

Alexithymia, Anger and Anger Expression Styles as Predictors of Psychological Symptoms

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ABSTRACT

Alexithymia, anger and anger expression styles as predictors of psychological symptoms

Objective: A review of the literature shows that alexithymia, anger, and anger expression styles have been important variables in predicting psychological symptoms. Furthermore, alexithymic characteristics may cause various difficulties in anger and its expression. From this point of view, the aim of our study was to investigate the extent to which alexithymia, anger, and anger expression styles predicted psychological symptoms in the university sample.

Method: The present study included 434 students (244 women, 190 men) from different departments of Hacettepe University. In addition to the Demographic Information Form, participants were administered the 20-item Toronto Alexithymia Scale (TAS-20) to assess the presence of alexithymic characteristics; to evaluate their anger and anger expression styles, the State-Trait Anger Expression Inventory (STAXI) was used, and participants' psychological symptoms were examined using the Brief Symptom Inventory (BSI). After carrying out a correlation analysis to evaluate the relationships between all variables of the study, hierarchical regression analysis was conducted to investigate the degree to which alexithymia, anger, and anger expression styles predicted psychological symptoms.

Results: According to the regression analysis, it was concluded that alexithymia, trait anger, and anger-in positively predicted psychological symptoms.

Conclusion: Our study indicates that alexithymic characteristics, anger, and anger expression styles explain psychological symptoms. Additionally, it emphasizes the benefit of addressing alexithymic characteristics, the frequency of anger experience, and healthy ways of anger expression simultaneously and as a whole rather than individually in psychotherapies aiming to reduce psychological symptoms, even in persons that do not require a diagnosis.

Keywords: Alexithymia, anger expression styles, psychological symptoms, trait anger

ÖZ

Psikolojik belirtilerin yordayıcıları olarak aleksitimi, öfke ve öfke ifade tarzları

Amaç: Alanyazın incelendiğinde aleksitimi, öfke ve öfke ifade tarzlarının psikolojik belirtileri yordamada önemli değişkenler olduğu görülmektedir. Bununla birlikte, aleksitimik özelliklerin öfke ve öfkenin ifade edilmesi konusunda çeşitli zorluklara neden olabileceği anlaşılmaktadır. Buradan hareketle, bu çalışmanın amacı üniversite örnekleminde aleksitimi, öfke ve öfke ifade tarzlarının bir araya gelerek psikolojik belirtilerdeki artışa ne derece yordadığını incelemektir.

Yöntem: Çalışmada Hacettepe Üniversitesi'nin farklı bölümlerinden 434 öğrenciye (244 kadın, 190 erkek) Demografik Bilgi Formu ile birlikte aleksitimik özellikler taşıyıp taşımadıklarını değerlendirmek amacıyla 20 maddelik Toronto Aleksitimi Ölçeği (TAÖ-20), öfke duygularını ve öfke ifade tarzlarını değerlendirmek amacıyla Sürekli Öfke-Öfke Tarz Ölçeği (SÖÖTÖ), psikolojik belirtilerini taramak için de Kısa Semptom Envanteri (KSE) uygulanmıştır. Çalışmanın tüm değişkenleri arasındaki ilişkileri değerlendirmek amacıyla uygulanan korelasyon analizinin ardından, aleksitimi, öfke ve öfke ifade tarzlarının psikolojik belirtileri yordama gücünün incelenmesi amacıyla hiyerarşik regresyon analizi yürütülmüştür.

Bulgular: Regresyon analizi, aleksitimi, sürekli öfke ve içte tutulan öfkenin bir araya gelerek psikolojik belirtileri pozitif yönde yordadığını göstermiştir.

Sonuç: Mevcut çalışma aleksitimik özelliklerin, öfkenin ve öfke ifade tarzlarının psikolojik belirtileri açıklayabileceğine işaret etmektedir. Ayrıca mevcut çalışma, bir tanı almayı gerektirmeyecek bile olsa, psikolojik belirtileri azaltmayı hedefleyen psikoterapilerde aleksitimik özelliklerin, öfkeyi deneyimleme sıklığının ve öfkenin sağlıklı şekillerde ifade edilmesinin ayrı ayrı değil, eşzamanlı olarak ve bir bütün şeklinde ele alınmasının yararına vurgu yapmaktadır.

Anahtar kelimeler: Aleksitimi, öfke ifade tarzları, psikolojik belirtiler, sürekli öfke



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INTRODUCTION

The concept of alexithymia includes characteristics such as difficulties in identifying feelings and differentiating between feelings and bodily states created by emotional arousal, problems expressing feelings to other people, constricted imaginal processes manifesting themselves in limitation of fantasies, and a stimulus-bound, externally-oriented cognitive structure (1,2). These characteristics suggest a deficiency in cognitive processes and the regulation of feelings (1). Alexithymic individuals do not lack feelings. However, these persons' feelings are often undifferentiated, diffuse, and excessive (3). They may have very little awareness about their feelings or frequently experience difficulties in relating their feelings to memories, fantasies, higher-order emotions, or specific situations (1). Alexithymia has been found related to disruption of interpersonal relations (4), reduced social support (5), and a high negative affect (1,6).

Conceptualization of alexithymia first came about in the process of naming certain cognitive and emotional characteristics found in persons with psychosomatic disorders (7). Subsequent research in this area found alexithymic traits not only among patients with psychosomatic and other psychological and physical diseases, but also in individuals from the normal population (1,8). Studies in the normal population (9) as well as in psychiatric patient groups (10-12) have demonstrated that the increase in alexithymia scores correlates with a higher incidence of psychological symptoms. Studies carried out in normal and/or clinical populations found correlations of alexithymia with depression (13), anxiety symptoms and anxiety disorders (14), somatic symptoms and somatoform disorders (15), psychosomatic disorders (16), eating disorders (17), and substance use disorders (18).

As alexithymia is a concept related to emotions and interpersonal relations, the feeling of anger is of particular interest, given that anger frequently affects interpersonal relations. Spielberger et al. (19) divided anger into two types, situational (state) and continuous (trait). The authors analyze trait anger from the

viewpoint of interpersonal variation in the frequency of experiencing a feeling of anger, defining the tendency towards anger as an unchanging dimension of personality. They describe three anger expression styles, namely, anger-in, anger-out, and anger control. Anger-in refers to a perception of anger whose open expression is being suppressed; anger-out stands for an open, but generally negative, aggressive expression of anger, while anger control manifests as keeping calm and mitigating the emotional and behavioral expression of anger (19,20). The anger level may be increased in alexithymic persons, as they generally confront problems superficially and come to judgments without exploring the deeper aspects of the problems at hand, being unable to establish the related cause-effect relations and not including their emotions into the process (21). Studies have found relations of the increase of alexithymic characteristics with a disposition to choose angry and strong expressions for negative emotions and information regarding these emotions (22), an increase in repression of anger (23), and the experience of ambivalence when expressing emotions (24). Another study based on these results undertaken with university students found that the group with a higher level of alexithymic characteristics experienced more anger and expressed it more in non-verbal ways than the group with a lower level of alexithymia (25). In other studies made in clinical (10,12) and normal populations (9), participants with higher alexithymia scores achieved higher points on the subscales anger/hostility and anger/aggression compared to participants with lower alexithymia scores. In addition, some studies done in a clinical population found patients' total alexithymia score to be correlated with trait anger, anger-in, and anger control scores (26); in these persons, scores for alexithymia, trait anger, and anger-in were higher and anger control scores lower than in the normal population (27-29).

In the literature, we also found a number of studies looking at anger and anger expression styles among the causes of several physical and psychological problems (28,30). In this context, more anger was found to be correlated with more symptoms or a

higher level of psychological functioning (31). Anger is discussed as an issue particularly under the aspect of psychological wellbeing (32). It was found that persons frequently experiencing anger and expressing it reported a higher level of psychological illness and symptoms, while individuals with a higher level of anger control tended to display a better state of psychological wellbeing (31). Unexpressed anger due to denial or suppression reportedly causes a number of psychophysiological problems (33). A closer look at the literature reveals that anger and anger expression styles are often related to depression (32,34), symptoms of anxiety and anxiety disorder (35), somatization (33), eating disorders (36), and certain somatoform and psychosomatic disorders (37,38).

A literature review shows that alexithymia, anger, and anger expression styles are important variables in the explanation of psychological symptoms. In addition, alexithymic characteristics can cause various problems regarding anger and anger expression (27-29). There are studies analyzing individually the relationship of alexithymia (9-12) and anger and anger expression styles (30,33) with psychological symptoms. However, we could not find any studies examining to what degree alexithymia and anger and anger expression styles together explain the psychological symptoms, an approach supported by closely correlated research findings. Alexithymia is closely related with emotions that have a very important function for human beings; yet while there are studies finding the condition frequently in normal samples, most of the research is carried out with patient groups (8), while the concept of alexithymia also needs to be studied in the normal population. From this observation, our study aims to examine how far alexithymia taken together with anger and anger expression styles can predict psychological symptoms in a university sample, thus filling a lacuna in the literature. At this point, our hypothesis is that while with a rise of alexithymia and trait anger psychological symptoms increase, unhealthy anger expression styles (anger-in and/or anger-out) will predict psychological symptoms and these variables together will explain psychological symptoms to a higher degree.

METHOD

The study sample consisted of 434 volunteers who were enrolled as undergraduate students in the faculties of economy and administration, health sciences, natural sciences, engineering, humanities, education, law, and fine arts at Hacettepe University during the academic year 2015-2016; 244 of them (56.2%) were female, 190 (43.8%) were male. They were between 17 and 27 years of age with a mean of 20.55 (SD=1.76). The mothers of 37.2% of them (n=161) had started or completed primary school, 30% (n=130) had graduated from high school, and 21.9% (n=95) were university graduates; of their fathers, 33% (n=141) had graduated from university, 30.4% (n=130) were high school graduates, and 27.2% (n=116) had started or completed primary school. For the remaining participants, their mothers' or fathers' education status was given as "illiterate, literate, master's degree or doctorate". Four hundred and eight participants (94%) had not seen a psychologist or psychiatrist during the last six months while 26 (6%) had but had not received any diagnosis. In order to make sure that the sample consisted of persons without any diagnosis of psychological disorder, 16 participants who were in the demographic information form had reported to have seen a psychologist or psychiatrist and received a diagnosis were excluded from the study.

Measures

Demographic Information Form: This form, prepared by the researcher, was used to obtain the participants' sociodemographic characteristics. The requested information included gender and age of the participant, subject and year of study, where and with whom they lived, location where they had spent most of their lives (metropolis, city, suburb, village/town), family income level, mother's and father's state of health and status of education, and a question about visits to psychologists or psychiatrists during the past six months and, if applicable, about the diagnosis received.

Toronto Alexithymia Scale (TAS-20): A short form of 20 items and three dimensions to assess the presence of alexithymic characteristics, the Toronto Alexithymia Scale was developed by Bagby et al. (39,40). They established that the 20-item Toronto Alexithymia Scale (TAS-20) was the best instrument to measure alexithymia (40). The validity and reliability of the scale in Turkey was studied by Gulec et al. (41). The TAS-20, a self-report scale, consists of 20 items, each assessed with a five-point Likert-type scale between “1=never” and “5=always”, and includes three subscales: “Difficulty identifying feelings”, “Difficulty describing feelings”, and “Externally-oriented thinking”. The researcher found Cronbach’s alpha internal consistency coefficients of 0.78 for the complete scale and between 0.57 and 0.80 for the subscales. Confirmatory factor analysis demonstrated that alexithymia has a 3-factor structure.

