.68	.497	.001
<b>Total workload</b>	43.37 (9.20)	44.58 (8.96)	-1.89	.048	.005

Source: Own elaboration.

TABLE 2. Mean (M), standard deviation (SD) and results of the comparison of means between both qualifications in workload scores by NASA-TLX dimension.

		<b>Licentiate</b>	<b>Bachelor's</b>			
		M (DT)	M (DT)	<i>t</i> (843)	<i>p</i>	$\eta^2$
Attending practical classes	Effort	67.08 (26.26)	67.43 (25.24)	-0.30	.764	.000
	Mental D.	59.89 (22.60)	63.67 (20.43)	-2.55	.011	.007
	Physical D.	43.05 (26.41)	45.55 (27.48)	-1.38	.165	.002
	Temporal D.	57.70 (27.10)	60.34 (26.62)	-1.40	.161	.002
	Performance	29.71 (21.01)	28.82 (18.73)	0.52	.597	.000
	Frustration	29.87 (25.53)	32.90 (25.95)	-1.67	.094	.003
Conducting group work outside the classroom	Effort	63.80 (25.16)	71.61 (21.48)	-4.68	.000	.026
	Mental D.	63.01 (23.43)	71.59 (20.86)	-5.52	.000	.034
	Physical D.	44.38 (26.36)	49.42 (28.96)	-2.59	.010	.008
	Temporal D.	60.92 (25.59)	66.71 (23.58)	-3.20	.001	.013
	Performance	31.46 (20.71)	29.64 (19.92)	1.26	.206	.002
	Frustration	34.56 (27.72)	41.63 (26.85)	-3.68	.000	.016
<b>Total workload</b>	Effort	52.36 (14.69)	56.27 (16.14)	-3.57	.000	.016
	Mental D.	51.27 (14.71)	58.61 (16.28)	-6.48	.000	.047
	Physical D.	36.04 (19.02)	39.19 (19.96)	-2.40	.016	.006
	Temporal D.	50.23 (15.92)	53.49 (15.78)	-2.89	.004	.010
	Performance	42.58 (14.80)	40.97 (14.30)	1.57	.116	.003
	Frustration	27.76 (16.86)	31.44 (17.35)	-3.13	.002	.011

Source: Own elaboration.



## 4. Discussion

Given the lack of research that has examined student perceptions of the academic demands resulting from adapting degrees to the EHEA, this study aimed to evaluate workload levels in two samples of psychology students (from bachelor's and licentiate degree programmes) and analyse whether the changes introduced by adapting to the EHEA have caused any significant change in student's perceived workload.

Using the NASA-TLX scale not only made it possible to discover the workload perceived by the students, but also to go into more depth in the understanding which activities generate the highest workload levels.

The results of this study indicate that there are differences in the total workload perceived by each group, with higher scores obtained from the bachelor's group (adapted to the EHEA) than the licentiate group (old system). Taking specific tasks into account, statistically significant differences were found for the «attending practical classes» and «conducting group work outside the classroom» activities.

Analysing each of them in greater detail, we find that for the «attending practical classes» task there are statistically significant differences in the mental demand dimension and so this activity requires a greater cognitive effort from the bachelor's group than from the licentiate group. The «conducting group work outside the classroom» activity is perceived

as being far more demanding than the previous one, with significant differences found in all dimensions apart from performance. This means that bachelor's students have to make greater efforts to achieve similar results, which as well as making greater demands also causes feelings of frustration.

These results allow us to draw two important conclusions from the adjustment to the EHEA, conclusions that require reflection and open up perspectives for future research. The first result is proof that the students perceive a greater workload in the new psychology degree since the implementation of the bachelor's programme; the second one shows that the activity that creates the greatest load in all dimensions is «conducting group work outside the classroom».

With regards to the first question, the results found coincide with those obtained by other authors regarding an increase in perceived workload in bachelor's students compared with those on the licentiate degree (Roca-Cuberes, 2013; Rodríguez-Izquierdo, 2014). To explain this result, various pieces of research state that the workload in bachelor's qualifications is no higher than the corresponding workload according to number of credits and that the increase in workload perceived by the students could be because the new methodologies require a continuous temporal distribution throughout the term (Julián et al., 2010). Other authors state that the lack of a relationship between effort and performance is not

explained by a greater workload, but instead by the lack of appropriate study techniques, limited use made of learning resources such as personal tutoring, and the need for greater effort from students (Ortíz et al., 2012). This increase in perceived workload could be because the EHEA establishes an autonomous teaching and learning system that requires organisation and planning strategies that are unfamiliar to students and for which they are unprepared.

Future research should evaluate the current perception of workload and perform longitudinal studies to discover whether the new bachelor's degrees are resulting in the acquisition of more proactive learning and a reduction in perceived workload over academic years. Their results would make it possible to discover what the process of adaptation to the EHEA has been like in order to propose interventions in study strategies and skills, applying knowledge from pedagogy with the aim of facilitating and improving the learning process.

