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Emotion dysregulation in mood disorders: a review of current challenges

Abstract

Background: Emotion dysregulation is not a new concept in mood disorder research. During the last two decades, it has received considerable attention and has been frequently discussed. However, there are still notable research gaps regarding the role of emotion dysregulation in mood disorders other than major depressive disorder and bipolar disorder.

Method: Between-studies literature review was applied to a set of articles published between 1990 and 2016. Results of theoretical and empirical studies were compared. Sets of inclusion and exclusion criteria were strictly followed.

Results: Analysis showed serious problems regarding definitions of emotion regulation as a concept and with creating boundaries between this concept and other similar concepts. Significant levels of inconsistencies and a lack of systematization in this area were detected, especially in research related to neurological correlates of emotion regulation in mood disorders. Other conceptual challenges were outlined as well.

Conclusion: There is a strong need to enhance current knowledge about emotion dysregulation in mood disorders. It is necessary for experimental studies of interest to be aligned with current findings and norms. A rather good base has been set, but there is still a lot of room for improvement as some of the identified challenges will remain.

Keywords: emotion regulation, mood disorders, depression, bipolar, neurology, theoretical study

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Introduction

Emotion regulation is a cornerstone of normal development and optimal psychological functioning, which why it has been explored in so many different contexts.[1,2] Recent research has indicated that emotions are typically guided by individuals to achieve specific goals.[3,4] Recent research by Gross[5,2] have primarily focused on specific emotion regulation strategies individuals use to manage their own emotions. Previous research doubts the scientific validity of emotion regulation due to the the large number of different definitions available.[6] Some authors introduce it as a regulatory process, which if it doesn't work properly, leads to a spectrum of disorders.[7–10] This is unsatisfactorily non-specific about the mechanisms underlying emotion regulation. Some authors attempted to enhance the definition of emotion regulation and the one offered by Koole[11] is considered to be among the most relevant: "Emotion regulation consists of people's active attempts to manage their emotional states." This definition's contribution lies in its construction of emotion regulation as an active construct, however, it can be misleading as it implies that emotion regulation is a conscious process, although different studies show that emotion regulation can be connected with different levels of consciousness[12] and different neural correlates confirm this standpoint.[13] Mauss & Tamir[14] consider emotion regulation as the process of altering current emotions into wanted emotions. Many papers have discussed the range of definitions of emotion regulation and the difficulties this has caused for research, the pioneering ones as early as the late 1980s.[15,16] Articles published in the early 2000s highlight definitional issues[17,18] and outline methodological and conceptual challenges.[19,20] Articles published about ten years ago cover this problem from a different angle and propose radical changes in the approach to emotion regulation with more precisely defined terms and concepts.[21–23] They focus on the challenges related to emotion regulation in general, outside the context of a specific spectrum of disorders. Beauchaine[24] finds that both emotion regulation and dysregulation can be defined effectively. We strongly believe that challenges and problems occasionally mentioned in various articles should be systematized, especially because there are a huge number of articles covering this topic from different angles

Background

Consequences of poor emotion regulation

Difficulties in emotion regulation can cause serious psychological problems for the person experiencing them.[25–27] These problems may vary from anxiety disorders to borderline personality disorder or substance abuse.[28] Emotion regulation difficulties typically cause mental disorders including, anxiety, depression and alcohol use disorder.[29] Clinical researchers indicate that people who have a serious mental illness also commonly have problems with emotion regulation.[30] These problems often result in aggressive behavior and hospitalization, to protect them and their environment.[31,32] Other consequences include aggression towards oneself,[33] serious eating disorders,[34] alcohol and drug abuse,[35–37] non-suicidal self-injury,[38] etc. Different disorders are connected with different levels of emotion dysregulation. For example, in anorexia nervosa and bulimia nervosa, emotion dysregulation is global as it is present across multiple dimensions.[39]

Regulation of positive/negative emotions and mood disorders

Emotion regulation involves the selection and application of emotion regulation strategies, that individuals perceive to be beneficial for achieving their goals.[40] These strategies can be spontaneous or controlled intrinsic, aiming to regulate one's emotion, or extrinsic, aiming to the emotions of others.[3] Characteristically, mood disorders display various forms of dysfunctional emotional reactivity.[41] When individuals diagnosed with a bipolar disorder are compared with a normative sample, positive emotional reactivity increases and this can be established even at a physiological level.[42] When it comes to negative emotional reactivity, there is still no consensus about the way in which it deviates from the optimal level of activation as different studies provide different and opposing results.[43–45] Individuals with major anxiety and depressive disorders have weaker reactions to all stimuli, positive or negative, and they tend to poorly regulate a wide range of emotions.[46,47] Commonly, those with a mood disorder have minimal or no emotional control, and often use dysfunctional strategies for regulating emotions.[48,49] Regulation of negative emotions has been discussed often in studies on human development, as it is an important aspect of an individual's growth and maturation.[50] Negative emotions are particularly interesting as their regulation is strongly linked with mood disorders.[8,51] There are numerous strategies, falling in two groups, to deal with stressful stimuli – cognitive and behavioral.[52] For regulation of negative emotions, reappraisal is considered an effective and healthy way to deal with emotions,[53] while suppression may indicate emotion dysregulation and be a prelude to aggressive and violent behavior.[54] Such problems are mostly due to accelerated prefrontal activation and decreased amygdala activation.[55] Of course an ability to also accept and process positive emotions is crucial for psychological wellbeing.[51] Positive emotions cause psychological and physiological,[56] including increases in metabolic activity[54] and accelerated neurotransmission[57] among others. There are two opposing strategies for processing a positive emotion. The first strategy involves rumination about the positive emotion's individual qualities and as a result, the positive emotion strengthens.[58] A dampening strategy can also be applied to lessen the intensity of the positive emotion, decrease the positive emotional state and highlight negative aspects of positive feelings.[51] Dampening has been increasingly connected with both clinical and non-clinical depression as well as a wide spectrum of disorders.[60] However, rumination is not exclusively regarded as a positive strategy, as it has been used to explain manic episodes, while dampening is connected with depressive episodes.[51] Rumination focused on emotions can be a predictor of manic symptoms and a history of mania, and rumination applied to negative emotions it can be a very strong predictor of depression and its severity.[60] Interestingly, although dampening is usually connected to depression, it can also lead to intensification of the manic state.[51] Factors influencing emotion dysregulation include emotional awareness, emotion regulation goal and strategies employed to accomplish the emotion regulation goal.[61] As for emotional awareness, the awareness of the emotion and the relevant context facilitates adaptive emotion regulation.[62] Emotion regulation goals typically specify what is meant to be achieved, whereas emotion regulation strategies specify the means.[61]

The link between emotion regulation processes and mood disorders

Emotion dysregulation is often discussed in the context of mood disorders. At the neurophysiologic level among people with mood disorders, the processes of emotion regulation do not work as expected.[63] Joormann & Vanderlind[64] argue that most common emotion regulation processes are not very effective in controlling mood disorders,[65] as they help in controlling emotions by altering the person's immediate emotional impact, but mood disorders may persist. Beauregard[13] suggest that temporal areas and cingulated brain regions, among others, play an important role in developing and applying maladaptive strategies to emotion regulation.[57] According to data provided by the World Health Organization, the prevalence for mental disorders in Europe is 27% and unipolar depression is among the top three most prevalent disorders. Rates vary internationally and for different disorders from 18.1% to 36.1%, but they are undeniably high.[66] According to US national sample research, depression is the most commonly diagnosed lifetime disorder (at 16.6%) and also most prevalent for twelve-month episodes (at 29.9%).[66]

Mood disorders are a burden for society on several levels – individual, economic and societal,[67] so it is vital to understand, treat and, ultimately, prevent them. Problems in emotion regulation are just one approach to the topic, but the existing knowledge is scattered based on the dominant area of research. It is strongly believed that systematization of the current knowledge would make it easier to assess the relationship between mood disorders and emotion dysregulation.