State-Trait Anger Expression Inventory (STAXI): The State-Trait Anger Expression Inventory (STAXI) was developed by Spielberger et al. (42) and is an adaptation of a scale with the original name “State-Trait Anger Scale”. The Turkish translation of the form as well as validity and reliability studies have been carried out by Ozer (43). The instrument includes the subscales “Trait Anger” and “Anger Type” and consists of 34 items. The adaptation of the 10-item State Anger subscale from the original form has not yet been completed. STAXI is a self-report scale scored between 1 and 4 points; it includes two main subscales: “Trait Anger” and “Anger Type”. While the Trait Anger Scale includes the first 10 items of the instrument, the Anger Type Scale is made up of three subscales: “Anger-in,” “Anger-out,” and “Anger control”. Cronbach’s alpha values for the Trait Anger Scale range from 0.67 to 0.92. For the Anger Type subscales, the coefficient was between 0.58 and 0.76 for Anger-in, 0.69 and 0.91 for Anger-out, and 0.80 to 0.90 for Anger control. As these values are within acceptable limits, the scales can be considered to be generally consistent with the original forms.

Brief Symptom Inventory (BSI): This instrument has been composed using the 53 items with the highest

power of discrimination from the 90-item Symptom Checklist (SCL-90) developed by Derogatis (44) to establish certain psychological symptoms seen in clinical and normal samples. The adaptation of the instrument for Turkey was carried out by Sahin and Durak (45), reaching high reliability and validity values. BSI is a self-report instrument scored with a 5-point Likert-type scale between 0 and 4, asking participants to read each item separately and mark to what degree each of the symptoms on the form affected them during the past week, including the day of the examination. High weighted scores from the scale show increased psychological distress. Factor analysis using data from three different studies established that the instrument has a five-factor structure, the factors being anxiety, depression, negative self, somatization, and hostility. Cronbach’s alpha inner consistency coefficients for the entire BSI ranged from 0.93 to 0.96 and for the subscales from 0.63 to 0.86.

Implementation

Having obtained the required approval from the ethics committee of Hacettepe University, the instruments were administered groupwise to undergraduate students enrolled in different departments of Hacettepe University in a classroom setting. Participants were informed about the application and assured that they could terminate their collaboration at any time; written consent was received. The questionnaire booklets, with the Demographic Information Form on top and with the condition to keep them in a fixed order, were administered to the participants in four sets in order to prevent a sequence effect of the arrangement of the scales.

Data Analysis

Before statistical analysis, the data were assessed for normal distribution, missing values, and extreme values assumptions. Participants who had stated on the Demographic Information Form that they had sought psychological support during the past six months and received a psychiatric diagnosis were excluded from

the study. Eventually, while 513 persons had initially participated in the study, the final analyses were carried out on 434 data sets, using the SPSS 20.0 software. To assess the relation between basic variables, Pearson product-moment correlation coefficient analysis was used. To assess the degree to which alexithymia predicts psychological symptoms of trait anger and anger expression styles, hierarchical regression analysis was carried out selecting the “hierarchic” command. These analyses used TAS-20 total score and the scores from the STAXI subscales Trait Anger, Anger-in, Anger-out, and Anger control as predictors and the BSI total score as dependent variable.

RESULTS

The participants’ total scores for TAS-20, STAXI, and BSI and the subscale scores (mean and standard deviation) are shown in Table 1.

As we pointed out, the aim of this study was to assess how far alexithymia, trait anger, and anger expression styles together predict psychological symptoms in university students. Considering the nature of the regression analysis performed to reach this result, Pearson product-moment correlation coefficient analysis was carried out with the data in order to assess the correlations between all basic variables individually. Results of the correlation analysis showing the relation between the variables of the study are reported in Table 2.

In order to assess the degree to which alexithymia predicts psychological symptoms of trait anger and anger expression styles, the TAS-20 total score and the scores for the STAXI subscales Trait Anger, Anger-in, Anger-out, and Anger control were entered as predictor variables, while the BSI total score went in as dependent variable. Data were analyzed using hierarchical regression analysis.

