MENTAL WELL-BEING OF PHD STUDENTS AND POSTDOCTORAL RESEARCHERS IN ECONOMICS, BUSINESS ADMINISTRATION, AND STATISTICS[*]

SERGIO A. BERUMEN

sergio.berumen@urjc.es
King Juan Carlos University, Department of Applied Economics I
Paseo de los Artilleros, s/n. 28032, Madrid, SPAIN

PETRA HEGEMANN

hegemann.petra@gmail.com
King Juan Carlos University

ABSTRACT: This research is justified in the need to delve into the complex process through which the education of academics and scientists goes. This qualitative research consists of two complementary studies based on the evaluations of 42 PhD students and postdoctoral researchers of six public universities in Madrid, Spain, in Economics, Business Administration, and in Statistics. The interviews were held during the 2021 to 2024 academic years, each time in two specific stages. The first one was focused on motivation and satisfaction, and the second one, was on the assessment of mental well-being. From the information obtained, the objective became to identify the underlying relation between the variables considered. The responses were studied through the structured interview method. This research is a diagnosis, a first step from which to develop strategies to enhance motivation and satisfaction, as well as mechanisms to anticipate mental well-being problems.

Keywords: mental well-being, motivation, satisfaction, qualitative research, structured interviews.

RESUMEN: Esta investigación se justifica por la necesidad de profundizar en el complejo proceso por el que transcurre la formación de académicos. Esta investigación cualitativa consta de dos estudios complementarios a partir de las respuestas de 42 estudiantes de doctorado e investigadores postdoctorales de seis universidades públicas en Madrid, España, en Economía, Administración de Empresas, y en Estadística. Las entrevistas se llevaron a cabo durante los cursos académicos 2021 a 2024, en cada curso en dos etapas específicas. La primera se centró en la motivación y la satisfacción, y la segunda, en el bienestar mental. A partir de la información obtenida, el objetivo se centró en identificar la relación subyacente entre las variables consideradas. Las respuestas se estudiaron a través del método de entrevistas estructuradas. La presente investigación es un diagnóstico, un primer paso para el posterior desarrollo de estrategias que potencien la motivación y la satisfacción, así como el desarrollo de mecanismos que permitan anticipar los problemas relacionados con el bienestar mental.

Palabras Clave: bienestar mental, motivación, satisfacción, investigación cualitativa, entrevistas estructuradas.

1. Introduction

Maslow (1943) and MacCorquodale & Meehl (1948) were the trailblazers of the scientific study of human needs and the identification of motivation as an abstract process that is difficult to observe directly, but that cannot be taken for granted as it can also be enhanced by external stimuli. Through the years, a range of approaches to this issue have been constructed, including the following theoretical frameworks: (i) Theory of Vroom (1964) and its subsequent improvement by Porter & Lawler (1968); (ii) Two-Factors Theory (Herzberg, 1968); (iii) Discrepancy Theory (Locke, 1969); (iv) Theory of Human Needs (Alderfer, 1969); (v) Model of Labor Characteristics (Hackman & Oldham, 1976); (vi) Range of Affection (Locke, 1976: 268); (vii) Bandura Theory (1977); (viii) Opponent Process Theory (Landy, 1978); (ix) Organismic Interaction Theory (Deci & Ryan, 1985: 123); (x) Person and Environment Theory (Caplan, 1987), and (xi) Human Motivation Theory (McClelland, 1988).

A more recent classification points out four approaches: (i) avoidance; (ii) approximation; (iii) welfare, and (iv) growth. In the first one, behavior is directed by the rejection of negative or undesirable crossroads or circumstances (Greenburgh et al., 2021). On the contrary, in the motivation of approximation, behavior is directed by a positive or desirable event (Gregory, 2021). The Welfare Theory focuses on well-being and values, such as tastes, preferences, desires, needs and objectives (Hancock, 2021). Finally, the Growth Theory focuses on personal growth and the acquisition of more-demanded knowledge (Chabot et al., 2022). In any of these approaches, motivation is activated by intrinsic and extrinsic stimuli. Intrinsic motivation individuals perform their tasks only because they find them interesting (Fishbach & Woolley, 2022), or merely for the acquisition of skills (Shuxratovna-Ruzikulova, 2021), or even in the absence of rewards (Russi, 2021). On the contrary, in extrinsic motivation it becomes necessary the connection between the effort made and the positive consequences that occurred afterward, such as material or social rewards (Berumen et al., 2016; Matyjek et al., 2020). On the other hand, and both in an intrinsic and extrinsic manner, the individuals may feel unmotivated when: (i) there is no linkable perception of the relationship between actions and the achievement of objectives (Jones et al., 2021); (ii) the activity performed is not positively valued (Peasley et al., 2020); (iii) there is a lack of the necessary qualification to assume certain responsibilities (Se & Eunjung, 2020); (iv) the fear of failure is permanent (Kupor et al., 2018). When it comes to satisfaction, the focus has been on recognizing how satisfied an individual feels with the results achieved and how these impact performance (DeCarlo et al., 2021).

