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SELF-ESTEEM AND PSYCHOLOGICAL WELL-BEING IN UNIVERSITY STUDENTS

A AUTOESTIMA E O BEM-ESTAR PSICOLÓGICO EM ESTUDANTES UNIVERSITÁRIOS

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ABSTRACT

To examine the influence of Sex, age, area of residence, academic year, health behaviors, and social media use on self-esteem and psychological well-being in a sample of Portuguese university students. A descriptive, correlational, and quantitative study was conducted using a cross-sectional, quasi-experimental design. The sample comprised 194 individuals (171 female, 23 male) aged 18-57 years. Data were collected using a sociodemographic questionnaire, the Rosenberg Self-Esteem Scale, and the Psychological General Well-being Index short version. The results showed a positive correlation between self-esteem and psychological well-being. Gender showed effects on both self-esteem and psychological well-being when associated with hours of sleep per day and social media use. Academic year and physical exercise practice only affected self-esteem. Age demonstrated statistically significant multivariate effects on both self-esteem and psychological well-being. No significant effects were found on self-esteem and psychological well-being for the remaining variables (area of residence, smoking habits, hours of sleep per day, social media use, and daily time spent on social networks). It is possible to conclude that self-esteem positively influences psychological well-being, and psychological well-being affects self-esteem, highlighting the importance of a healthy relationship between these constructs. In the absence of such a relationship, access to mental health and support services is necessary.
Keywords: self-esteem, psychological well-being, university students

RESUMO

Objetivo: examinar a influência das variáveis sexo, idade, área de residência, ano de escolaridade, comportamentos de saúde e utilização de redes sociais na autoestima e no bem-estar psicológico numa amostra de estudantes universitários portugueses. *Método*: foi realizado um estudo descritivo, correlacional e quantitativo, com um desenho transversal e quasi-experimental. A amostra é constituída por 194 indivíduos, sendo 171 do sexo feminino e 23 do sexo masculino, com idades compreendidas entre os 18 e os 57 anos. Foram administrados um questionário sociodemográfico, a escala de Autoestima de Rosenberg e o Questionário Geral de Bem-Estar Psicológico - versão reduzida. *Resultados*: existe uma correlação positiva entre autoestima e bem-estar psicológico. Verificou-se que o sexo apresenta efeitos na autoestima e no bem-estar psicológico quando associado às horas de sono por dia e utilização de redes sociais. No caso do ano de escolaridade e prática de exercício físico apenas apresentou efeito na autoestima. Por sua vez, a idade apresentou efeitos multivariados estatisticamente significativos na autoestima e bem-estar psicológico. Quanto às restantes variáveis (área de residência, ano de escolaridade, prática de exercício físico, hábitos tabágicos, horas de sono por dia, utilização de redes sociais e horas passadas por dia nas redes sociais) não foram encontrados efeitos sobre a autoestima e o bem-estar psicológico. *Conclusão*: a autoestima exerce uma influência positiva no bem-estar psicológico e este sobre a autoestima, sendo por isso necessária uma relação saudável entre ambas, na medida em que face à sua inexistência é necessário o acesso a serviços de saúde mental e de apoio.
Palavras-chave: autoestima, bem-estar psicológico, estudantes universitários

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Mental health problems are one of the main public health concerns (Bolinski et al., 2020), particularly among university students, potentially having repercussions that can affect their quality of life and health (Pereira et al., 2018). The challenges and stress factors characteristic of the academic, social, personal, and vocational life of university students represent threats to their well-being. Therefore, healthy self-esteem is necessary to deal with the psychological distress that may arise during these challenging phases (Pereira et al., 2018; Singhal & Prakash, 2020), thus contributing to increased well-being (Bukhari & Khanam, 2017).

Self-esteem is one of the most critical factors related to psychological well-being (Singhal & Prakash, 2020). However, self--esteem is a debated construct in psychology, with different conceptions about it. Self--esteem refers to the personal opinion that individuals have about themselves and the appreciation of their worth, consisting of a favorable or unfavorable attitude towards oneself. Self-esteem begins to form throughout childhood, developed from social interactions, how others see us, and how we react to who we are. If individuals have a favorable view and observation of themselves, they have high self-esteem (Haq 2016). To this end, they consider themselves worthy of respectable value, have a more productive lifestyle, are autonomous and receptive to criticism, are more creative, independent, and responsible, and have a good appearance in society. On the other hand, if individuals feel that they have no value, their self-esteem is low. They think they cannot do anything right, showing a low ability to face problems and have difficulties dealing with these situations, as they do not have confidence in themselves.

Related to self-esteem is the construct of psychological well-being, with scientific evidence showing a relationship between the two (Akfirat, 2020; Singhal & Prakash, 2020). Psychological well-being consists of a person's ability to deal with the environment, fulfill their desires, and satisfy their needs, and its existence is presented as an indicator of normal development and quality of life (Akfirat, 2020). Indeed, the existence of a positive relationship between self-esteem and psychological well-being indicates that the satisfaction of personal and psychological needs, the feeling of social belonging, and respect for society lead to positive results (Çiçek, 2021; Singhal & Prakash, 2020). Thus, self-esteem plays a fundamental role in determining psychological well-being (Çiçek, 2021), considering that subjects with low self--esteem generally experience a reduced level of well-being, demonstrating the association between self-esteem and well-being. Therefore, developing healthy self-esteem is necessary to promote university students' mental health and well-being (Singhal & Prakash, 2020).

