

# Regulation of emotions during experimental stress in alexithymia

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## Abstract

**Objective:** The aim of this study was to examine whether deficits in emotion regulation manifest as a relative lack of congruence between subjective reports of emotion and autonomic activity when confronted with stressors. **Methods:** A pool of 830 university students was screened using the Toronto Alexithymia Scale-Revised for deficits in emotion regulation associated with alexithymia. Those meeting a criterion floor cutoff and other inclusion criteria composed the experimental group and were matched on age, gender, and race to those in the control group. A final sample size of 94 students (47 in each group) was presented with experimental stressor tasks (the Stroop task and a conversation task) in counterbalanced order while autonomic activity data (heart rate and skin conductance) and subjective reports of negative affect were continuously collected during baseline, stressor exposure, and recovery periods. Data were analyzed to determine relative differ-

ences in congruence between the autonomic and subjective measures. **Results:** Data suggested that participants high in emotion regulation deficits reported consistently higher subjective negative affect relative to those without such deficits throughout baseline, stressor exposure, and recovery periods. However, autonomic activity remained nearly identical in both groups across phases. Explicit tests of group differences in congruence between autonomic and subjective emotion measures also partly supported evidence of subjective hyperarousal. **Conclusions:** Deficits in emotion regulation, as evidenced in those with high levels of the alexithymic trait, appear to manifest as chronically elevated subjective negative affect relative to autonomic activity regardless of the level of environmental demands. Theoretical and clinical implications of these findings are discussed.

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## Introduction

Emotion regulation and its association with mental and physical health has become a topic of substantial research in recent years. Although definitions of emotion regulation can vary substantially across studies, broadly defined, this construct refers to the process by which one influences how, when, to what degree, and which emotions he or she experiences and expresses [1]. Research on emotion regulation increasingly has centered on variables that impede an individual's ability to successfully reduce the intensity of negative affect when confronted with ongoing

stressors (e.g., [2–6]). The clinical impetus of these lines of research is that by identifying variables that interfere with effective emotion regulation, interventions may be devised to circumvent the potential physical and psychosocial sequelae of unregulated emotions.

One construct that is thought to impede the regulation of negative affect is that of alexithymia. This construct was initially formulated from clinical observations that patients with “psychosomatic” disorders appeared to have deficiencies in emotional expressiveness [7–9]. Subsequent studies led to the coining and defining of the term alexithymia as a deficit in one's ability to recognize (and hence regulate) emotions [10,11]. Advances in reliable and valid measurement of this construct have led to a resurgence of interest in alexithymia as a potential model for understanding how unregulated emotions may mediate certain health consequences. Research has found an

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association between alexithymia and an extensive range of pathology including mood disorders, eating disturbances, substance abuse, cardiovascular disease, diabetes mellitus, rheumatoid arthritis, inflammatory bowel disease, cancer, respiratory illness, and chronic pain [12]. One prospective study even has found alexithymia to be an independent risk factor for all-cause mortality after controlling for a variety of behavioral risk factors and biophysiological parameters [13].

Despite the evidence that the impact of alexithymia on emotion regulation may have significant consequences for health, however, little remains known about the process by which this may occur. Some researchers in this area previously have proposed that conscious awareness of emotions is integral to the ability to successfully regulate them, and that deficits in this area may manifest as chronically increased autonomic arousal, which may manifest as poor health outcomes [14–16]. However, few studies have employed methods capable of studying such mechanisms due to the majority of research on alexithymia being descriptive and cross-sectional. Some exceptions to descriptive studies have begun to emerge in recent years, such as increasing use and development of prospective within-person process studies. For example, Zautra and colleagues [17] have used prospective daily diary analysis to find that “emotional clarity” (an inverse of the alexithymia construct) is helpful for getting through periods of high stress. Those who are better able to cognitively differentiate and thereby regulate emotions during periods of high stress tend to have better daily outcomes in a number of health-related domains than those who are not able to do so. However, this study did not evaluate physiological measures and therefore could not address whether elevated physiological activity mediated the relationship between emotional clarity and daily health outcomes.

Experimental studies offer an additional means of appropriately studying potential mechanisms by which alexithymia may be related to health outcomes. For example, a few experimental studies previously have examined cognitive and physiological stress responses in individuals high in alexithymic traits and found some support for elevated physiological arousal in the relative absence of conscious awareness of negative affect [18–20]. The purpose of the present study was to extend this earlier work by experimentally testing the hypothesis that deficits in the ability to cognitively represent (and thereby regulate) emotion during stress will manifest as a greater lack of congruence between subjective reports of emotion and autonomic activity compared to those without evidence of such deficits. The direction of incongruence was hypothesized to be autonomic hyperreactivity. It was thought that such a study would provide an improved means of assessing whether deficits in the regulation of affect may be linked to health via unregulated physiological activity during and following periods of stress.

## Method

### *Participants*

#### *Experimental group*

A total of 830 students attending a general psychology class at a university in the Midwestern part of the United States were screened for alexithymia using an empirically validated self-report scale (the Toronto Alexithymia Scale [21]). Of these, 84 (10.1%) individuals met the criterion floor cutoff for the experimental group. However, 25 of these individuals were excluded: 16 due to medical conditions that may have systematically influenced physiological data obtained, and 9 due to choosing not to participate in the experiment. Of the remaining 59 individuals, 12 fell below the criterion cutoff score for alexithymia at retesting approximately 2 weeks later and were thus excluded. This left a final experimental group sample of 47 participants (29 females, 18 males). Ages ranged from 18 to 40 years, with a median age of 18 years ( $S.D.=3.0$ ). The majority of those in the high-alexithymia group self-identified as white (84.7%), followed by Asian (8.5%), Hispanic (5.1%), and African American (1.7%).

#### *Control group*

The initial control group pool consisted of 746 students, of which 108 (14.4%) were excluded due to self-reported medical conditions that may have systematically influenced data obtained, and 13 were excluded due to indicating they would not be willing to participate in the experimental study. From the remaining pool, those cases whose scores on the Toronto Alexithymia Scale were under the criterion ceiling cutoff for the control group were selected to match those in the high-alexithymia group based on age, gender, and race. Thus, the demographic characteristics of the control group were identical to that of the high-alexithymia group. The matching procedure was thought to be justified in that failing to account for these demographic variables can produce systematic differences in physiological responding between groups [22].

### *Measures*

#### *Alexithymia*

The Toronto Alexithymia Scale, Revised (TAS-20 [21,23]) was used to assess alexithymia in respondents. The TAS-20 consists of three main dimensions of alexithymia revealed through factor analysis: difficulty in identifying feelings, difficulty in describing feelings, and externally oriented thinking. Internal consistency has been found to be .81 for the full scale and ranges from .66 to .78 for the subscales. Sample items from each subscale include “I am often puzzled by sensations in my body” (difficulty identifying feelings), “It is difficult for me to find the right words for my feelings” (difficulty describing feelings), and

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