

## **Case study on measuring the level of stress in the academic environment in France**

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**Abstract.** The study is a novelty because was elaborated on a group of students in the academic environment in France. Following the documented steps, I have noticed that several questionnaires have been used in order to identify stress levels in the academic environment. The case study presented in this article consists in a questionnaire meant to identify stress factors. There are several factors that are likely to cause stress: changes to routine, time pressure, difficult tasks, too much homework's, financial state, sleep schedule and physical work conditions. I believe that stress management results could be visible if we can motivate people to adjust their behavior and life style.

**Keywords:** *stress, questionnaires, detection, statistics, MatLab*

### **1.Introduction**

The aim of this study is to detect the stress in the academic environment in France. I applied the following instrument: The Holmes and Rahe Scale Questionnaire, to identify stress factors.

This study was conducted during three months in France on a group of 76 students of different universities. Stress at work has become a serious problem affecting many people of different professions and students as well [1].

Stress represents the basis of research for a multitude of doctoral theses and scientific articles. Therefore, over the course of time, stress has been defined in various ways: Stress has a different meaning for different people under different conditions.

The first definition of stress is that proposed by Hans Selye: Stress is the non-specific response of the body to any demand. Other definitions, reviewed in detail by him in his *Stress in Health and Disease* (1976), include the following:

- In the behavioral sciences, stress is regarded as the “perception of threat, with resulting anxiety discomfort, emotional tension, and difficulty in adjustment”.
- He says that “stress is not necessarily something bad – it all depends on how you take it. The stress of exhilarating creative successful work is beneficial, while that of failure, humiliation or infection is detrimental [2]”. So, the effects of stress depend on one’s positive or negative perception over the situation.

The effect of stress on our emotional and physical health can be devastating. In a recent USA study, over 50% of individuals felt that stress negatively impacted work productivity. Between 1983-2009, stress levels increased by 10-30% among all demographic groups in the USA [3].

Psychologist Richard S. Lazarus defined stress as follows: „a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources

and endangering his or her well-being.” He also states that stress triggers „two critical processes that mediate the person-environment relationship: cognitive appraisal and coping”[4].

“Stress is the body's reaction to a mentally or emotionally disruptive or upsetting condition; to adverse external influences capable of affecting our physical health [5].”

“Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury.

The concept of job stress is often confused with challenge, but these concepts are not the same [6].”

In the figure.1 it is related the stress causes for students:

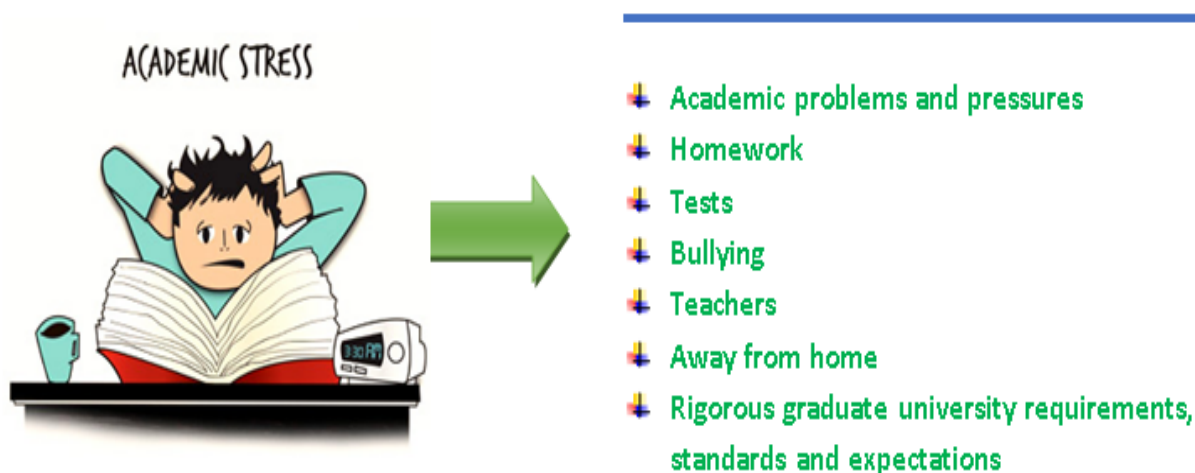


Figure.1. Academic stress for students

## 2.Measurement results

In order to verify the validity of the hypotheses and to achieve the objectives that had been previously set, I have used the following tool:

• The Holmes and Rahe Scale Questionnaire (figure.2), to identify stress factors [7].

