Emotion regulation strategies for university students:
a systematic literature review

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Abstract
Emotion regulation strategies can be taught to students, contributing to improving achievement in the educational context. Therefore, it is important to identify whether students know and use strategies to regulate their emotions. Thus, the present study aimed to conduct a review of the state of knowledge of research regarding emotion regulation strategies of college students, predominantly from teacher training courses. International and national articles published from 2015 to 2020 indexed in the APA, BVS-Psi, ERIC, SciELO, Science Direct, Scopus, and Redalyc databases were analyzed. After applying the inclusion criteria, five studies were selected. The results revealed that students report employing different strategies to regulate their emotions. The instruments employed in the research and the variables associated with the use of these strategies were also identified. It is noteworthy the need to expand the investigations about this theme in the national context, considering a larger number of variables of interest.

Keywords
Emotion Regulation; Teacher Education; Literature Review.

Estratégias de regulação emocional de estudantes universitários:
uma revisão sistemática da literatura

Resumo
As estratégias de regulação emocional podem ser ensinadas aos estudantes, contribuindo para um melhor desempenho no contexto educativo. É importante, pois, identificar se os estudantes conhecem e utilizam estratégias para regular suas emoções. Assim, o presente estudo objetivou realizar uma revisão do estado do conhecimento das pesquisas referentes às estratégias de regulação emocional de estudantes universitários, predominantemente de cursos de formação de professores. Foram analisados artigos internacionais e nacionais publicados entre 2015 e 2020 indexados nas bases de dados APA, BVS-Psi, ERIC, SciELO, Science Direct, Scopus e Redalyc. Após a aplicação dos critérios de inclusão, cinco estudos foram selecionados. Os resultados revelaram que os estudantes relatam empregar diferentes estratégias para regular suas emoções. Os instrumentos empregados nas pesquisas e as variáveis associadas ao uso dessas estratégias foram também identificadas. Destaca-se a necessidade de ampliação das investigações acerca dessa temática no contexto nacional, considerando um maior número de variáveis de interesse.

Palavras-chave
Regulação Emocional; Formação de Professores; Revisão de Literatura.

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Estrategias de regulación emocional de estudiantes universitarios:

una revisión sistemática de la literatura

Resumen
Las estrategias de regulación de las emociones pueden enseñarse a los alumnos, contribuyendo a un mejor rendimiento en el contexto educativo. Es importante identificar si los estudiantes conocen y utilizan estrategias para regular sus emociones. Por lo tanto, el presente estudio tuvo como objetivo realizar una revisión del estado del conocimiento de la investigación relativa a las estrategias de regulación de las emociones de los estudiantes universitarios, predominantemente de los cursos de formación de profesores. Se analizaron artículos internacionales y nacionales publicados entre 2015 y 2020 indexados en las bases de datos APA, BVS-Psi, ERIC, SciELO, Science Direct, Scopus y Redalyc. Tras aplicar los criterios de inclusión, se seleccionaron cinco estudios. Los resultados revelaron que los estudiantes dicen emplear diferentes estrategias para regular sus emociones. Se identificaron también los instrumentos empleados en la investigación y las variables asociadas al uso de estas estrategias. Cabe destacar la necesidad de ampliar la investigación sobre este tema en el contexto nacional, considerando un mayor número de variables de interés.

Palabras clave
Regulación Emocional; Formación de Profesores; Revisión de la Literatura.

1 Introduction

The self-regulation of learning is a highlighted theme in Educational Psychology and can be defined as the student's capacity of controlling factors or conditions that affect their learning (DEMBO, 2001; ZIMMERMAN, 2015). It involves metacognitive, affective, motivational, and behavioral processes linked to the acquisition of knowledge and abilities (ZIMMERMAN, 1986, 2015). A self-regulated student is active and able to plan, monitor, control, and regulate their thoughts, motivation, feelings, and actions, adjusting them - when necessary - to their feelings and actions to improve their learning (ZIMMERMAN, 2002, 2015).