Self-esteem and psychological well-being can be influenced by multiple sociodemographic variables, including gender, age, area of residence, and education, among others (Bleidorn et al., 2016; Çiçek, 2021; Haq, 2016; Singhal & Prakash, 2020; Wani & Dar, 2017). Bleidorn et al. (2016) conducted a systematic cross-cultural study examining age and gender differences in self-esteem. The results suggest that gender and age differences in self-esteem are not a Western idiosyncrasy, as they can be observed in different countries (Bleidorn et al., 2016). Generally, men tend to have higher self-esteem than women (Wani & Dar, 2017), with both genders showing gradual increases in self-esteem from late adolescence to middle age (Bleidorn et al., 2016). In contrast, Wani and Dar (2017) concluded that younger university students have a higher self-esteem level than older female students. Conversely, Singhal and Prakash (2020) found no significant gender differences in self-esteem. Çiçek (2021) found that females showed higher self-

-esteem and psychological well-being than males. Moreover, regarding well-being, being female was found to be a significant predictor of lower well-being. Concerning the area of residence, there is a significant difference between students from urban and rural areas, with students from rural areas presenting lower self-esteem than those residing in urban environments.

Psychological well-being can also be influenced by physical exercise and hours of sleep per day, as regular physical activity and sleeping seven or more hours per day were shown to be predictors of well-being (Nogueira & Sequeira, 2020). In this sense, physical exercise and regular sleep patterns significantly positively affect students' well--being (Nogueira & Sequeira, 2020). Thus, people who exercise more show higher levels of psychological well-being (Pereira et al., 2017). According to Mendes et al. (2021), university students who exercise more have a healthier life than those who do not, and physical inactivity can lead to problems that have a psychosocial impact (Cabral et al., 2020). Regarding gender, men practice more physical exercise and have better levels of self-esteem, as they view exercise as a way to become stronger, while women want exercise to bring them moments of emotional balance, such as states of relaxation (Pereira et al., 2017).

Moreover, given the increase in social media use in recent years, it is known that they have lasting effects on human beings, particularly their self-esteem and psychological well-being (Huang, 2017; Jan et al., 2017). The literature suggests a strong relationship between social media use and self-esteem, with both being negatively associated, meaning that increased social media use leads to a decrease in people's self-esteem (Jan et al., 2017). One explanation for this is that when people spend more time on social media, they tend to visit other people's profiles, which causes them to start envying certain individuals they consider superior or in a better situation than themselves (Jan et al., 2017). A meta-analysis found that the average correlation between time spent on social media and psychological well-being is weak (Huang, 2017). Regarding age, no relationship was found between time spent on social media and psychological well--being (Huang, 2017), as from a certain age onwards, Internet use is normalized (Ferreira et al., 2020).

Many studies considered only one region of the country, so they do not have nationally representative samples of the university context (Çiçek, 2021; Pereira et al., 2017). Additionally, they only include one social network representative of all social networks (Jan et al., 2017; Mendes et al., 2021). Given the above, the general objective of this study is to examine the influence of the variables gender, age, area of residence, year/level of schooling, health behaviors, and social media use on self-esteem and psychological well--being in a sample of Portuguese university students. The specific objectives are: (a) to evaluate if there is a relationship between self-esteem and psychological well-being; (b) to compare differences in self-esteem and psychological well-being according to gender; (c) to compare differences in self-esteem and psychological well-being according to age; (d) to compare differences in self-esteem and psychological well-being considering the area of residence; (e) to compare differences in self--esteem and psychological well-being according to the year of schooling; (f) to compare differences in self-esteem and psychological well-being considering health behaviors (practicing physical exercise, smoking habits, and hours of sleep); (g) to compare differences in self-esteem and psychological well-being considering social media use.

METHODS

The present study is descriptive, corre-

lational, and quantitative, with a cross--sectional and quasi-experimental design. The sample consists of 194 participants, of which 23 (11.9%) are male, and 171 (88.1%) are female, aged between 18 and 57 years (M = 21; SD = 4.672). Regarding the area of residence, most participants reported living in an urban area (n = 118; 60.8%) and 76 (39.2%) in a rural area. Concerning education, most students are in the first year of their master's degree (n = 46; 23.7%), followed by the second (n = 45; 23.2%) and third year of their bachelor's degree (n = 39; 20.1%), the first year of their bachelor's degree (n = 35; 18%) and the fourth year of their bachelor's degree (n = 17; 8.8%), with the second year of the master's degree having the least participants (n = 12; 6.2%).