As seen in Table 3, results of the regression analysis carried out for the prediction of psychological symptoms show that the TAS-20 total score predicts the psychological symptom score at a significant level ($F_{[1,432]}=101.52, p<0.001$). The TAS-20 total score is the

Table 1: Descriptive statistics

| | Mean | SD |
|---------------------------------|-------|-------|
| TAS-20 | | |
| Total score | 49.73 | 9.46 |
| Difficulty identifying feelings | 15.43 | 4.93 |
| Difficulty expressing feelings | 12.71 | 3.68 |
| Externally-oriented thinking | 21.59 | 3.99 |
| STAXI | | |
| Trait anger | 20.58 | 4.90 |
| Anger-in | 17.55 | 3.68 |
| Anger-out | 15.96 | 3.37 |
| Anger control | 21.74 | 4.59 |
| BSI | | |
| Total score | 59.40 | 35.32 |
| Anxiety | 12.91 | 9.06 |
| Depression | 16.51 | 10.02 |
| Negative self | 12.68 | 9.17 |
| Somatization | 7.63 | 6.16 |
| Hostility | 9.68 | 5.52 |

TAS-20: Toronto Alexithymia Scale, STAXI: State-Trait Anger Expression Inventory, BSI: Brief Symptom Inventory, SD: Standard deviation

Table 2: Correlations between the scores obtained from the instruments used in this study

| | | | | | | | | | | | | | | | |
|--------------------------|--------|--------|--------|--------|--------|-------|--------|--------|-------|-------|-------|-------|-------|----|--|
| 1. TAS-20 Total | - | | | | | | | | | | | | | | |
| 2. DIF | 0.84* | - | | | | | | | | | | | | | |
| 3. DDF | 0.80* | 0.62* | - | | | | | | | | | | | | |
| 4. EOT | 0.60* | 0.19* | 0.21* | - | | | | | | | | | | | |
| 5. Trait anger | 0.37* | 0.42* | 0.25* | 0.13* | - | | | | | | | | | | |
| 6. Anger-in | 0.31* | 0.32* | 0.30* | 0.07 | 0.34* | - | | | | | | | | | |
| 7. Anger-out | 0.21* | 0.26* | 0.09 | 0.09 | 0.64* | 0.17* | - | | | | | | | | |
| 8. Angler control | -0.33* | -0.29* | -0.19* | -0.24* | -0.49* | 0.02 | -0.49* | - | | | | | | | |
| 9. BSI Total | 0.44* | 0.49* | 0.41* | 0.05 | 0.41* | 0.30* | 0.26* | -0.28* | - | | | | | | |
| 10. Anxiety | 0.38* | 0.45* | 0.34* | 0.03 | 0.40* | 0.25* | 0.28* | -0.23* | 0.93* | - | | | | | |
| 11. Depression | 0.42* | 0.48* | 0.42* | 0.03 | 0.34* | 0.30* | 0.18* | -0.23* | 0.91* | 0.82* | - | | | | |
| 12. Negative self | 0.42* | 0.45* | 0.41* | 0.07 | 0.37* | 0.32* | 0.20* | -0.23* | 0.91* | 0.78* | 0.79* | - | | | |
| 13. Somatization | 0.33* | 0.37* | 0.30* | 0.05 | 0.24* | 0.14* | 0.18* | -0.18* | 0.82* | 0.76* | 0.67* | 0.66* | - | | |
| 14. Hostility | 0.33* | 0.37* | 0.27* | 0.06 | 0.48* | 0.29* | 0.32* | -0.32* | 0.79* | 0.67* | 0.63* | 0.70* | 0.58* | - | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | |

TAS-20: Toronto Alexithymia Scale, DIF: Difficulty identifying feelings, DDF: Difficulty describing feelings, EOT: Externally-oriented thinking, BSI: Brief Symptom Inventory, *p<0.01

