

ASSOCIATION BETWEEN SELF-CONTROL AND PSYCHOSOCIAL OUTCOMES IN UNDERGRADUATES

ASSOCIAÇÃO ENTRE AUTOCONTROLE E DESFECHOS PSICOSSOCIAIS EM ESTUDANTES

Abstract

Objectives: To analyze how self-regulation processes can impact psychosocial outcomes in university students.

Method: We investigated 215 participants. The Barratt Impulsiveness Scale, the Delaying Gratification Inventory, and the Ego Resiliency Scale were used as measures of self-control. The psychosocial outcomes analyzed were stress (Cohen's Perceived Stress Scale), quality of life (World Health Organization Quality of Life instrument-Abbreviated version - WHOQOL-Bref), and mental health (Self-Reporting Questionnaire-20).

Results: Self-control measures correlated significantly with all outcomes. In a regression analysis, impulse control and ego resiliency were simultaneously associated with outcomes, while delaying gratification was not significant.

Conclusion: Variables of self-regulation were predictors of mental health, stress, and quality of life in university students. These measures may be capable of indicating non-functional outcomes and/or protective factors, depending on how the subject reacts to the environment.

Keywords: Self-control, stress, mental health, quality of life.

Resumo

Objetivos: Analisar como processos de autorregulação podem afetar desfechos psicossociais em estudantes universitários.

Método: Foram investigados 215 participantes. A Escala Barrat de Impulsividade, o Inventário de Postergação de

Gratificação (Delaying Gratification Inventory) e a Escala de Resiliência para Adultos foram usados como medidas de autocontrole. Os desfechos psicológicos analisados foram estresse (Escala de Estresse Percebido de Cohen), qualidade de vida (World Health Organization Quality of Life instrument-Abbreviated version - WHOQOL-Bref) e saúde mental (Questionário de Autorrelato - Self-Reporting Questionnaire-20).

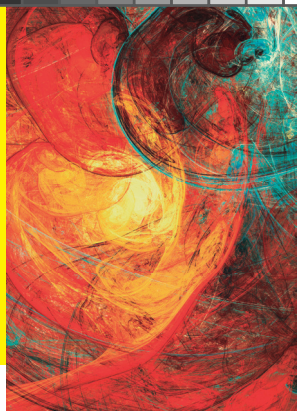
Resultados: As medidas de autocontrole apresentaram correlação significativa com todos os desfechos. Na análise de regressão, controle de impulsos e resiliência do ego mostraram associação simultânea com os desfechos, enquanto a postergação de gratificação não demonstrou significância.

Conclusão: As variáveis de autorregulação foram preditoras de saúde mental, estresse e qualidade de vida nos estudantes universitários avaliados. Essas medidas podem ser capazes de indicar desfechos não funcionais e/ou fatores protetores, dependendo da forma como o sujeito reage ao ambiente.

Palavras-chave: Autorregulação, estresse, saúde mental, qualidade de vida.

INTRODUCTION

Mental health is one of the primary concerns in relation to undergraduate students' health nowadays.¹ Problems associated with the mental health of university students have been the target of a growing number of studies, which suggests that students, especially those studying health sciences, have a significantly higher risk of presenting a mental disorder than other population strata. A recent meta-analysis involving 116,628 medical



**RACHEL ELISA RODRIGUES PEREIRA DE PAIVA¹, RENAN ARAÚJO SALES¹,
MARCO AURÉLIO ROMANO-SILVA², JONAS JARDIM DE PAULA^{1,2}**

¹ Faculdade de Ciências Médicas de Minas Gerais (FCMMG), Belo Horizonte, MG. ² Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG.

students suggests that the prevalence of depression or depressive symptoms in these students is around 27% and prevalence of suicidal ideation is 11%.² In the same study, longitudinal analyses suggest that higher education increases the prevalence of depression in this population by 13%.²

Mental health problems are strongly associated with negative consequences for the subject's daily life, including lower quality of life, a higher rate of cognitive complaints and perceived stress.³ Currently, students have reduced quality of life during the academic period, due to high levels of activities, troubled schedules, sleep deprivation, and days with work overload.⁴ Students studying health sciences, including medicine, nursing, and psychology, provide services and study human beings and their relationships, often at their worst and most difficult moments. These factors can influence the subject's perceptions of well-being, including their quality of life. According to the World Health Organization, quality of life is defined as an individual's perception of their position in life in the context of the culture and value system in which they live, with relation to their goals, expectations, standards, and concerns.⁵ This is a broad concept and includes, besides the physical and psychological aspects of human beings, their environment, placing importance on the subject's subjectivity when assessing its context.