The sampling technique used was non--probabilistic convenience sampling, known as snowball. As inclusion criteria, participants must be Portuguese university students and answer all questions, leaving none unfilled. As exclusion criteria, participants who are not Portuguese university students and invalid responses they may give are removed from the sample. In constructing the database, 23 sample elements had to be eliminated as they did not meet the inclusion criteria.

Instruments

For this study, three questionnaires were applied. A sociodemographic questionnaire that includes questions related to gender (0-male; 1-female), age (numerical), area of residence (0-rural; 1-urban), current year of education (open-ended response), how often they exercise (0-never; 1-almost never; 2-infrequently; 3-somewhat frequently; 4-very frequently), whether they smoke (0-no; 1-yes) and how many hours they sleep on average per day (0-less than 5 hours; 1-6 to 7 hours; 2-7 to 8 hours; 3-more than 8 hours). Regarding social media use, two questions were developed: "do you use social media" (0-no; 1-yes) and, "on average, how many hours per day do you spend on them" (0-0 to 5 hours; 1-6 to 10 hours; 2-11 to 15 hours; 3-more than 15 hours).

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to assess self-esteem, and it was translated and adapted for the Portuguese population by Vasconcelos-Raposo et al. (2012). It consists of 10 items, with a Cronbach's alpha of .845. The items are evaluated on a 4-point Likert scale (1-strongly disagree to 4-strongly agree), where five are positively oriented, and five are negatively oriented. The negative statements are reversed to allow for statistical data processing.

The General Psychological Well-being Questionnaire - short version (QGBEP-R; Pereira et al., 2018) is a validation of the short version Psychological General Well--being Index (PGWB-S; Grossi et al., 2006) for a sample of the Portuguese population, composed of 6 items, with a Cronbach's alpha of .86. Some items are evaluated on a Likert-type frequency scale with 5 response alternatives (1-never to 5-always) and others on a Likert-type intensity scale, also with 5 response alternatives (1- "I felt full of energy" to 5- "I felt I had no energy or vitality in relation to everything"). The higher the total obtained, the greater the perceived psychological well-being.

Procedure

Following the most updated version of the Declaration of Helsinki (2013) and all ethical principles for conducting research, we began by presenting the informed consent, which contains information regarding the purpose of the study, functioning as a contractual document, ensuring all ethical principles of research in social and human sciences, namely the voluntary nature of participation, the possibility of withdrawal at any time, ensuring the anonymity of the data provided. Subsequently, the protocol was presented: a socio-

demographic questionnaire, the Rosenberg Self-Esteem Scale (10 items), and the General Psychological Well-being Questionnaire - short version (6 items).

For sample collection and considering the current pandemic situation, the protocol was placed online on the Google Forms platform from November 22 to December 22, 2021. This lasted for one month, as sample saturation was reached. Social networks and informal contacts were used as a means of dissemination. Thus, a non-probabilistic convenience sampling technique, known as snowball, was used.

After this process, the Statistical Package for the Social Sciences (SPSS 27.0) and JASP (JASP 16.0) were used for data analysis. In constructing the database, 23 sample elements had to be eliminated as they did not meet the inclusion criteria.

Statistical analysis

GThe statistical analysis programs Statistical Package for Social Sciences (SPSS 27.0) and JASP (JASP 16.0) were used for data analysis. Initially, descriptive statistical analysis was performed using mean, standard deviation, skewness, kurtosis, frequency, and percentage. The descriptive analysis indicators were used to characterize the sample and items. Internal consistency was also calculated using Cronbach's alpha and the greatest lower bound (GLB) in the case of scales. The GLB provides the lowest possible value that the reliability of a scale can present (Peters, 2014). In turn, the skewness and kurtosis values evaluated the normal distribution of the variables (Vasconcelos-Raposo et al., 2012).

Once a normal distribution was verified, a Pearson correlation was performed to conclude the strength of the relationship between the self-esteem variable and psychological well--being (Dancey & Reidy, 2004). Subsequently, a linear regression was carried out, considering that it provides a measure of the effect that x (explanatory/predictor variable) has on y (variable being predicted) (Dancey & Reidy, 2004).

In turn, after verifying the normality of the variables and the homogeneity of variances, multivariate analysis of covariance (MANCOVA) was used (Dancey & Reidy, 2004), followed by an analysis of variance, to compare groups (sex, age, area of residence, year of education, physical exercise practice, smoking habits, hours of sleep per day, use of social networks, and time spent using them). Partial Eta-squared (η_p^2) was reported as a measure of effect size between groups according to the following practical rule: small (>.01), medium (>.06), and large (>.14) (Vasconcelos-Raposo et al., 2012). The significance level was maintained at 5% (p = .05).

RESULTS

Regarding physical exercise, most participants (n = 71; 36.6%) exercise infrequently, 55 (28.4%) almost never do it, 38 (19.6%) do it somewhat frequently, 16 (8.2%) practice very frequently, and finally, 14 (7.2%) never practice it. Regarding smoking habits, 171 (88.1%) of the participants responded that they do not smoke, with only 23 (11.9%) being smokers. Lastly, regarding the number of hours slept per day, 93 (47.9%) participants sleep between 7 to 8 hours, 76 (39.2%) sleep between 6 to 7 hours, 15 (7.7%) sleep more than 8 hours per day. Finally, 10 (5.2%) sleep less than 5 hours per day.