Among the variables involved in learning self-regulation, emotions play an important role. Educational environments are proper to enable different emotions, called academic or performance-related emotions, such as pleasure in learning, hope, satisfaction, pride, relief, gratitude, anger, anxiety, shame, boredom, frustration, hopelessness, among others (BZUNECK, 2018; PEKRUN, 2006; PEKRUN *et al.*, 2011). Studies reveal that these emotions may affect positively or negatively the students' school and academic performance (BZUNECK, 2018; PEKRUN, 2006, 2014;

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STUPNISKY; HALL; PEKRUN, 2019). In this sense, the capacity of emotional self-regulation is necessary when these emotions may start to affect the learning process (HARLEY *et al.*, 2019).

Emotion regulation is defined as the attempts of the individual to influence which emotions they have and when and how they experience and express them (GROSS, 1998, 2015). The emotion regulation process is divided into three steps: identification of the emotion, selection of a strategy, and implementation of the chosen strategy. The evaluation of the current state that needs to be regulated and the definition of a goal or final desired state work as an impulse of the action to start the emotion regulation process (ELDESOUKY; GROSS, 2019). To manage the emotional answers, it is possible to use different strategies, that could be more or less effective on the modulation of the emotion in the short and long term (GROSS; JOHN, 2003; PEKRUN, 2006; STUPNISKY; HALL; PEKRUN, 2019; TAXER; GROSS, 2018; THOMPSON *et al.*, 2019).

The strategies of emotion regulation consist of actions performed by individuals, consciously or not, to maintain, increase, decrease or modify one or more components for an emotional answer. In general, they aim to modify a thought or situation, aiming to regulate emotion and maintain emotional wellbeing, and can be used at the beginning or at the end of the process that enables the emotion. These strategies can be learned through life and enable adaptation of a variety of situations experienced by individuals (GROSS, 1998, 2015). There are different strategies to regulate emotions, however, some have been more studied for being used more frequently by adults (GROSS, 1998). Researchers of the emotion regulation area point that the strategies are not considered positive or negative by themselves. This depends on the context and situation that they were used, and may become adaptive or maladaptive (ELDESOUKY; ENGLISH, 2019; SCHLESIER; RODEN; MOSCHNER, 2019).

According to the processual model of emotion regulation (PMER) (GROSS, 1998, 2015; GROSS; JOHN, 2003), the strategies of emotion regulation can be organized into five families of strategies, which implies the alteration of an emotional trajectory, intervening in different points of the emotional triggering process. The main strategies of emotion regulation are: *situation selection* (to be or not in situations, places, or people that trigger desired or undesired emotions); *situation modification* (transforming an external situation aiming to alter its emotional impact); *attention deployment* (directing

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attention for another aspect of the experienced situation); *cognitive change* (transformation of the evaluation of a situation, altering it meaning); and *response modulation* (directly influence experiential, behavioral or physiological components of the emotional answer). Some family strategies gather other actions used as emotion regulation, such as *distraction* (redirect or divert attention from an element that triggers emotion on a scene to a neutral one) and *rumination* (excessive attention investment to feelings associated with the event that triggered the emotion) strategies, both of the *attention deployment* category. In the *cognitive change* category, a widely studied strategy is *reappraisal* (cognitively transforming the situation, aiming to alter its emotional impact). Lastly, on the *response modulation* category, it is possible to mention as an example the *expressive suppression* (continuous efforts to inhibit expensive behavior of an emotion) strategy (GROSS, 1998, 2015; GROSS; JOHN, 2003).
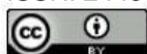
The emotion regulation strategies were also the object of study of other authors, who cataloged different possibilities of actions to deal with emotions. As an example, we can mention the study by Garnefski, Kraaij, and Spinhoven (2001), which evidenced nine strategies more frequently used by people. These are *self-blame and other-blame* (taking responsibility or blaming the environment or another person for what was experienced); *thought focus* (frequently thinking about the feelings associated with the event that triggered emotions); *catastrophizing* (attributing a much worse meaning than the fact that happened); *putting into perspective* (relativizing the experienced situation, comparing with other situations); *positive refocusing* (thinking of other pleasant and enjoyable topics, and not on the situation that triggered the situation); *positive reappraisal* (attributing positive meanings for the event in which the emotion was experienced); *acceptance* (recognizing that the experienced fact is real); and *refocus on planning* (reflecting about the possibilities to deal with the negatives questions of an event and which measurements can be taken) (GARNEFSKI; KRAAIJ; SPINHOVEN, 2001). Still, on the studies by Coats and Blanchard-Fields (2008) and Flavell, P. Miller and S. Miller (1999), other strategies were found, such as *fleeing the situation*, *evolving oneself with another task,* or *departing from a determined situation* (attempts of avoiding situations that triggers undesired emotions), as well as *seeking information* and *social support* (attempts of controlling the emotions with the help of other people aiming to keep emotion wellbeing).

