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First-year at university: The effect of academic employability skills and physical quality of life on students' well-being

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Abstract.
BACKGROUND: With increasing access at European universities, supporting and promoting the high education, students' mental well-being and generic employability capacities have become priorities, but their respective influences, after an adaptation period of seven months, remain unclear.
OBJECTIVE: Our aims were to analyse the relationships between students' well-being and self-perceived academic employability skills, and other social and environmental factors.
METHODS: Three hundred and twenty-one freshmen students at the end of their first year completed an online questionnaire. Two instruments were used to assess well-being: the General Health Questionnaire (GHQ-12), which explores psychological suffering, and the psychological quality of life subdomain of the Whoqol-bref.
RESULTS: Psychological Whoqol-bref scores are linked to the academic employability skills (AES) items of drafting, critical spirit, problem-solving, teamwork, and supervision/direction of others, and has positive effects on AES score and on the following Whoqol-bref domains: physical, social relationships and environmental. Although three of six psychological Whoqol-bref items (ability to concentrate, satisfaction with self, negative feelings) are correlated with GHQ-12 items (sleeping, decision-making, feeling under strain, problem-solving, depression, self-confidence, thinking about self, feeling happy). GHQ-12 score is negatively linked with Whoqol-bref physical.
CONCLUSIONS: For better quality of life, and improved employability skills, innovative activities should be developed to ascertain the sustainable academic's abilities of students.

Keywords: Psychological Whoqol-bref, psychological suffering, GHQ-12, freshmen students, mental well-being, academic employability skills

1. Introduction

Among young Europeans, psychological disorders including depression represent a growing public health issue. This is particularly true of students, who are more and more susceptible to depressive mood and anxiety as universities become increasingly competitive in attempts to meet occupational requirements under demanding conditions [1–5]. With increasing access at European universities, supporting and promoting the high education, students are more likely to confront difficulties that can be attributed to an imbalance between learning conditions and the capacity of students to deal with them, given their socio-economic and cultural contexts [6]. The social and academic circumstances they face expose them to a number of socio-economic, environmental, and psy-

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chological factors that may result in alterations in social and mental health [7,8] with an impact on academic achievement [9]. Despite many disorders among this population, be they somatic (tiredness, headaches, backaches), psychological (depression, suicidal ideation/attempts) or behavioural and other (eating habits, substance abuse), very few studies have been dedicated to student health [6,10,11].

The past decade has seen a rapid expansion in the number of students in tertiary education [12] and the general focus on obtaining skills in order to gain good employment has led to a plethora of graduates and to a larger number of applicants for any given job. At the same time, too many students drop out and leave university without a diploma as a result of long-lasting lack of learning motivation, failure to meet expectations and loss of confidence in the institution's project, especially as first-year undergraduates [13]. However, social and occupational status in adulthood and health status throughout life are determined by success in education and by the number of years of schooling [14]. This finding enabled us to identify some challenges and difficulties related to transition periods. These issues may have greater impact among adolescents from families with lower education, lower socio-economic status, and fewer resources [6]. In this context, many students face considerable difficulties in the transition from family home to dormitory and the shift between different circles of companions and social networks [15], which sometimes lead to dropping out. The first year of student life is a vulnerable period in which young people establish and adjust new psychological identities [16]. At the beginning of the academic year, students may reorganise their daily lives differently. If they go home each evening to their families, they must negotiate their new social activities with their parents. This is common among students native to Luxembourg – one of the smallest countries in Europe (2600 km^2 with a maximum distance of 82 km). In contrast, students who live away from home and family must adjust their behaviour in accord with a new environment that can present various difficulties (such as social isolation, unhealthy eating habits, long commuting times). Both situations may impact on family relationships and personal identity. For this reason, in our study we evaluated the health status of students in the first and the last months of the first academic year.

