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Divergent Profiles of Trait Emotional Intelligence in Depression, Anxiety, and Insomnia

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Supplementary Materials: Code, Data, Materials, Preregistration [see Index of Supplementary Materials]

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Abstract

Background: Trait emotional intelligence (trait EI) has been linked to mental health outcomes, but little is known about disorder-specific emotional profiles in clinical populations. Identifying such profiles may inform transdiagnostic models and tailored interventions.

Method: In this cross-sectional study, we compared trait EI across individuals with depression (n = 200), anxiety-related disorders (n = 61), or insomnia (n = 47) and matched non-clinical controls (N = 608 total). All participants completed the Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF). Group differences were examined for the global score and four subscales (Well-being, Self-control, Emotionality, Sociability).

Results: All clinical groups scored significantly lower than their respective controls on the TEIQue-SF global score and all subscales (all ps < .001). Between clinical groups, disorder-specific patterns emerged: Individuals with depression scored lower than those with insomnia on global trait EI and Well-being, reflecting diminished positive affect and life satisfaction. The insomnia group showed higher Self-control scores than the depression and anxiety groups, though the insomnia–anxiety difference was attenuated after controlling for age. No other significant differences were found between clinical groups.

Conclusion: Findings highlight robust trait EI deficits across depression, anxiety, and insomnia, alongside disorder-specific patterns in Well-being and Self-control. These results emphasize the need to consider demographic factors and emotional competencies in clinical research and give some indication that trait EI may be a promising target for transdiagnostic assessment and intervention.

Keywords

trait emotional intelligence, depression, anxiety, insomnia, psychopathology, mental health, transdiagnostic

Highlights

- Trait emotional intelligence (EI) was lower across all four dimensions in depression, anxiety, and insomnia vs. controls.
- Trait EI profiles showed both shared impairments and disorder-specific differences.
- Depression was associated with lower Well-being than insomnia.
- Insomnia showed higher Self-control than depression; differences from anxiety were age-dependent.

Emotional competencies, defined as the ability to perceive, access, understand, manage, and regulate emotions, are central to social functioning and mental health (Mayer & Salovey, 1997). Many mental disorders involve emotional dysregulation, which is associated with excessive fear in anxiety, reduced positive affect in depression (American Psychiatric Association, 2013), and irritability and emotion-recognition problems in insomnia (de Almondes et al., 2020).

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Considering the importance of emotional competencies in psychological functioning, accurate assessment of the aforementioned domains is crucial. The Trait Emotional Intelligence Questionnaire (TEIQue; Petrides, 2009) and its short form (TEIQue-SF) were developed to assess key emotional competencies, also described as "trait emotional intelligence" (trait EI). Trait EI is conceptualized as a constellation of emotion-related self-perceptions and dispositions assessed via self-report questionnaires and rating scales (Petrides et al., 2007). Within this framework, trait EI is situated within the personality domain rather than conceptualized as a cognitive ability or a facet of general intelligence (Petrides & Furnham, 2001; Petrides et al., 2007). This conceptual positioning is particularly relevant given the longstanding debate surrounding the use of the term "intelligence" for self-reported emotion-related traits (Hughes & Evans, 2018; Zeidner et al., 2008). The TEIQue divides trait EI into four sub-dimensions, each covering a number of Emotional Intelligence facets (Petrides, 2009):

1. *Emotionality* includes the facets of emotion perception, emotion expression, relationships, and trait empathy. Individuals with high scores on the Emotionality factor are not only highly aware of their own emotions but also skilled at recognizing and understanding the feelings of others. This emotional awareness enables them to develop and maintain stable and fulfilling relationships.
2. *Self-control* comprises the facets of stress management, impulse control, and emotion regulation. Individuals with high scores on the Self-control factor can effectively manage their impulses and regulate external pressures and stress.
3. *Sociability* encompasses the facets of emotion management, assertiveness, and social awareness. Unlike the Emotionality factor, the Sociability factor focuses more on social contexts in general rather than personal relationships. Individuals with high scores on the Sociability factor excel in social interactions, communicate confidently across various contexts, and are adept at negotiation and networking.
4. *Well-being* includes the facets of trait happiness, trait optimism, and self-esteem. Individuals with high scores on the Well-being factor generally tend to have a positive outlook on life, reflect positively on past experiences, and have optimistic expectations for the future, often experiencing positive, fulfilling emotions.

The TEIQue and TEIQue-SF have been extensively used in community samples (see Baudry et al., 2018, for a systematic review). Lower TEIQue-SF scores have been associated with higher symptoms of depression (Tolsa & Malas, 2022), anxiety (Siegling et al., 2015), as well as insomnia severity (Emert et al., 2017) in student and community samples. Further studies confirmed links with overall mental health (Martins et al., 2010). Evidence from clinical samples extends these findings, indicating that trait EI is a strong predictor of psychopathology and may influence mental health both directly and indirectly via related constructs such as mindfulness and irrational beliefs (Petrides et al., 2017).