When it comes to mental health studies focused on the stress to which university students are subject, research is scarce, although five ones are particularly relevant. In the first place, Beiter et al. (2015) acknowledged a 231% increase in mental health-related problems at the university and the close relation underlying between depression, anxiety, and stress. In the second place, Weinberger & Gbedemah (2018) studied some of the effects derived from a deterioration of the students' mental health, such as: (i) between 2010 and 2015 the number of deaths increased an 15%; (ii) 43% suffered from anxiety and depression, and (iii) 63% acknowledge having a mental health problem. In the third place is the work of Barreira et al. (2018), who surveyed 1185 students from the universities of Berkeley, Columbia, Harvard, MIT, Princeton, San Diego, and Yale. Their most relevant findings are: (i) 18% showed symptoms of depression and anxiety; (ii) the level of depression increased as doctoral students progressed through the program; (iii) at least 11% had thought about suicide in the two weeks before the questionnaire; (iv) those seeking help were not the ones with the greatest health problems, and (v) 26% rated their work as useful, while 32% considered it irrelevant. In the fourth place, there is the work of Blasco et al. (2019), based on a sample of 2118 Spanish university students, where 9,9% said they had had suicidal thoughts; the 5,6% planned to carry them out, and 0,6% tried to commit suicide at some point. Finally, there is the study of Almasri et al. (2021), which specialized in doctoral students in political science, where 15,8% had suicidal thoughts and 32% acknowledged having suffered episodes of prolonged anxiety in the past.

The present research has two objectives: (i) on one hand, to study the correlation that underlies motivation and satisfaction, and (ii) to make a general evaluation of the inner process experienced by each student, and, in the other hand, to correlate mental health and the subjective appreciation of the performance of doctoral students and researchers.

In general terms, its importance lies in the need to deepen into the complex process through which the education of researchers, scientists, and technologists from all disciplines go, which will surely leave an inner mark on them for the rest of their professional lives. There is also the need to identify the assessment that individuals make about themselves and their performance, how they assimilate the stress to which they are subjected and how they perceive the situation for the future.

Originally, this research was interested in assessing the motivation, satisfaction, and well-being of doctoral students of researchers of first, second, and third years, to find out more about their vital and

personal evolution throughout their education years. As the research progressed, however, it was identified that in the cases of motivation and satisfaction, the differences were, in fact, substantially significant depending on the year of education of the students, but not about their mental health deterioration – understood as the "burnout" syndrome, mental fatigue and/or stress of varying intensity, so that in the second analysis individuals were integrated in to mixed groups.

2. Research method

To carry out this research, a database was built based on the responses of 42 doctoral students and researchers in Economics, Business Administration, and Statistics, in Madrid, Spain. First, a contact list was made of those responsible for the respective students' secretariats/offices of the universities, and the students' offices of the centers of the Higher Council for Scientific Research (CSIC, by its initials in Spanish). Second, the data of university students enrolled in doctoral studies in the academic years 2021 to 2024 and those assigned to current projects or stays were requested via email and telephone.

The list of participants was drawn up: (i) those students assigned to doctoral programs in six public universities (Alcalá, Autónoma de Madrid, Carlos III, Complutense de Madrid, Politécnica de Madrid, and Rey Juan Carlos), and (ii) the list increased by adding PhD students who carried out a research stay or an academic course.

Data were collected in four stages: (i) during the fourth week of September 2021, 2022, 2023, and 2024; (ii) during the second week of February 2022, 2023, and 2024; (iii) in the fourth week of May 2022, 2023, and 2024; (iv), and (iv) during the third week of July 2022, 2023, and 2024. To achieve consistent results, participants were asked to meet the following conditions: (i) to be attached to a doctoral program or current projects or stays, and (ii) to temporarily reside in Madrid. In the case of doctoral students, the age range was between 23 and 30 years old, while in the case of researchers, the age range was between 28 and 40 years.

The research went through five methodology stages (Berumen & Lei, 2020): (i) establishment of contact with participants; (ii) online session via Microsoft Teams with all participants to explain what their participation involved; (iii) selection of the participant most committed to the project; (iv) the responses were analyzed through the structured interviews method, and (v) interpretation of the results. In conducting the interviews, human interaction bias was avoided; in addition, by guaranteeing that the information provided is anonymous, it has sought to avoid what in electoral surveys is called the "shy voter effect".

3. Preliminary results on motivation and satisfaction

Answer choices were limited to two variables of varying intensity within the range of negative motivation (*NM*) / negative satisfaction (*NS*) and two in the spectrum or positive motivation (*PM*) / positive satisfaction (*PS*).

