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Decoupling between physiological, self-reported, and expressed emotional responses in alexithymia

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ABSTRACT

Alexithymia is characterized by difficulties identifying, describing, and expressing emotions and is associated with mental health problems involving emotion dysregulation. To understand the relationship between alexithymia and health, researchers have predominately examined group differences in physiological arousal and self-reported experience. The present study extends this research by examining differences in physiological arousal, self-reported experience, and observed expression. In addition to this between-subjects approach the present study examined within-person difference scores to better understand individual differences in decoupling between all three emotional response domains. Participants (N = 106; M = 18.00 years), classified as alexithymic (males = 17, females = 34) or non-alexithymic (males = 23, females = 32), gave an impromptu 3-min speech while measures of heart rate and galvanic skin response were continuously recorded. Participants completed self-report measures of self-conscious affect and their behavior was later coded for self-conscious affect. Alexithymic participants: (1) had significantly higher heart rate during baseline however physiological responses were indistinguishable during arousal and recovery, (2) experienced greater self-consciousness collapsing across the tasks, and (3) expressed more self-consciousness as a result of the speech. In addition, findings support the decoupling hypothesis. Alexithymic males experienced and expressed greater self-consciousness compared to their physiological arousal. Results are discussed in terms of the underlying mechanisms of alexithymia.

1. Introduction

Alexithymia is characterized by difficulties identifying, describing, and expressing emotions and is associated with psychological and physical health problems (Taylor, Bagby, & Parker, 1997). To understand the relationship between alexithymia and health, social stress and emotion-elicitation paradigms have revealed differences in emotional responding between alexithymic and non-alexithymic individuals. With some exceptions (Luminet, Rime, Bagby, & Taylor, 2004; Pollatos et al., 2011; Roedema & Simons, 1999), only two emotional response domains have been examined: physiological arousal and self-reported experience. Decoupling between these emotional response domains (e.g., high self-reported negative affect relative to autonomic responses) has been identified as a risk factor linking alexithymia to health problems (Stone & Nielson, 2001). When emotions arise, however, individuals experience change in observable *expression* as well as *arousal* and *experience* (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). Examining observed expressions may therefore be a critical part of the socioemotional deficits of alexithymia. For instance, difficulty expressing emotion could result in interpersonal problems (e.g., lack of social support), which could be related to health problems in alexithymic individuals (Lumley, Stettner, & Wehmer, 1996). The current study therefore extends prior research by examining group differences in arousal, experience, and expression between alexithymic and non-alexithymic individuals. Furthermore, we calculated within-person difference scores to better understand individual differences in decoupling between all three emotional response domains. This within-person approach has been deemed a more accurate reflection of decoupling across an individual's emotional response domains (Mauss et al., 2005). As a more person-centered approach it allows for a better understanding of how decoupling between emotional responses relate to various individual difference factors (Lanteigne, Flynn, Eastabrook, & Hollenstein, 2012). It is therefore an appealing method to employ within alexithymia research to aid in understanding the mechanisms underlying alexithymia and psychological well-being.

1.1. Alexithymia and emotional responding

One of the earliest models of alexithymia was the stress-alexithymia hypothesis (Martin & Pihl, 1986), which states that alexithymia is associated with high levels of autonomic reactivity

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during stress. While there is some support for autonomic hyperarousal during periods of rest (e.g., de Timary, Roy, Luminet, Fillee, & Mikolajczak, 2008; Fukunishi, Sei, Morita, & Rahe, 1999; Newton & Contrada, 1994; Papciak, Feuerstein, & Spiegel, 1985; Stone & Nielson, 2001; Wehmer, Brejnak, Lumley, & Stettner, 1995) most studies have found either lower (Linden, Lenz, & Stossel, 1996; Nemiah, Sifneos, & Apfel-Savitz, 1977; Newton & Contrada, 1994; Wehmer et al., 1995) or comparable (Connelly & Denney, 2007; de Timary et al., 2008; Fukunishi et al., 1999; Papciak et al., 1985; Stone & Nielson, 2001) physiological reactivity between alexithymics and non-alexithymics during periods of stress. Of those studies finding lower levels of autonomic activity, many used emotion-eliciting slides or asked participants to recall an affectively-charged event (e.g., Linden et al., 1996; Nemiah et al., 1977; Wehmer et al., 1995). This type of elicitation is perhaps too passive to elicit physiological responses in alexithymic individuals, given alexithymics' tendency for externally oriented thinking and limited imaginative capacity. In comparison, of those studies that found comparable levels of autonomic activity, most employed more active forms of elicitation (e.g., social stress or performance tasks), which may be more appropriate techniques to use with alexithymic populations (e.g., Connelly & Denney, 2007; de Timary et al., 2008; Fukunishi et al., 1999; Papciak et al., 1985). Papciak et al. (1985) suggested that alexithymia is not necessarily related to autonomic hyperarousal, but that subjective experiences were "decoupled" from corresponding autonomic reactivity. Recent studies employing similar paradigms, such as speech tasks, have supported the decoupling hypothesis, finding greater self-reported negativity relative to physiological arousal (Connelly & Denney, 2007; Newton & Contrada, 1994; Pollatos et al., 2011).

