



# Development Via Web Application of an Academic Well-Being Scale for University Students During the Covid-19 Pandemic

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## Research Article

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## Abstract

This is a study of technological development in the elaboration of a computerized instrument for the evaluation of the self-perception of academic well-being, based on the theory of subjective well-being of Positive Psychology. It aimed to build an instrument and seek evidence of validity via web application as a technology for evaluation of the construct of academic well-being in university students. Descriptive and exploratory, quantitative field investigation with 702 volunteer academics from Universities from different geopolitical regions in Brazil. After the theoretical analysis, through an integrative review, which allowed the construction of the items, which initially were 50 items. In the construction of the instrument, factors related to the content of academic well-being were obtained, with Eigenvalue equal to or greater than 0.44 being defined. Thus, 03 Factors were evidenced: Factor 01 - Self-confidence and professional academic achievement, with 27 items; Factor 02 - Social support with 2 items; and Factor 3 - Self-perceived limitations in income, with 11 items. The total scale presented McDonald's Omega of 0.894, with 40 items in its final version. The validity conditions were guaranteed, together with the reliability, of the three subscales and the total scale assured. Such aspects of the evaluation of academic well-being can be employed in verifications after the return of university activities, identifying possibilities of changes in the academic scenario and strategies of interventions and behavioral readaptations.

**Keywords:** Subjective Well-Being; Positive Psychology; University Students; Scale

**Abbreviations:** SWB: Subjective well-being; ANDIFES: National Association of Directors of Federal Institutions of Higher Education.

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## Introduction

In the academic environment, several factors influence the condition of the university experience. The adaptation to the new environment, the commitment of time necessary for the development of curricular activities, the amount of information absorbed in the classroom, the possible lack of

family support or at least its fragility with the change of city, economic situation, construction of new bonds of friendship, change of routine, among others, as well as the stress of secular life, are factors that can put pressure on the psychic suffering of countless academics in Brazilian universities [1].

Entering higher education implies, for most young students, major transformations and adaptations to new roles in society, responsibilities and routines. Like any period of life transition, this is also a phase that requires the taking of new attitudes and behaviors, not only with regard to study skills, but also to the organization and autonomy of the individual himself, inherent to adult life [2].

Based on this context, the perception of academic well-being and the implications of the respective changes in the university context, this study opted for the theoretical support of Positive Psychology. This line of approach has developed mainly in the last decade, to which according to Seligman [3], by the need and interest to study the virtues and human potentialities.

It is noteworthy that within the process of construction and validation of instruments in Psychology, one of the main stages is the theoretical survey and categorization of these to produce items [4]. Specifically in this study, Among the various concepts studied by Positive Psychology, the concept of subjective well-being was chosen to theoretically support the construction of the concept of academic well-being of this research.

Subjective well-being (SWB) seeks to understand the evaluation that people make of their lives and has been consolidated with the growing recognition of the importance of subjectivity in the evaluation of what makes life good and desirable. SWB indicators refer to people's life satisfaction, positive and negative emotions. Emotions refer to the evaluation of SWB by affective criteria and are relatively less stable than satisfaction. The dimension satisfaction with life is a cognitive judgment of some specific domain in the person's life, that is, an evaluation about life according to a criterion of its own [5,6].

The Covid-19 pandemic promoted drastic transformations in daily life by imposing the need for adaptations to the relationships that occur in society, which included the school environment, tangents to concerns with individual and family safeguarding, which was expressed in social isolation due to the fear of contamination, which triggered the suspension of face-to-face academic activities and the adoption of new teaching methodologies. These factors added to all the emotional loads already present in the academic course and culminated in the way of dealing with changes in access to education, which was something that

happened quickly and required an accelerated adaptation.

The COVID-19 pandemic and the imposition of social isolation together with uncertainties and fears about the future have caused damage not only to the physical but also mental health of several individuals, who may take too much refuge in the internet and in the resources of this tool [7].

## Objectives

The general objective of this study, which corresponds to the research of a Doctoral Thesis, was to build an instrument and seek evidence of validity via web application as a technology for evaluation of the construct of academic well-being for university students.

## Methodology

This is a descriptive, exploratory research, with the objective of describing the characteristics of a certain population, which in this case, the target audience are the academics of Higher Education, through an instrument built and validated specifically for this purpose. The collection was carried out from August to December 2021, the pandemic period, obtaining 702 volunteer participants from the Universities of all the Geopolitical Regions of Brazil, in a non-probabilistic sampling, with Snowball procedure, defined by the characteristics of the population, in temporality of academic activity, scientific areas, and during the pandemic period with social distancing in force.

The stages in the process of constructing instruments were: I-Establishment of the conceptual structure through systematic review; II- definition of the objectives of the instrument and the population involved; III Construction of items and response scales; IV-Selection and organization of items; V-Structuring of the instrument; VI-Content Validity; and VII-Pre-test.

The instrument presented to the participants was designed for use in mobile applications and/or computers. It consisted of: 1) identification of the user via e-mail, ICF - acceptance of participation in the research; gender, age, public or private university, region of Brazil that studies, and area of training at the University; 2) 44 items referring to the instrument on aspects of well-being, one of these items was repeated, being discarded in the analysis, valid items only 43. After performing the analyses of the validation process, 03 more items were discarded because they did not meet the criteria, so the scale was left with 40 items in its final version. The data obtained were organized and tabulated in the Microsoft Excel program, through the pivot table, with the objective of characterizing the sample universe researched and the data being later passed on to SPSS Version 28, where

descriptive, parametric and non-parametric analysis of the data were performed.

In the web application, the choice of the non-relational MongoDB database is supported by the flexibility and security of data entry and high capacity to treat them later, so the technologies adopted were Next.js (an open source React front-end development web framework created by the company Vercel that allows functionalities such as server-side rendering and generation of static websites for React-based web applications) and non-relational MongoDB database (free, open-source, cross-platform document-oriented database written in the C++ language, and classified as a NoSQL database program, MongoDB uses JSON-like documents with schemas). All technologies are open source, strongly active community-oriented and well disseminated in the market, thus facilitating future developments and adjustments.

## Results and Discussion

In the evaluation of the instrument, it was found a parsimonious factorial solution in three factors, with 47.3% of the variance explained, being identified the reliability of 40 items, presented in four factors: The Factor 1 scale, called Self-confidence and professional academic achievement, which had 27 items, obtained a McDonald's Omega of 0.945; Factor 02, named Social support with 2 items, it was not possible to have an acceptable value, and in Factor 3, identified as Self-perceived limitations in income, with 11 items, a McDonald's Omega of 0.852 was obtained, and Factor 04, McDonald's Omega of 0.852. The total scale showed McDonald's Omega of 0.894. All factors consisted of non-inverted items.

In view of the descriptions contained in the items in Factor 04, it was not possible to characterize it as a factor compatible with the theoretical aspects presented in the scale, therefore, it was decided to suppress Factor 04 and test a model from the confirmatory factor analysis. Such a way that it is then observed the expression of three grouping factors, namely: Factor 01, Factor 02 and Factor 03.

In the confirmatory factor analysis, the factor structure presented adjustment results ( $\chi^2 = 154.697$ ;  $df = 89$ ;  $p = 0.000$ ;  $RMSEA = 0.069$ ). The indices supported the four-factor model broken down by EFA ( $2/df = 1.73$ ;  $CFI = 0.866$ ;  $TLI = 0.854$ ;  $SRMR = 0.191$ ). The items grouped in Factor 1 correspond to aspects Self-confidence in achievement, while Factor 2 corresponds to items related to Social Support, Factor 3 referring to Self-perceived limitations in income.

Since the validity conditions were guaranteed, together with the reliability, of the three subscales and the total scale

were assured, the presentation of standardized scores at three levels was also maintained: medium, below average and above average. And for each of these levels, a descriptive textual representation was developed for the direction of the respondent and subsequent self-evaluation.

We searched the literature for studies within the parameters of the objectives of this research, and identified some, among them, the study by Dias Viana, et al. [8] which was observed in the validation process that the results indicated through exploratory factor analysis a structure with three factors, with adjustment indices considered adequate along with acceptable Cronbach's alpha coefficient. The authors concluded that the EBESE scale presented adequate internal consistency indices and a factorial structure according to the underlying theory. The other study, Rebolo, et al. [9] was presented analyses with variables whose positive relationship and with the variable of the teacher's self-perception of happiness with work, to measure teacher well-being.

The theoretical basis for the term academic well-being, used one of the most studied constructs in the Positive Psychology movement, subjective well-being, which corresponds according to the scientific literature, a subjective assessment of the individual of his own current situation in the world [10]. A similar perspective has Scorsolini-Comin, et al. [11], who present that subjective well-being is an internal experience of each individual, which allows him to issue a judgment of how the person feels and his degree of satisfaction with life. In this sense, most researchers in SWB consider the components of this term, those proposed by Andrews, et al. [12]: a cognitive factor (life satisfaction) and two emotional factors (positive affects and negative affects) that define the level of happiness perceived by the individual [13].

This theoretical contextualization was based on the term academic well-being, which corresponds to the self-perception about their well-being of the university student, which involves the demands of this academic scenario, that is, their unique perspective on what this individual understands about their well-being, at that given moment of response of the instrument. At this point, it is emphasized that the elaboration of an instrument. Refers to the description of self-perception of the respondent, and that the indicators are self-reflective for directions of conduct of the academic in relation to this construct.

This collection of the theoretical contribution with the consensus of most authors on the classification of subjective well-being, developed the concept of academic well-being corresponding to the perception and/or internal experience

of the individual about his state of satisfaction and his emotional aspects about his academic experiences. This concept is a reflection of the theoretical contributions of authors.

Regarding the other results, regarding the profile of the university students participating in the study, the majority were female with 76.9% (540). Regarding age, the mean was 23.79, with a standard deviation of 6.7, with greater participation in the North and Northeast Regions. And the impacts that the scenario of the Pandemic brought to the world reality, evidenced the relevance of the inclusion of this theme in one of the objectives of this research. According to data from the National Association of Directors of Federal Institutions of Higher Education - ANDIFES [14,15], the profile of undergraduate students of Brazilian federal universities is, in each period, closer to the sociodemographic profile of Brazil. The results also indicate that universities express the cultural, racial and gender diversity of the Brazilian population, as well as income inequality.

## Conclusion

The present study of technological development in psychology, elaborated, built and validated a scale via web application, with the objective of magnifying the academic well-being of the university. The possibility of self-perception of this construct identified by the student can increase the strategies of prevention and care of psychopathologies in this phase, such as seeking professional help from psychology, for proper care and/or referrals. It was found that there is the possibility of evaluating this perception about the view of academic well-being, which the scale provides, and bringing the possibility of this knowledge of its self-evaluation and its implicators of this construct, can generate tools to minimize negative emotions and feelings, which result in suffering arising from this phase of academic training. Such aspects can be used in verifications after the return of academic activities, identifying possibilities of changes in the academic context, while supporting intervention strategies and behavioral readaptations.

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