Mental disorders and reduced quality of life have a very high impact on health services, approaching that of cardiovascular diseases.⁶ Although diagnosis and treatment of these disorders are increasingly accessible and reliable, early identification of which mental health problems or disorders may develop is particularly challenging given the highly variable clinical course of mental health disorders. Not only the disorders themselves, but also their functional outcomes are incredibly heterogeneous, depending on the individual characteristics of each student.⁷ Thus, when exposed to a stressor stimulus, such as difficulties encountered in higher education, people react differently, some are affected more intensely by the experience and others are virtually unaffected, as has been seen in prospective studies of mental health.⁸ Genetic, psychological and social factors contribute to this heterogeneity of outcomes.⁹ One

of the variables associated with how people respond to stressors and their consequences is their capability for self-regulation.

Self-regulation involves the ability to regulate affective, cognitive, and behavioral states.¹⁰ It is crucial for the subject to plan, assess, change and adapt thoughts, goals, behaviors, and emotions to the stimuli and challenges of daily life.¹¹ Self-regulation may involve biological or automatic systems (which maintain homeostasis) and cognitive or volitional systems (which are related to self-control). One current model suggests that self-control is related to impulse control, delaying gratification, and ego resiliency.¹⁰

Impulse control is the subject's ability to inhibit behaviors or thoughts of an instinctive or automatic nature. The outcome of impulse control deficits is impulsivity, which is a cognitive-behavioral factor strongly associated with adverse consequences in daily life.¹² Attention is related to rapid decision making leading to non-planned and maladaptive behavior, including worse mental health,¹³ compulsive behavior,¹⁴ and substance abuse.¹⁵

The ability to delay gratification is associated with specific personality traits.¹⁶ Boys who tend to delay gratification are described as more attentive, focused, cooperative, and controlled, while those who tend not to postpone gratification, are described as aggressive, irritable, and restless, among others. Meanwhile, girls who tend to delay gratification are described as intelligent, resourceful, and competent. Those who tend not to delay are more suggestive of a poor reaction to stress, are easily offended, and are commonly described as cranky.¹⁶ From a neurological point of view, the orbitofrontal cortex seems to be involved in the ability to control impulses. Characteristically, women possess a larger orbitofrontal cortex and metabolic levels of glucose utilization in this brain region are lower than in men. Women also have better prefrontal cortex connectivity and better control over the dorsal striatum, which may contribute to better control of impulsive acts and inhibition of unwanted behaviors than men.¹⁷

Finally, ego resiliency represents the extent to which people manage to maintain control in a task, context, or situation where they feel uncomfortable. This concept is directly related to characteristics that emphasize



flexibility and resiliency in the face of environmental stressors.¹⁸ Ego resiliency is associated with a flexible behavioral and cognitive repertoire, improving problem-solving skills and the ability to maintain performance under stress and active engagement with the world.¹⁰ It is an essential factor for social relationships and engages in socially demanding contexts.¹⁹

Our hypothesis in this study is that different aspects of self-control may be related to different outcomes in university life. Our focus is to assess the association of three different aspects of self-control - impulse control, delaying gratification, and ego resiliency - with mental health, quality of life, and perceived stress in university students. We believe that different aspects of self-control might be uniquely associated with these three outcomes, partially explaining the variability of these traits.

METHODS

Ethical considerations

This study was approved by the local Ethics Board at the Faculdade Ciências Médicas de Minas Gerais (CAAE 82915917.1.0000.5134). All participants gave consent for participation.

