

## Emotion regulation and anxiety disorders<sup>☆</sup>

Ananda Amstadter<sup>\*</sup>

*Auburn University, United States*

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### Abstract

Recent attention has been given to the role of emotion regulation in the development and maintenance of psychopathology. Gross [Gross, J. J., & John, O. P. (1998). Mapping the domain of expressivity: multimethod evidence for a hierarchical model. *Journal of Personality and Social Psychology*, 74, 170–191] provided a framework from which to understand emotion regulation processes, and it is within this framework that the literature on emotion regulation/dysregulation in the anxiety disorder population is reviewed, with a focus on possible deficiencies that lead to or maintain the disorders. The present paper aims to: (1) briefly introduce emotion regulation strategies of suppression and reappraisal; (2) summarize the empirical studies of emotion regulation within anxiety disorders; (3) discuss the neurobiological markers of emotion regulation within these disorders; (4) provide future directions for research; and (5) summarize possible treatment implications resulting from this important area of research.

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### 1. Emotions and emotion regulation

Emotions have been studied with great interest from the inception of the field of psychology including such notables as James, Freud and Darwin (Gross, 1998). Such attention has been given for good reason; there is no doubt that emotions serve numerous functions, such as an evolutionary function (Tooby & Cosmides, 1990), a social and communicative function (e.g., Ekman,

1993), and a decision making function (Oatley & Johnson-Laird, 1987), among others. While emotions can be adaptive in many ways, emotions can also be maladaptive; delineating between the two is a key goal of affective science, a rapidly growing field. As a result of growth, researchers have begun to define key constructs used across studies. Affect, emotion, and mood are no longer terms used interchangeably; they are now differentiated conceptually and empirically. This newly agreed upon nomenclature allows for literature synthesis, enhancing further understanding of affective science. Affect refers to the superordinate class for all valenced conditions (Rottenberg & Gross, 2003). Emotions, a subtype of affect, are flexible response sequences elicited by internal or external events appraised as relevant to an organism's well-being (Gross, 1998). Emotions are multidimensional, consisting of experiential, behavioral, and physiological components (Lang, 1994). For example, the emotion of fear may include feelings of uneasiness, escape

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<sup>\*</sup> Correspondence address: National Crime Victims Research and Treatment Center, Medical University of South Carolina, 165 Cannon Street, 3rd Floor, Charleston, SC 29425, United States. Tel.: +1 843 792 8352; fax: +1 843 792 3388.

*E-mail address:* amstadt@musc.edu.

attempts, and a racing heart. Moods refer to a combination of affective responses that last for a longer period of time compared to emotions, which are relatively transient (Rottenberg & Gross, 2003).

Individuals differ in emotion specific behavior (Davidson, 1998). Various emotional components (i.e., experiential, behavioral, physiological) may not be the same within the same individual. For example, one may have a low tolerance for anger and therefore subjectively report experiencing high levels, whereas physiologically, they may not appear angry (i.e., no increase in heart rate). This implicates the need for multimodal assessment of emotion, such as use of self-report, physiological measures, and objective behavioral measures such as facial coding. Davidson reported that individuals differ on certain components of emotional responding including threshold for emotion elicitation, amplitude of emotional response, rise time to peak, and recovery time. These aspects compose what Davidson refers to as affective chronometry, which he views as intrinsic to the understanding of psychopathology. Another variable of which individuals differ is that of acceptance of emotions. Self-judgment of emotions may deem them appropriate or excessive, acceptable or intolerable, comprehensible or nonsensical.

Increased attention in affective science has also led to findings that further the understanding of emotions, rendering many previously held views erroneous. For example, emotions were previously believed to be independent and automatic, similar to fixed action patterns (Solomon, 1976), and are now thought to be flexible and controllable. In fact, many methods of exertion of control over emotions have been demonstrated (Gross, 1998). The most well received definition of the term emotion regulation refers to methods of influence relating to the experience and expression of emotions, as well as the times in which emotions occur (Rottenberg & Gross, 2003). An important aspect of this definition of emotion regulation is that it occurs within the individual; other definitions, especially those within the developmental literature posit that emotion regulation can include extrinsic forces, including other people's effects on one's regulation (e.g., Thompson, 1994). Empirical research has demonstrated that emotion regulation techniques may be employed automatically or purposely, and further can be conscious or unconscious (Gross, 1998). Rather than a strict dichotomy, it may be more correct to conceptualize a continuum from conscious and purposeful to unconscious and automatic. Davidson (1998) asserted that emotions are rarely generated without

accompanying regulatory processes; in other words, emotion regulation is an inherent aspect of emotional response tendencies. This intrinsic connection between emotion generation and regulation creates a blurry boundary as to when one ends and the other begins. While some argue that emotion generation and regulation are inextricably entwined (e.g., Thompson, 1994), developments in methodology appear otherwise (Rottenberg & Gross, 2003).

As there is an emotion generation process, meaning that emotions develop over time rather than appearing in full-force, there are many opportunities for modification (Gross, 1998). A broad distinction can be made between antecedent-focused and response-focused regulation strategies. Antecedent-focused strategies occur early on in the emotion generation process, before the emotion has been fully generated. Typically, the early intervention of antecedent-focused strategies allow for alteration of the emotional trajectory, influencing both the experience and subsequent expression of the emotion. The most commonly studied antecedent-focused strategy is termed reappraisal, which refers to alteration of the way one thinks about a situation to alter its emotional impact. Conversely, response-focused emotion regulation strategies occur later in the emotion generation process, and thereby allow fewer opportunities for intervention. As the emotion is fully generated, response-focused strategies tend to focus on alteration of the expressional component of the emotion, rather than the experiential and physiological components. In comparison to antecedent-focused strategies, response-focused strategies are less likely to modulate the experiential component of emotion (Gross & John, 2003). Response-focused strategies may have undesired and unintended effects on the physiological and experiential components of the emotion. Suppression, the most frequently investigated response-focused strategy, refers to attempts to ignore the emotion that has developed and avoid its expression.

Various emotion regulation strategies differentially effect the three components of emotion, some more efficaciously than others (Lazarus & Opton, 1966). For example, participants were exposed to an evocative film: one group was instructed to mask the experience of emotion (i.e., suppress) and one group received no such instructions. While participants in the suppression group were able to effectively hide their emotional experience, subjective and physiological measures indicated they were experiencing negative emotions at a higher degree than participants not using suppression (Gross & Levenson, 1997). Suppression

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