Regarding the use of social networks, 190 (97.9%) participants use them, with only 4 (2.1%) reporting not doing so. Regarding the hours spent daily on social networks, 140 (72.2%) do so between 0 to 5 hours, followed by 48 (24.7%) who responded using social networks between 6 to 10 hours per day. Finally, 6 (3.1%) participants use social networks between 11 to 15 hours per day.

Descriptive statistics and internal consistency

For the normal distribution of dependent variables, skewness and kurtosis values should be between -1 and 1 (Fernandes et al., 2012). Regarding the normality criteria of the Rosenberg Self-Esteem Scale, skewness values range between -.434 and .514 and kurtosis values between -.687 and .532, and for the General Psychological Well-being Questionnaire, skewness values range between -.661 and .499 and kurtosis values between -.609 and .309. Thus, according to the skewness and kurtosis values, it is possible to assume that we are dealing with a normal distribution. Regarding internal consistency, Cronbach's alpha for the self-esteem scale is very good ($\alpha = .907$). In turn, Cronbach's alpha for the psychological well-being questionnaire is low ($\alpha = .471$), with the first item showing a negative correlation. Thus, and given that Cronbach's alpha has raised problems regarding internal consistency (Peters, 2014; Sijtsma, 2009), the value of the greatest lower bound is taken into consideration, as it informs about the lowest possible value that the reliability of a scale can present (Peters, 2014). In the case of the self-esteem variable, the greatest lower bound was .947 [95% CI = .942, .962]. As for psychological well-being, the greatest lower bound was .762 [95% CI = .711, .821].

Correlation between self-esteem and psychological well-being

A Pearson correlation was performed to observe the relationship between self-esteem and psychological well-being, verifying that self-esteem can be seen as correlated with psychological well-being since the correlation between both is significant positive moderate ($r^2 = .327$; $p < .001$), which indicates that as self-esteem increases, there is an increase in psychological well-being.

A MANCOVA was performed to compare the effect of Sex and area of residence with the age covariate for self-esteem and psychological well-being. The multivariate test results reveal varying effects across the studied variables. The Intercept demonstrates a strong and significant effect with a Pillai's Trace of .599, $Z = 140.300$, $p < .001$, partial eta squared of .599, and observed power of 1.000. Age also significantly impacts Pillai's Trace of .091, $Z = 9.392$, $p < .001$, partial eta squared of .091, and observed power of .978. Sex exhibits a marginally significant effect, with Pillai's Trace of .037, $Z = 3.562$, $p = .030$, partial eta squared of .037, and observed power of .656. In contrast, the Area of residence does not show a significant effect, with Pillai's Trace of .003, $Z = .304$, $p = .738$, partial eta squared of .003, and very low observed power of .098. The interaction between Sex and Area of residence also lacks statistical significance, with Pillai's Trace of .016, $Z = 1.501$, $p = .225$, partial eta squared of .016, and observed power of .317. These results indicate that while Intercept and Age have strong and reliable effects, Sex has a moderate effect, and Area of residence, both independently and in interaction with Sex, shows weak and non-significant effects in the model.

The univariate analysis presented in the table reveals several significant findings. The corrected model for self-esteem shows a significant effect ($F_{(4, 189)} = 7.614$, $p < .001$, partial $\eta_p^2 = .139$, observed power = .997), indicating that the independent variables collectively explain about 13.9% of the variance in self-esteem. For the BEP (Well-Being) variable, the model is also significant ($F_{(4, 189)} = 2.787$, $p = .028$, partial $\eta_p^2 = .056$, observed power = .757), though with a smaller effect size.

Age demonstrates a significant effect on both self-esteem ($F_{(1, 189)} = 18.883$, $p < .001$, partial $\eta_p^2 = .091$, observed power = .991) and BEP ($F_{(1, 189)} = 5.420$, $p = .021$, partial $\eta_p^2 = .028$, observed power = .639), suggesting that age is an important factor in both outcomes, particularly for self-esteem.

Sex also shows a significant effect on self-

-esteem ($F_{(1, 189)}$ = 6.720, p = .010, partial η_p^2 = .034, observed power = .732) and a marginally significant effect on BEP ($F_{(1, 189)}$ = 3.836, p = .052, partial η_p^2 = .020, observed power = .496), indicating that gender differences play a role in these psychological constructs.

The area of residence does not show significant effects on either self-esteem or BEP (p > .05 for both), suggesting that where participants live does not substantially influence these outcomes. The interaction between Sex and area of residence shows a marginally significant effect on self-esteem ($F_{(1, 189)}$ = 2.969, p = .087, partial η_p^2 = .015, observed power = .403) but no significant effect on BEP, hinting at a possible interplay between gender and living area on self-esteem. However, this effect is weak and not statistically significant at the conventional .05 level.