Table 1. Response options on motivation and satisfaction

Motivation assessment:	Satisfaction assessment:
Very low	Completely dissatisfied
Low	Somewhat satisfied
High	Very satisfied
Very High	Completely satisfied

The results indicated different degrees of motivation and satisfaction, which depend on the temporal moment that individuals live. By the assessment of motivation and satisfaction, the classification has been as follows (figure 1): (i) first-year doctoral students were the most motivated; (ii) the researchers were located at close range; (iii) a little further away were the third-year doctoral students, and (iv) at a considerable distance from the first ones, we find the second-year doctoral students.
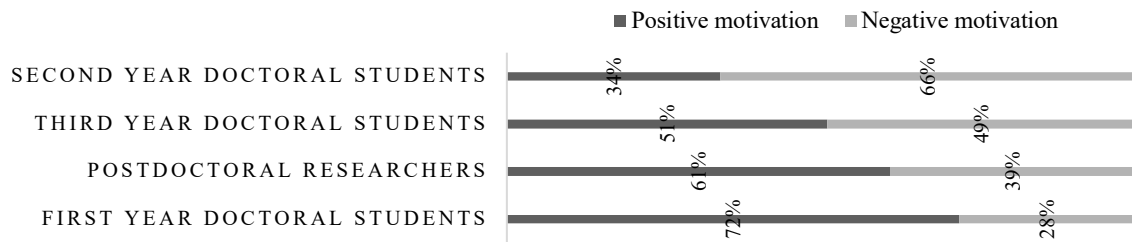
Figure 1. Results on motivation

In the case of satisfaction (figure 2): (i) the differences between researchers and first-year doctoral students are small, and most of them showed positive satisfaction, and (ii) third- and fourth-year doctoral students repeat position, in both cases at a considerable distance from the first ones. It is striking that both motivation and satisfaction are very similar in very different individuals because while first-year doctoral students are at the beginning of their academic life, researchers often have several professional consolidations.
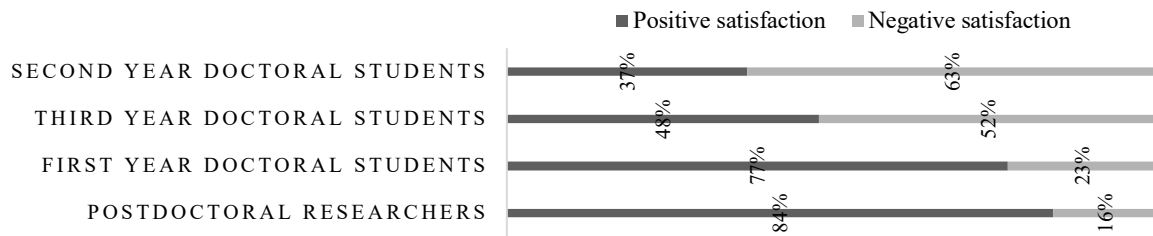

Figure 2. Results on satisfaction

4. Final results

The interviews were structured in three blocks (Jackson, 2007): (i) items 1 to 5, on the impact on the education process; (ii) items 6 to 8, on the impact on personal well-being, and (iii) items 9 to 11, on the impact on social relationships. There were 39 questions in total.

Table 2. Items and Questions of the Interviews

Assessment of mental well-being and its impact on the education process:
1. Difficulty to make decisions.
   What kind of decisions do you find most challenging to make?
   Do you notice any patterns in your decision-making difficulties?
   Are there specific factors or pressures that make decisions harder for you?
2. Procrastination in the performance of tasks.
   What types of tasks do you usually procrastinate on?
   Are there specific triggers or circumstances that lead to procrastinate on a task?
   Do you find certain environments make you more prone to procrastination?
   Are there particular times of the day when you are more likely to procrastinate?
3. Disaffection for work that previously was stimulating.
   What aspects of your duties did you find most stimulating in the past?
   When did you first start noticing a change in your feelings towards your work?
   Are there specific events or changes at work that might have contributed to your disaffection?
   Have your career goals or personal aspirations changed recently?
4. Evasive mentality.
   What situations typically trigger your tendency to be evasive?
   Do you notice a pattern in the types of tasks or issues you tend to avoid?
   How do you perceive the consequences of your evasive actions in the short term?
   How do you justify your evasiveness to yourself or others?
5. Breach of obligations and commitments.
   What types of obligations or commitments do you find challenging to uphold?
   Can you recall specific instances where you breached an obligation or commitment?
   Are there any common factors of patterns in the situations where you fail to meet your commitments?
   What are your usual reasons or justifications for breaching commitments?

Assessment of mental well-being and its impact on social relationships:
6. Episodes of anxiety or panic.
   What are some common triggers or situations that lead to your anxiety of panic episodes?
   How do you react to these episodes , both in the moment and afterwards?
   How do your anxiety or panic episodes impact your daily life and responsibilities?
   How do you communicate your experiences to others, and what kind of support do you receive?
7. Fatigue or physical discomfort.
   What specific symptoms of fatigue or physical discomfort are you experiencing?
   When did you first start noticing these symptoms?
   How often do you experience fatigue or physical discomfort, and how long do the episodes last?
   What strategies have you tried to alleviate your fatigue or physical discomfort, and how effective have they been?
8. Feeling of emptiness.
   Are there specific events or experiences that seem to trigger this feeling of emptiness?
   Have you found any activities or practices that temporarily relive or exacerbate this feeling?
   How do you describe this feeling to yourself or others?