As for the second consideration, namely that «conducting group work outside the classroom» is the activity that produces the greatest perceived load, this would indicate the difficulty students have in adapting to a new system of learning that involves developing interpersonal and planning and organisational competences. In addition, this is identified as a stressful activity that requires time and where the greater effort does not correspond with the expected reward.

The EHEA identifies team work as one of the principal transversal competences. Several studies (Alonso-Martín, 2010; Arce, Fariña, Novo, & Seijo, 2012; París, Torrelles, & Mas, 2016) have evaluated the acquisition and development of this competence in university students. The results of this research show that students do not regard this competence as a resource that helps them with their learning, but they do perceive it as a stressful factor that, on the whole, students are not acquiring. As Fidalgo-Blanco, Leris, Sein-Echaluce, and Garcia-Peñalvo (2013) observe, in the academic setting, teamwork is usually applied using what they call a «black box» model. In other words, it is not the teamwork competence of individuals that is assessed, but instead just the quality of the work once it is completed. Consequently, students are left to develop group-work skills through mere exposure, without giving them any resources or guidance, erroneously assuming that the students start university courses having already acquired this skill in non-university education.

The results found in this study make apparent the need to develop training programmes for students and for teachers to develop and evaluate this transversal competence, as it is precisely one of the most important of those identified in the professional profile of psychology graduates (ANECA, 2005).

With regards to the limitations of the study, it should be noted that it is an incidental sample from a single university, and a larger sample from several

Spanish universities would have allowed for more generalisable results to be obtained.

Finally, among the main practical implications of the results obtained, it is worth noting that this is a pioneering study in the evaluation of workload levels in the move towards the bachelor's degree in psychology in the EHEA. In agreement with the literature consulted, it is confirmed that this adaptation entailed an increase in perceived student workload levels and that the group work activity is perceived as especially demanding and frustrating. These results make it possible to open up new lines of research concerning the differences detected and propose future studies, considering perceived workload as an indicator of quality and of evaluation of adjustment to the EHEA.

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# Table of Contents

## Sumario

### Studies *Estudios*

**Francisco López Rupérez, Isabel García García,  
Eva Expósito Casas**

Performance in science, epistemic conceptions, and STEM vocations in Spain's autonomous communities: evidence from PISA 2015, improvement policies, and practices  
*Rendimiento en Ciencias, concepciones epistémicas y vocaciones STEM en las comunidades autónomas españolas. Evidencias desde PISA 2015, políticas y prácticas de mejora* 5

**Zaida Espinosa Zárate**

Cultivating creativity for intercultural dialogue  
*El cultivo de la creatividad para el diálogo intercultural* 29

**Ignasi de Bofarull**

Character and learning habits: definition and measurement proposal  
*Carácter y hábitos para el aprendizaje: definición y proyecto de medición* 47

**David Luque**

Interpretive developments of the philosophy of education in the anglophone tradition: an attempt to systematise them  
*Desarrollos interpretativos de la filosofía de la educación en la tradición anglófona: un intento de sistematización* 67

### Notes *Notas*

**María Moralo, Manuel Montanero**

Learning with and without errors in students with ASD  
*Aprendizaje con y sin error en estudiantes con TEA* 85

**Antonio Portela Pruaño, José Miguel Nieto Cano, Ana Torres Soto**

Re-engagement in education and training of young people who leave education early: the importance of earlier prior trajectories  
*La reincorporación formativa de jóvenes que abandonan tempranamente la educación: relevancia de su trayectoria previa* 103

**Oihane Fernández-Lasarte, Eider Goñi, Igor Camino, Estibaliz Ramos-Díaz**

Perceived social support and school engagement in secondary students  
*Apoyo social percibido e implicación escolar del alumnado de educación secundaria* 123

**Jesús-Miguel Muñoz-Cantero, Luisa Losada-Puente**

Validation of the construct of self-determination through the ARC-INICO scale for teenagers  
*Validación del constructo de autodeterminación a través de la escala ARC-INICO para adolescentes* 143

**M<sup>a</sup> Inmaculada López-Núñez, Susana Rubio-Valdehita,  
Eva M<sup>a</sup> Díaz-Ramiro**

Changes in Psychology students' workload due to  
alignment with the EHE

*Cambios producidos por la adaptación al EEES*

*en la carga de trabajo de estudiantes de Psicología* **163**

## **Book reviews**

---

**Naval, C., & Arbués, E. (Eds.).** *Hacer la Universidad  
en el espacio social [Constructing the university in the  
social space]* (Emanuele Balduzzi).

**Mínguez, R., &**

**Romero, E. (Coords.).** *La educación ciudadana en*

*un mundo en transformación: miradas y propuestas*

*[Citizenship education in a changing world:*

*perspectives and proposals]* (Marina Pedreño Plana).

**Bellamy, F.-X.** *Los desheredados: por qué es urgente*

*transmitir la cultura [The disinherited: why transmitting*

*culture is urgent]* (Esteban López-Escobar).

**Pallarés,**

**M., Chiva, O., López Martín, R., & Cabero, I.** *La*

*escuela que llega. Tendencias y nuevos enfoques*

*metodológicos [The school of the future: Trends and*

*new methodological focuses]* (Juan Carlos San Pedro

Velado). **177**

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