Table 1: *Univariate Analysis for Sex, Area of Residence, and Age (covariavle).*

Origin	Dep. Variable	*F*	Sig.	η_p^2	Obs. Power
Age	Self-esteem	18.883	<.001	.091	.991
	BEP	5.420	.021	.028	.639
Sex	Self-esteem	6.720	.010	.034	.732
	BEP	.836	.362	.004	.496
Area of Residence	Self-esteem	.016	.898	<.001	.052
	BEP	.337	.562	.002	.089
Sex * Area of Residence	Self-esteem	2.969	.087	.015	.399
	BEP	1.249	.265	.007	.190

Overall, these results indicate that age and Sex are the most influential factors on self-esteem and well-being in this study, while the area of residence appears to have little impact. The models explain more variance in self-esteem (13.9%) compared to BEP (5.6%), suggesting that other unmeasured factors may play substantial roles in determining well-being.

Asecond MANCOVA was performed to compare Sex and education with the same covariable (age).

We performed a MANCOVA to compare the effect of Sex and year/level of education with the age covariate for self-esteem and psychological well-being. The MANCOVA analysis revealed several significant multivariate effects of the independent variables on the combined dependent variables. The results of the multivariate tests indicate that these independent variables significantly affect the dependent variables when considered together, controlling for covariates. The multivariate test results were as follows: Age: Pillai's Trace = .074, $F_{(2, 180)}$ = 7.217, p < .001, partial η^2 = .074, observed power = .931. Sex: Pillai's Trace = .036, $F_{(2, 180)}$ = 3.366, p = .037, partial η^2 = .036, observed power = .629. Education: Pillai's Trace = .064, $F_{(2, 180)}$ = 1.190, p = .292, partial η^2 = .032, observed power = .624. Sex * Education Interaction: Pillai's Trace = .079, $F_{(2, 180)}$ = 1.481, p = .230, partial η^2 = .039, observed power = .740. These values confirm the significant multivariate effects, with p-values indicating that the independent variables significantly influence the combined dependent variables.

The subsequent univariate analysis also provided detailed insights into the individual dependent variables. The analysis of each dependent variable showed how the independent variables affect them separately, offering a more granular view of the data. The univariate results highlighted which specific variables contribute significantly to the overall multi-

variate effect, allowing for a more nuanced understanding of the relationships at play.

The table below summarizes the univariate analysis, including F-values, significance levels (Sig.), partial eta squared, and observed power for each dependent variable.

The MANCOVA analysis revealed significant main effects of age and Sex on self-esteem and psychological well-being, while the effects of education and the interaction between Sex and

Table 2: *Univariate Analysis for Sex, Education, and Age (covariavle)*.

Origin	Dep. Variable	*F*	Sig.	η_p^2	Obs. Power
Age	Self-esteem	18.883	<.001	.091	.991
	Psychological Well-being	5.420	.021	.028	.639
Sex	Self-esteem	6.720	.010	.034	.732
	Psychological Well-being	.836	.362	.004	.496
Education	Self-esteem	.016	.898	<.001	.052
	Psychological Well-being	.337	.562	.002	.089
Sex *Education Interaction	Self-esteem	2.969	.087	.015	.399
	Psychological Well-being	1.249	.265	.007	.199

education were not significant. These results suggest that age and Sex influence self-esteem and, to a lesser extent, psychological well--being. However, education and the interaction between Sex and education do not affect these outcomes significantly. The detailed univariate analysis presented in the table below highlights these findings further:

A MANCOVA was performed to compare the effect of Sex and physical practice with the age covariate for self-esteem and psychological well-being. The results showed for the Intercept: $F_{(2, 188)} = 135.287$, $p < .001$, Pillai's Trace = .590, η_p^2=.590; Age: $F_{(2, 188)} = 8.496$, $p < .001$, Pillai's Trace = .083, η_p^2=.083; Sex: $F_{(2, 188)} = 3.499$, $p = .032$, Pillai's Trace = .036, η_p^2=.036; Physical Activity Practice: $F_{(2, 188)} = .355$, $p = .702$, Pillai's Trace = .004, η_p^2=.004, and for the Interaction Sex * Physical Activity Practice: $F_{(2, 188)} = .985$, $p = .375$, Pillai's Trace = .010, η_p^2=.010

The Intercept shows a significant and large effect, which is typical in this type of analysis. Age and Sex demonstrate significant effects on the dependent variables, with age showing a small to medium effect size and Sex showing a small effect size. Physical activity practice did not show significant effects, with a small effect size. Similarly, no significant effects were found in the interaction between Sex and physical activity practice, which presented a small effect size. Regarding observed power, the Intercept and age showed high power, while Sex showed moderate, and Physical activity practice and its interaction with Sex had low power.

The Mancova results suggest that, in this multivariate analysis, age and Sex are important factors influencing the dependent variables, while physical activity practice and its interaction with Sex do not appear to have a significant impact.