Assessment of mental well-being and its impact on social relationship:
9. Irritable behavior.
   What are some common triggers that make you feel irritable?
   Are there specific situations, people, or environments that tend to increase your irritability?
   How does the irritable behavior impact your daily life and relationships?
10. Desire to withdraw from society, family, and friends.
    Are there specific events or experiences that might have contributed to these feelings?
    How do you react to social situations or interactions with family and frieds?
    How do you balance your need for solitude with maintaining relationships?
11. Persistent sadness.
    How does this persistent sadness impact your daily life, responsibilities, and relationships?
    How do you view your sense of purpose and meaning in life, and how does this relate to your feelings of sadness?
    How do you take care of your mental and emotional well-being?

The partial results of the items and questions of the interviews reveal the formation of four groups (figure 3). It should be noted that they are not divided according to disciplines because the number of doctoral students in Statistics was less representative.

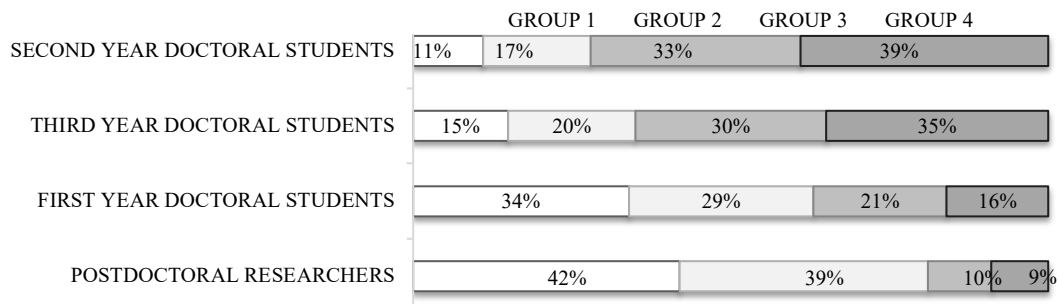|	GROUP 1	GROUP 2	GROUP 3	GROUP 4
SECOND YEAR DOCTORAL STUDENTS	11% 17%	33%		39%
THIRD YEAR DOCTORAL STUDENTS	15% 20%	30%		35%
FIRST YEAR DOCTORAL STUDENTS	34%	29%	21%	16%
POSTDOCTORAL RESEARCHERS	42%	39%		10% 9%

Figure 3. Detailed content of the groups

While groups 1 and 2 mostly include first-year researchers and doctoral students, in groups 3 and 4 the highest percentage falls on second and third-year doctoral students. See the strong change between groups 2 and 3.

The results of the first block (items 1 to 5 – figure 4) reveal stress levels with different degrees of intensity. Groups 1 and 2 have significantly lower levels than groups 3 and 4. In some cases, the discomfort registered by the first is almost tripled.
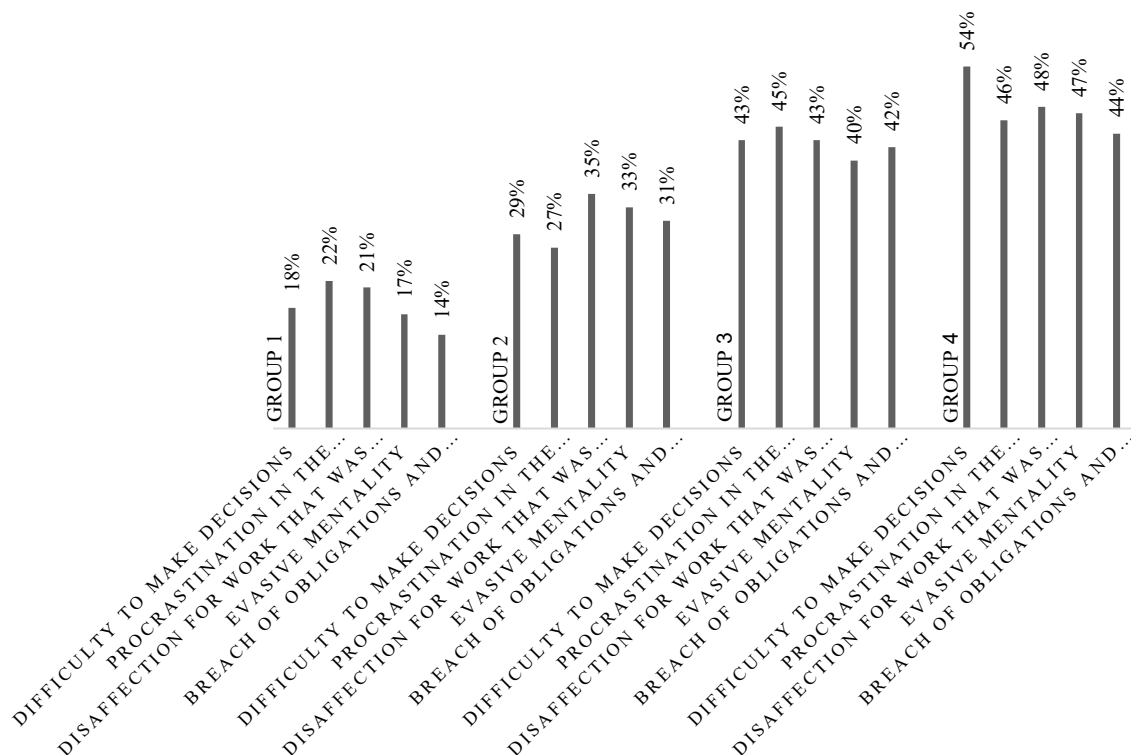