The sustainable employability of graduates – i.e. their capability to gain initial employment, maintain employment, and obtain new employment if required [17] – is a priority for European universities. Thus, perceptions of the purpose and process of higher education have varied over time and now employability is understood less as a generic quality that can be achieved whatever the academic level but more as a product of higher education. For policy makers, to be a graduate is not sufficient for a highly competitive and flexible job market. Numerous students looking for work also believe that a diploma is not sufficient to secure employment; they think they must have the qualities and the capabilities required for enterprise in order to be competitive in the job market [18,19]. Today, students must, during their courses, not only acquire the knowledge necessary to obtain the diploma they are preparing for, but also acquire the competences sought by employers [20]. They are encouraged to self-learn, self-actualise and self-initiate. In other words, students need active career planning at university; they have to be led to self-management, i.e. to thinking about their own career objectives and how to achieve them. Recently, effort has been put in to determining what capabilities are most relevant to employability. Several lists of skills have been conceived by professionals and teachers. They include problem-solving, communication, teamwork, information technology, and self-management. According to this, becoming employable appears to represent a new challenge, the responsibility for which depends on individual capabilities, thus creating considerable pressure on the student's life [19, 21].

Well-being is considered to be an outcome of quality of life; indeed there is a cognitive connection between an individual's aspirations and achievement [22]. Well-being is essential for effective learning, and a good school education is a strong predictor of lifelong psychological health and quality of life in different kinds of populations, settings and times. Also, well-being does not necessarily refer to fulfilment in all aspects of life and may differ from objective appraisals made by others.

Thus, as well as improving students' employability skills, there is a real need for universities to pay attention to their mental health. Two tools which assess the general well-being state of students are often used to explore psychological suffering or psychological quality of life (see Table 6). We opted to include both in our survey. However, no study was identified in which these instruments were used to look at relationships between indicators of academic achievement (actual module mark; performance or employability skills; perceived importance of achieving grades). Despite this, these tools are related to past research and

their relevance to health concepts, policy and guidelines for implementation is firmly established. The first is the psychological domain of the brief World Health Organisation Quality of Life (Whoqol-bref) [23] scale, a widely-used tool that is validated among university students [24–27]. The second instrument is the short-version of the General Health Questionnaire [28, 29], which screens for psychological suffering. Its psychometric properties have been thoroughly validated. The evidence confirming the validity of this instrument among university students is generally strong [8, 30,31]. Both instruments are used internationally and have been validated in different languages. Because their widespread use is recommended by the European framework [20], many data are available for international comparisons.

Actually, the links between health and self-perceived skills for employability [32] are still not really understood. In a context where universities are expected to promote student satisfaction, well-being and employability, to provide support to those looking for employment and to develop a participatory process [20], our research questions are: For first-year university students, are well-being and high academic employability associated? What demographic, social and environmental determinants affect internal mechanisms of psychological suffering or quality of life and of academic skills for employability?

First-year students in university should be appropriately monitored because of the need to identify any problems with well-being and academic competence as quickly as possible. First-year students are also of most interest as they face the changes associated with a new lifestyle, and are young and discovering university life; their new experiences are likely to lead to the emergence of interesting issues to investigate. By launching an action plan at the beginning of university life, we aim to reduce disparities in skills acquired during prior education. Focusing on the period between the seventh and ninth months after the beginning of the courses, the main aim of our study is to analyse the relationships between well-being (psychological suffering and quality of life), and employability skills including other determinants (environmental and social relationships, quality of life, satisfaction with university services, socio-demographic characteristics). The secondary aim is to explore what is the most appropriate psychological instrument with which to evaluate student mental well-being.

2. Materials and methods

2.1. Participants and procedure

Between seven and nine months after the start of their first year at university, 973 students from Sciences and Technology, Law and Finances and Social Sciences at the University of Luxembourg were invited to participate in a cross-sectional study.

Our study protocol was approved by The Ethical Research Committee of the University, which approved an online instrument as appropriate for "asking students to fill in the survey during courses". Delegates from students' associations and a member of the research team provided information about the goals of the survey and all respondents gave informed consent for participation.

During a class, the research team (with co-operation of delegates from students' associations) presented the study and its aims, and students were assured that non-participation in this survey would not have an effect on academic assessment. Flyers, posters, electronic displays in halls and cafeteria, and e-mails to all students were used for the three reminders. Students were contacted via their academic e-mail and asked to complete, anonymously, a self-reported questionnaire in the language of their choice (French, German or English).