The univariate analysis revealed significant effects of the corrected model on both self--esteem ($F_{(4, 180.829)} = 7.059$, $p < .001$, η_p^2= .130) and psychological well-being ($F_{(4, 21.847)} = 2.699$, $p = .032$, $\eta_p^2 = .054$), with a notably stronger effect on self-esteem.

Age emerged as a significant predictor for both dependent variables. It showed a substantial effect on self-esteem ($F_{(1, 436.786)} = 17.050$, $p < .001$, η_p^2= .083) and a smaller but still significant effect on psychological well-being ($F_{(1, 35.902)} = 4.436$, $p = .037$, η_p^2= .023). This suggests that age plays a crucial role in determining both self-esteem and psychological well-being, with a more pronounced impact on self-esteem.

Sex also significantly affected self-esteem ($F_{(1, 177.753)}$ = 6.939, p = .009, η_p^2= .035). Its effect on psychological well-being was marginally significant ($F_{(1, 23.416)}$ = 2.893, p = .091, η_p^2= .015), indicating that Sex may have some influence on psychological well-being, but this relationship is less robust than its impact on self-esteem.

Interestingly, physical activity practice did not show significant effects on either self-esteem ($F_{(1, 17.723)}$ = .692, p = .407, η_p^2= .004) or psychological well-being ($F_{(1, 2.706)}$ = .334, p = .564, η_p^2 = .002). This suggests that, in the context of this study and when controlling for age and Sex, physical activity practice does not significantly influence these psychological variables.

Furthermore, the interaction between Sex and physical activity practice did not yield significant results for self-esteem ($F_{(1, 25.893)}$ = 1.011, p = .316, η_p^2= .005) or psychological well-being ($F_{(1, .614)}$ = .076, p = .783, η_p^2= .000). This indicates that the effect of physical activity on self-esteem and psychological well-being does not significantly differ between males and females.

The results highlight the impact of age and Sex in self-esteem and psychological well-being, with age presenting the higher scores. The lack of significant effects for physical activity practice and its interaction with Sex suggests that these factors may not play as crucial a role in determining self-esteem and psychological well-being as previously thought, at least within the context and measures used in this study. The model explains 13% of the variance in self-esteem and 5.4% in the variance in psychological well-being, indicating that while these factors are essential, other variables are likely not included in this analysis that also contribute to these psychological constructs.

We conducted a MANCOVA to compare the effect of sex and smoking habits (smoker vs. non-smoker) with the covariate age on self-esteem and psychological well-being. A significant multivariate covariate effect of age was found [$F_{(2,184)}$ = 9.00, p < .001, Wilk's λ = .913, η_p^2 = .087], with an observed power of 97%. A non-significant small multivariate covariate effect of the sex variable was found ($F_{(2,184)}$ = 2.400, p = .093, Wilk's λ = .975, η_p^2= .025), with an observed power of 48%. No multivariate covariate effect was found for the smoking habits variable ($F_{(2, 184)}$ = .667, p = .515, Wilk's λ = .993, η_p^2= .007), with an observed power of 16%. The univariate analysis for the age variable ($F_{(2, 184)}$ = 18.080, p < .001, η_p^2= .087) showed a significant medium effect on self-esteem, with an observed power of 99%, and a small effect on psychological well-being ($F_{(2, 184)}$ = 4.906, p = .028, η_p^2 = .025), with an observed power of 60%.

A MANCOVA was conducted to compare the effect of Sex and hours of sleep with the covariate age on self-esteem and psychological well-being. A significant medium multivariate

Table 3: *Results from the Mancova Sex x Psychological Well-being and Age.*

Source	Self-Esteem				Psyc Well-Being			
	F	*p*	η_p^2	Obs. Power	*F*	*p*	η_p^2	Obs. Power
Corrected Model	7.059	<.001	.130	.994	2.699	.032	.054	.741
Age	17.050	<.001	.083	.984	4.436	.037	.023	.554
Sex	6.939	.009	.035	.746	2.893	.091	.015	.395
Physical Activity	.692	.407	.004	.131	.334	.564	.002	.089
Sex × Physical Activity	1.011	.316	.005	.170	.076	.783	<.001	.059

covariate effect of age was found ($F_{(2, 184)}$ = 7.356, p = .001, Wilk's λ = .926, η_p^2 = .074), with an observed power of 94%. A significant small multivariate covariate effect of the sex variable was found ($F_{(2, 184)}$ = 5.605, p = .004, Wilk's λ = .943, η_p^2 = .057), with an observed power of 85%. No multivariate covariate effect was found for the hours of sleep variable ($F_{(2, 184)}$ = .654, p = .687, Wilk's λ = .979, η_p^2 = .011), with an observed power of 26%. The univariate analysis for the age variable showed a significant medium effect on self-esteem ($F_{(2, 184)}$ = 14.555, p < .001, η_p^2= .073), with an observed power of 97%. The univariate analysis for the sex variable showed a small significant effect on self-esteem and psychological well-being, with an observed power of 78% and 86%, respectively (Table 4).

A MANCOVA was conducted to compare the effect of Sex and Time Spent on social media usage with the covariate age, using self-esteem and psychological well-being as dependent variables.