Figure 4. Results on mental well-being and its impact on the formative process

The second block (items 6 to 8) is interested in the impact on personal well-being. Unlike items 1 to 5, in this case, the distances between groups 2 and 3 are not so pronounced, while in group 4 distance remains high.
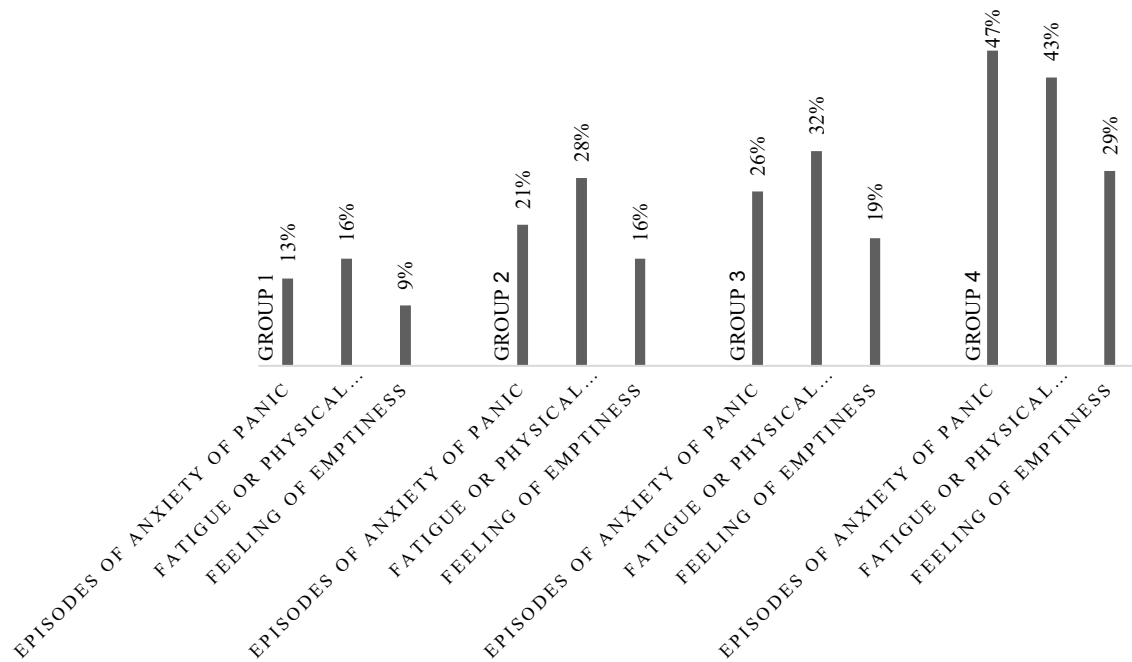
Figure 5. Mental outcomes and their impact on personal well-being

In the items of the third block (9 to 11), the interest focuses on social relations. Although in different proportions, in the four groups, there is a high indicator of "irritable behavior", which shows a symptom of submission to pressures of various kinds. The distances between groups 2 and 3 are relative, in ranges that go between low and moderate; but not in group 4, which shows notably worse results. Note the enormous distance between groups 1 and 4.
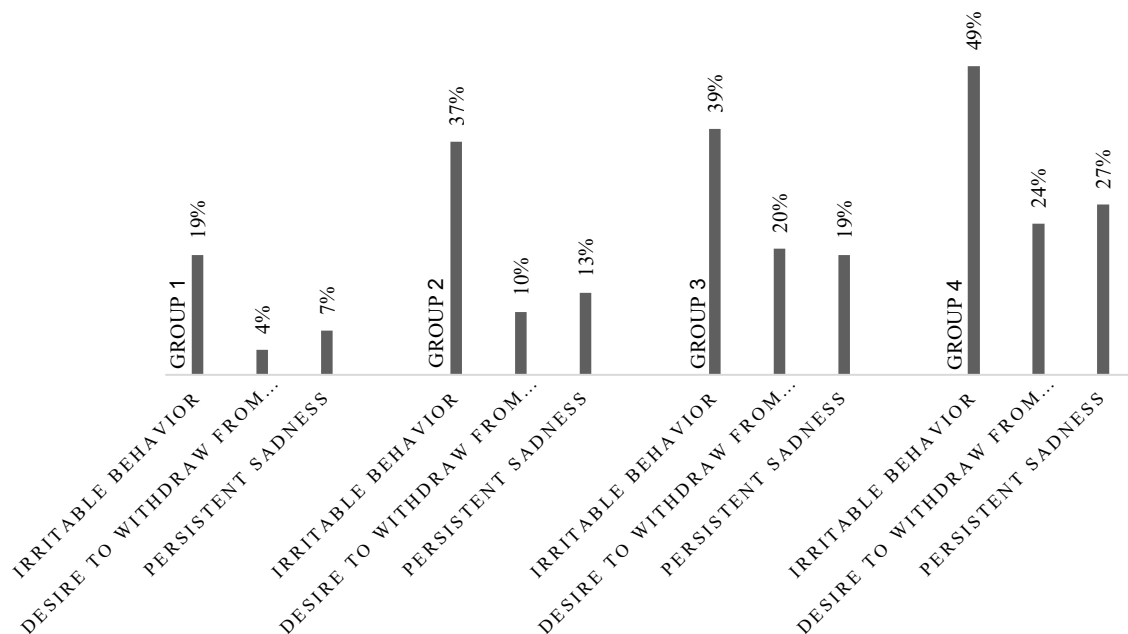