Participants

We evaluated 215 undergraduates studying different health sciences subjects, including psychology, medicine, and nursing. They answered scales and questionnaires (detailed below) about their current stress levels, quality of life, self-regulation, and sociodemographic and psychological characteristics. Criteria for inclusion in the study were 18 years of age or over, reported active enrollment on a university health sciences course, and provision of consent for participation in the study. Exclusion criteria were the presence of physical, motor, or sensory difficulties that compromised study procedures. We assessed the study participants by personal assessment or using an online platform containing questionnaires, scales, and other tests. This platform was prepared using the Google Forms app, as in other studies.^{20,21} As a validation procedure, part of the sample was interviewed by the researchers, who applied the questionnaires traditionally (pen-and-paper, n = 65). Participants' data are shown in Table 1.

Table 1 - Participants' description

	n (%)	Mean (SD)
Sociodemographic data, n (%)		
Sex		
Female	187 (0.87)	
Male	28 (0.13)	
Type of school		
Public	45 (0.21)	
Private	170 (0.79)	
Occupation		
Study	116 (0.54)	
Study and work	99 (0.46)	
Self-control		
Impulse control (ABIS-11)		26.6 (6.6)
Delaying gratification (DGI)		128.4 (26.6)
Ego-resiliency (ER89)		36.9 (6.5)
Outcomes		
Mental health (SRQ-20)		9.1 (5.3)
Perceived stress (Cohen)		29.5 (3.7)
Quality of life (WHOQOL-Bref)		13.8 (2.4)

ABIS-11 = Abbreviated Barratt Impulsiveness Scale; DGI = Delaying Gratification Inventory; ER89 = Ego Resiliency Scale; Cohen = Cohen Perceived Stress Scale; SD = standard deviation; WHOQOL-Bref = World Health Organization Quality of Life instrument-Abbreviated version.

Assessment of participants

Self-regulation

We used three different scales to assess specific aspects of self-control. The Abbreviated Impulsiveness Scale (ABIS-11) comprises 13 self-report questions on impulsivity, which is a psychological trait related to the tendency to act in a given situation before assessing possible consequences of the behavior.²² Higher scores on the ABIS-11 represent less impulse control. Delaying gratification was assessed using the Delaying Gratification Inventory (DGI), a 35-question scale on the subject's ability to forego immediate satisfaction for future reward.¹⁰ The DGI evaluates five different areas in which self-control is needed: food, physical pleasures, social interactions, money, and individual achievements. Each item is part of a total score, which represents a higher capacity to



**RACHEL ELISA RODRIGUES PEREIRA DE PAIVA¹, RENAN ARAÚJO SALES¹,
MARCO AURÉLIO ROMANO-SILVA², JONAS JARDIM DE PAULA^{1,2}**

¹ Faculdade de Ciências Médicas de Minas Gerais (FCMMG), Belo Horizonte, MG. ² Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG.

postpone gratification. The Ego Resiliency Scale (ER89) consists of a 14-item inventory on which subjects rate how they behave in a series of situations that require ego resiliency.²³ The higher the score, the greater the rating of the ego's capacity for resiliency.

Quality of life assessment

The Brazilian version of the World Health Organization Quality of Life instrument-Abbreviated version (WHOQOL-Bref) is a widely-adopted measure of different aspects of quality of life in adults. The WHOQOL-Bref has 26 questions covering the physical, psychological, social, environmental, and spiritual/religious/personal beliefs aspects of quality of life. The higher the subject's score on the scale, the greater the self-reported perceived quality of life.²⁴

Mental health

The Self Report Questionnaire (SRQ-20) is a scale composed of 20 questions for evaluation of psychiatric symptoms of a non-psychotic nature. It was created and has been recommended by the WHO as a rapid tool for screening symptoms of depression and anxiety. A high SRQ-20 score indicates a possible mental disorder. The higher the score on the scale, the greater will be the magnitude of the non-psychotic psychiatric symptoms reported.²⁵

Stress

Cohen's Perceived Stress Scale²⁶ aims to measure the degree to which individuals perceive situations as stressful; that is, how unpredictable, uncontrollable and overloaded respondents evaluate their lives as being. The scale comprises 14 questions that are scored based on the frequency with which situations occur in the respondent's life, offering a general estimate of stress as

perceived by the subject. Thus, the higher the score on the scale, the higher the perceived stress.

Statistical analysis

We used JASP software for data analysis (JASP Team, 2018).²⁷ We tested associations with variables using Pearson correlation coefficients and linear regression models. For each study outcome (Mental Health, Quality of Life, and Perceived Stress) we tested the simultaneous role of impulse control (ABIS-11), delaying gratification (DGI), and ego resiliency (ER89). We conducted multicollinearity analysis for each regression model to ensure that the contribution of each aspect of self-control was independent.

RESULTS

Impulse control was associated with fewer non-psychotic psychiatric symptoms, ($r = 0.600$; $p < 0.001$), suggesting that higher impulse control scores are indicative of better mental health. A moderate correlation was found with quality of life ($r = 0.488$; $p < 0.001$) and a weak correlation with perceived stress ($r = 0.261$; $p < 0.001$), suggesting that better impulse control is associated with higher quality of life and less perceived stress.

Delaying gratification correlated significantly with mental health ($r = -0.321$, $p < 0.001$), perceived stress ($r = -0.135$, $p < 0.001$), and quality of life ($r = 0.321$, $p < 0.001$). These correlations can be considered small-to-moderate in terms of effect size.

Finally, ego resiliency correlated significantly and inversely with mental health ($r = -0.328$; $p < 0.001$) and perceived stress ($r = -0.246$, $p < 0.001$), and these correlations were considered moderate. In turn, ego resiliency had a stronger correlation with quality of life ($r = 0.378$; $p < 0.001$), suggesting that better ego resiliency is associated with higher quality of life.

Table 2 - Correlations between aspects of self-regulation, mental health, stress and quality of life

	Mental health	Perceived stress	Quality of life
Impulse control	0.600*	0.261*	-0.488*
Delaying gratification	-0.321*	-0.135*	0.321*
Ego resiliency	-0.328*	-0.246*	0.378*

* $p < 0.001$.

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Since all three predictors were associated with all study outcomes we carried out linear regression analysis. All regression models were significant: mental health ($p < 0.001$, $r^2 = 23\%$), perceived stress ($p < 0.001$, $r^2 = 10\%$),

and quality of life ($p < 0.001$, $r^2 = 30\%$). In all models, impulse control and ego resiliency, but not delaying gratification, were predictors of the outcomes analyzed. The regression models are shown in Table 3.

Table 3 - Different aspects of self-control as predictors of psychosocial outcomes in linear regression models

Predictors	F	df	p	R ²	Standard β	p
Mental health	20.39	3	< 0.001	0.226		
Impulse control					0.316	< 0.001
Delaying gratification					-0.068	0.388
Ego resiliency					-0.213	0.001
Perceived stress	7.799	3	< 0.001	0.100		
Impulse control					0.245	0.007
Delaying gratification					0.068	0.421
Ego resiliency					0.188	0.007
Quality of life	30.26	3	< 0.001	0.302		
Impulse control					-0.337	< 0.001
Delaying gratification					-0.121	0.105
Ego resiliency					0.242	< 0.001

DISCUSSION

This study aimed to analyze how self-regulation processes (impulse control, delaying gratification, and ego resiliency) can interfere in health sciences students' perceptions of quality of life, stress, and mental health.