A significant medium multivariate covariate effect of age was found ($F_{(2, 184)}$ = 9.005, p < .001, Wilk's λ = .913, η_p^2 = .087), with an observed power of 97%. A significant small multivariate covariate effect of the sex variable was found ($F_{(2, 184)}$ = 3.433, p = .034, Wilk's λ = .965, η_p^2 = .035), with an observed power of 64%. No multivariate covariate effect was found for the social media usage variable ($F_{(2, 184)}$ = .965, p = .383, Wilk's λ = .990, η_p^2 = .010), with an observed power of 22%. The univariate analysis for the age variable showed a significant medium effect on self-esteem ($F_{(2, 184)}$ = 18.087, p < .001, η_p^2 = .087), with an observed power of 99%, and a significant small effect on psychological well-being ($F_{(2, 184)}$ = 4.879, p = .028, η_p^2 = .025), with an observed power of 59%. The univariate analysis for the sex variable showed a small effect on self-esteem and psychological well-being, with an observed power of 72% and 49%, respectively (Table 5).

We conducted a MANCOVA to compare the effect of Sex and hours spent per day on social media with the covariate age on self-esteem and psychological well-being. A significant medium multivariate covariate effect of age was found ($F_{(2, 187)}$ = 9.654, p < .001, Wilk's λ = .906 η_p^2 = .094), with an observed power of 98%. A non-significant small multivariate covariate effect of the sex variable was found ($F_{(2, 187)}$ = 1.977, p = .141, Wilk's λ = .979, η_p^2 = .021), with an observed power of 41%. No multivariate covariate effect was found for the variable hours spent per day on social media ($F_{(4, 364)}$ = 1.057, p = .378, Wilk's λ = .978, η_p^2 = .011),

Table 4: *Results from the MANCOVA Sex and Houres of Sleep, and Univariate Effects on Self-esteem and Psychological Well-being Related to Sex and Hours of Sleep.*

	Male	**Female**	***F***	***p***	η_p^2
	M ± DP	***M*** ± DP			
Self-esteem	31.261 ± 5.189	27.854 ± 5.279	7.588	.006	.039
Psychological Well-being	19.130 ± 2.546	17.766 ± 2.907	9.351	.003	.048

Table 5: *Results from the MANCOVA Sex and Houres of Sleep, and Univariate Effects on Self-esteem and Psychological Well-being Related to Sex and Time Spent on Social Media.*

	Male	**Female**	***F***	***p***	η_p^2
	M ± DP	***M*** ± DP			
Self-esteem	31.261 ± 5.189	27.854 ± 5.279	6.466	.012	.033
Psychological Well-being	19.130 ± 2.546	17.766 ± 2.907	3.771	.054	.019

with an observed power of 33%. The univariate analysis for the age variable showed a significant medium effect on self-esteem ($F_{(2, 187)} = 19.408$, $p < .001$, $\eta_p^2 = .094$), with an observed power of 99%, and a small effect on psychological well-being ($F_{(2, 187)} = 5.969$, $p = .015$, $\eta_p^2 = .031$], with an observed power of 68%.

DISCUSSION

University life encompasses various challenges and stressors, which can lead to mental health problems (Ferreira et al., 2020), particularly in psychological well-being and self-esteem (Bolinski et al., 2020; Bukhari & Khanam, 2017; Pereira et al., 2018). Furthermore, physical exercise and social media use have been shown to affect self-esteem (Cabral et al., 2020) and psychological well-being (Huang, 2017; Jan et al., 2017; Mendes et al., 2021; Nogueira & Sequeira, 2020; Pereira et al., 2017). Therefore, it was deemed pertinent to verify the influence of variables such as sex, age, area of residence, year of schooling, health behaviors, and time spent on social media use on self-esteem and psychological well-being in a sample of Portuguese university students. Initially, the relationship between the dependent variables (self-esteem and psychological well-being) was verified, followed by comparative analyses presented in the same order as the specific objectives (sex, age, area of residence, year of schooling, health behaviors, social media use).

Scientific evidence shows that self-esteem and psychological well-being are correlated (Akfirat, 2020; Singhal & Prakash, 2020). The present study found that self-esteem and psychological well-being are positively correlated, meaning that individuals with high self-esteem have high levels of psychological well-being. Moreover, both variables were predictors of each other. This demonstrates that self-esteem plays a fundamental role in determining psychological well-being (Çiçek, 2021), i.e., developing healthy self-esteem positively affects well-being, a necessary condition for promoting mental health (Singhal & Prakash, 2020).

Regarding sex, different investigations present discrepancies in the results obtained (Çiçek, 2021; Haq, 2016; Singhal & Prakash, 2020; Wani & Dar, 2017). In some studies, men tend to have higher self-esteem than women (Wani & Dar, 2017). Additionally, regarding well-being, Nogueira and Sequeira (2020) found that being female is a significant predictor of lower well-being. Conversely, others found that females have higher self-esteem and psychological well-being (Çiçek, 2021). In the present investigation, sex only has effects when associated with other independent variables. In the case of the year of schooling and physical exercise, it affects self-esteem, while in the hours of sleep per day and social media use affect both self-esteem and psychological well-being. In the remaining variables, sex has no effect. Thus, the investigations by Singhal and Prakash (2020) partially agree with the results obtained in this study, as they found no significant differences regarding sex in self-esteem among university students.