Figure 6. Results on mental well-being and its social relationship

5. Discussion

Given the intrinsic difficulty of carrying out sequential experiments to confirm the objectives described in the introduction, table 3 shows schematically the interpretation from the results achieved in the second part of the research, interested in mental well-being and what corresponds to the objective of the general evaluation of the internal process experienced by the participants.

Table 3. Final analysis

	Mental well-being, related to the education process	Mental well-being, related to personal well-being	Mental well-being, related to personal relationships
GROUP 1	Very positive	Very positive	Very positive
GROUP 2	Positive	Positive	Positive
GROUP 3	Medium	Medium	Positive
GROUP 4	Negative	Negative	Moderately negative

Based on the above analysis, we can affirm that the objectives indicated in the introduction have been reached, based on the following arguments: (i) a greater motivation and satisfaction, a better mental well-being (groups 1 and 2, made up mostly of researchers and first-year doctoral students), and (ii) a lower motivation and satisfaction, and a worse mental well-being (groups 4 and 3, made up of second- and third-year doctoral students). These results point out in the following (perhaps definitive?) direction: doctoral studies and postdoctoral stays are not linear and predictable processes; they are subject to multiple changes related to the subjective assessment of motivations and personal situation of each student/researcher. From here and thereafter, a series of conclusions are derived subject to discussion.

Derived from the findings of the first study, we conclude that motivation is more related to well-being and values, while the results are more related to personal growth and knowledge. Having said that, we continue: (i) positive motivation is mostly predominant (*PM*) (in fact, in first-year doctoral students and researchers negative motivation (*NM*) is hardly significant), and (ii) in terms of subjective assessment, first-year doctoral students were the most motivated of all of them; then, at a relatively short distance were the researchers, and a little further away were the third-year doctoral students. Second-year doctoral students are in the last place. In this latter case, the fall in the indicator between the first and second year of doctoral studies is very marked.

Regarding the second part of the research, the worsening of the items related to mental well-being experienced by doctoral students in the second year is very striking, and although in the third year, there is a recovery (see figure 3), this is insufficient. Regarding the objective assessment, the results reveal the superiority of the researchers, followed relatively closely by the first-year doctoral students, while once again the gap opens in the results of the third year, and is even deeper in the second year.

Likewise, the assessment of the motivation of first-year researchers and doctoral students is very high, which may be due to antagonistic reasons: while the first ones are preceded by a career dedicated to research, the latter face a universe of knowledge, but they have not delimited yet the object of study to which they will dedicate the rest of their professional lives. At the other extreme, the results achieved indicate the need to continue the research to find out what causes lead to such a significant loss of motivation among second-year doctoral students and why they seem to recover throughout the third year, although they remain far from the results obtained at the beginning of the studies. In this vein, Lerchenmueller et al. (2019) have emphasized the insecurities experienced by researchers in the development of their activities (in their work they identify that in women the data is even worse); in a large sample, they warned that 65% of researchers were reluctant to promote their findings so that they were known and cited in scientific publications; in some cases, this had been the cause of interruption or rupture of their promising careers. Daker et al. (2019) name 'creative anxiety' the stress produced by the lack of ideas. It can be described as the fear of facing a blank sheet in which the doctoral student is expected to capture brilliant and exceptional ideas, but that derives in anxiety, and then to a mental-blocking state; in some dramatic cases, it can even derive to suicide (Levecque et al., 2017).

Considering these explanations, it is very likely that second and third year doctoral students will experience, to some extent, what was pointed out by Lerchenmueller et al. (2019) and Daker et al. (2019). Naturally, due to the inherent vertigo of failure, but to some extent also due to vertigo of success, whether they are based on facts, such as the rejection of a paper, the negative evaluation of the first article that has been sent for evaluation in a journal with an impact index or a strong reprimand from the tutor.

Based on the results shown above, two reflections are proposed. In the first place, this research proposes an exercise of introspection, of "stopping the machinery and looking back" on motivations and mental well-

being, but also on the personal performance, environment and expectations of doctoral students and researchers who lived in Madrid throughout the 2022/24 academic year. Secondly, the education process of doctoral students and researchers is surrounded by some threats of varying intensity and nature. An increasing amount of externalities can represent professional damage in the long run, to the extent that, if preventive tools are available, problems can be faced through new collaborative holistic strategies.

Recent studies related to the issues analyzed in different personal scenarios, including family, work, education, etcetera, have multiplied (e.g. Barry et al., 2018). However, studies focused on the university environment are needed. This research is a diagnosis, a first step from which to develop strategies to enhance motivation and satisfaction, as well as mechanisms to anticipate mental health problems. Therefore, it is necessary to continue with this psychology-based study, especially after having analyzed what happens in the winding and extraordinary process of education of PhD students and postdoctoral researchers.