Methodology

PubMed, ProQuest, SagePub, ScienceDirect, Taylor & Francis, and the Wiley Online Library used as sources of articles for the study. Key words for our sensitive terms search were: emotion (dys) regulation, mood disorders, strategies, neurological correlates. We focused on articles published after 1990, since before then emotion regulation received almost no attention at al.[68] The following inclusion criteria were adopted:

1. General research on defining emotion regulation.
2. Articles about neurological correlates of emotion (dys) regulation in patients with mood disorders.
3. Articles about emotion regulation strategies applied by individuals with a mood disorder.
4. Research conducted on adults with a DSM diagnosis of a disorder from the spectrum of mood disorders.
5. Investigation of methodological and conceptual challenges related to emotion regulation in mood disorders.

The following exclusion criteria were adopted:

1. Studies conducted on people below 18 years of age.
2. Studies conducted on the general population.
3. Studies conducted on patients with comorbid diagnoses.

The method used for analyzing the compiled articles is a between-study literature review, meaning that results were compared from two or more different studies. Results of the research were further divided based on the topic in focus.

Results

Conceptual boundaries between emotion regulation and similar terms

A number of definitions of emotion (dys) regulation can be found

in academic literature.[8,15,16] For now, there is no universally accepted way to define the concept. This does not come as a surprise since there were, and still are, certain problems with conceptualizing the core term relevant for this field – emotion.[69] Additional confusion is created because terms such as emotion (dys) regulation, emotional response, emotional vulnerability, etc. overlap.[65] This creates numerous problems because authors need to consider how a paper defines "emotion regulation" before accepting or using its results.[69] Gratz & Roemer[70] present emotion dysregulation as a multidimensional construct encompassing:

1. A lack of awareness, understanding, and acceptance of emotions;
2. A lack of access to adaptive strategies for modulating the intensity and/or duration of emotional responses; an Unwillingness to experience emotional distress as part of pursuing desired goals; and
3. The inability to control behaviors when experiencing emotional distress.

Articles defining emotion dysregulation are very rare, unlike articles about emotion regulation and the role of emotion dysregulation in various disorders. Commonly, emotion dysregulation is seen as the opposite of emotion regulation; however, the previous definition proves the necessity of outlining boundaries for emotion dysregulation and listing its defining characteristics. Some authors research this concept in greater depth and suggest elements which constitute emotion dysregulation: "emotional expressions and experiences that are excessive in relation to social norms and context-inappropriate; rapid, poorly controlled shifts in emotion ('lability'); and the anomalous allocation of attention and to emotional stimuli".[71] Literature on emotion regulation is focuses on its different forms, levels and contexts. For example, attention has been paid to the distinction between extrinsic and intrinsic regulation and to emotion regulation in family and academic contexts, but it is important to focus on the way emotions are regulated and not on other aspects of a person experiencing that emotions.[69] Still, not all classifications of emotional regulation received equal attention. The distinction between automatic and voluntary emotional regulation is one of the most popular topics.[72–74] As these types of emotion regulation have been explored in the context of different mood disorders, it is necessary to define them too. Automatic emotion regulation is defined as "goal-driven change to any aspect of one's emotions without making a conscious decision to do so, without paying attention to the process of regulating one's emotions, and without engaging in deliberate control".[75] In contrast, voluntary emotion regulation is goal-oriented.[18] However, a research gap has been identified as automatic emotion regulation received significantly more attention, especially in terms of its neural correlates.[72]