The covariate age presents statistically significant multivariate effects. However, it only had effects on self-esteem and psychological well-being regarding the area of residence, being a smoker, using social media, and the hours spent on them. Conversely, Huang (2017) found no relationship between social media and psychological well-being. In the other cases, age only showed an effect on self-esteem. Similarly, Bleidorn et al. (2016) found that self-esteem gradually increases from late adolescence to middle age, while Wani and Dar (2017) found that self-esteem is higher in younger individuals.

Regarding the area of residence, regardless of being male or female, residing in a rural or urban area has no effect on self-esteem and psychological well-being. However, Haq (2016) found a significant difference between urban

and rural students, with rural students having lower self-esteem.

Reflecting on the MANCOVA for sex and physical exercise, it was found that regardless of being male or female, being a practitioner or not does not affect self-esteem and psychological well-being. However, it would be expected that being a practitioner is associated with higher self-esteem and psychological well-being, as this could lead to a more positive self-view, consequently contributing to higher psychological well-being. According to Nogueira and Sequeira (2020), individuals who exercise more have higher psychological well--being. Concerning smoking habits, regardless of being male or female, no statistically significant differences were found, i.e., smoking or not smoking does not influence self-esteem and psychological well-being. It was expected that smokers would have lower self-esteem and well-being, considering they tend to adopt risky behaviors, which can harm mental health. However, the fact that this did not occur may be due to the majority of the sample being non--smokers.

In comparisons by hours of sleep per day, regardless of being male or female, no statistically significant differences were found in self-esteem and psychological well-being. The study by Nogueira and Sequeira (2020) contradicts the obtained results, stating that sleeping more than 7 hours significantly contributes to increasing students' well-being, while sleeping less than 6 hours has the opposite effect. Therefore, regular physical activity and sleeping 7 or more hours per day were predictors of psychological well-being (Nogueira & Sequeira, 2020).

In the case of social media use, regardless of being male or female, no statistically significant differences were found in self-esteem and psychological well-being. This contradicts the results obtained by Jan et al. (2017), which state that there is a strong negative relationship between social media use and self-esteem: increased social media use leads to decreased self-esteem. Additionally, Huang (2017) found that lower psychological well-being is associated with higher social media use. In this study, the fact that no differences were found may be due to the disparity in group size, as the sample mostly comprised people who use social media.

No statistically significant differences were found regarding the hours spent per day on social media, regardless of being male or female, i.e., the hours spent on social media do not influence self-esteem and psychological well-being. This is corroborated by the study by Cabral et al. (2020), which did not find a significant association, stating that the problem may be related to poor internet use, not the frequency of its use. However, we consider that statistically significant differences were expected, as according to Huang (2017) and Jan et al. (2017), the more time spent on social media, the lower the self-esteem and well-being. This may happen as people tend to check others' profiles, which can provoke feelings of envy (Jan et al., 2017).

Limitations and Future Directions

The present results should be interpreted considering several limitations. One limitation concerns the use of a convenience sample, which may raise doubts about whether the sample represents the Portuguese population. Additionally, care should be taken during sample characterization to ensure more uniform group sizes for comparison.

Moreover, given the current pandemic situation (SARS-COV 2), digital means had to be used to share the protocol, consequently preventing the clarification of potential doubts, possibly leading to biased results. This might have had implications, as some responses had to be excluded.

Therefore, another consideration for future investigations concerns collecting information about perceptions of mental health, self-care

behaviors related to physical and mental well-being, and other psychosocial and sociodemographic factors, such as substance use history and recent life stressors, as these data were not mentioned in this study and may affect students' self-esteem and well-being. Future research could also include other variables related to social media, as they impact self-esteem and well-being.

CONCLUSION

In conclusion, the results of this study showed that self-esteem and psychological well-being are positively related, as high self-esteem is associated with high well-being. Moreover, it was found that the constructs are predictors of each other. Regarding the influence of sociodemographic variables, sex only had an effect when associated with other variables. In the case of self-esteem, this occurs in the year of schooling, physical exercise, hours of sleep per day, and social media use, with the effect also visible on psychological well-being in the last two variables. Age affects self-esteem and psychological well-being concerning the area of residence, such as being a smoker, time spent using social media, and hours spent on them. In the case of the year of schooling, physical exercise, and hours of sleep per day, age only affected self-esteem. As for the area of residence, year of schooling, physical exercise, smoking habits, hours of sleep, social media use, and hours spent per day on them do not affect self-esteem and psychological well-being.

Thus, this study is relevant, as it demonstrates that self-esteem influences well-being and vice versa, making it crucial to have a healthy relationship between the two. If this does not happen, it is important to have access to mental health services for university students, and support from other students should be promoted.

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