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However, research investigating its sub-dimensions within clinical populations remains limited (Aslanidou et al., 2018; Oussi & Bouvet, 2023; Petrides et al., 2011; Sinclair & Feigenbaum, 2012). For example, Oussi and Bouvet (2023) investigated trait EI in individuals with panic disorder, generalized anxiety disorder, and non-clinical controls. They found that the clinical groups had significantly lower scores than the non-clinical group for the total TEIQue Score as well as for the sub-dimensions Well-being and Self-control. No significant difference was found between the two clinical groups. Aslanidou et al. (2018) compared TEIQue-SF subscale scores between individuals with a substance-related disorder and non-clinical individuals. Results showed that individuals with a substance-related disorder exhibited lower scores on all subscales except Emotionality.

In another study, Sinclair and Feigenbaum (2012) explored the TEIQue profiles of individuals with borderline personality disorder, finding significantly lower scores on all sub-dimensions compared to a non-clinical control group. Additionally, Petrides et al. (2011) compared the TEIQue profiles of individuals with and without autism spectrum disorder. The former scored significantly lower on all four sub-dimensions of the TEIQue. These findings give some indication that trait EI and its sub-dimensions may differ between clinical and non-clinical groups. However, given the small number of studies and disorders assessed, further research is needed. Furthermore, only one study to date has compared two clinical groups, both being anxiety disorders.

To extend previous research, this study examined whether individuals with depression, anxiety-related disorders, or insomnia differ from matched non-clinical controls in trait EI (TEIQue-SF). We assessed both the global score and all sub-scales (Emotionality, Self-control, Sociability, Well-being). We expected lower scores in all clinical groups compared to controls. Given their distinct clinical presentations, we also explored whether depression, anxiety, and insomnia differ in trait EI subdimensions.

Method

Participants

Participants with a mental disorder were drawn from baseline data of the ImPuls trial on exercise and mental health (Wolf et al., 2024). They were recruited between February 2021 and June 2022 via psychiatric hospitals, general practices, and outpatient clinics. Inclusion criteria were ICD-10 diagnoses of major depressive disorder (≥ moderate), nonorganic insomnia, panic disorder, agoraphobia, or post-traumatic stress disorder (PTSD); exclusion criteria included substance-related disorder, bipolar disorder, psychotic disorder, eating disorder, or acute suicidality. Participants had to be members of one of two cooperating health insurances.

Controls were recruited between November 2022 and September 2024 via flyers, social media, and other studies, and matched 1:1 on age (± 3 years), gender, and education.

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Individuals were eligible for inclusion in the control group if they did not meet any of the following diagnoses at the time of assessment: bipolar disorder (including those currently remitted), current depressive episode, remitted recurrent depressive disorder, dysthymia, agoraphobia, social anxiety disorder, panic disorder, generalized anxiety disorder, obsessive-compulsive disorder, PTSD, somatic symptom disorder, eating disorders, nonorganic insomnia, schizophrenia, schizotypal, and delusional disorders, currently remitted schizophrenia, persistent delusional disorder, or schizoaffective disorder, mental and behavioral disorders due to psychotropic substances, or hyperkinetic disorder.

For both groups, eligibility required age 18–65 years, fluency in German, and no regular exercise (more than once per week, with sessions lasting at least 30 minutes) for six consecutive weeks in the prior three months[1].

A total of 308 individuals with a depressive disorder (n = 200[2]), an anxiety-related disorder (agoraphobia and/or panic disorder and/or PTSD, n = 61) or insomnia (n = 47) were included. Non-clinical controls were matched 1:1 to the clinical participants. Final control group sizes were n = 196 for depression, n = 57 for anxiety-related disorders, and n = 47 for insomnia. A total of eight non-clinical controls (four depression and four anxiety-related disorders) could not be matched because of missing demographic information or because no suitable gender match was available (e.g., participants identifying outside the binary categories). If age, gender, or education data was missing in the clinical group, matching was based on the remaining variables. Demographic and clinical characteristics of all groups are presented in Table 1.

A power analysis using G*Power (Version 3.1.9.7; Faul et al., 2007), based on independent post-hoc t tests with Bonferroni correction, indicated that n = 50 per subgroup was required to detect a medium effect (d = 0.60) between clinical and control groups, assuming α (0.05/3) = 0.017 and power = 0.80. The actual subgroup size of the insomnia group was slightly smaller due to recruitment constraints of the parent study.

Measures

Structured Clinical Interview for DSM-5 – Clinician Version (SCID-5-CV)

The SCID-5-CV (First et al., 2016) was administered to establish inclusion and exclusion diagnoses. The SCID-5-CV is a semi-structured instrument to assess mental disorders according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). The SCID-5-CV was extended with additional modules from the SCID-5 Research Version for somatic symptom and related disorders, specific phobia, sleep disorders, feeding and eating disorders, body dysmorphic disorders,

1) This was a relevant criterion for the ImPuls-study (Wolf et al., 2024).

2) In the preregistration, the number of patients with depression was mistakenly reported as 199. The correct sample size included in the study is 200.

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gambling disorder, and intermittent explosive disorder. The SCID-5-CV shows adequate psychometric properties, with a percentage of positive agreement between interview and clinical diagnoses between 73% and 97%, diagnostic sensitivity and specificity > .70 and Cohen's kappa > .70 for most diagnoses (Osório et al., 2019).

Demographic Questionnaire

A demographic questionnaire assessed age, gender, marital status, socioeconomic status, medication use, and history of inpatient or outpatient psychological treatment.

Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF)

Trait EI was assessed with the 30-item short version of the TEIQue (TEIQue-SF; Petrides, 2009). Items are rated on a 7-point Likert scale (1 = completely disagree to 7 = completely agree), yielding a global score and four subscales: Well-being (6 items, e.g. "I feel that I have a number of good qualities."), Self-control (6 items, e.g., "I'm usually able to find ways to control my emotions when I want to."), Emotionality (8 items, e.g. "I find it difficult to bond well even with those close to me."), and Sociability (6 items, e.g. "I can deal effectively with people."). The TEIQue-SF shows good psychometric properties with an internal consistency for the global score of $\alpha = .89$ for men and $\alpha = .88$ for women (Cooper & Petrides, 2010). In this study, Cronbach's α of the global score was $\alpha = .85$ for the clinical sample, $\alpha = .87$ for the non-clinical sample and $\alpha = .92$ for the total sample. Cronbach's α for the subscales ranged between $\alpha = .60$ and $\alpha = .82$ for the clinical sample, between $\alpha = .54$ and $\alpha = .81$ for the non-clinical sample and between $\alpha = .69$ and $\alpha = .89$ for the total sample.

Symptom Questionnaires

Symptom severities were measured with validated self-report questionnaires: the *Brief Symptom Inventory* (BSI-18) for global, somatic, depressive, and anxiety symptoms; the *Patient Health Questionnaire-9* (PHQ-9) for depressive symptoms; the *Insomnia Severity Index* (ISI) for sleep difficulties, and the *Pittsburgh Sleep Quality Index* (PSQI) for sleep quality; the seven-item *Generalized Anxiety Disorder Scale* (GAD-7) for anxiety; the *PTSD Checklist for DSM*-5 (PCL-5) for PTSD, and the *Positive and Negative Affect Schedule* (PANAS). Validated German versions were used. All questionnaires show good internal consistency and sufficient test-retest reliability.

Procedure

Clinical participants first completed telephone screening for ImPuls eligibility, followed by written informed consent and a SCID-5-CV interview (face-to-face or video) conducted by trained master-level psychologists. Once eligible, they received a link to the online questionnaire battery, to be completed within 14 days. Compensation depended on group allocation in the parent ImPuls trial: those randomized to treatment as usual (control

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condition) received €450[3] after study completion. At baseline, no participants had yet been randomized.

Non-clinical controls provided consent, completed an online screening (age, gender, and education, exclusion criteria), and were interviewed with the SCID-5-CV by supervised graduate students via video. When individuals were not diagnosed with any of the mental disorders that would have led to their exclusion, they received a link to the same online survey as the clinical sample. Participants in the non-clinical control groups received a compensation of €8 per hour or course credit after completion of the assessment.

Data Analyses

Data were analyzed using two-way ANOVAs with group (clinical vs. control) and diagnosis (depression, anxiety-related disorder, insomnia) as factors, applied to the TEIQue-SF global and subscales. This deviated from the preregistered one-way ANOVAs but better aligned with the study hypotheses.

Post-hoc comparisons were conducted using independent-samples *t* tests with Bonferroni correction for six pairwise comparisons per outcome. Nonparametric Wilcoxon–Mann–Whitney tests were additionally conducted as sensitivity analyses, as assumption checks indicated that assumptions underlying parametric tests were not consistently met, including indications of heterogeneity of variances and some deviations from normality (see Supplementary Table S2). The Wilcoxon tests were conducted separately in each imputed dataset using a normal approximation with corrections for ties and continuity. Squared standardized test statistics were combined across imputations using the D_2 method (Li et al., 1991), and the resulting *p*-values were Bonferroni-adjusted.

Exploratory analyses examined differences between the three clinical groups. Additional analyses adjusted separately for age and gender. Missing data were handled via multiple imputation (10 datasets, MICE, Version 3.16.0; van Buuren & Groothuis-Oudshoorn, 2011), separately for clinical and control samples. Estimates and their sampling variances from the independent-samples t tests and covariate-adjusted linear models were pooled using Rubin's rules, with degrees of freedom calculated using the Barnard–Rubin adjustment (Barnard & Rubin, 1999). Missingness was minimal (≤ 1.3% per variable). Demographic and clinical descriptive statistics are reported for the original data, whereas descriptive statistics and inferential analyses of the TEIQue-SF outcomes are based on the imputed datasets. Analyses were conducted in R (Version 4.4.1; R

3) The assessments conducted in the parent ImPuls-study (Wolf et al., 2024) were intensive and involved multiple phases, including wearing accelerometer-based sensors to monitor participants' activity patterns. Additionally, the final assessment took place twelve months after the initial one, requiring a considerable commitment of time and effort from the participants.

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Core Team, 2024), with a significance threshold of $p < .05$ after adjustment for multiple comparisons where applicable.

Results

Subject Characteristics

Sociodemographic and clinical characteristics are summarized in Table 1. Compared to their matched controls, the depression and anxiety-related disorders groups had significantly lower employment rates; the depression group also reported significantly less physical activity. All clinical groups differed significantly from their controls on the clinical measures; the only exception was prior inpatient psychotherapy, which did not differ between the insomnia group and its control.

Group Differences in Trait Emotional Intelligence

As shown in Table 2, all clinical groups scored significantly lower than controls on the TEIQue-SF global score and subscales. Significant main effects of Group (clinical vs. non-clinical control) were observed for the TEIQue-SF global score and all subscales. Additionally, a significant main effect of the assigned type of Diagnosis (whether depression, anxiety-related disorder or insomnia) was found for the TEIQue-SF global score and all subscales, except Sociability. Interaction effects between Group and Diagnosis were significant for the TEIQue-SF global score and the Well-being subscale, but not for the other subscales. Detailed ANOVA results can be found in Table S1 (see Supplementary Materials). In the additional covariate-adjusted analyses, the main effect of Diagnosis on Emotionality was no longer statistically significant after adjustment for gender ($p = .141$).

Post-hoc tests indicated that depression scored lower than insomnia on the global score, Well-being and Self-control, and anxiety-related disorders scored lower than insomnia on Self-control. The latter difference was no longer statistically significant when controlling for age, $t(102.78) = -2.17$, $p = .192$. The pattern of statistical significance in all other between-clinical-group pairwise comparisons remained unchanged in the separate age- and gender-adjusted models. No further differences were observed among clinical groups (see Table 3). The rank-based sensitivity analyses yielded the same pattern of statistically significant group differences as the parametric comparisons at the .05 level after Bonferroni adjustment (see Supplementary Table S2).

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Table 1

Demographic and Clinical Characteristics of the Clinical Groups and Their Respective Matched Control Groups

Characteristic	Depression			Anxiety-Related Disorders			Insomnia		
	Clinical Group *n* = 200	Control Group *n* = 196	Differences	Clinical Group *n* = 61	Control Group *n* = 57	Differences	Clinical Group *n* = 47	Control Group *n* = 47	Differences
	n (%)	*n* (%)	Chi-squared-/ Fisher's exact test (*p*)	*n* (%)	*n* (%)	Chi-squared-/ Fisher's exact test (*p*)	*n* (%)	*n* (%)	Chi-squared-/ Fisher's exact test (*p*)
Gender[a]			.620			.199			1.00
Women	131 (65.5)	130 (66.3)		45 (73.8)	45 (78.9)		36 (76.6)	36 (76.6)	
Men	67 (33.5)	66 (33.7)		12 (19.7)	12 (21.1)		11 (23.4)	11 (23.4)	
Other	2 (1.0)	0 (0.0)		4 (6.6)	0 (0.0)		0 (0.0)	0 (0.0)	
Nationality[b]			.087			.610			.267
German	185	169		58	56		44	41	
Other	21	30		4	3		3[c]	6	
Native language[b]			.860			.587			.063
German	180	174		55	54		46	40	
Other	25[d]	28		9	5		4	8	
Employment[e]			**< .001**			**.005**			.431
Unemployed	**64 (32.0)**	**27 (13.8)**		**23 (37.7)**	**7 (12.3)**		10 (21.3)	10 (21.3)	
Employed	**115 (57.5)**	**157 (80.1)**		**31 (50.8)**	**41 (71.9)**		32 (68.1)	36 (76.6)	
Other	**19 (9.5)**	**12 (6.1)**		**6 (9.8)**	**9 (15.8)**		4 (8.5)	1 (2.1)	
Relationship status[e]			.064			.354			.212
Single	96 (48.0)	75 (38.3)		28 (45.9)	32 (56.1)		24 (51.1)	17 (36.2)	
In a relationship	104 (52.0)	121 (61.7)		33 (54.1)	25 (43.9)		23 (48.9)	30 (63.8)	
Years of education[f]			.958			.951			1.00
≤ 10 Years	39 (19.5)	36 (18.4)		19 (31.1)	18 (31.6)		17 (36.2)	17 (36.2)	
11-13 Years	79 (39.5)	79 (40.3)		23 (37.7)	20 (35.1)		17 (36.2)	17 (36.2)	
> 13 Years	82 (41.0)	81 (41.3)		19 (31.1)	19 (33.3)		13 (27.6)	13 (27.6)	
Previous psychological treatment									
Previous outpatient treatment	**128 (64.3)**[d]	**27 (13.8)**	**< .001**	**55 (91.7)**[g]	**8 (14.0)**	**< .001**	**31 (66.0)**	**9 (19.1)**	**< .001**
Previous inpatient treatment	**97 (48.5)**	**2 (1.0)**	**< .001**	**36 (59.0)**	**6 (10.5)**	**< .001**	7 (14.9)	1 (2.1)	.059
Current treatment									
Psychological treatment[h]	**96 (64.9)**[i]	**0 (0.0)**	**< .001**	**42 (75.0)**[j]	**0 (0.0)**	**< .001**	**20 (60.6)**[k]	**0 (0.0)**	**< .001**
Pharmacological treatment	**116 (58.3)**[d]	**4 (2.0)**	**< .001**	**29 (47.5)**	**1 (1.8)**	**< .001**	**19 (40.4)**	**1 (2.1)**	**< .001**

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Characteristic	Depression			Anxiety-Related Disorders			Insomnia		
	Clinical Group n = 200	Control Group n = 196	Differences	Clinical Group n = 61	Control Group n = 57	Differences	Clinical Group n = 47	Control Group n = 47	Differences
	M (SD)	M (SD)	Wilcoxon rank-sum test	M (SD)	M (SD)	Wilcoxon rank-sum test	M (SD)	M (SD)	Wilcoxon rank-sum test
Age	41.0 (12.7)[l]	40.2 (13.8)	W = 20119, p = .527	39.8 (12.7)	39.2 (13.1)	W = 1795.5, p = .761	48.8 (12.0)[m]	48.2 (13.1)	W = 1064, p = .963
Physical activity (minutes/week), self-report (BSA-F)	**303.2 (490.4)[n]**	**545.8 (877.7)[o]**	**W = 12980, p < .001**	519.5 (841.5)[p]	546.1 (669.4)	W = 1641, p = .709	454.75 (384.5)[m]	431.1 (537.6)	W = 1207, p = .243
Global symptom severity (BSI-18)	**21.4 (10.1)**	**3.4 (4.6)**	**W = 37937, p < .001**	**19.3 (9.5)**	**3.1 (4.4)**	**W = 3297, p < .001**	**16.6 (10.0)**	**2.7 (3.0)**	**W = 2041, p < .001**
Sleep quality (PSQI)	**9.4 (3.7)[q]**	**4.2 (2.5)[r]**	**W = 33166, p < .001**	**8.4 (4.2)[s]**	**5.0 (3.2)**	**W = 2377, p < .001**	**11.5 (2.8)[c]**	**4.1 (2.4)**	**W = 2108.5, p < .001**
Depressive symptoms (PHQ-9)	**14.2 (4.5)**	**2.8 (3.1)[r]**	**W = 38030, p < .001**	**10.2 (5.3)[g]**	**3.1 (3.6)**	**W = 3055.5, p < .001**	**12.1 (4.3)**	**2.2 (2.0)**	**W = 2187, p < .001**
Anxiety symptoms (GAD-7)	**10.2 (4.7)**	**2.0 (2.2)[r]**	**W = 36928, p < .001**	**10.2 (4.9)**	**2.0 (2.3)**	**W = 3307.5, p < .001**	**8.8 (4.8)**	**1.6 (1.6)**	**W = 2088, p < .001**
PTSD symptoms (PCL-5)	**26.4 (13.9)[d]**	**3.4 (5.4)[r]**	**W = 36938, p < .001**	**26.9 (16.4)**	**3.8 (4.5)**	**W = 3166, p < .001**	**25.5 (13.9)**	**2.6 (2.9)**	**W = 2139, p < .001**
Positive affect (PANAS)	**2.1 (0.6)[t]**	**3.4 (0.6)**	**W = 2727, p < .001**	**2.5 (0.6)**	**3.2 (0.6)**	**$t(116) = 6.8$, p < .001[u]**	**2.4 (0.6)**	**3.3 (0.6)**	**$t(92) = 7.5$, p < .001[u]**
Negative affect (PANAS)	**2.7 (0.7)[d]**	**1.4 (0.5)**	**W = 36363, p < .001**	**2.6 (0.8)[g]**	**1.3 (0.3)**	**W = 3231.5, p < .001**	**2.2 (0.8)[c]**	**1.3 (0.3)**	**W = 1923, p < .001**

Note. BSA-F = Physical Activity, Exercise, and Sport Questionnaire; BSI-18 = Brief Symptom Inventory; PSQI = Pittsburgh Sleep Quality Index; PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder Scale; PCL-5 = PTSD Checklist for DSM-5; TEIQue-SF = Trait Emotional Intelligence Questionnaire – Short Form; PANAS = Positive and Negative Affect Schedule; statistically significant p-values (p < .05) are highlighted in bold.

[a]four participants in the non-clinical control group indicated a different gender during screening compared to a later questionnaire. However, through email correspondence and personal interviews, the correct gender was confirmed in all cases. [b]multiple responses possible; [c]based on 46 participants; [d]based on 199 participants; [e]The original response options have been collapsed into the presented categories; [f]15 participants of the non-clinical control group provided contradictory information at a later date; [g]based on 60 participants; [h]an error in the questionnaire regarding current psychological treatment has resulted in a high number of missing responses in the clinical group; [i]based on 148 participants; [j]based on 56 participants; [k]based on 33 participants; [l]based on 198 participants; [m]based on 45 participants; [n]based on 189 participants; [o]based on 195 participants; [p]based on 59 participants; [q]based on 193 participants; [r]based on 195 participants; [s]based on 56 participants; [t]based on 197 participants; [u]t-test.

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Table 2

Means, Standard Deviations, and Pairwise Comparisons for TEIQue-SF Subscales and Global Scores Across Clinical and Control Groups

Variable	Disorder	Clinical *M* (*SD*)	Control *M* (*SD*)	*t*	*p*	*d*	95% CI for *d*
Well-Being	**Depression**	**3.69 (1.14)**	**5.81 (.90)**	***t*(385.36) = -20.42**	**< .001**	**-2.06**	**[-2.31, -1.82]**
	Anxiety-Related	**4.11 (1.19)**	**5.69 (.91)**	***t*(114.05) = -8.06**	**< .001**	**-1.49**	**[-1.90, -1.07]**
	Insomnia	**4.61 (1.38)**	**5.94 (.83)**	***t*(89.90) = -5.66**	**< .001**	**-1.17**	**[-1.61, -0.72]**
Self-Control	**Depression**	**3.95 (.97)**	**5.27 (.91)**	***t*(390.82) = -13.96**	**< .001**	**-1.41**	**[-1.63, -1.18]**
	Anxiety-Related	**3.87 (1.01)**	**5.29 (.87)**	***t*(114.05) = -8.11**	**< .001**	**-1.49**	**[-1.91, -1.08]**
	Insomnia	**4.47 (1.04)**	**5.44 (.86)**	***t*(89.96) = -4.90**	**< .001**	**-1.01**	**[-1.45, -0.58]**
Emotionality	**Depression**	**4.42 (1.05)**	**5.40 (.81)**	***t*(381.04) = -10.34**	**< .001**	**-1.05**	**[-1.26, -0.84]**
	Anxiety-Related	**4.69 (1.01)**	**5.44 (.77)**	***t*(114.05) = -4.52**	**< .001**	**-0.83**	**[-1.21, -0.45]**
	Insomnia	**4.76 (.99)**	**5.53 (.76)**	***t*(90.06) = -4.23**	**< .001**	**-0.87**	**[-1.30, -0.44]**
Sociability	**Depression**	**3.89 (1.01)**	**4.96 (.84)**	***t*(388.97) = -11.44**	**< .001**	**-1.15**	**[-1.37, -0.94]**
	Anxiety-Related	**4.05 (1.01)**	**5.01 (.82)**	***t*(114.05) = -5.67**	**< .001**	**-1.04**	**[-1.43, -0.65]**
	Insomnia	**4.13 (1.14)**	**5.15 (.74)**	***t*(90.06) = -5.18**	**< .001**	**-1.07**	**[-1.51, -0.63]**
Global Score	**Depression**	**3.96 (.71)**	**5.40 (.66)**	***t*(385.14) = -20.62**	**< .001**	**-2.08**	**[-2.33, -1.84]**
	Anxiety-Related	**4.18 (.71)**	**5.37 (.59)**	***t*(114.05) = -9.77**	**< .001**	**-1.80**	**[-2.23, -1.37]**
	Insomnia	**4.48 (.89)**	**5.54 (.59)**	***t*(90.06) = -6.79**	**< .001**	**-1.40**	**[-1.86, -0.94]**

Note. TEIQue-SF = Trait Emotional Intelligence Questionnaire – Short Form. Descriptive statistics are based on the imputed datasets. Degrees of freedom were calculated using the Barnard-Rubin adjustment. Reported *p*-values are Bonferroni-adjusted for six comparisons per outcome. Confidence intervals refer to Cohen's *d*, are based on approximate Wald intervals pooled across imputations, and are not adjusted for multiple comparisons. Statistically significant *p*-values ($p < .05$) are highlighted in bold.

Table 3

Results of Pairwise Comparisons for TEIQue-SF Subscales and Global Score Across Clinical Groups

Variable	Comparison	*t*	*p*	*d*	95% CI for *d*
Well-Being	Depression vs. Anxiety-Related	*t*(256.44) = -2.54	.069	-0.37	[-0.66, -0.08]
	Depression vs. Insomnia	***t*(242.15) = -4.80**	**< .001**	**-0.78**	**[-1.11, -0.45]**
	Anxiety-Related vs. Insomnia	*t*(103.88) = -2.00	.290	-0.39	[-0.78, 0.00]
Self-Control	Depression vs. Anxiety-Related	*t*(256.64) = 0.51	1.00	0.07	[-0.21, 0.36]
	Depression vs. Insomnia	***t*(241.97) = -3.29**	**.007**	**-0.53**	**[-0.86, -0.21]**
	Anxiety-Related vs. Insomnia	***t*(103.94) = -3.02**	**.019**	**-0.59**	**[-0.98, -0.19]**
Emotionality	Depression vs. Anxiety-Related	*t*(256.21) = -1.78	.457	-0.26	[-0.55, 0.03]
	Depression vs. Insomnia	*t*(242.40) = -2.02	.266	-0.33	[-0.65, -0.01]
	Anxiety-Related vs. Insomnia	*t*(104.06) = -0.36	1.00	-0.07	[-0.45, 0.32]
Sociability	Depression vs. Anxiety-Related	*t*(256.39) = -1.08	1.00	-0.16	[-0.45, 0.13]
	Depression vs. Insomnia	*t*(242.57) = -1.43	.921	-0.23	[-0.55, 0.09]
	Anxiety-Related vs. Insomnia	*t*(104.06) = -0.39	1.00	-0.08	[-0.46, 0.31]

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Variable	Comparison	*t*	*p*	*d*	95% CI for *d*
Global Score	Depression vs. Anxiety-Related	*t*(256.17) = -2.13	.203	-0.31	[-0.60, -0.02]
	Depression vs. Insomnia	***t*(242.45) = -4.28**	**< .001**	**-0.69**	**[-1.02, -0.37]**
	Anxiety-Related vs. Insomnia	*t*(104.06) = -1.93	.340	-0.37	[-0.76, 0.01]

Note. TEIQue-SF = Trait Emotional Intelligence Questionnaire – Short Form. Degrees of freedom were calculated using the Barnard-Rubin adjustment. Reported *p*-values are Bonferroni-adjusted for six comparisons per outcome. Confidence intervals refer to Cohen's *d*, are based on approximate Wald intervals pooled across imputations, and are not adjusted for multiple comparisons. Statistically significant *p*-values ($p < .05$) are highlighted in bold.

Discussion

This study compared trait EI in individuals with depression, anxiety-related disorders, and insomnia to matched controls. As expected, all clinical groups scored significantly lower on the TEIQue-SF global score and all subscales, consistent with results from prior studies in community samples, which have also linked higher trait EI to better mental health (Martins et al., 2010). Our results extend findings from clinical samples with autism and borderline personality disorder, which have also found lower scores in clinical compared to non-clinical groups (Petrides et al., 2011; Sinclair & Feigenbaum, 2012).

Our results partly diverged from Aslanidou et al. (2018), who reported intact Emotionality in substance-related disorder. This underscores that different disorders may present different competencies in EI related to their clinical characteristics. Indeed, emotional deficits in substance-related disorder populations are associated with difficulties in awareness, expression, and regulation of emotions (Dingle et al., 2018), but not necessarily to lower Emotionality scores, which also reflect empathy and relational skills. In contrast, the clinical groups in the current study may experience more generalized deficits in emotional competencies, which could account for the broader impairments observed here.

When comparing our results to the only previous study including anxiety-related disorders, further differences emerge. Oussi and Bouvet (2023) found that individuals with generalized anxiety disorder and panic disorder scored lower than controls only on Well-being and Self-control, but not on Emotionality or Sociability. Several methodological differences might account for this discrepancy. Their non-clinical controls self-declared the absence of mental disorders, whereas we used structured clinical interviews and 1:1 demographic matching (gender, age, education), which likely increased sensitivity and may have revealed deficits not detected in their sample. Differences in clinical composition may also matter: while their study focused narrowly on generalized anxiety and panic disorder, our broader anxiety group also included agoraphobia and PTSD, potentially capturing additional emotional and interpersonal difficulties. Both disorders are characterized by high avoidance and heightened reactivity to threat cues, which

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may be related differently to trait EI compared to generalized anxiety or panic disorder. For instance, reduced emotional awareness or expression (facets of Emotionality) and avoidance-related interpersonal difficulties (Sociability) could indicate broader deficits in emotional competencies.

At the same time, the heterogeneity of our anxiety-related disorders group should be considered when interpreting these findings. The included conditions represent a broader spectrum of anxiety-related psychopathology, which allowed us to capture a wider range of clinical presentations, but may also differ in specific symptom profiles and emotion regulation processes. For example, prior studies comparing panic disorder and generalized anxiety disorder suggest partly divergent patterns: Onur et al. (2013) found lower total emotional intelligence in generalized anxiety disorder, but not in panic disorder, compared to non-clinical controls, whereas Lizeretti et al. (2014) reported broadly reduced emotional understanding and regulation in anxiety disorders but no significant EI differences between panic disorder with agoraphobia and generalized anxiety disorder. In addition, research on PTSD comorbidity indicates that emotion dysregulation domains such as limited regulation strategies, impulse control difficulties, lack of emotional awareness, and lack of emotional clarity may differ across trauma- and anxiety-related presentations (Allbaugh et al., 2025). This heterogeneity may have reduced the sensitivity to detect more fine-grained disorder-specific differences in trait EI, potentially contributing to the largely non-significant differences observed between clinical groups. Together, our findings highlight the importance of methodologically rigorous disorder-specific investigations of trait EI, to advance a nuanced understanding across clinical populations.