Finally, until 30 September 2015, doctoral studies in Spain were regulated by the Real Decreto 778/1998, of 30 April. The programs were structured in two periods, the teaching period (lasting two years and 32 credits), and the research period, which culminated with the obtaining of the Advanced Studies Diploma (DEA, in Spanish), of the Third Cycle. Once the above was overcome, the doctoral student carried out the Doctoral Thesis. These programs are currently regulated by Real Decreto 99/2011, of 28 January. The transformation has been very profound. With the disappearance of both the seminars and the DEA, it is now difficult to catalogue the programs by thematic sub-areas or competencies. Because the PhD student is now under the direction of a tutor from the beginning, each training process is *sui generis*. The change has been a mistake. The Spanish university does not have to be a copy of the Anglo-Saxon universities, because the truth is that in the past things were done well.

In the previous system, PhD students also suffered mental well-being problems, but one way to deal with them was socialization among all those who participates in the programs (first, second and third years). In the current system, this type of support is not possible.

References

Alderfer, C. P. (1969). An Empirical Test of New Theory of Human Need. *Organizational Behavior & Human Performance*, *4*(1), 142-175. https://doi.org/10.1016/0030-5073(69)90004-X

Almasri, N., Read, B., & Vandeweerdt, C. (2021). Mental Health and the PhD: Insights and Implications for Political Science. *PS: Political Science & Politics*, *5*(22), 347-353. https://doi.org/10.1017/S1049096521001396

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84, 191-215. https://doi.org/10.1037/0033-295X.84.2.191

Barreira, P., Basilisco, M., & Bolotnyy, V. (2018). Graduate Student Mental Health: Lessons, from American Economics Departments, Working Paper, Harvard University. https://scholar.harvard.edu/files/bolotnyy/files/bbb_mentalhealth_paper.pdf

Barry, K., Woods, M., Stirling, C., & Martin, A. (2018). Psychological Health of Doctoral Candidates, Study-related Challenges and Perceived Performance. *Higher Education Research & Development*, *37*(39), 468-483. https://doi.org/10.1080/07294360.2018.1425979

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S. (2015). The Prevalence and Correlates of Depression, Anxiety, and Stress in a Sample of College Students. *Journal of Affective Disorders*, *173*(1), 90-96. https://doi.org/10.1016/j.jad.2014.10.054

Berumen, S. A. & Lei, Y. (2020). 馬德里中國本科留學生 的動機評價和融入率 / Evaluation of Motivation and Diagnosis of the Integration of Chinese Undergraduate Students in Madrid. *Hong Kong Journal of Social Sciences*, 55 Spring/Summer, 23-55. http://hkjoss.com/index.php/journal/article/view/401 / https://hdl.handle.net/10115/28879

Berumen, S. A., Pérez-Megino, L. P., & Arriaza Ibarra, K. (2016). Extrinsic Motivation Index: A New Tool for Managing Labor Productivity. *International Journal of Business Science and Applied Management*, *11*(1), 1-17. https://doi.org/10.69864/ijbsam.11-1.113

Blasco, M. J., Vilagut, G., Almenara, J., Roca, M., Piqueras, J. A., Gabilondo, A., & Lagares, C. (2018). Suicidal Thought and Behaviors: Prevalence and Association with Distal and Proximal factor in Spanish University Students. *Suicide and Life-Threatening Behavior*, *49*(3), 881-898. https://doi.org/10.1111/sltb.12491

Caplan, R. D. (1987). Person-environment Fit Theory and Organizations: Commensurate Dimensions, Time Perspectives, and Mechanisms. *Journal of Vocational Behavior*, 31, 248-267. https://doi.org/10.1016/0001-8791(87)90042-X

Chabot, M., Mitchell, M., Stevens-Nafai, E., & Nafai, S. (2022). Impact of Clinical and Cultural Activities on Personal Growth During International Service Learning. *The Internet Journal of Allied Health Sciences and Practice*, *20*(1), article 11. https://nsuworks.nova.edu/cgi/viewcontent.cgi?article=2121&context=ijahsp

Daker, R. J., Cortes, R. A., Lyons, I., & Green, A. E. (2019). Creativity Anxiety: Evidence for Anxiety that is Specific to Creative Thinking, from STEM to the Arts. *Journal of Experimental Psychology General*, *149*(1), 42-57. https://doi.org/10.1037/xge0000630

DeCarlo, T. E., Powers, T., & Sharma, A. (2021). Manager Directives for Salesperson Ambidextrous Selling and Resulting Job Satisfaction: A Regulatory Focus Perspective. *European Journal of Marketing*, *55*(11), 3010-3032. https://doi.org/10.1108/ejm-05-2020-0335

Deci, E., & Ryan, R. (1985). *Intrinsic Motivation and Self Determination in Human Behavior*. Plenum Press.