Mark down the point value of each of these life events that has happened to you during the previous year. Total these associated pointed. Add up all the points you have to find your score.

• 150 pts or less means a relatively low amount of life change and a low susceptibility to stress-induce health problems.

• 150 to 300pts implies about a 50% chance of a major stress-induced health problem in the next 2 years.

• 300 pts or more raises the odds to about 80%, according to the Holmes-Rahe prediction model.

Life Event	
1. Death of spouse	100
2. Divorce	73
3. Marital Separation from mate	65
4. Detention in jail or other institution	63
5. Death of a close family member	63
6. Major personal injury or illness	53
7. Marriage	50
8. Being fired at work	47
9. Marital reconciliation with mate	45
10. Retirement from work	45
11. Major change in the health or behavior of a family member	44
12. Pregnancy	40
13. Sexual Difficulties	39
14. Gaining a new family member (i.e. birth, adoption, older adult moving in, etc.)	39
15. Major business adjustment	39
16. Major change in financial state (i.e. a lot worse or better than usual)	38
17. Death of a close friend	37
18. Changing to a different line of work	36
19. Major change in number of arguments with spouse (i.e. a lot more or less)	35
20. Taking on a mortgage (for home, business, etc.)	31
21. Foreclosure on a mortgage or loan	30
22. Major change in responsibilities at work (i.e. promotion, demotion, etc.)	29
23. Son or daughter leaving home (marriage, college, military, etc.)	29
24. In-law troubles	29
25. Outstanding personal achievement	28
26. Spouse beginning or ceasing work outside the home	26
27. Beginning or ceasing formal schooling	26
28. Major change in living condition (i.e. new home, remodeling, deterioration, etc.)	25
29. Revision of personal habits (i.e. dress, associations, quit smoking, etc.)	24
30. Troubles with the boss	23
31. Major changes in working hours or conditions	20
32. Changes in residence	20
33. Changing to a new school	20
34. Major change in usual type and/or amount of recreation	19
35. Major change in church activity (i.e. a lot more or less)	19
36. Major change in social activities (i.e. clubs, movies, visiting, etc.)	18
37. Taking on a loan (i.e. car, tv, freezer, etc.)	17
38. Major change in sleeping habits (i.e. a lot more or less)	16
39. Major change in number of family get-togethers (i.e. a lot more or less)	15
40. Major change in eating habits (i.e. a lot more or less, eating hours, surroundings, etc)	15
41. Vacation	13
42. Major holidays	12
43. Minor violations of the law (i.e. traffic tickets, jaywalking, etc.)	11

Figure 2. Holmes-Rahe questionnaire

### 3. Interpretation of measurement results

In this case study, there have been 76 respondents aged 18 to 55, who took part in this study. The age distribution was the following: 63% of respondents aged 18 to 25, 25% of respondents aged 26 to 35, 8% of respondents aged 36 to 45, and 4% aged 46 to 55.

In that which concerns gender, out of the total amount of respondents, 14 of them were males (18%) and 62 were females (82%). The research took place between May and July 2014 and the respondents came from universities situated in Paris and Evry Île-de-France (France). A short description of Matlab software are presented in figure.3.

This is an example of a calculation procedure for Holmes-Rahe Questionnaire with Matlab software (figure.4):

```

Holmes_Fr=xlsread('anova.xlsx','HolmesFr ')
mean(Holmes_Fr)
var(Holmes_Fr)
std(Holmes_Fr)
    
```

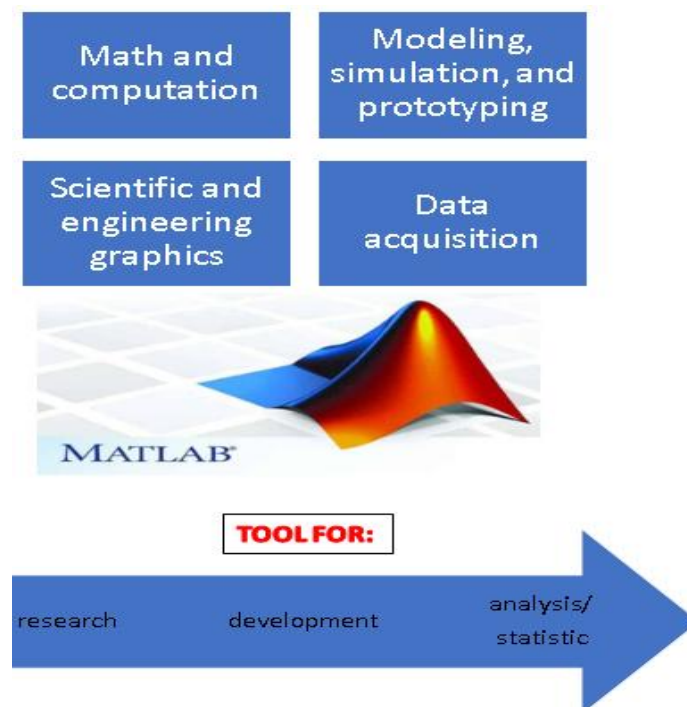


Figure 3. MatLab software description

The average score for the group of respondents was extremely high, of approx. 1266 points. Therefore, it may be concluded that the subjects who took part in this interview may consider stress a health issue and may be exposed to a major risk of stroke or mental illness.

Out of the 76 respondents, only one (approx. 1.32%) scored below 150 points (135 points), thus presenting a low risk of illness. Another respondent (approx. 1.32%) scored between 150 and 299 points (284 points), thus presenting a moderate risk of illness (a 50% probability of stress turning into a health issue). The other 74 respondents (approx. 97,37%) scored above 300 points, thus presenting a high risk of illness (a 90% probability of stress turning into a health issue) [8].

Representation of the corresponding average to the Holmes-Rahe Questionnaire is presented in fig.5. Below there are the meanings of the Matlab functions used to calculate the statistic indicators (Table.1) - *theoretical average, standard deviation, variance*:

- mean = average;
- var = variance/dispersion;
- std = standard deviation.

Tabel.1. Result for Holmes-Rahe Questionnaire

Respondent	Holmes –Rahe Questionnaire
1	2691
2	6434
3	3803
4	551
5	1199
6	866
7	877
8	348

<b>Respondent</b>	<b>Holmes –Rahe Questionnaire</b>
9	966
10	932
11	445
12	284
13	1250
14	633
15	1539
16	1107
17	1755
18	1119
19	416
20	1189
29	505
30	919
31	1371
32	1288
33	1357
34	848
35	756
36	435
37	815
38	1405
39	1506
...	...
75	1652
76	135
<i>Average (m)</i>	<i>1266,487</i>
<i>Standard deviation (s)</i>	<i>1021,567</i>
<i>Variance (s<sup>2</sup>)</i>	<i>104359,8</i>

```
Command Window
New to MATLAB? Watch this Video, see Demos, or read Ge

>> format long
mean(rahe_Fr)

ans =

    1.266486842105263e+003

>> var(rahe_Fr)

ans =

    1.043598119824562e+006

>> std(rahe_Fr)

ans =

    1.021566502888853e+003
```

Figure 4. Matlab- statistic indicators

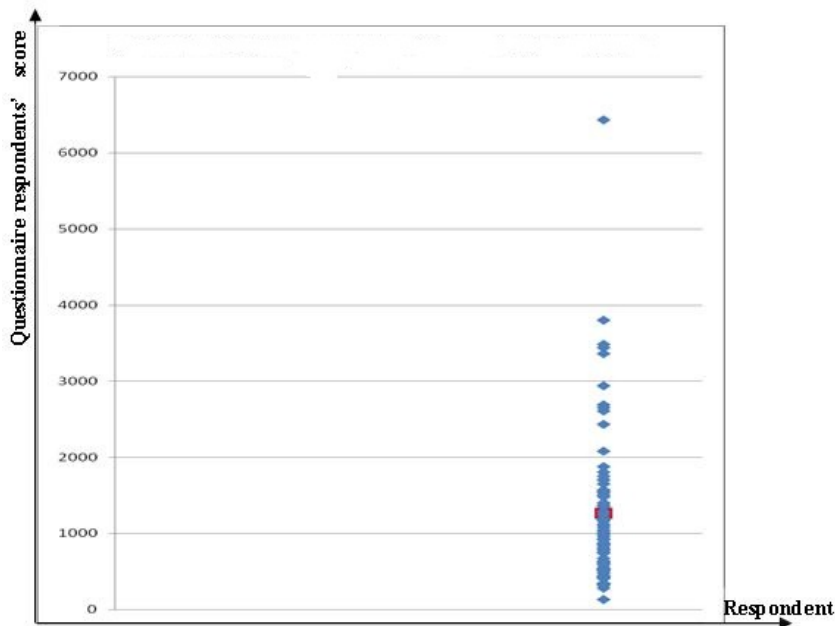


Figure 5. Representation of the corresponding average to the Holmes-Rahe Questionnaire Most stressful life events related with the Holmes and Rahe stress scale it is presented in figure.6.