Table 3: Results of regression analysis for the prediction of psychological symptoms

| Predictor variables | R | R ² | ΔR ² | B | SH | β | t | F |
|---------------------|------|----------------|-----------------|------|------|------|----------|-----------|
| Step 1 | | | | | | | | |
| TAS-20 Total score | 0.44 | 0.19 | 0.19 | 0.61 | 0.06 | 0.44 | 10.08*** | 101.52*** |
| Step 2 | | | | | | | | |
| TAS-20 Total score | 0.51 | 0.26 | 0.26 | 0.46 | 0.06 | 0.33 | 7.38*** | 76.76*** |
| Trait anger score | | | | 0.39 | 0.06 | 0.29 | 6.50*** | |
| Step 3 | | | | | | | | |
| TAS-20 Total score | 0.52 | 0.27 | 0.27 | 0.43 | 0.06 | 0.30 | 6.69*** | 54.28*** |
| Trait anger score | | | | 0.35 | 0.06 | 0.26 | 5.66*** | |
| Anger-in score | | | | 0.17 | 0.06 | 0.12 | 2.67** | |

TAS-20: Toronto Alexithymia Scale, ***p<0.001, **p<0.01. In the first step, the total score of the Toronto Alexithymia Scale was included in the equation, in the second step the score for the Trait Anger subdimension, and in the last step the scores for the Anger Expression Style subdimensions Anger-in, Anger-out, and Anger-control.

variable with the greatest contribution to the variance at a ratio of 19%. In the second step, the dimension Trait Anger was included in the equation, increasing the explained total variance to 26%. The contribution of the Trait Anger score of 7% is significant ($F_{[2,431]}=76.76$, $p<0.001$). Anger-in, which was entered in the last step of the analysis, was also significant in the prediction of psychological symptoms ($F_{[3,430]}=54.28$, $p<0.001$). The Anger-in score predicted psychological symptoms at a level of 1%. In total, these three dimensions together account for 27% of the variance in psychological symptoms. On closer inspection, the results show that an increase in alexithymia, trait anger, and suppressed anger are correlated with an increase in psychological symptoms.

DISCUSSION

The results of a regression analysis have shown that alexithymia, trait anger, and suppressed anger not only account for psychological symptoms individually, but taken together, they explain a higher degree of psychological symptoms. According to the results, alexithymia accounts positively for psychological symptoms at a significant level. Therefore, with an increase in alexithymia, psychological symptoms in the participants are also likely to rise. It is quite striking that the predictive power of alexithymia for psychological symptoms, or the variance of the psychological symptoms variable, is almost 20%, which is consistent with the results in the literature

and may be explained by the characteristics of alexithymia (9-12). Alexithymic traits reflect a deficit in cognitive processes and the regulation of emotions (1). One of the basic characteristics of alexithymia is the difficulty to identify feelings and to differentiate between feelings and bodily states created by emotional arousal (2). When a person is not aware of the reasons for a certain feeling, a healthy regulation of negative emotions may be obstructed (46,47). Identifying feelings and conveying them to others is necessary for health and rapport. In addition, alexithymic individuals tend to interpret physical signs of arousal wrongly as symptoms of a somatic illness (1). It is also reported that alexithymic persons are unable to process their emotions via cognitive processes and may discharge the tension created by unpleasant emotional states through substance use or compulsive behaviors such as binge eating or starvation (1). Therefore, an increase in alexithymia characteristics appears to be a likely predictor for a rise of psychological symptoms in the participants.