2.2. Measures

2.2.1. Two instruments described each student's well-being

- The Whoqol-bref psychological domain (subscale 6 items) measured on a five-point scale (Cronbach's alpha 0.77). The higher the score, the better the psychological quality of life. It has been validated in the languages used for the investigation: German [33], French [34] and English [23].
- The General Health Questionnaire (GHQ-12 items) was scored on a four-point scale (range 0–36) (Cronbach's alpha 0.75). The lower the score, the lower the psychological suffering. The GHQ-12 is in English [35], German [36], and French [37].

2.2.2. One explored the student's academic employability skills

- The Academic Employability Skills (AES) scale is a self-assessment tool measuring capacity in drafting, problem-solving, teamwork, supervision /direction of others, and use of new technolo-

Table 1
Socio-demographic characteristics between non-responders and responders. % or mean (SD)

	Non-respondents	Sample	p-value
Faculties			
Sciences and Technology (ST)	27.5	29.0	
Law and Finance (LF)	38.3	39.3	0.740
Social Sciences (SS)	34.2	31.8	
Age: mean (SD)	20.6 (3.2)	21.0 (4.0)	0.091
[min; max]	[18; 44]	[17; 57]	
Sex			$<0.001^{***}$
Male	53.7	42.7	
Female	46.3	57.3	
Nationality			
Luxembourger	62.4	63.9	0.662
Other	37.6	36.1	
Grant aided students	4.8	2.8	0.150
Handicapped students	0.2	0.6	0.214
Type of course			
Full-time	98.6	98.4	
Part-time	1.4	1.6	0.716
12th grade diploma			
General	67.6	70.7	0.330
Technical/Professional	32.4	29.3	
Type of lodging			
With family	91.3	90.7	
University hall	1.5	0.6	0.351
Other	7.2	8.7	

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

gies. The level of each was estimated on a four-point scale from 'not very good' to 'excellent' (Cronbach's alpha 0.76). English and French versions were available [38]; the German version was translated and back-translated by experts.

2.2.3. Other factors

- Satisfaction with university services included six items scored in a range from 'very dissatisfied' to 'very satisfied'.
- Three other Whoqol-bref domains were assessed on five-point scales. The Cronbach's alpha internal is 0.77 for physical (7 items) and environmental (8 items), and 0.64 for social relationships (3 items). Subscales have been validated in the languages used for the investigation: German [33] French [34] and English [23]. The higher the score, the better the quality of life.
- Socio-demographic characteristics: sex, age, nationality, 12th grade diploma, level of education of the parents and their professional status.

2.3. Analysis of data

We performed a regression of each dependent variable of the well-being: the psychological Whoqol-bref (6 items) score and the General Health Questionnaire (GHQ-12 items) score. Among potential explanatory variables, we selected those with a significant simple effect and/or significant interaction with the two well-being scales at the $p < 0.10$ level, after which we proceeded with a multiple regression.

3. Results

Between seven and nine months after the beginning of their first year at university, 321 students (mean age, 21 years) filled out the online questionnaire. Women predominated among participants (57.3% vs. 46.3% among non-respondents, $p < 0.001$); see Table 1.

Female students were more represented in Social Sciences (77.5%) than in Law and Finance (52.4%) and Sciences and Technology (41.9%). Natives of Luxembourg were also more represented in Social Sciences (80.4% vs. 47.6% in Law and Finance). Satisfaction with university services was highest among Law and Finance students (mean 69.9/100 vs. 63.4 in Sciences and Technology). Social Sciences students achieved the best Academic Employability Skills (AES) scores (mean 76.1/100 vs. 74.9 from Sciences

Table 2
Social and demographic characteristics, and other factors: % or mean (SD)