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In the education context, the use of emotion regulation strategies could help students to improve their school and academic performance. The teacher's capacity to recognize and regulate their own emotions and conflicts is an essential prerequisite for the effective promotion of student's emotion regulation (CRUVINEL; BORUCHOVITCH, 2019; PEKRUN, 2014; PEKRUN; LINNENBRINK-GARCIA, 2014; TAXER; FRENZEL, 2015; TAXER; GROSS, 2018). Chen (2016) suggests that the teaching of the abilities of emotion regulation and the strategies of emotion regulation must be included in the teachers' initial formation since they may take emotion regulation in different situations during the professionalization process and also in their future teaching.

Since strategies of emotion regulation in the educational context might be taught to students, it is important to identify if future teachers know and use strategies to regulate their emotions. Thus, this article aimed to make a review to know the state of the art concerning international and national researches that investigated the strategies of emotion regulation used by students on teacher training courses and by college students.

2 Methodology

The study followed the state of knowledge review model, according to PRISMA guidelines (MOHER *et al.*, 2010). The searches took place in December 2020 on the virtual databases and electronic periodicals American Psychological Association (APA), Psychology Virtual Library (BVS-Psi), Education Resources Information Center (ERIC), Scientific Libary Online (SciELO), Science Direct, Scopus, and Scientific Magazines from Latin America and the Caribbean, Spain, and Portugal (Redalyc). The search terms used for the research in English were "self-regulation of emotion", or "strategies for self-regulation of emotion", or "emotion regulation strategies", combined with "university students", or "college students", or "undergraduate", or "postsecondary students", or "teacher education students", or "higher education students". For the search in Portuguese, the keywords used were "autorregulação da emoção", or "autorregulação emocional", or "regulação da emoção", or "regulação emocional", or "estratégias de regulação da emoção", or "estratégias de regulação emocional", combined with "formação de professores", or "estudantes do ensino superior", or "estudantes universitários". The terms could be in any part of the article. The quotation marks in each

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descriptor were also used in the search of articles. The collection of academic productions included the period between 2015 and 2020 in order to consider the most recent scientific productions about the theme. The search took place on January 2021.

The established criteria of inclusion were: 1. only scientific articles from periodicals; 2. only descriptive-correlational studies about the use of emotion regulation strategies; 3. target audience: students of teacher training courses aged over 18 years old. In case no studies of this population were found, the investigation could be have done with college students. We also analyzed the data collection instruments and the variables that were most associated with the report of the use of emotion regulation strategies. We excluded theoretical or review studies, studies that did not have higher education students as target audience, repeated articles, and studies of instruments construction and validation.

A total of 127 studies were identified during the search. After sorting the works by reading the titles and summaries, 19 of those were selected to be fully read. Among these, five articles matched the theme, target audience, and type of research of interest of this review, considering the predetermined criteria of inclusion and exclusion. There was total agreement between both authors concerning the final inclusion of those five articles to be included in the review and be analyzed to answer the goals of this research. The data derived from these works are shown below, descriptively, focusing on the target audience (students of teacher training courses or college students), the most and least strategies of emotion regulation, the data collection instruments, and the variables that were most associated with the use of those strategies.

3 Results and discussion

As shown in Table 1, only two articles concerned emotion regulation of students of teacher training courses. The other three works whose participants were college students were located. All found articles were international. It is important to highlight that no Brazilian researches about the emotion regulation strategies of teacher training courses and college students were identified during the period. The target audience and the total number of participants, as well as the age range and databases where the studies were found, are also described.

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Table 1 – Characteristics of the articles located on the literature review about the emotion regulation strategies on higher education - organized by year of publication and target audience

Authors/ Year	Nationality	Emotion regulation strategies	Target audience	Sample	Age range	Database
Alhebaishi (2019)	Saudi Arabia	Reflective diary and semistructured interviews	Teacher training programs students	70 participants	23-27	ERIC
Canedo *et al.* (2019)	Argentina	Cognitive emotion regulation questionnaire (GARNEFSKI; KRAAIJ; SPINHOVEN, 2001)	College students	84 participants	23 (average age)	Redalyc
Lasa-Aristu *et al.* (2019)	Spain	Cognitive emotion regulation questionnaire (GARNEFSKI; KRAAIJ; SPINHOVEN, 2001)	College students	350 participants	35,6 (average age)	Redalyc
Akfirat (2020)	Turkey	Cognitive emotion regulation questionnaire (GARNEFSKI; KRAAIJ; SPINHOVEN, 2001)	Pedagogical training courses students	403 participants	27,7 (average age)	ERIC
Vally and Ahmed (2020)	United Arab Emirates and United Kingdom	Emotion regulation questionnaire (GROSS; JOHN, 2003)	College students	147 participants	21,37 (average age)	Scopus

Source: Made by the authors (2021).

From the findings, it is possible to observe that the nationality of the studies was diverse. However, one of these had intercontinental authors, one from the United Arab Emirates and the other from the United Kingdom (VALLY; AHMED, 2020). Besides that, it was possible to determine that most of the researches related to emotion regulation strategies were written by two or more authors (CANEDO *et al.*, 2019; LASA-ARISTU *et al.,* 2019; VALLY; AHMED, 2020). It was also found that all the articles were published between 2019 and 2020, with 2019 being the year with most studies, three in total. The cognitive emotion regulation questionnaire (GARNEFSKI; KRAAIJ; SPINHOVEN, 2001) was the most used tool to measure the emotion regulation strategies on the samples in most of the studies (AKFIRAT, 2020; CANEDO *et al.*, 2019; LASA-ARISTU *et al.*, 2019).

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The emotion regulation questionnaire (GROSS; JOHN, 2003) was applied only in one study (VALLY; AHMED, 2020).

Between the two studies about emotion regulation of students of teacher training courses found, one has investigated the emotional answers of teachers in training during a professional internship for decency and how they regulate or deal with emotional answers (ALHEBAISHI, 2019). The obtained results revealed that the future teachers used many regulation and confrontation strategies to improve the positive emotions and decrease the negative ones, such as confront avoidance, finding ways of solving problems, masking emotions or keeping facial expressions under control, anger suppression, deep breathing and seeking social support with their families and supervisors. The participants also related difficulties to distinguish which strategies were more efficient and worked better in specific situations.