Data analysis has shown that the increase in trait anger and anger-in frequently seen in alexithymic individuals can account for the increase in psychological symptoms. We also found that trait anger predicted psychological symptoms at a higher level than anger-in. There are studies in the literature that support our results regarding trait anger (30-32). The prediction of increased psychological symptoms with an increase in trait anger can be explained through the relation between negative affect and psychological symptoms. An increase in trait anger, as a negative

affect, may cause a person to realize negative emotional and physical experiences and become more inclined towards complaining about them, which may lead to psychological symptoms (48,49). On the other hand, results regarding anger expression styles found in our study are not consistent with those reported by Diong et al. (31). While their study found anger-out and anger control to be predictors of psychological symptoms, our study found only anger-in to predict psychological symptoms. In addition, we found anger-in to account only for a very small portion of the variance in psychological symptoms. It may be assumed that this inconsistency is caused by the age group of the participants. Persons of that age may think that expressing anger, even in inappropriate ways, could be a good way to express themselves. As their competence and techniques of confronting their anger in a healthy way and expressing it adequately may not yet be sufficiently developed, these persons may feel that rather than suppressing their anger or keeping it inside, the feeling of relief when expressing their anger might be an easy and right way of action. In other words, in a university sample expressing anger might be more functional than keeping it inside, which may result in psychological symptoms. Therefore, since participants with a higher level of anger-in may feel to have more problems and to be less able to express themselves, it is possible that more psychological problems and symptoms are found in this group.

In short, in conformity with our expectation, our study shows that alexithymia, trait anger, and anger-in explain the variance in psychological symptoms to a higher degree when taken together. Alexithymia, trait anger, and anger-in individually are important variables to explain psychological symptoms, and the literature tells us that they are closely correlated to one another. As these factors can predict psychological symptoms more strongly when taken together, it is important to examine them jointly. While the ways in which alexithymia, trait anger, and anger-in can lead to an increase in psychological symptoms are under debate, it follows that for the treatment of psychological symptoms alexithymia, trait anger, and

anger expression styles are elements to be taken into consideration.

There are some limitations to this study, the first of which is the use of a self-report instrument. When taking measurements from persons who are not aware of their feelings, the use of a self-report approach may hinder a healthy identification of individuals with alexithymic characteristics. As this study was cross-sectional, it is problematic to make conclusions about causal relations between variables; thus, the results can only be assessed at the level of correlations. The sample consisted only of undergraduate students from Hacettepe University, which does not allow assessing for level of education and age; hence, generalization for other age ranges and educational status is not possible. We recommend further studies to be done with different age ranges and levels of education, applying other techniques in addition to self-report instruments. Another limitation is the omission of examining subdimensions of alexithymia and the lack of considering psychological symptoms individually when assessing general psychological symptoms. For future studies, we recommend to examine subdimensions of alexithymia and measure psychological symptoms more specifically. On the other hand, this study did not find a significant gender-specific difference in the scores for alexithymia, trait anger, and anger expression styles as predictors. Future studies analyzing sex-differences for these variables can be a contribution to the literature, which contains contradictory results in this respect.

To summarize, the present study seems important in that it shows that alexithymic characteristics, anger, and anger expression styles can account for psychological symptoms. Even while this study has been carried out in a homogenous sample, it is valuable in that it shows that in psychotherapy aimed at reducing psychological symptoms it is useful to consider the presence of alexithymic characteristics, the reduction of the frequency of anger experience, and a healthy way of anger expression not separately, but simultaneously as a whole. In addition, while the literature includes many studies on the relation of alexithymia with various psychopathologies, research

assessing psychological symptoms in non-clinical samples in general are rarer. As most studies in the literature have been conducted in clinical samples, our study assessing psychological symptoms in a university sample generally is an important contribution to the literature. Another important contribution to the literature is the indication that the effect of alexithymia may be relevant not only for persons presenting for therapy with psychological complaints, but in any other case that might be related to alexithymic characteristics (e.g., problems in interpersonal relations).

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|------------------------------------|--------------|
| Development of study idea | B.K., I.D. |
| Methodological design of the study | I.D., B.K. |
| Data acquisition and process | B.K. |
| Data analysis and interpretation | B.K. |
| Literature review | B.K. |
| Manuscript writing | B.K. |
| Manuscript review and revision | I.D. |

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