		Total sample $N = 321$	Sciences and technology $N = 93$	Law and finance $N = 126$	Social sciences $N = 102$	p-value
Group			29.0	39.3	31.8	
Sex	Female (vs. male)	57.3	41.9	52.4	77.5	$<0.001^{***}$
Nationality	Luxembourger	63.9	67.7	47.6	80.4	$<0.001^{***}$
12^{th} grade diploma	General	70.7	66.7	67.5	78.4	0.116
Father's education level	Under 12^{th} grade	64.2	56.5	65.8	69.1	0.188
Mother's education level	Under 12^{th} grade	69.2	65.9	68.4	73.2	0.548
Father's professional status	Manual worker	66.0	58.1	66.7	72.2	0.133
Mother's professional status	Manual worker	79.3	77.6	77.8	82.5	0.637
Age (year)		21.0 (4.0)	20.8 (4.3)	20.9 (3.5)	21.4 (4.2)	0.561
GHQ-12 score		12.4 (4.4)	13.9 (4.6)	11.7 (5.0)	12.4 (3.6)	0.221
Psychological Whoqol-bref		73.6 (14.4)	72.0 (14.7)	74.1 (14.3)	74.6 (14.3)	0.424
Physical Whoqol-bref		72.9 (14.9)	65.7 (14.8)	73.4 (14.6)	75.8 (14.6)	0.058
Social relationships Whoqol-bref		74.0 (18.3)	73.2 (17.0)	72.2 (17.4)	77.0 (20.2)	0.140
Environment Whoqol-bref		74.0 (13.8)	74.2 (12.9)	74.1 (13.8)	73.7 (14.8)	0.983
Satisfaction with university services		66.9 (9.6)	63.4 (11.2)	69.9 (10.1)	65.3 (7.4)	0.020^{*}
Academic Employability Skills (AES) score		72.7 (13.0)	74.9 (11.7)	68.2 (13.5)	76.1 (12.1)	$<0.001^{***}$
AES item 1 – Drafting/writing		75.7 (18.1)	76.2 (17.6)	71.5 (19.3)	80.3 (15.8)	$<0.001^{***}$
AES 2 – Critical spirit/having sound judgment		72.2 (17.1)	71.4 (17.0)	69.0 (17.7)	77.0 (15.3)	0.002^{**}
AES 3 – Problem solving		73.4 (17.5)	77.7 (16.8)	69.1 (17.9)	74.9 (16.5)	$<0.001^{***}$
AES 4 – Teamworking		75.9 (19.8)	77.7 (19.9)	69.3 (18.7)	82.5 (18.6)	$<0.001^{***}$
AES 5 – Supervision/direction of others		66.4 (20.4)	67.6 (19.7)	62.9 (21.0)	69.6 (19.9)	0.037^{*}
AES 6 – Use of new technologies		72.4 (20.1)	78.6 (16.7)	67.5 (20.5)	72.7 (21.0)	$<0.001^{***}$

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

and Technology vs. 68.2 from Law and Finance); they mainly declared capacities for drafting/writing, critical thinking, decision-making and team working; see Table 2.

No correlation was found between socio-demographic characteristics and the psychological Whoqol-bref or GHQ-12 scores. However, both scores were linked with Whoqol-bref physical (0.64 and -0.36, respectively), social relationships (0.51 and -0.20) and environmental (0.51 and -0.26) domains. Psychological Whoqol-bref score is positively associated with the AES (r 0.25, $p < 0.001$); this relation is verified for each item separately (drafting, critical spirit, problem-solving, teamwork, and supervision/direction of others), except for the use of new technologies. The GHQ-12 and AES scores were negatively linked (r -0.42, $p < 0.001$); see Table 3.

Relations between psychological Whoqol-bref items and GHQ-12 items show that only 3/6 Whoqol-bref psychological items (ability to concentrate; satisfaction with self; negative feelings) are correlated with 8/12 GHQ-12 items (lost much sleep, making decisions, feeling under strain, not overcoming difficulties, depressed, losing self-confidence, thinking of oneself as a worthless person and being reasonably happy); see Table 4.

