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Does alexithymia expose to mental disorder symptoms in late adolescence? A 4-year follow-up study

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ABSTRACT

Objective: To investigate the possible causal link between alexithymia and the emergence of anxiety and depression symptoms, as well as alcohol consumption in a sample of late adolescents.
Method: The nonclinical sample comprised late adolescents ($n=315$), including both females ($n=256$) and males ($n=59$). The follow-up period was 4 years, and at baseline, the mean age of the subjects was 19 years (range 17–21 years). Alexithymia was measured with the 20-item Toronto Alexithymia Scale (TAS-20), depression symptoms with the short form of the Beck Depression Inventory (RBDI), anxiety with the State-Trait Anxiety Inventory (STAI) and alcohol consumption with the Alcohol Use Disorders Identification Test (AUDIT). The three TAS-20 subscales were assessed separately. Linear and cumulative logistic regression analyses were used for the evaluation of associations, and the analyses were adjusted with the corresponding baseline scores.
Results: The TAS-20 total and subscale scores did not predict the RBDI or AUDIT scores at follow-up. However, the TAS-20 subscale "difficulty identifying feelings" was significantly associated with both STAI-State ($P=.007$) and STAI-Trait ($P=.004$) scores at follow-up.
Conclusions: Alexithymic features may be individual predictors of later anxiety symptoms. The significant differences between the various dimensions of alexithymia should be considered in future studies.

1. Introduction

Alexithymia is a personality construct comprising reduced ability to identify and describe feelings, a limited imagination and externally oriented thinking (EOT) [1]. It is associated with a variety of mental disorders and somatic illnesses, including depression [2], substance use disorders [3], eating disorders [4], panic disorder [5], somatization [6] and essential hypertension [7]. In adolescents, associations have been found in terms of depression, anxiety and eating disorder symptoms [8–10].

Most of the earlier studies have used the 20-item Toronto Alexithymia Scale (TAS-20) total score [11,12] without evaluating the separate subscales that represent different dimensions of alexithymia: difficulty identifying feelings (DIF), difficulty describing feelings (DDF) and EOT. However, the subscales have been shown to differ significantly in terms of their associations with different variables; for example, anxiety and depression have been particularly associated with the DIF and DDF subscales [5,9].

Due to the cross-sectional design used in most previous studies, no firm conclusions have been drawn about causality. A handful of studies have assessed the influence of alexithymic features on the emergence of mental disorder symptoms and somatic health problems. A systematic review by Kojima [13] identified only seven prospective studies evaluating the link between alexithymia and health outcomes. Some studies showed an increased risk for health problems, including posttraumatic stress disorder [14] or cardiac death [15], while some found no such association [16]. In a Finnish study conducted in an adult population sample, alexithymia did not predict major depressive disorder, personality disorders or alcohol use disorders [17]. Another recent study reported that alexithymia did not increase the risk of developing panic disorder [18].

Alexithymia has been associated with poor subjective health, hazardous substance use and sedentary lifestyle [19,20]. Alexithymia may also hinder the building of social relationships as a result of deficient emotional recognition and expression, and furthermore, alexithymic individuals may not be able to utilize social support adequately because they neither recognize the others' emotions nor respond to them appropriately [21,22]. In addition to the risk factors associated with lifestyle and social relationships, alexithymia may be a predisposing factor even on a physiological level. It has been suggested that alexithymia is associated with a deregulation in the autonomic nervous system [23,24]. Also, a range of irregularities in the immune system have been associated with alexithymia and led to suggestions that alexithymic individuals may suffer from unnoticed chronic stress [25].

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Irregularities in autonomic nervous and immune systems have also been associated with various mental disorders, including depression [26,27] and anxiety [28]. Similarly, low social support is associated with both depression and anxiety [29,30]. These associations provide potential hypotheses to explain how alexithymia may predispose to mental disorders. However, the specific mechanisms behind such predisposition are still largely unknown. Possible associations of alexithymia and depression, anxiety, and substance use disorder symptoms have been extensively studied in cross-sectional settings, but there is a clear lack of studies that assess causality. Previous research has typically focused on a single disorder or illness. To find answers to the open questions, a reasonable approach is to go closer to the roots of alexithymia and study younger age groups. Adolescence is a particularly risky phase regarding the development of mental disorders [31]. For instance, over 50% of lifetime anxiety disorders are suggested to develop before adulthood wherefore the identification of potential risk factors is vital.

The significance of alexithymia on the emergence of mental disorder symptoms has not been studied in adolescent populations. For the present study, we were particularly interested in the possible differences between the different dimensions of alexithymia in this regard. We hypothesized that alexithymic features would have a significant effect in predisposing late adolescents to anxiety symptoms, and that this association would be related to the DIF and DDF dimensions of alexithymia in particular. Another hypothesis was that the TAS-20 total score would not, as such, predict depressive symptoms and excessive drinking, but the separate alexithymic dimensions might influence the emergence of these symptoms.