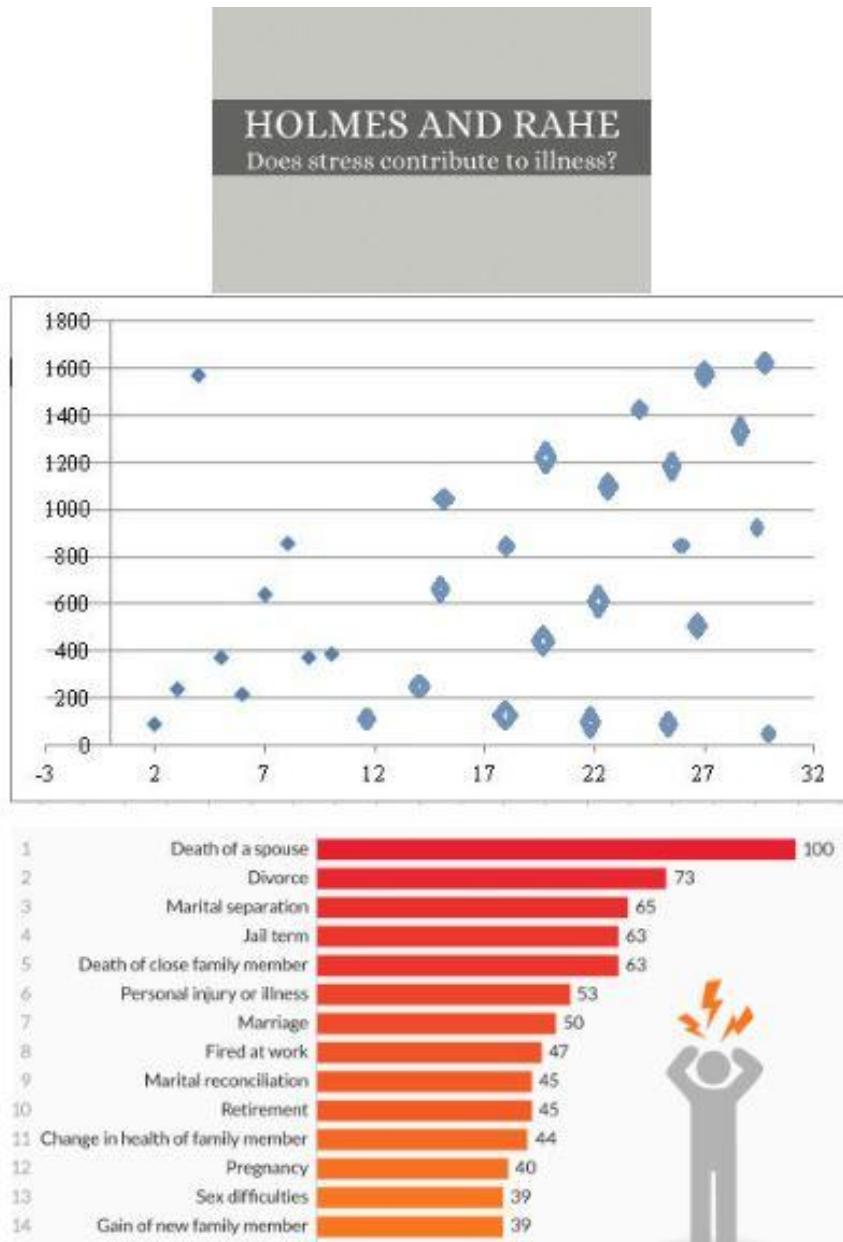


Figure 6. Life events chart

Some of the things students commonly cite as causes of stress include: examinations and pressure of combining paid work and study. In France, they know, that the key to success is to think positively!

#### 4. Conclusions

As a conclusion, the average score for the group of respondents to the Holmes-Rahe Stress Scale Questionnaire was exceedingly high, of about 1266 points, and in this case the subjects who took part in this interview may consider stress a health issue and may be exposed to a major risk of stroke or mental illness. The conclusion drawn by analyzing these questionnaire is that the staff in the academic environment is exposed to a high level of stress.

The academic environment is a stress generator due to the fact that, during university, students encounter various situations and they must demonstrate skills to cope with the multitude of challenges that arise, make important decisions in their careers, etc.

Despite there being thousands of treatises about this subject, as well as multiple developments both in theory and in practice, the concept of stress still remains a matter of debate and approaches in this field will continue to be made.

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