The relationship between psychological Whoqol-bref and self-perceived AES (regression coefficient (rc) 0.14, $p = 0.019$) was positive. The same relation existed with Whoqol-bref physical (rc 0.38, $p < 0.001$), social relationships (rc 0.28, $p < 0.001$) and environmental (rc 0.19, $p < 0.001$) domains. No link was observed between GHQ-12 and AES, but there is a negative influence on the physical Whoqol-bref domain (rc -0.10, $p < 0.001$); see Table 5.

4. Discussion

Our study is about the well-being of first-year university students (in terms of the psychological quality of life domain of the Whoqol-bref and psychological suffering from the General Health Questionnaire (GHQ-12)) and its associations with academic employability skills. Our most important finding is the connection between well-being and capacities acquired at university: the better the psychological quality of life, the greater the student's generic academic skills for employability. The psychological quality of life of freshmen is associated with all competencies except the use of new technologies (drafting, critical spirit, problem-solving, teamwork, and supervision/direction of others).

The self-assessment measure of academic skills relative to employability is [32] based on the theory of self-efficacy [39]: indeed, if employability perfor-

Table 3
Relationships between Psychological Whoqol-bref and GHQ-12, and other determinants (bivariate tests): Mean (SD) or correlation coefficients (Pearson's correlation)

	Psychological Whoqol-bref score		GHQ-12 score	
	Mean (SD)	p-value	Mean (SD)	p-value
Group				
Sciences and Technology	72.0 (14.7)	0.424	13.9 (4.6)	0.221
Law and Finance	74.1 (14.3)		11.7 (5.0)	
Social Sciences	74.6 (14.3)		12.4 (3.6)	
Sex				
Female	73.2 (14.2)	0.515	12.9 (3.6)	0.180
Male	74.3 (14.6)		11.6 (5.6)	
Nationality				
Luxembourger	73.9 (14.0)	0.629	12.2 (4.3)	0.583
Other	73.1 (15.1)		12.7 (4.7)	
12^{th} grade diploma				
General	73.9 (14.4)	0.578	12.2 (4.1)	0.631
Professional or technical	72.9 (14.5)		12.8 (5.3)	
Father's educational level				
Under 12^{th} grade	70.9 (15.4)	0.685	12.1 (4.9)	0.430
12^{th} grade and above	69.9 (14.8)		12.8 (3.7)	
Mother's educational level				
Under 12^{th} grade	73.9 (14.1)	0.423	12.7 (4.9)	0.281
12^{th} grade and above	72.5 (15.1)		11.7 (4.2)	
Father's professional status				
Manual worker	74.0 (13.6)	0.331	12.6 (4.6)	0.573
Senior officer	72.3 (15.7)		12.0 (4.2)	
Mother's professional status				
Manual worker	73.8 (14.2)	0.453	12.4 (4.5)	0.764
Senior officer	72.2 (15.1)		12.1 (4.5)	
Age (year)	0.00	0.944	0.13	0.217
GHQ-12	−0.42	<0.001***	–	–
Psychological Whoqol-bref domain	–	–	−0.42	<0.001***
Physical Whoqol-bref domain	0.64	<0.001***	−0.36	<0.001***
Social relationships Whoqol-bref domain	0.51	<0.001***	−0.20	0.050*
Environmental Whoqol-bref domain	0.51	<0.001***	−0.26	0.012*
Satisfaction with university services	0.17	0.109	−0.15	0.160
Academic Employability skills (AES) score	0.25	<0.001***	−0.03	0.795
AES item 1 – Drafting/writing	0.18	0.002**	−0.01	0.945
AES 2 – Critical spirit/having sound judgment	0.17	0.003**	0.04	0.705
AES 3 – Problem solving	0.23	0.000***	−0.12	0.232
AES 4 – Teamworking	0.16	0.004**	0.03	0.778
AES 5 – Supervision/direction of others	0.25	0.000***	−0.07	0.510
AES 6 – Use of new technologies	0.10	0.074	−0.01	0.931

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

mance depends on the knowledge, skills and abilities possessed, how to use those assets and present them to employers depends on confidence in one's own value. We observed that the academic employability skills profile is coherent with the courses followed: for example, Social Sciences students mainly declared capacities for drafting/writing, (critical judgment, NOT CLEAR) and teamworking, and students of Sciences and Technology highlighted their performance in solving problems and using new technologies. Recent studies show that the health behaviour of first-year university students differs from that of their working peers. Drinking and drink-related problems increased during the study and are much more prevalent among students than others in the same age group. Moreover, this health behaviour affects their quality of life assessment, which is not the case among their working peers [15]. In addition, employed young people scored higher in their self-perceived quality of life than did students [40].

The psychological quality of life from the Whoqol-bref and the psychological suffering from the General Health Questionnaire (GHQ-12) scores differ greatly between countries (see Table 6). In Luxembourg, the

Table 4
Associations between psychological Whoqol-bref items and GHQ-12 items (bivariate tests)

	GHQ1		GHQ2		GHQ3		GHQ4		GHQ5		GHQ6	
	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value
Item 5	0.008	0.955	0.065	0.633	−0.035	0.799	0.174	0.199	−0.051	0.710	0.037	0.788
Item 6	0.107	0.431	−0.067	0.623	−0.038	0.779	0.061	0.654	−0.021	0.878	−0.027	0.843
Item 7	−0.157	0.248	−0.286	0.033	−0.096	0.483	−0.094	0.491	−0.205	0.130	0.017	0.900
Item 11	−0.027	0.842	−0.080	0.558	0.009	0.949	0.142	0.295	−0.184	0.176	−0.109	0.424
Item 19	−0.182	0.180	−0.245	0.068	−0.108	0.430	0.204	0.132	−0.307	0.021*	−0.263	0.050*
Item 26	−0.078	0.569	−0.308	0.021*	−0.004	0.977	0.347	0.009**	−0.297	0.026*	−0.074	0.585
	GHQ7		GHQ8		GHQ9		GHQ10		GHQ11		GHQ12	
	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value	Pearson's correlation	p-value
Item 5	−0.112	0.412	0.126	0.354	−0.109	0.424	−0.066	0.631	−0.024	0.861	−0.153	0.259
Item 6	0.022	0.874	0.205	0.130	−0.129	0.344	−0.072	0.596	−0.085	0.535	−0.003	0.980
Item 7	−0.116	0.393	−0.051	0.709	−0.273	0.042*	−0.138	0.311	0.040	0.769	−0.187	0.168
Item 11	−0.142	0.295	0.217	0.108	−0.122	0.370	−0.149	0.272	−0.156	0.252	−0.035	0.798
Item 19	−0.158	0.244	0.130	0.340	−0.345	0.009**	−0.371	0.005**	−0.401	0.002**	−0.299	0.025*
Item 26	−0.051	0.707	0.260	0.053	−0.264	0.049*	−0.111	0.416	−0.194	0.152	−0.078	0.569

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Psychological Whoqol-bref 6 items [23]: Item 5: How much do you enjoy life? Item 6: To what extent do you feel your life to be meaningful? Item 7: How well are you able to concentrate? Item 11: Are you able to accept your bodily appearance? Item 19: How satisfied are you with yourself? Item 26: How often do you have negative feelings such as blue mood, despair, anxiety, depression?

GHQ- 12 items [29] Have you recently... GHQ1: Been able to concentrate on what you are doing? GHQ2: Lost much sleep over worry? GHQ3: Felt that you are playing a useful part in things? GHQ4: Felt capable of making decisions about things? GHQ5: Felt constantly under strain? GHQ6: Felt you couldn't overcome your difficulties? GHQ7: Been able to enjoy your normal day to day activities? GHQ8: Been able to face up to your problems? GHQ9: Been feeling unhappy or depressed? GHQ10: Been loosing confidence in yourself? GHQ11: Been thinking of yourself as a worthless person? GHQ12:Been feeling reasonably happy, all things considered? Been thinking of yourself as a worthless person? Been feeling reasonably happy, all things considered?