2. Material and methods

2.1. Material

The original study population was recruited to a study investigating eating disorder symptoms among adolescents in 2003−2005; the details of the nonclinical sample of students aged 14−16 years are described in earlier studies [10,32]. For the present study, the baseline was the fall of 2008, when the study population was recontacted. At that time, a sample of 729 subjects participated by completing the study questionnaire. The battery of measures used in the present study was applied for the first time. Altogether 727 individuals were eligible for the 4-year follow-up study in fall 2012. They were sent an invitation letter, and upon returning the informed consent and providing their e-mail addresses, the follow-up study questionnaire was mailed out and completed online. Of the eligible individuals, 315 (43.3%) completed the questionnaire and thus comprised the final sample. Apart from the higher participation rate among females ($P<.001$), the participants did not differ from the nonparticipants. At baseline, the mean age of the participants was 19 years (range 17−21 years) and at follow-up, 23 years (range 21−24 years). Of the subjects, 82.2% ($n=259$) were female (median age 22, range 21−24 years) and 17.8% ($n==56$) were male (median age 22, range 21−24 years). The study protocol was approved by the Ethical Committee of the Hospital District of Southwest Finland.

2.2. Measures

The TAS-20 scale [11,12] was used for measuring alexithymia. The psychometric properties of the scale, including its Finnish version, have been proven satisfactory both in adult [11,12,33–35] and adolescent populations [36]. The TAS-20 total score was used both as a continuous variable, and as recommended by the developers of the scale, a cutoff score of ≥61 was used for identifying a subject as alexithymic or having "high" degree of alexithymia [37]. The scores below the cutoff were classified into two groups: scoring ≤51 denoted a "low" and scoring 52–60 a "moderate" degree of alexithymia.

The anxiety symptoms were measured using the State-Trait Anxiety Inventory (STAI) [38]. It comprises two 20-item scales: the STAI-State (STAI-S) and STAI-Trait (STAI-T) anxiety scales. The STAI-S scale measures current anxiety symptoms and STAI-T the general feeling or level of anxiety. Each item is rated on a 4-point Likert-type scale, and the total score range is 20−80. The psychometrical properties of the STAI instrument have been established as good [39,40].

Alcohol consumption and misuse was assessed with the Alcohol Use Disorders Identification Test (AUDIT) [41]. It is a 10-item scale for screening excessive drinking and assessing hazardous alcohol consumption. The items are multiple-choice questions covering recent alcohol use, symptoms indicating alcohol dependence and alcohol-related problems. The total score range is 0−40. The AUDIT test has shown good psychometrical properties in several different populations and clinical samples [42].

The Raitasalo Beck Depression Inventory (RBDI) [43] is a Finnish modification of the short form of the Beck Depression Inventory [44]. The scale comprises 14 items: the first 13 items measure depressive symptoms and the final item measures anxiety. Each item is rated on a 5-point Likert-type scale. For depressive symptoms, the total score range is 0−39. A score of 0–4 represents absent or very mild depression; 5–7, mild; 8–15, moderate; and 16–39, severe depression [44]. The reliability and validity of the scale have been shown to be good for major depressive disorder [43], and the scale has proven to be applicable to adolescents [45]. In the present study, the RBDI score was used both as a continuous and categorized variable.

Alexithymia has been shown to be associated with various sociodemographic factors [19,20,46,47]. To avoid overestimating the significance of the associations with the studied measures, we also included sociodemographic variables in the analyses. The variables were dichotomized as follows: gender (male/female), dwelling (single/other), main occupation (student/other), perceived health (good or fairly good/moderate or fairly poor), sports activities (regularly/rarely or none) and smoking (yes/no).

2.3. Statistical methods

The TAS-20 total and subscale scores are presented as means and 95% confidence intervals (CIs). The STAI-S, STAI-T, AUDIT and RBDI scores were characterized using medians and interquartiles because the distributions of these variables were positively skewed. The differences between genders were analyzed using the two-sample t test for normally distributed variables and the Mann–Whitney U test for nonnormally distributed variables.

The associations of the baseline TAS-20 scores with STAI-S, STAI-T and AUDIT scores at follow-up were analyzed using linear regression. Since the baseline scores explain the corresponding scale scores at follow-up to a significant extent, all the analyses were adjusted with the corresponding baseline scores. The final linear regression analyses included the TAS-20 scores and those sociodemographic variables that were significantly ($P<.05$) associated with the STAI-S, STAI-T or AUDIT scores. Log-transformed values for the STAI-S, STAI-T and AUDIT scores were used to meet the assumption of normality in linear regression analyses.

Due to the high proportion of zero scores in the RBDI scale ($n=120$ [46.3%] for females and $n=31$ [55.4%] for males), the RBDI was not used as a continuous variable in the adjusted analyses. The RBDI scores were classified into four groups — 0−4 points, 5−7 points, 8−15 points and 16−39 points — and were analyzed using cumulative logistic regression. Logistic models were adjusted with the classified RBDI baseline score. The final logistic regression models included the TAS-20 scores and those sociodemographic variables that were significantly ($P<.05$) associated with the RBDI score. Results of the logistic regression analyses are expressed as cumulative odds ratios and their 95% CIs.

The modifying effects of gender on the associations between the baseline TAS-20 scores and STAI-S, STAI-T, AUDIT or RBDI at follow-up