The other study found investigated the relationship between psychological well-being, self-esteem, perceived general self-efficacy, level of hope, and emotion regulation strategies of students in pedagogical training (AKFIRAT, 2020). According to the results of the research, the most reported strategies were the *refocus on planning*, *positive reappraisal*, and *rumination*. The correlations obtained showed that the punctuations of psychological well-being, self-esteem, general self-efficacy, and some emotion regulation strategies (*refocus on planning*, *positive refocusing*, *positive reappraisal*, and *putting into perspective*) decrease as hopelessness increase. As the punctuations of psychological well-being increase, the self-esteem, general self-efficacy, and some emotion regulation strategies (*refocus on planning*, *positive refocusing*, *positive reappraisal*, and *putting into perspective*) also increase. In contrast, some punctuations of *acceptance*, *self-blame*, *other-blame*, and *catastrophizing* decrease.

Among the results of the search for investigations about the emotion regulation strategies of college students, the first examined the influence of cognitive strategies of emotion regulation on college students' subjective and psychological well-being (CANEDO *et al.*, 2019). The results evinced that the most mentioned strategy was the *refocus on planning*, followed by *positive reappraisal*. Both were associated with a higher experience of positive affection. The cognitive strategies of emotion regulation that showed coefficients more positively correlated with well-being were *positive reappraisal* and *positive refocusing*. The strategy with the highest negative correlation was

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catastrophizing. To a lesser degree, *self-blame* and *refocus on planning* showed associations with psychological and subjective well-being. The cognitive strategies of emotion regulation that showed less or no association with well-being indicators were *other-blame*, *rumination*, *acceptance*, and *perspective-taking*.

The second study about emotion regulation strategies of college students found aimed to identify different profiles of cognitive-emotion regulation and analyze the predictive capacity of negative affection, emotional traces (anxiety and anger), and depressive symptomatology (LASA-ARISTU *et al.*, 2019). On the results, two groups of participants with different styles of emotional confrontation in answer to stressful events were found: profile 1, labeled as "vulnerable", and profile 2, labeled as "protector". Most of the participants (65%) were classified in group 2, characterized by reports of more frequent use of adaptive emotion regulation strategies. The strategies mostly reported by the students from this group were acceptance, positive refocusing, refocus on planning, *positive reappraisal*, and *putting into perspective*. On the other hand, participants of group 1 had significantly higher punctuations on *rumination*, *catastrophizing*, and *other-blame* strategies. Concerning the analyses about anxiety and anger traces, depressive symptoms, and positive and negative affection, the participants of profile 1 showed significantly higher scores in depressive symptomatology, anxiety-trace, and anger; while those of profile 2 scored higher on positive affection.

Lastly, the third study made with college students investigated specifically two strategies of emotion regulation, *cognitive reappraisal,* and *expressive suppression*, associated with psychological well-being and the tendency of obtaining social support from other people (VALLY; AHMED, 2020). In general, the sample reported more preference to the report of the use of *cognitive reappraisal* instead of *expressive suppression*. The report of the use of *cognitive reappraisal* predicted significantly high levels of psychological well-being and a higher probability of the participants showing positive affection. *Cognitive reappraisal* was also positively associated with the search for social and emotional support, while the same association was negative with *expressive suppression*. Reports of the use of *expressive suppression* strategy were significantly predictive of high negative affection and also negatively associated with well-being.

It is possible to observe that, among the five literature review studies found, the main strategies of emotion regulation mentioned by the students were: *refocus on*

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planning, *positive reappraisal* or *cognitive,* and *rumination*. In general, reappraisal strategy is considered efficient and adaptable and is frequently associated with better academic performance, as well as higher psychological well-being and more positive social results (GROSS; JOHN, 2003; HAINES *et al.*, 2016; MCRAE; GROSS, 2020). According to Gross (1998), reappraisal also caused a decrease of experiences of negative emotion when compared to the emotional suppression strategy. On the other hand, rumination strategy, according to McRae and Gross (2020), is less adaptive and may impact the person's mental health. In this sense, these authors suggest that schools should promote psychosocial interventions that teach students about the psychological mechanisms involved in emotion regulation and also how to implement the adaptive strategies of emotion regulation in the situations they live. Thus, working with emotion perception in oneself and in other or exercising empathy, dialogue, and cooperation are activities that promote students' competencies of emotion regulation together with socioemotional abilities and significant learning (CAMILLO; CUEVA; VARGAS, 2020; CANETTIERI; PARANAHYBA; SANTOS, 2021). Another possibility would be to work with emotional intelligence, which includes emotion regulation (MACÍAS GARCÍA; GONZÁLEZ LÓPEZ; ESLAVA-SUANES, 2018).