Table 5
Effects of self-perceived Academic Employability Skills and other determinants on psychological Whoqol-bref and GHQ-12. regression coefficient (SE) and 95% confidence interval

	Psychological Whoqol-bref score					GHQ-12 score				
	Est.	SE	95% CI		p-value	Est.	SE	95% CI		p-value
			Lower	Upper				Lower	Upper	
(Intercept)	0.26	5.24	−10.06	10.58	0.961	23.79	2.22	19.41	28.18	<0.001***
Academic employability skills score	0.14	0.06	0.24	0.26	0.019**	−0.04	0.03	−0.09	0.01	0.120
Whoqol-bref										
Physical	0.38	0.06	0.26	0.50	<0.001***	−0.10	0.03	−0.15	−0.05	<0.001***
Social relationships	0.28	0.04	0.20	0.35	<0.001***	−0.01	0.02	−0.04	0.03	0.706
Environmental	0.19	0.05	0.09	0.29	<0.001***	−0.01	0.02	−0.05	0.03	0.590

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 6
Psychological Whoqol-bref and General Health Questionnaire (GHQ-12) scores among students: results from the literature: Mean (SD = standard deviation)

Authors	Country	N	Age (SD)	Psychological Whoqol-bref [0–100]
Eurich 2008 [25]	Brazil	67	21.2 ± 4.3	69.3 (12.3)
Hassed 2009 [26]	Australia	148	18.8 ± 1.1	65.6 (16.1)
Kaliseti 2004 [27]	Turkey	150	19	60.7 (14.7)
Li 2009 [51]	Thailand	407	20.5 ± 1.2	68.1 (11.0)
Wu 2007 [52]	Taiwan	304	20.1 ± 1.7	54.4 (12.0)
Sciences Technology Law and	Luxembourg	93	20.8 (4.3)	72.0 (14.7)
Finance Social Sciences	Our present survey	126	20.9 (3.5)	74.1 (14.3)
		102	21.4(4.2)	74.6 (14.3)
Authors	Country	N	Age (SD)	GHQ-12 score [0–36]
Özdemir 2000 [8]	Turkey	115	21.9 ± 2.2	7.5 ± 3.7
Baumann 2008 [53]	France	934	20.0 ± 2.0	12.8 ± 5.4
	Poland	479		15.3 ± 5.3
	Romania	195		13.8 ± 4.2
Cotton 2002 [54]	South Australia	176	25.0 ± 9.0	15.9 ± 7.3
Roberts 2000 [7]	United Kingdom	468	23.4 ± 4.8	13.5 ± 6.5
Sciences Technology Law and	Luxembourg	93	20.8 (4.3)	13.9 (4.6)
Finance Social Sciences	Our present survey	126	20.9 (3.5)	11.7 (5.0)
		102	21.4 (4.2)	12.4 (3.6)

students' psychological quality of life was higher than, or similar to, that reported in other studies among university students. Social Sciences students had a higher psychological quality of life than did their counterparts in Brazil [25]. Regarding the mental distress scored by the GHQ12, the Law and Economics students achieved values lower only in Turkey [8]. These results may be considered as satisfactory in the European context, given continuous changes in the demographic pattern of the student body, and difficult global economic circumstances.

The following hypotheses may be raised:

(1) Better psychological quality of life is associated with acquisition of skills that increase employability among the group in which female students were most represented, namely those studying Social Sciences.
(2) The Social Sciences group included the highest proportion of Luxembourg natives, and the highest level of self-perceived employability skills. Our hypothesis is that a number of students already possess high individual capacities. For them, the competencies relative to employability to ensure their professional future have been insufficient. Their need is not met by the various seminars and courses, creating dissatisfaction which probably affected their psychological quality of life.
(3) The difference between faculties could be attributable to the academic employability skills taught in each school: self-assessed capacities like drafting/writing, critical judgment and team working that Social Sciences students mainly declared may be more complex to learn.

Our findings confirm that individual health, health behaviour, health complaints, and financial parameters are selectively associated with some but not all indicators of student educational achievement [9].

As in a previous study, no gender difference or other determinant which produces social inequality was observed despite being recognized in the literature as resulting in morbidity [41]. In the same way, no association exists between psychological quality of life or academic employability skills and students' satisfaction with the university services; a factor reported to be a determinant of academic success and educational achievement [42].