In addition to the problem of its diffused definitions, emotion regulation is not clearly enough separated from other similar terms, in particular with the term "coping." According to the definition offered by Folkman & Lazarus,[76] coping "consists of cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person". Emotion regulation is a wider term as it is not restricted to dealing with demands that are beyond one's capacities. Another term often confused with emotion regulation is emotional suppression which basically refers to "inhibition of expressive behavior",[77] but this is just one of the forms of emotional regulation[53] so it is not acceptable to use these two terms synonymously. Emotion regulation is further confused with regulation of emotions, which is an entirely different approach. This confusion is deepened due to the variety of similar sounding terms whose meaning has not been clarified when used by particular authors. Some processes which include assessing and modulating an emotional response to a situation were presented by Rothbart et al.[78] Effortful control was defined as "the efficiency of executive attention and ability to inhibit a dominant response" whereas reactive control was defined as "involuntary motivational approach and avoidance systems in response to an activity",[9] but a parallel can be drawn between these two and the previously defined automatic and voluntary emotion regulation.

Neurological correlates of emotion (dys) regulation in mood disorders

Emotion dysregulation is a core characteristic of mood disorders.[79] It is highly useful to test models of emotion regulation in the context of mood disorders.[72] Latest advances allow scientists to come up with non-linear models of emotion regulation compatible with the nature of mood, especially bipolar, disorders.[80] Additionally, modeling techniques enable drawing conclusions regarding the comorbidity between different Axis I disorders because the same mechanism is present in the emotional circuit.[81] Recent research has focused on identifying neural substrates of emotion regulation.[24,82] Different parts of the brain are involved in emotion regulation, each having its specific purpose. The brainstem and hypothalamic regions make it possible for people to express emotion and to experience their instrumental role through control of the autonomic system, the endocrine system and the motor system in our bodies.[63,83] The limbic system is responsible for creating a wider span of emotions which people use to respond to stimuli and it is also an important factor in the learning process.[84] The cortical regions of the brain enable the highest level of emotional processing, including planning and anticipation processes.[82,85] Their maladaptive cognitive strategies may produce some sort of mood disorder.[86] It has been found that depression (in both bipolar and non-bipolar patients) is accompanied by structural abnormalities in brain regions.[87] Table 1 summarizes results from studies exploring neurological correlates of emotion regulation in clinical samples for assessment of the issues concerned. Studies about chemically induced mood disorders are not included. Reviewing these articles revealed results are all over the place. While there are some points in the brain which are usually highlighted as relevant in articles assessing a particular disorder, each study indicates additional relevant areas of the brain. It is rather unclear why this happens, as these studies have quite similar research designs, include emotion activation tasks and feature a control group. Differences may be attributed to their level of detail, or the nature of the chosen stimuli (complex visual stimuli such as video clips versus words). Whatever the reason is, we believe that knowledge in this area should be further enhanced, deepened, and systematized. This is especially true for the disorders from this particular spectrum which have been included in the latest DSM V.[95] For example, discrepancies in neurological correlates of premenstrual dysphoric disorder is very high as very few studies highlight different parts of the brain as hyper behavior increased. Some studies treat the role of amygdala[93,94] as crucial, but others do not mention it at all.[95] No studies were found exploring the neurological correlates in terms of emotion regulation for some disorders: disruptive mood dysregulation disorder, persistent depressive disorder, substance/medication-induced depressive disorder, depressive disorders due to another medical condition or other specified, or unspecified, depressive disorders.