According to the results presented, measures of impulsivity have directly proportional correlations with measures of psychiatric symptoms and perceived stress, which means that the higher the individual's score on the impulsivity scale, the higher the reported psychiatric symptoms related to anxiety and depression, and the higher the perception of stress. Also, we saw that reported quality of life was inversely proportional to reported impulsivity so that the higher the reported impulsivity, the lower the perceived quality of life. We therefore see that the higher the level of impulsivity, the lower the ability to consider consequences in everyday situations. In a study with young adults, it was observed

that lower reported quality of life was associated with impulsivity traits, also measured with the Barratt Impulsivity Scale, and lower quality of life was also associated with predisposition to specific disorders, such as intermittent explosive disorder and compulsive sexual behavior, among others.²⁸

Delaying gratification exhibited a negative correlation with psychiatric symptoms and perception of stress and a positive correlation with perceived quality of life. Thus, individuals who score lower for self-report delaying gratification have higher reported symptoms related to anxiety and depression and stress. Gratification delaying capacity can be a predictor of academic success, socioeconomic status, or drug abuse, for example²⁹; as well as of development of other externalizing disorders,³⁰ while a high capacity to delay gratification may be a protective factor against psychiatric disorders.³¹ Thus, we understand that reported quality of life interferes in



**RACHEL ELISA RODRIGUES PEREIRA DE PAIVA¹, RENAN ARAÚJO SALES¹,
MARCO AURÉLIO ROMANO-SILVA², JONAS JARDIM DE PAULA^{1,2}**

¹ Faculdade de Ciências Médicas de Minas Gerais (FCMMG), Belo Horizonte, MG. ² Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG.

these situations and that the directions of the correlations observed are factors seen in the daily lives of the people who took part in this research.

In the case of ego resiliency, that is, a person's ability to regulate in situations they find uncomfortable, we see that the self-report score is inversely proportional to psychiatric symptoms and stress, so that the greater the ability to regulate, the less impulsive behaviors and the lower the perception of stress. Additionally, the better the ego resiliency, the greater the reported quality of life. This makes complete sense; if in daily life one deals better with uncomfortable situations, consequently one will have less stress and greater well-being.

In the linear regression model constructed for this study, it was observed that self-regulation variables such as ego-resiliency and impulsiveness were predictors of psychiatric symptoms, stress, and quality of life. Reported psychiatric symptoms exhibited a moderate, directly proportional association with impulsiveness and a moderate, inversely proportional association with ego resiliency. Reported stress exhibited a moderate association with reported impulsivity, but a weak association with ego resiliency. In turn, quality of life exhibited a moderate, inversely proportional association with impulsivity and a directly proportional association with ego resiliency.

Self-regulation variables were separated in this study so that we could understand a little better how each aspect of this construct is seen in daily situations when placed in association with mental health, stress, and quality of life. However, it is necessary to mention a limitation of our study, since it is a complex construct and was only studied for a short time, measures of impulsiveness, delaying gratification, and ego resiliency still encompass many elements that relate to each other and it is difficult to separate each concept.

CONCLUSION

In this study we conclude that students studying health sciences' perceptions of aspects of self-regulation in association with mental health, stress, and quality of life, are significantly correlated. It was also observed that self-regulation variables are predictors of psychiatric symptoms, mental health, and quality of life. In the literature, it is already known that these measures may

be capable of indicating dysfunctional outcomes and/or protective factors, depending on how the subject reacts to their environment.

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Correspondence: Rachel Elisa Rodrigues Pereira de Paiva, Alameda Ezequiel Dias, 275, CEP 30130-110, Belo Horizonte, MG, Brazil.

E-mail: rachelelisarodrigues@gmail.com

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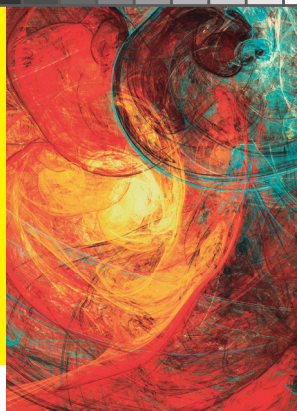


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RACHEL ELISA RODRIGUES PEREIRA DE PAIVA¹, RENAN ARAÚJO SALES¹,
MARCO AURÉLIO ROMANO-SILVA², JONAS JARDIM DE PAULA^{1,2}

¹ Faculdade de Ciências Médicas de Minas Gerais (FCMMG), Belo Horizonte, MG. ² Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, MG.

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