The study focused on both psychological suffering and quality of life, but only one facet of well-being appears related to academic skills towards employability. Indeed, when we analysed the content of the items (Table 4), for example, ability to concentrate, self-satisfaction and negative feelings, we remark that they are associated with factors such as being anxious, unable to concentrate on a task or be happy with oneself, which can be considered as psychological reflections of quality of life. In contrast, the body image, the meaning that we give to life or enjoyment of life are strongly influenced by the social environment, (e.g. the people with whom one lives, to whom one speaks and whose opinion matters). Students spend much time at university, they meet other young people, lecturers, and academic staff who set the standards by which they are compared and from which they assess their satisfaction with the quality of their life and their environmental conditions.

Due to the emphasis on employability in higher education, the mastery of AES should imply better academic adjustment of the first year students. GHQ-12 measures psychological suffering and its health related-outcomes, so a high level of psychological suffering contributes to a decrease in physical quality of life. Although the cross-sectional study design precludes conclusions about the direction of the link, a recent survey confirmed that the prevalence of psychiatric disorders among first-year students is correlated with increased difficulty in adapting to university education [43]. Our study shows that the psychological Whoqol-bref score is an interesting indicator to include in the monitoring of students' well-being; it could be used to evaluate the influence on relevant educational achievement predictors of programmes and services of a comprehensive health promotion plan. Indeed, students who leave university without having obtained a diploma represent an important economic, psychological and social cost for the students themselves and wider society. Student dropout is affected by multiple factors; nevertheless, with the mobility developed by the European Higher Educational Area and the Bologna Process, the university environment undoubtedly plays an important part [44]. So, psychological quality of life from the Whoqol-bref and psychological suffering from the GHQ-12 are both useful instruments with which to explore well-being at university. They complement each other: psychological suffering from the GHQ-12 provides important data to prevent mental troubles of the most vulnerable students, and psychological quality of life from the Whoqol-bref facilitates provision of an environment conductive to learning.

5. Limitations

First, the survey was conducted among volunteers in their first year of higher education and the results cannot be generalized. Although the population is small, the participation rate (33%) is in accord with the literature (27%) including a web-based survey [45]. Second, the voluntary completion of the web-based self-administered questionnaire might lead to bias in terms of participation and responses to questions [46]. However, the web-format Whoqol-bref is considered equivalent to the paper version [45], and the quality of the completed questionnaires was very high. Third, the predominance of female students in our sample is consistent with similar observations have been made elsewhere [12]. Women are more motivated to participate in investigations and to provide information on their well-being. At the opposite, the men are recognized to be low responders to surveys anyway [47,48].

6. Conclusion

Our study shows it is important to assess indicators of well-being and to create benchmarks to monitor students during their first university year. We also need to better understand the relationship between well-being and the acquisition of employability skills, how they are constructed and how they operate in a globalized academic market. Such tracking allows the provision of appropriate assistance and services [4], optimisation of coaching, and the development of a dynamic view of employability that allows for ongoing training opportunities.

In this context, many universities have created tutoring groups to help students manage their university work and develop [successful working methods [49]. Moreover, specific disciplines such as Social Sciences can promote 'help workshops' that aim to improve ac-

quisition of skills like drafting/writing, critical thinking, problem-solving, teamwork, supervision, and use of new technology. Information also plays an important role in the promotion of autonomy, self-respect and development of the ability to take action. It increases the participation of students in their training and improves their performance [50].

Creating working groups specifically to connect students with potential employers, arranging meetings with professionals and sessions on job-seeking techniques also help students gain confidence in their capabilities and, according to our results, to increase their well-being. Participation in these activities promotes peer interaction and contributes to student support. Our findings are essential to those designing and implementing individual or community programs in health promotion because they lead to a consideration of other types of support: workshops to develop empowerment strategies, discussion groups, welfare initiatives, individual help, information provided on websites, leaflets and hotlines, and other means to increase the capacity of students to cope with anxiety and manage their lives.

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