Furthermore, among the studies found, psychological well-being was the most studied variant related to emotion regulation (AKFIRAT, 2020; CANEDO *et al.*, 2019; VALLY; AHMED, 2020). It was possible to determine that the report of the use of adaptive emotion regulation strategies represented a significant predictive factor of students' high levels of psychological well-being. Researches with active teachers determined that their capacity in dealing with emotions in the classroom was important for their daily tasks and well-being, as well as to achieve their teaching goals (FRENZEL *et al.*, 2018; LAVY; ESHET, 2018; ULLOA; EVANS; JONES, 2016). According to Ulloa, Evans, and Jones (2016), emotional competencies (being conscious about one's emotions and being able to regulate them) and teachers' well-being influence the way they understand and deal with the students' needs and emotional difficulties. For these authors, emotionally competent teachers tend to implement practices that work with emotions, with the teaching of strategies, self-conscience, and mindful abilities, as well as emotions-focused reflective practices. Alhebaishi (2019) and Taxer and Gross (2018) highlight that future teachers must be prepared to deal with their own and their students' emotions, onde both

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teachers and students experience and express various emotions in the school environment. Taxer and Gross (2018) also mention that the capacity of emotion regulation might improve the teachers' teaching effectiveness and ability to establish and favorable atmosphere in the classroom.

Lastly, it is worth highlighting that two studies that analyzed the use of emotion regulation strategies related to genre did not find any significant difference (LASA-ARISTU *et al.*, 2019; VALLY; AHMED, 2020). The obtained results by this literature review indicated that studies about college students' emotion regulation strategies need to be expanded, especially on the national scope, due to the incipient number of studies found in a recent time frame. Future investigations also need to consider a greater number of variables of interest that could be associated with the use of those strategies, such as demographic and psychosocial variables, poorly examined on the studies found.

4 Closing remarks

This study aimed to make a review of the state of knowledge about international and national studies that investigated the emotion regulation strategies reported by students of teacher training courses and college students. The search found five articles, in which participants reported the use of different strategies to regulate their emotions. However, not all of them were considered to be adaptive, in accordance with the literature. Some studies included other variables of interest that could be associated with emotion regulation capacity, such as psychological well-being, or that could be enhanced due to the lack of ability to regulate emotions, such as emotional traces (anxiety and anger) and depressive symptomatology.

The findings showed in the review allowed determining that emotional self-regulation is a relevant, present, and evident theme on the international scope. Furthermore, on one hand, they bring important contributions by evincing that promoting the teaching of emotion regulation on academic context, especially among teacher training courses students, might help them during college studies and in their future teaching practice, once they will be able to teach emotion self-regulation to their students and better deal with the emotions that emerge in a classroom. On the other hand, it revealed some of the limitations to be overcome in future researches. The first is the time

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frame, which considers only studies from the past five years. It is important to point out that the searches were limited to seven databases, and there are others that were not consulted. Another limitation is that the selected studies were on descriptive-correlational researches. Thus, it is suggested that future studies include exploratory studies including demographic (such as age, genre, and semester of the course) and psychosocial (such as quality of life, stress, and mental health) variables, which could be associated with the use of emotion regulation strategies. Other studies must also investigate the effects of oriented interventions to the teaching of emotion regulation strategies on the improvement of academic performance of higher education students.

It is expected, thus, that this review contributes to reinforcing the importance of this theme and inspires new researches, especially on the national scope and with future teachers, considering the benefits that emotion regulation capacity might provide for this population, such as college students and future teaching professionals.
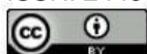
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