Table 1 Overview of neurological studies on emotion regulation in mood disorders

Mood disorder	Increased activity	Decreased activity
Bipolar disorder	Medial temporal lobe:[88]	**Inferior frontal gyrus:**[88,89]
	Pallidum:[88]	**Anterior cingulate cortex:**[89]
	Putamen:[88,89]	**Prefrontal cortex:** [90]
	Parahippocampalgyrus:[89]	**Amygdala:** Amygdala activity varies depending on mood state (mania or euthymia)[90]
	Thalamus:[89]	
Major depressive disorder	Parahippocampalgyrus:[81,91,92]	**Amygdala, Parahippocampalgyrus and Thalamus** In depressed people these show decreased activity when it is necessary to process positive emotions/stimuli
	Thalamus:[92]	
	Amygdala:[92,13]	
	Insula:[92,13]	
	Precentral gyrus: [92]	
	Middle temporal gyrus:[92]	
	Right subcallosal gyrus:[92]	
	Right dorsal anterior cingulate cortex:[92]	
	Right anterior cingulate cortex: [13]	
	Right anterior temporal pole:[13]	
Premenstrual dysphoric disorder	Amygdala:[93,94]	
	Medial prefrontal cortex:[95]	
	Dorsolateral prefrontal cortex:[95]	

Another problem is homogeneity of the clinical sample. This is especially relevant for studies conducted on individuals with bipolar disorders. According to the DSM V classification, bipolar disorders consist of Bipolar I, Bipolar II, Cyclothymic disorders, and Bipolar disorder due to medications, drugs, or a medical condition. However, this distinction hasn't been made in the studies and participants are just labelled with a diagnosis of bipolar disorder. A further complication is that even the existing boundaries between types of bipolar disorder are considered inappropriate.[96] There are diagnostically significant differences between different categories of bipolar disorders[97] so presenting patients as one homogenous group without further explanation should be unacceptable. While a lack of such explanation can be understood in studies separately assessing manic and depressive episodes, studies approaching the disorder in general should probably offer some justification to prevent further confusion.

The problem of sample homogeneity can be viewed from another point. Most studies assume that the participants in focus and control groups differ solely based on their diagnosis. However, there is a growing number of studies containing individuals with a mood disorder whose abnormal brain structure has been identified.[98–102] While brain abnormalities related to mood disorders are not a novelty, they pose an additional research challenge, as they have not been confirmed in larger samples. For example, if they are not present in every case of major depression, how should we treat them? Do researchers need to extend their sampling techniques and requirements to include brain abnormality as a point of difference as well, or will they continue to ignore it?

Conclusion

Each emotion has its own mental and psychological implications for a mental disorder, but the research does not explore that, even though researchers acknowledge that emotion dysregulation has negative implications for mental health.[1,103] More research is needed so as to clearly discuss the links between specific emotions and specific mental disorders as well as their effects on intensity. Similarly, the existing studies have not presented reliable findings on the effect of age or physiological development on emotional dysfunction.[104] The previously conducted analysis and synthesis of the existing knowledge about emotion dysregulation and mood disorders allows several conclusions. Firstly, the relationship between emotion regulation dysfunction and mood disorders still hasn't received much attention from authors of review papers who apply a holistic approach. The knowledge of this subject is largely fragmented, which based on experience from other research areas may slow down progress. Furthermore, not all mood disorders are equally represented in academic papers. Bipolar disorder and major depressive disorder are by far the most researched in this spectrum, while persistent depressive disorder, cyclothymia and seasonal depressive disorder are rarely the main topic of interest. Additionally, there is very little research which assesses emotion regulation models in the context of mood disorders,[51]

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although there are numerous studies which conceptualize emotion dysregulation.[4,105] It is strongly suggested that this discrepancy is resolved to allow greater progress in this research area. Furthermore, while some studies show promise in exploring the intentional use of various methods of emotion regulation to treat mood disorders in ways that may seem counterintuitive (such as using suppression to increase cognitive control),[64] a lot that remains to be studied about these contradictory results. The overall conclusion is that this area of research is still rather diffuse and needs thorough systematization. Research challenges will only arise as the knowledge of this topic progresses. The very basis of this research area – classification of disorders as mood disorders – does not even exist in the DSM V. Now, we are presented with bipolar and related disorders, and depressive disorders. Furthermore, new disorders are being introduced and all of these changes should be reflected in current literature. The opinion of the authors of this article is that such a static approach in this branch of science cannot be justified by obstacles researchers find in their way.

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Conflict of interest

The author declares that there is no conflict of interest.

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