Fishbach, A., & Woolley, K. (2022). The Structure of Intrinsic Motivation. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*(1), 339-363. https://doi.org/10.1146/annurev-orgpsych-012420-091122

Greenburgh, A., Barnby, J. M., Delpech, R., Kenny, A., Bell, V., & Raihani, N. (2021). What Motivates Avoidance in Paranoia? Three Failures to Find a Betrayal Aversion Effect. *Journal of Experimental Social Psychology*, *97*(2), 104206. https://doi.org/10.1016/j.jesp.2021.104206

Gregory, A. (2021). Desire and Motivation. In A. Gregory, *Desire as Belief: A Study of Desire, Motivation, and Rationality* (pp. 25-47). Oxford University Press. https://doi.org/10.1093/oso/9780198848172.001.0001

Hackman, J. R., & Oldham, G. R. (1976). Motivation Through the Design of Work: Test of a Theory. *Organizational Behavior and Human Performance*, 16, 250-279. https://doi.org/10.1016/0030-5073(76)90016-7

Hancock, D. (2021). Fostering Resilience in Children. *Journal of Health Visiting*, *9*(5), 198-201. https://doi.org/10.12968/johv.2021.9.5.198

Herzberg, F. (1968). One More Time: How do you Motivate Employees?. *Harvard Business Review*, January, 52-62. https://hbr.org/2003/01/one-more-time-how-do-you-motivate-employees

Jackson, C. (2007). The General Health Questionnaire. *Occupational Medicine*, *57*(1), 79. https://doi.org/10.1093/occmed/kql169

Jones, B. D., Krost, K., & Jones, M. W. (2021). Relationships Between Students' Course Perceptions, Effort, and Achievement in an Online Course. *Computers and Education Open*, 2: 100051. https://doi.org/10.1016/j.caeo.2021.100051

Kupor, D., Reich, T., & Laurin, K. (2018). The (Bounded) Benefits of Correction: the Unanticipated Interpersonal Advantages of Making and Correcting Mistakes. *Organizational Behavior and Human Decision Processes*, 149, 165-178. https://doi.org/10.1016/j.obhdp.2018.08.002

Landy, F. J. (1978). An Opponent Process Theory of Job Satisfaction. *Journal of Applied Psychology*, *63*(5), 533-547. https://doi.org/10.1037/0021-9010.63.5.533

Lerchenmueller, M. J., Sorenson, O., Frank, F., & Tanner, M. C. (2019). Gender Differences in How Scientists Present the Importance of Their Research: Observational Study. *British Medical Journal*, 367, 16573. https://doi.org/10.1136/bmj.l6573

Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work Organization and Mental Health Problems in PhD Students. *Research Policy*, *46*(4), 868-879. https://doi.org/10.1016/j.respol.2017.02.008

Locke, E. A. (1969). What is Job Satisfaction? *Organizational Behavior and Human Performance*, 4, 309-336. https://doi.org/10.1016/0030-5073(69)90013-0

Locke, E. (1976). *The Nature and Causes of Job Satisfaction: Handbook of industrial and organizational psychology*. Rand McNally.

MacCorquodale, K., & Meehl, P. E. (1948). On a Distinction Between Hypothetical Constructs and Intervening Variables. *Psychological Review*, *55*(2), 95-107. https://doi.org/10.1037/h0056029

Maslow, A. (1943). A Theory of Human Motivation. *Psychological Review*, 50, 370-396. https://doi.org/10.1037/h0054346

Matyjek, M., Meliss, S., Dziobek, I., & Murayama, K. (2020). A Multidimensional View on Social and Non-social Rewards. *Frontiers in Psychiatry*, 11, 818. https://doi.org/10.3389/fpsyt.2020.00818

McClelland, D. (1988). *Human Motivation*. Cambridge University Press.

Peasley, M. C., Hochstein, B., Britton, B. P., Srivastava, R. V., & Stewart, G. T. (2020). Cant't Leave it at Home? The Effects of Personal Stress on Burnout and Salesperson Performance. *Journal of Business Research*, 117, 58-70. https://doi.org/10.1016/j.jbusres.2020.05.014

Porter, L. W., & Lawler, E. (1968). *Managerial Attitudes and Performance*. Dorsey Press and Richard D. Irwin.

Russi, M. (2021). Active Learning without Rewards (PhD Thesis). University of Sussex, United Kingdom. https://doi.org/10.13140/RG.2.2.20962.45765

Se, W. L., & Eunjung, A. L. (2020). Teacher Qualification Matters: The Association Between Cumulative Teacher Qualification and Students' Educational Attainment. *International Journal of Educational Development*, 177, 102218. https://doi.org/10.1016/j.ijedudev.2020.102218

Shuxratovna Ruzikulova, N. (2021). Formation of Students' Skills to Work with Learning Materials. *Current Research Journal of Pedagogics*, *28*(9), 106-109. https://doi.org/10.37547/pedagogics-crjp-02-09-24

Vroom, V. H. (1964). *Work and Motivation*. Jossey-Bass.

Weinberger, A. H., & Gbedemah, M. (2018). Trends in Depression Prevalence in the USA from 2005 to 2015: Widening Disparities in Vulnerable Groups. *Psychological Medicine*, *48*(8), 1308-1315. https://doi.org/10.1017/S0033291717002781