To date, limited alexithymia research has included measures of observed expression (Luminet et al., 2004; Pollatos et al., 2011; Roedema & Simons, 1999), even though most theorists would agree that an emotional response includes changes in physiology, experience, and expression (Leventhal, 1980). Moreover, each component of the emotion system can mature at different rates across individuals, thus, physiological, self-reported, and expressed responses can occur relatively independent of each other (Mauss et al., 2005). Individuals with alexithymia may therefore show a different pattern of responding depending on which emotional response domain is measured. Of those studies using emotion eliciting slides (Roedema & Simons, 1999) or movies (Luminet et al., 2004), no relation between alexithymia and behavioral expressions of emotion have been found. However, using a public-speaking paradigm, Pollatos et al. (2011) found higher observer–rated anxiety (e.g., voice quality, gaze) in alexithymic compared to non-alexithymic participants. This is also the only study to date that has examined decoupling between all emotional response domains. While non-alexithymics had positive associations between each domain, alexithymic participants exhibited high self- and observer-rated anxiety combined with low autonomic responses.

1.2. The present study

The present study extends previous research by examining patterns of decoupling between all three emotional response domains. To examine this objective, participants were classified as alexithymic or non-alexithymic and were instructed to give an impromptu 3-min speech while measures of heart rate and galvanic skin response were continuously recorded. Heart rate is a common measure of general autonomic activity, in that it reflects both sympathetic arousal and parasympathetic control. Galvanic skin response is a common and accurate measure of sympathetic reactivity (Beauchaine, 2001). Participants also reported feelings of self-consciousness and videos were later coded for observed self-conscious affect. We first examined group differences in emotional responding. Alexithymics were expected to have higher levels of physiological arousal during baseline (de Timary et al., 2008; Fukunishi et al., 1999; Newton & Contrada, 1994; Papciak et al., 1985; Stone & Nielson, 2001; Wehmer et al., 1995), but, have comparable arousal levels during the speech task to the non-alexithymics (Connelly & Denney, 2007; de Timary et al., 2008; Fukunishi et al., 1999; Papciak et al., 1985; Stone & Nielson, 2001). For self-reported experience, alexithymics were expected to report more self-consciousness (e.g., ashamed, embarrassed) during the speech compared to non-alexithymics (Connelly & Denney, 2007; Pollatos et al., 2011). Based on Pollatos et al. (2011) we predicted that alexithymics would express more self-consciousness compared to non-alexithymics. In terms of the decoupling hypothesis, it was predicted that alexithymics would have high experienced and expressed self-consciousness relative to their level of physiological arousal (Connelly & Denney, 2007; Newton & Contrada, 1994; Pollatos et al., 2011).

2. Method

2.1. Participants

Participants included 106 students recruited from a first-year undergraduate psychology course at a university in southern Ontario, Canada. Participants were selected using a pre-screening package during the first week of classes and were classified as either alexithymic (HA, males = 14, females = 31) or non-alexithymic (NA, males = 26, females = 35). Participants were 18.26 years (*SD* = 1.01; range = 17–23) identified as European-Canadian (68.9%), Black (21.7%), Asian (2.8%), Hispanic (1.9%) and Native Canadian (4.7%).

2.2. Procedure

Questionnaire packages were distributed to students in an introductory psychology course and included the Toronto Alexithymia Scale (TAS-20; Bagby, Taylor, & Parker, 1994). Students who agreed to participate in studies were contacted. In the lab, participants completed a consent form and a set of questionnaires, including the TAS-20, followed by four tasks: 3-min Baseline, 3-min Speech task (giving an impromptu speech as if in front of a panel of judges), self-report of feelings during the speech, and 3-min Recovery period. Participants were debriefed and given a second consent form in which the opportunity to terminate participation was offered. Four participants chose to withdraw and these data were immediately destroyed. One other participant chose not to give a speech and therefore was not included in the analyses. Participants received course credit.

Two concealed video cameras, monitored from an adjacent room, captured the video. Electrocardiogram (ECG) sensors were attached in a Lead II configuration; one sensor was placed two centimeters below the right collarbone and the second between the left hipbone and the last rib bone. Galvanic skin response (GSR) was measured with an SS3 electrodermal response transducer attached to the tips of the third and fourth finger of the non-dominant hand. ECG and GSR were continuously measured from an MP150 amplifier (Biopac Systems Inc., US) at 200 Hz. Physiological signals were monitored and recorded using AcqKnowledge 4.1. ECG was measured in volts and GSR was calculated as level of conductance in micromhos.

2.3. Measures

2.3.1. Questionnaires

2.3.1.1. Alexithymia. The 20-item Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) assesses difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking.