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Associations Between Affective Temperaments and Alexithymia in Healthy Young Adults

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Abstract

Background: Alexithymia is characterised by difficulties in identifying and expressing emotions and has been predominantly examined in clinical populations. However, evidence regarding its association with affective temperament dimensions—considered biologically based traits—in non-clinical samples remains limited.

Objective: This study aimed to investigate the relationships between affective temperament dimensions and alexithymia and its sub-dimensions in a non-clinical sample of university students.

Methods: The study included 107 non-clinical university students who completed the Toronto Alexithymia Scale (TAS-20) and the Temperament Evaluation of Memphis, Pisa, Paris and San Diego Auto-questionnaire (TEMPS-A). Non-parametric tests were used for group comparisons, Spearman correlation analyses assessed inter-variable relationships, and multiple linear regression analyses were conducted to identify temperament dimensions predicting alexithymia.

Results: Depressive, cyclothymic, irritable, and anxious temperament dimensions showed moderate positive correlations with TAS-20 total scores. At the sub-dimension level, cyclothymic and anxious temperaments emerged as the strongest predictors of Difficulty Identifying Feelings (DIF), whereas hyperthymic temperament was negatively associated with DIF. The regression model explained approximately 48% of the variance in TAS-20 total scores. Additionally, alexithymia showed small-to-moderate associations with family structure, traumatic experiences, and chronic illness.

Conclusions: The findings suggest that alexithymia—particularly the Difficulty Identifying Feelings dimension—is associated with affective temperament traits largely independent of sociodemographic factors. These results support the notion that alexithymia may reflect temperament dimensions explained a substantial proportion of variance in alexithymia scores in this sample of healthy young adults.

Key words: alexithymia; affective temperament; emotional awareness; personality traits

Introduction

Conceptualisation of Alexithymia

Alexithymia is commonly described as a multidimensional construct involving persistent difficulties in recognising, differentiating, and verbally articulating one’s own emotional states, accompanied by a tendency towards externally focused cognitive styles[1]. Although the concept was originally introduced within the field of psychosomatic medicine[2, 3], subsequent research has demonstrated that alexithymia is not restricted to somatic disorders and is frequently observed across a wide spectrum of psychiatric conditions, including depressive disorders, anxiety-related conditions, post-traumatic stress disorder, and substance use disorders[4, 5].

More recent epidemiological and community-based studies have further indicated that alexithymia is not exclusive to clinical populations, but rather exists along a continuum within the general population[6, 7]. This has led to ongoing debate regarding its conceptual status, specifically whether alexithymia should be understood primarily as a stable personality-related characteristic or as a state-dependent phenomenon emerging in the context of psychological distress or psychopathology[3, 8, 9]

Temperament, Character, and Personality Structure

This debate is closely intertwined with theoretical models of personality that distinguish between temperament and character as fundamental components of individual differences. [10]Temperament refers to biologically rooted emotional and behavioural tendencies that manifest early in life and display relative stability across developmental stages. [11]In contrast, character is shaped predominantly by environmental influences, social learning, and personal experiences, and is considered more amenable to change over time.[12]

From this perspective, personality can be conceptualised as a dynamic organisation resulting from the interaction between relatively stable temperament traits and more malleable character dimensions.[10] Such models provide a useful framework for examining whether alexithymia aligns more closely with enduring temperament-based dispositions or with experience-dependent personality features.

Affective Temperament as a Psychobiological Framework

Within this broader personality framework, the concept of affective temperament has been proposed as a psychobiological foundation underlying emotional reactivity and vulnerability to mood-related psychopathology.[13-15] Affective temperaments were originally described to capture stable patterns of emotional responsiveness observable from early developmental stages and persisting across the lifespan.

This model encompasses depressive, hyperthymic, cyclothymic, and irritable temperaments, later expanded to include anxious temperament. These dimensions are thought to reflect biologically influenced affective styles that shape how individuals experience, regulate, and respond to emotional stimuli. Importantly, affective temperaments are not viewed as pathological in themselves but as foundational emotional dispositions that may confer either vulnerability or resilience depending on contextual and developmental factors[14, 16-18].

Alexithymia and Personality-Related Constructs

The relationship between alexithymia and personality-related characteristics has been explored primarily within broad temperament–character frameworks and trait-based personality models, such as the Five-Factor Model. Across these approaches, alexithymia has been consistently associated with higher levels of negative affectivity, increased harm avoidance, lower self-directedness, and insecure attachment patterns.

However, many of these studies have not examined affective temperament as a distinct psychobiological construct. Instead, temperament-related features have often been subsumed under broader personality dimensions, potentially obscuring more specific associations between biologically grounded affective traits [1, 3] and particular components of alexithymia.

Affective Temperament and Alexithymia: Evidence from Clinical Samples

Empirical studies directly addressing the association between affective temperament dimensions and alexithymia remain relatively limited and have largely focused on clinical populations. Research conducted in individuals with bipolar disorder, alcohol use disorder, and post-traumatic stress disorder has demonstrated that anxious, cyclothymic, and irritable temperaments tend to be positively associated with higher levels of alexithymia, particularly with difficulties in identifying emotional states[3, 4, 14].

These findings suggest that certain affective temperament profiles characterised by emotional lability, heightened internal arousal, or increased sensitivity to affective fluctuations may interfere with emotional awareness and labelling processes. Nevertheless, the extent to which such associations are present in individuals without psychiatric diagnoses remains insufficiently explored.[6]

Rationale and Aim of the Present Study

Despite accumulating evidence from clinical samples, systematic investigations of the relationship between affective temperament and alexithymia in non-clinical populations are scarce. As a result, it remains unclear which components of alexithymia are most closely linked to affective temperament traits in individuals who do not meet criteria for psychiatric disorders.

The present study aims to address this gap by examining associations between affective temperament dimensions and alexithymia, including both total scores and specific sub-dimensions, in a non-clinical sample of university students. By focusing on a population below diagnostic thresholds, the study seeks to contribute to a clearer understanding of whether alexithymia reflects an early, temperament-related emotional vulnerability rather than solely a consequence of clinical psychopathology.

Research Hypotheses

Drawing on prior research, it was hypothesised that affective temperament dimensions would show meaningful associations with levels of alexithymia in a non-clinical sample of university students. It was further anticipated that these relationships would not be uniform across the construct, but would differ according to specific alexithymia components, namely Difficulty Identifying Feelings, Difficulty Describing Feelings, and Externally Oriented Thinking. In addition, affective temperament traits were expected to explain a substantive proportion of variance in alexithymia scores beyond basic sociodemographic factors, with distinct temperament dimensions contributing in different ways to particular aspects of alexithymia.

Methods

Participants and Procedure

The study comprised 107 university students aged between 18 and 26 years who were enrolled in undergraduate or associate degree programmes at various universities across Turkey. Participants were recruited using a convenience sampling strategy. Data were collected between May and July 2023 using a mixed administration approach that included both online and face-to-face methods.

Online data collection was conducted through secure survey links circulated via student and faculty WhatsApp groups. Face-to-face data collection primarily involved students undertaking clinical internships at **Yedikule Chest Diseases and Thoracic Surgery Training and Research Hospital** and was supplemented by peer referral, whereby participants invited eligible classmates or acquaintances to take part in the study.

Prior to participation, all individuals were provided with written information outlining the aims and procedures of the study, confidentiality safeguards, the voluntary nature of participation, and the right to withdraw at any point without consequence. Written or electronic informed consent was obtained from all participants. An initial pool of **109** respondents was reviewed for incomplete responses, inconsistent answering patterns, and uniform response styles. Following data screening, **two** cases were excluded, yielding a final analytic sample of **107** participants. Completion of the full set of questionnaires required approximately **15 to 20 minutes**.

Ethical approval for the study was granted by the **Yedikule Chest Diseases and Thoracic Surgery Training and Research Hospital Clinical Research Ethics Committee** on **11 May 2023** (**Approval No: 2023-339**). All study procedures were carried out in accordance with the ethical standards set forth in the Declaration of Helsinki.

In addition, formal written permissions for research use were obtained individually for each assessment instrument prior to data collection, in compliance with the requirements of the respective copyright holders and Turkish adaptation authorities. Permissions were secured for the **Toronto Alexithymia Scale (TAS-20)** through the Turkish adaptation team, for the **TEMPS-A** from Prof. Dr. Simavi Vahip, for the **State–Trait Anxiety Inventory (STAI)** via the authorised rights holder of the Öner and Le Compte adaptation, and for the **Zung Self-Rating Depression Scale** through the Turkish adaptation team.

Inclusion and Exclusion Criteria

Participants were eligible for inclusion if they met the following criteria:
(a) were between 18 and 26 years of age;
(b) were currently enrolled in a university programme in Turkey;
(c) provided voluntary participation with informed consent;
(d) demonstrated sufficient proficiency in the Turkish language; and
(e) possessed adequate cognitive capacity to complete self-report questionnaires independently.

Participants were excluded from the study if they reported:
(a) a diagnosis of a psychotic disorder, bipolar disorder, or autism spectrum disorder;
(b) the presence of a major neurocognitive disorder or significant cognitive impairment;
(c) a severe or complex chronic medical condition, such as malignancy or advanced neurological or endocrine disease;
(d) an alcohol or substance use disorder within the preceding 12 months; or
(e) an acute psychiatric crisis at the time of assessment.

Measures

Sociodemographic Data Form

A structured sociodemographic questionnaire was designed by the authors with reference to the relevant literature. The form gathered information on participants' age and gender, academic field and year of study, number of siblings, living arrangements, and perceived parenting style. In addition, data were collected regarding smoking and alcohol use, the presence of chronic medical conditions, history of psychiatric medication use and psychotherapy, and exposure to potentially traumatic experiences, including physical and sexual trauma. These variables were selected due to their established relevance to alexithymia, affective temperament, and emotional regulation processes reported in previous research.

Toronto Alexithymia Scale (TAS-20)

Alexithymia was measured using the 20-item Toronto Alexithymia Scale (TAS-20), originally developed by Bagby, Parker, and Taylor[1]. The TAS-20 is a self-report measure assessing difficulties related to emotional awareness and verbal expression of emotions. Items are rated on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores reflecting greater alexithymic tendencies.

The instrument comprises three subscales:
Difficulty Identifying Feelings (DIF), which captures problems in recognising and distinguishing emotions from bodily sensations;
Difficulty Describing Feelings (DDF), which reflects challenges in communicating emotions to others; and
Externally Oriented Thinking (EOT), indicating a preference for concrete, externally focused thinking over introspective processes.

Total scores range from 20 to 100. In line with established thresholds, scores of 51 or below indicate non-alexithymia, scores between 52 and 60 suggest borderline alexithymia, and scores of 61 or above are indicative of clinically significant alexithymia.

The Turkish version of the TAS-20, validated by Güleç and Yenel, has demonstrated satisfactory psychometric properties in non-clinical samples, with reported Cronbach's alpha values of approximately .78 for the total scale. This version has been widely employed in both clinical and community-based research contexts[19].

Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire (TEMPS-A)

Affective temperament traits were assessed using the Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire (TEMPS-A), developed by Akiskal and colleagues. The TEMPS-A is a self-report instrument designed to assess biologically rooted affective temperament dimensions that are considered relatively stable across the lifespan[15]

The scale evaluates five affective temperament dimensions: depressive, cyclothymic, irritable, anxious, and hyperthymic temperaments. Items are answered in a dichotomous (yes/no) format, and scores are interpreted dimensionally rather than categorically. The TEMPS-A does not provide universal clinical cut-off values; instead, temperament traits are conceptualised along a continuum of affective predispositions.

The Turkish adaptation and validation study conducted by Vahip et al. reported good internal consistency for the TEMPS-A subscales, with Cronbach's alpha coefficients ranging approximately from .77 to .85 in non-clinical samples[20]. The Turkish version has since been widely used in research examining affective temperament in both clinical and general populations.

State–Trait Anxiety Inventory (STAI)

Anxiety was assessed using the State–Trait Anxiety Inventory (STAI), developed by Spielberger and colleagues[21]. The STAI consists of two 20-item self-report subscales: the State Anxiety scale (STAI-S), which assesses transient anxiety related to situational factors, and the Trait Anxiety scale (STAI-T), which measures relatively stable individual differences in anxiety proneness.

Items are rated on a four-point Likert scale, with higher scores indicating greater anxiety severity. Although no universally accepted clinical cut-off scores are defined, values of approximately 39–40 and above are commonly considered to reflect clinically relevant anxiety levels in research settings.

The Turkish adaptation and psychometric validation of the STAI were carried out by Öner and Le Compte, who reported good internal consistency, with Cronbach's alpha coefficients of approximately .80 for the STAI-S and .87 for the STAI-T[22].

Zung Self-Rating Depression Scale (ZDS)

Depressive symptoms were evaluated using the Zung Self-Rating Depression Scale (ZDS), a 20-item self-report measure developed by Zung[23]. Each item is rated on a four-point Likert scale indicating the frequency of depressive symptoms, with higher scores reflecting greater symptom severity.

The Turkish validity and reliability study conducted by Gençdoğan and Ören reported satisfactory internal consistency, with Cronbach's alpha values of approximately .83 in samples of high school and university students[24]. In non-clinical populations, ZDS scores are typically interpreted dimensionally, although gender-specific cut-off values have been suggested in prior Turkish research.

Statistical Analysis

Statistical analyses were performed using *IBM SPSS Statistics for Windows, version 22.0 (IBM Corp., Armonk, NY, USA).* An a priori power analysis for multiple linear regression was conducted to determine the minimum sample size required. Assuming a medium effect size (Cohen's $f^2 = 0.15$), an alpha level of 0.05, 80% power, and 7 predictors, the minimum required sample size was N = 92. The final sample size (N = 107) exceeded this requirement.

Descriptive statistics were computed to summarise the distributional characteristics of all study variables. Depending on data structure and distributional assumptions, group comparisons were conducted using independent-samples *t* tests, Mann–Whitney U tests, or Kruskal–Wallis H tests.

Associations between affective temperament dimensions and alexithymia scores were examined using Spearman's rank-order correlation coefficients. To determine which affective temperament dimensions were independently associated with alexithymia outcomes, multiple linear regression analyses were performed for both TAS-20 total scores and Difficulty Identifying Feelings (DIF) scores. Assumptions of multicollinearity were evaluated using variance inflation factor (VIF) and tolerance statistics.

For categorical comparisons, Fisher's exact test was employed in cases where expected cell counts were below five, in order to maintain the validity of the analyses.

Results

Participant Characteristics

Following data screening and cleaning procedures, 107 participants were retained for the final analyses. The median age of the sample was 21 years (range: 18–26). Most participants were female (n = 83, 77.6%), while male participants accounted for 22.4% of the sample (n = 24). The sample comprised students enrolled in a range of undergraduate and associate degree programmes at different universities across Turkey. A comprehensive overview of the sociodemographic, academic, lifestyle, and clinical characteristics of the participants is provided in *Table 1*.

Descriptive Statistics of Psychological Measures

Descriptive statistics for measures of alexithymia and affective temperament are presented in Table 2.

The mean total score on the TAS-20 was 54.64 (*SD* = 11.32). Mean scores for the TAS-20 subscales were 18.31 (*SD* = 6.98) for Difficulty Identifying Feelings (DIF), 14.63 (*SD* = 4.15) for Difficulty Describing Feelings (DDF), and 21.71 (*SD* = 4.05) for Externally Oriented Thinking (EOT).

The mean total TEMPS-A score was 40.00 (*SD* = 16.29). Among the affective temperament dimensions, hyperthymic and cyclothymic temperaments yielded the highest mean scores, whereas irritable temperament showed the lowest mean value.

Group Comparisons for TAS-20 Total Scores

Non-parametric analyses indicated that TAS-20 total scores did not differ significantly according to age, gender, academic characteristics, smoking status, or alcohol use (all $p > .05$).

TAS-20 total scores also varied significantly according to *perceived parenting style* ($H = 8.87$, $p = .031$; $\eta^2 = 0.06$). Post hoc analyses with Bonferroni correction showed that participants who described their parents as *authoritarian* or *neglectful* reported higher alexithymia total scores than those who perceived their parenting style as *democratic.*

Regarding trauma-related variables, participants with a *history of sexual trauma* demonstrated significantly higher TAS-20 total scores than those without such experiences (Mann–Whitney U test, $p < .05$). Similarly, individuals reporting a *chronic medical illness* showed elevated TAS-20 total scores compared with participants without chronic illness (Mann–Whitney U test, $p < .05$).

Finally, TAS-20 total scores differed significantly by *data collection method,* with higher scores observed among participants assessed via *face-to-face administration* compared with those completing the measures online ($Z = -2.63$, $p = .009$, $r = .25$). These results are summarised in *Table 3.*

Group Comparisons for TEMPS-A Total Scores

Group comparisons indicated that *TEMPS-A total scores* differed significantly according to *gender* and *smoking status.* Female participants demonstrated higher overall affective temperament scores compared with male participants. In addition, individuals who reported current cigarette smoking exhibited significantly higher TEMPS-A total scores than non-smokers.

No statistically significant differences in TEMPS-A total scores were observed with respect to age, academic characteristics, family structure variables, trauma history, chronic medical illness, psychiatric medication use, psychotherapy history, or data collection method (all $p > .05$). Detailed results of these analyses are presented in *Table 4.*

Associations Between Affective Temperaments and Alexithymia Total Scores

Spearman's rank-order correlation analyses revealed *moderate and statistically significant positive associations* between TAS-20 total scores and *depressive, cyclothymic, irritable,* and *anxious* affective temperament dimensions. Among these, the strongest correlations were observed for *cyclothymic* and *anxious* temperaments.

In contrast, *hyperthymic temperament* showed a *weak but statistically significant positive correlation* with TAS-20 total scores. Correlation coefficients for all temperament dimensions are reported in *Table 5 (Panel A).*

Associations Between Affective Temperaments and Alexithymia Sub-dimensions

Analyses focusing on alexithymia sub-dimensions demonstrated that *depressive, cyclothymic, irritable,* and *anxious* temperament traits were each *positively and significantly associated* with both *Difficulty Identifying Feelings (DIF)* and *Difficulty Describing Feelings (DDF)* scores. No significant associations were identified between any affective temperament dimension and *Externally Oriented Thinking (EOT)* scores.

With respect to hyperthymic temperament, negative associations were observed with both DIF and DDF scores; however, only the relationship with **DIF** reached statistical significance. These findings are summarised in *Table 5 (Panel B).*

Regression Analyses Predicting TAS-20 Total Scores

Multiple linear regression analysis was performed to examine the extent to which affective temperament dimensions predicted overall alexithymia levels. The model including all TEMPS-A dimensions explained approximately *48% of the variance* in TAS-20 total scores. Within this model, affective temperament traits demonstrated substantial explanatory power, indicating that temperament-related emotional dispositions contribute meaningfully to individual differences in alexithymia.

Regression Analyses Predicting Difficulty Identifying Feelings (DIF)

A separate multiple linear regression model was conducted to identify predictors of *Difficulty Identifying Feelings (DIF)* scores. In this model, *cyclothymic* and *anxious* temperaments emerged as significant *positive predictors* of DIF, whereas *hyperthymic temperament* was identified as a significant *negative predictor*. These findings indicate that temperament traits characterised by emotional variability and heightened internal arousal are associated with greater difficulty in recognising emotions, while traits linked to positive affectivity may exert a protective influence.

Group Comparisons for Difficulty Identifying Feelings (DIF) Scores

Non-parametric group comparisons revealed no statistically significant differences in DIF scores according to age, gender, academic characteristics, living arrangements, family income level, perceived parenting style, psychiatric medication use, psychotherapy history, or data collection method (all $p > .05$).

In contrast, participants reporting a *history of physical trauma* exhibited significantly higher DIF scores compared with those without such experiences (Mann–Whitney U = 92.00, $Z = -2.41$, $p = .016$). Similarly, individuals with a *history of chronic medical illness* demonstrated

significantly elevated DIF scores relative to participants without chronic illness (Mann–Whitney U = 524.00, $Z = -2.31$, $p = .021$).

Effect sizes for both comparisons fell within the *small-to-moderate range* ($r \approx .22–.23$).

Summary of Findings

In summary, alexithymia total scores were significantly associated with *sexual trauma history* and the presence of *chronic medical illness*, whereas *Difficulty Identifying Feelings (DIF)* scores showed more specific associations with *physical trauma history* and chronic illness. Across correlational and regression analyses, affective temperament dimensions—particularly *cyclothymic* and *anxious* temperaments—demonstrated consistent relationships with both overall alexithymia and DIF scores. In contrast, *hyperthymic temperament* was inversely associated with DIF, suggesting a potential buffering role in emotional awareness.

Discussion

Overview of the Main Findings

The present study examined the relationship between affective temperament dimensions and alexithymia in a non-clinical sample of young adults. The findings indicate that affective temperament traits are systematically related to alexithymia levels, even in individuals without diagnosed psychiatric disorders[3, 7]. In particular, the results support the notion that alexithymia—especially difficulties in identifying feelings—may reflect temperament-linked patterns of emotional processing rather than being solely attributable to clinical psychopathology or situational distress[1, 14, 16, 17]

Cyclothymic and Anxious Temperaments as Central Correlates of DIF

Among the affective temperament dimensions assessed, *cyclothymic* and *anxious* temperaments emerged as the most consistent correlates and predictors of the DIF component of alexithymia. Cyclothymic temperament is characterised by marked emotional variability and rapid shifts in affective states, which may disrupt the integration and cognitive labelling of emotional experiences. Similarly, anxious temperament involves heightened internal arousal and increased sensitivity to threat-related cues, potentially complicating the differentiation and conscious recognition of emotions.[1, 3, 4, 14]

These findings reinforce the importance of examining alexithymia at the level of its subcomponents, as total scores may obscure meaningful differences in how specific temperament traits relate to distinct aspects of emotional awareness.

The Potential Protective Role of Hyperthymic Temperament

In contrast to other temperament dimensions, *hyperthymic temperament* demonstrated a negative association with DIF scores. Traits associated with hyperthymic temperament, such

as elevated positive affect, lower harm avoidance, and greater emotional flexibility, may facilitate more effective recognition and differentiation of emotional states. This pattern suggests that hyperthymic characteristics could serve a protective function against deficits in emotional awareness, even in the absence of formal psychopathology[25, 26].

Trauma Exposure and Emotional Awareness

The study also identified significant associations between alexithymia and trauma-related variables. Sexual trauma history was linked to higher overall alexithymia levels, whereas physical trauma history was more specifically associated with elevated DIF scores. This differentiation aligns with previous research suggesting that traumatic experiences may selectively impair emotional identification processes rather than exerting uniform effects across all dimensions of emotional functioning[4, 27].

Importantly, these associations were observed in a non-clinical sample, underscoring that trauma-related disruptions in emotional awareness can be present even below diagnostic thresholds and may represent enduring vulnerabilities rather than transient reactions.[27]

Chronic Medical Illness and Alexithymia

Participants reporting a history of chronic medical illness exhibited higher alexithymia total scores and greater difficulty identifying feelings. This finding is consistent with literature indicating elevated alexithymia levels in individuals with chronic somatic condition[2, 28]. Difficulties in recognising and articulating emotional states may contribute to maladaptive coping strategies, altered illness perceptions, and challenges in psychological adjustment to long-term health conditions.[2]

Family Context and Developmental Considerations

Family-related variables also showed meaningful, albeit modest, associations with alexithymia. Higher alexithymia levels among participants reporting *authoritarian* or *neglectful* parenting styles. Nevertheless, the relatively small effect sizes observed suggest that while environmental factors play a contributory role, affective temperament remains the primary determinant of alexithymia-related difficulties in this sample[27].

Conclusion

This study provides evidence that affective temperament dimensions are meaningfully associated with alexithymia in a non-clinical sample of young adults. The findings indicate that alexithymia—particularly the core difficulty in identifying feelings—cannot be fully explained by transient emotional states, environmental stressors, or the presence of psychiatric disorders alone. Instead, it appears to reflect a temperament-related emotional vulnerability that is observable even among individuals functioning below diagnostic thresholds.

Across multiple analytic approaches, cyclothymic and anxious temperaments emerged as the most salient correlates and predictors of DIF, suggesting that emotional instability and heightened internal arousal may interfere with the cognitive processing and differentiation of emotional experiences[13]. In contrast, hyperthymic temperament showed an inverse relationship with DIF, pointing to a potential protective role of positive affectivity and emotional flexibility in emotional awareness[25, 26]

Importantly, affective temperament traits accounted for a substantial proportion of variance in overall alexithymia scores, underscoring the central role of biologically grounded emotional dispositions in shaping individual differences in emotional awareness. These findings support conceptualisations of alexithymia as a temperament-linked construct rather than a phenomenon solely secondary to clinical psychopathology[9]

Clinical Implications

Although the present study was conducted in a non-clinical sample, the findings carry several implications for clinical and preventive mental health practice.

First, the consistent association between cyclothymic and anxious temperament traits and difficulty identifying feelings suggests that emotional awareness difficulties may precede the onset of clinically significant psychopathology[13]. Temperament-informed screening may therefore aid in identifying individuals who are vulnerable to emotional dysregulation before overt symptoms emerge

Second, the inverse association between hyperthymic temperament and DIF highlights the potential value of strengthening adaptive affective traits, such as positive affectivity and emotional flexibility, within preventive or early intervention frameworks. Interventions aimed at enhancing emotional differentiation and labelling skills may be particularly beneficial for individuals with vulnerability-linked temperament profiles[25, 26]

Third, the observed associations between alexithymia, trauma exposure, chronic medical illness, and family-related variables emphasise that emotional awareness difficulties are embedded within broader biopsychosocial contexts. Clinicians working with individuals presenting somatic complaints, trauma-related concerns, or interpersonal difficulties may benefit from routinely considering alexithymia—especially DIF—as part of comprehensive assessment, even in the absence of a formal psychiatric diagnosis[2, 4, 27]

Finally, the temperament-based patterning of alexithymia observed in this study suggests that emotion-focused and mentalisation-oriented interventions may require tailoring according to individual temperament characteristics in order to maximise their effectiveness[29-31]

Limitations

Several limitations should be noted. Although the sample size was established through a priori power analysis and was adequate to detect moderate effects, the relatively homogeneous sample of healthy young adults may limit generalisability. Replication in more diverse and clinical samples is recommended. Second, the cross-sectional design precludes conclusions

regarding causality or developmental directionality. Although robust associations were observed between affective temperament dimensions and alexithymia, it remains unclear whether temperament traits predispose individuals to alexithymic characteristics, whether alexithymia influences the expression of temperament-related emotional reactivity, or whether both reflect shared developmental mechanisms. Longitudinal designs are required to clarify these pathways.

Third, the sample consisted exclusively of university students within a restricted age range and included a predominance of female participants. This limits the applicability of the findings to older age groups, non-student populations, and more gender-balanced samples.

Fourth, all constructs were assessed using self-report measures. Although the instruments employed are well validated, reliance on self-report may introduce response biases, particularly in the assessment of alexithymia, which is inherently characterised by limited emotional insight. The inclusion of clinician-rated assessments, behavioural tasks, or multimodal measures would strengthen future research.

Fifth, information regarding trauma exposure, chronic medical illness, and psychiatric history was based on participants' subjective reports and was not corroborated by clinical interviews or medical records. This approach is consistent with the non-clinical design but may limit the precision of these variables.

Finally, data collection involved both online and face-to-face administration. Although this variable was examined analytically, contextual differences inherent to these formats may have influenced response patterns and cannot be fully ruled out.

Strengths

Despite these limitations, the study has several notable strengths.

First, it addresses a relatively underexplored area by examining the association between affective temperament and alexithymia in a non-clinical population. By focusing on individuals below diagnostic thresholds, the study contributes to a more developmentally informed understanding of emotional vulnerability.

Second, the dimensional approach adopted for both temperament and alexithymia allowed for a nuanced examination of their interrelationships, particularly at the level of specific alexithymia subcomponents. The emphasis on DIF, rather than total scores alone, enhances conceptual clarity.

Third, the use of well-validated instruments with established Turkish psychometric properties strengthens the methodological reliability of the findings. The inclusion of a broad range of biopsychosocial variables further supports the interpretability of the results.

Finally, the proportion of variance explained by affective temperament dimensions underscores their theoretical and empirical relevance and supports further longitudinal and mechanistic research on temperament-based emotional vulnerabilities.

Disclosure

Author contributions

Conceptualization: Gözde Akbaba Çalışkan, Şenay Aydın

Methodology: Gözde Akbaba Çalışkan

Formal analysis: Gözde Akbaba Çalışkan

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Table 1 Sociodemographic, Clinical and Lifestyle Characteristics of the Participants(N=107)

	Category	**n**	**%**
I. Demographic Data			
Age (years)	Median (range)	21 (18--26)	__
Sex	Female	83	77.6
II. Academic Data			
Academic class	1st year	10	9.3
	2nd year	12	11.2
	3rd year	12	11.2
	4th year	27	25.2
	Undefined / Other	46	43.0
Academic major	Psychology	37	34.6
	Medicine	17	15.9
	Nursing	17	15.9
	Other majors	36	33.6
III. Lifestyle & Socioeconomic Data			
Smoking status	Non-smoker	69	64.5
	Current smoker	38	35.5
Alcohol use	None	58	54.2
	Social drinker	24	22.4
	Regular drinker	25	23.4
Living arrangement	Alone	9	8.4
	With family	58	54.2
	With friends	11	10.3
	Dormitory	29	27.1
Family income level	Low	15	14.7
	Middle	35	34.3
	High	52	51.0
IV. Family Structure			
Number of siblings *(including self)*	1 (only child)	39	36.4
	2 or more	68	63.6
Parental marital status	Married	92	86.0
	Divorced	9	8.4
	One or both deceased	6	5.6
Perceived parenting style	Authoritarian	41	38.3
	Democratic	24	22.4
	Overprotective	35	32.7

	Category	n	%
	Neglectful	7	6.5
V. Clinical & Trauma History			
Chronic medical illness	Absent	89	83.2
	Present	18	16.8
Sexual trauma history	Absent	100	93.5
	Present	7	6.5
Physical trauma history	Absent	102	95.3
	Present	5	4.7
Psychiatric treatment history	None	81	75.7
	Past	18	16.8
	Current	8	7.5
Psychotherapy history	None	79	73.8
	Past	20	18.7
	Current	8	7.5
VI. Data Collection Method			
Data collection method	Online survey	75	70.1
	Paper-based (face-to-face)	32	29.9

Values are presented as *n* (%) unless otherwise indicated. Age is presented as median (range). Percentages may not total 100 due to rounding.

Table 2 Descriptive Statistics of Psychological Measures (N = 107)

Scale	Mean (SD)	Min–Max
Global Scales		
TAS-20 Total	54.64 (11.32)	37–84
STAI-State Total	**39.48 (12.01)**	**20–75**
STAI-Trait Total	45.52 (11.37)	26–70
TEMPS-A Total	**40.00 (16.29)**	**0–75**
Zung Depression Index	51.83 (12.38)	26.25–85
TEMPS-A Subscales		
Depressive	6.09 (3.94)	—
Cyclothymic	9.81 (5.34)	—
Hyperthymic	10.68 (4.52)	—
Irritable	4.93 (3.83)	—
Anxious	8.48 (6.17)	—
TAS-20 Subscales		
DIF	18.31 (6.98)	—
DDF	14.63 (4.15)	—
EOT	21.71 (4.05)	—

Values are presented as mean (standard deviation); TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking.
TEMPS-A = Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire; STAI = State–Trait Anxiety Inventory.

Table 3 Group Comparisons for TAS-20 Total Scores (N = 107)

	Test Statistic	***p***
I. Demographic Variables		
Age (years)	$\rho = -0.017$	.866[a]
Gender (female/male)	$Z = -0.47$	.639[b]
II. Academic Variables		
Academic class	$\chi^2 = 6.58$	.083[c]
Academic major	$\chi^2 = 6.63$	.428[c]
III. Lifestyle & Socioeconomic Variables		
Smoking status	$Z = -0.92$	.502[b]
Alcohol use	$\chi^2 = 0.34$	.846[c]
Living arrangement	$\chi^2 = 3.56$	.313[c]
Family income level	$\chi^2 = 4.86$	.086[c]
IV. Family Structure & Parental Characteristics		
Number of siblings (incl. self)	Z=-0.23	.818[b]
Parenting style	$\chi^2 = 8.87$	.031*[c]
Parental marital status	$\chi^2 = 4.36$	.113[c]
V. Clinical & Trauma History		
Chronic medical illness	$Z = -2.14$	.033*[b]
Sexual trauma history	$Z = -2.04$	.041*[b]
Physical trauma history	$Z = -1.27$	.203[b]
Psychiatric medication history	$\chi^2 = 3.37$	.185[c]
Psychotherapy history	$\chi^2 = 1.454$	.483[c]
VI. Data Collection Method		
Data collection method (online vs. face-to-face)	Z = -2.616	.009**[b]

TAS-20 = Toronto Alexithymia Scale; All analyses were conducted using non-parametric tests. [a]Spearman's rho was used for continuous variables, [b]Mann–Whitney U tests for two-group comparisons, and [c]Kruskal–Wallis H tests for comparisons involving three or more groups. **p < .05, **p < .01 (two-tailed)*

Table 4 Group Comparisons for TEMPS-A Total Scores (N = 107)

Predictor Variable	**Test Statistic**	***p***
I. Demographic Variables		
Age (years)	$\rho = -0.017$	.866[a]
Gender (female/male)	$Z = 2.48$	.015*[b]
Marital status (self)	$\chi^2 = 2.50$	> .05[c]
II. Academic Variables		
Academic class	$\chi^2 = 0.706$	.620[c]
Academic major	$\chi^2 = 0.86$	.835[c]
III. Social & Family Variables		
Number of siblings (including self)	Z=0.28	.778[b]
Living arrangement	$\chi^2 = 1.76$	.160[c]
Family income level	$\chi^2 = 0.80$	> .05[c]
Parenting style	$\chi^2 = 1.17$	.324[c]
Parental marital status	$\chi^2 = 1.14$	.323[c]
IV. Lifestyle & Clinical Variables		
Smoking status	Z=-2.23	.026*[b]
Alcohol use	$\chi^2 = 1.15$	.321[c]
Chronic medical illness	$Z = -1.44$	.150[b]
Sexual trauma history	$Z = -1.50$	> .05[b]
Physical trauma history	$Z = -0.50$	> .05[b]
Psychiatric medication history	$\chi^2 = 2.43$	.093[c]
Psychotherapy history	$\chi^2 = 1.45$	> .05[c]
V. Data Collection Method		
Data collection method (online vs. face-to-face)	$Z = -1.46$	.145[b]

TEMPS-A = Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire;All TEMPS-A total score comparisons were conducted using non-parametric tests. [a]Spearman's rho was used for continuous variables, [b]Mann–Whitney U tests for two-group comparisons, and [c]Kruskal–Wallis H tests for comparisons involving three or more groups. $p < .05$ was considered statistically significant.

Table 5 Spearman Correlations Between Temperament Dimensions and Alexithymia Measures (N = 107)

Panel A			
Correlations Between TEMPS-A Temperament Dimensions and TAS-20 Total Score			
TEMPS-A temperament	TAS-20 Total		
Depressive	.52**		
Cyclothymic	.56**		
Irritable	.39**		
Anxious	.57**		
Hyperthymic	.29**		
Panel B			
Correlations Between TEMPS-A Temperament Dimensions and TAS-20 Subscales			
TEMPS-A temperament	DIF	DDF	EOT
Depressive	.54**	.45**	−.04
Cyclothymic	.59**	.46**	.05
Irritable	.40**	.24*	.15
Anxious	.58**	.43**	.09
Hyperthymic	−.22*	−.17	−.18

Values represent Spearman's rho (ρ) correlation coefficients; TEMPS-A = Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire; TAS-20 = Toronto Alexithymia Scale; DIF = Difficulty Identifying Feelings; DDF = Difficulty Describing Feelings; EOT = Externally Oriented Thinking; $p < .05$. $p < .01$ (two-tailed).

Table 6 Multiple Linear Regression Analyses Predicting Alexithymia Outcomes from TEMPS-A Temperaments (N = 107)

Panel A. Prediction of TAS-20 Total Score

Predictor	B	SE(B)	β	t	p	Tolerance	VIF
Depressive	1.237	0.213	.431	5.81	<.001	.435	2.30
Irritable	0.559	0.188	.296	2.98	.004	.536	1.87
Anxious	0.272	0.207	.207	2.24	.028	.488	2.04
Cyclothymic	0.204	0.221	.090	1.05	.298	.490	2.04
Hyperthymic	−0.168	0.209	−.073	−0.80	.423	.490	2.04

Model statistics (Panel A): $R^2 = 0.48$, $F(5,101) = 18.52$, $p < 0.001$.

Panel B. Prediction of DIF Scores

Predictor	B	SE(B)	β	t	p
Depressive	0.30	0.18	.17	1.68	.097
Cyclothymic	0.51	0.13	.39	4.09	<.001
Anxious	0.34	0.11	.30	3.14	.002
Hyperthymic	−0.29	0.12	−.19	−2.50	.014
Irritable	−0.13	0.17	−.07	−0.78	.440

Model statistics (Panel B): $R^2 = 0.37$, $F(1,105) = 62.44$, $p < 0.001$.

B = unstandardized coefficients; β = standardized coefficients. TAS-20 = Toronto Alexithymia Scale–20; DIF = Difficulty Identifying Feelings; TEMPS-A = Temperament Evaluation of Memphis, Pisa, Paris, and San Diego Autoquestionnaire. Tolerance and VIF values are reported for Panel A only.