Beyond overall deficits, comparisons between clinical groups revealed disorder-specific patterns in emotional competencies. Individuals with insomnia showed less pronounced impairments on Well-being and Self-control, and global trait EI especially compared to those with depression. On Well-being, they scored significantly higher than the depression group. Well-being, which captures positive affect, life satisfaction, and a positive outlook on life, is closely intertwined with depressive symptomatology, where diminished life satisfaction and reduced positive affect are core features. In contrast, Well-being impairments in insomnia appeared less pronounced, but it remains unclear whether this reflects disorder-specific characteristics, consequences of the disorders, or predisposing differences in trait EI. For the Self-control subscale, individuals with insomnia scored higher than those with depression or anxiety-related disorders. Self-control, reflecting the ability to regulate emotions and behaviors effectively, is often impaired in depression and anxiety. Maladaptive strategies such as rumination, characterized by repetitive focus on negative emotions (McLaughlin & Nolen-Hoeksema, 2011), may both reflect underlying deficits in adaptive regulation and contribute to their maintenance. Thus, lower Self-control scores could indicate a cycle in which limited regulatory capacity increases the use of maladaptive strategies, which in turn exacerbate symptoms.

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Additionally, depression and anxiety disorders are related to heightened emotional reactivity, which may overwhelm regulatory capacities, further contributing to deficits in Self-control (Ripper et al., 2018). Thus, reduced Self-control in depression and anxiety may reflect both difficulties in applying adaptive regulation strategies and the additional burden of stronger emotional reactivity.

Interestingly, the difference in Self-control between the anxiety and insomnia groups was no longer significant after controlling for age. This may suggest that the effect may have been partly driven by age rather than disorder-specific factors. However, as insomnia is more prevalent in older adults (Klimt et al., 2023), age may also be considered part of the disorder's typical profile rather than a mere confound. Alternatively, insomnia may involve less severe Self-control deficits than anxiety-related disorders. Evidence regarding the effect of poor sleep on emotion regulation is mixed: some studies report general associations (Perez et al., 2022), whereas others find difficulties only under specific conditions, such as medication use (Minkel et al., 2012). Future research should investigate whether these differences reflect disorder-specific traits or compensatory Self-control mechanisms in insomnia that may lessen more severe deficits observed in other clinical populations. The relationship between Self-control and clinical conditions could be complex and bidirectional: low Self-control may increase vulnerability to depression, anxiety, or insomnia, while chronic symptoms may further erode Self-control capacities. Similarly, the comparatively higher Well-being scores in the insomnia group also warrant further study. Future research should assess the directionality of the effects – or whether well-being is a mere epiphenomenon of mental disorders, especially depression.

Several limitations should be acknowledged. First, the cross-sectional design precludes causal interpretations. Longitudinal studies are needed to determine whether reduced trait EI is a cause or consequence of psychopathology. Second, reliance on self-report measures may introduce bias, and future research could benefit from incorporating multi-method approaches (e.g., behavioral assessments, informant reports). Third, whereas clinical group sizes were sufficient for detecting group-control differences, they may have limited power to detect smaller between-disorder effects. Fourth, the TEIQue-SF, although efficient and reliable, does not capture individual facets within the four factors. This lack of granularity may obscure specific emotional deficits (e.g., empathy, emotion regulation). In addition, the full version typically shows higher internal consistency (Petrides, 2009) and may therefore offer a more precise assessment of the underlying dimensions, potentially allowing for the detection of more subtle differences between clinical groups. Furthermore, the anxiety-related disorders group was diagnostically heterogeneous, which may have limited the detection of disorder-specific differences in trait EI. Finally, although trait EI is conceptualized as a personality-based construct rather than a form of cognitive ability, we did not include additional measures of related individual difference variables, such as general intelligence or social competence. Therefore,

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the specificity of the observed associations cannot be fully determined, as some overlap with other cognitive or socio-emotional constructs cannot be ruled out. Future research should include a broader range of measures to further disentangle trait EI from related domains.

In conclusion, this study underscores the relevance of trait EI across clinical populations. All groups showed marked deficits, with disorder-specific patterns most evident in depression (lower Well-being and Self-control). These findings suggest disorder-specific differences in trait EI. Future studies should assess whether impairments in trait EI are a risk factor, maintaining factor, consequence or an epiphenomenon of mental disorders. If they were found to be a risk or maintaining factor, future studies should further examine mechanisms and treatment implications.

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Competing Interests: The authors have declared that no competing interests exist.

Ethics Statement: This study was approved by the ethics committee for medical research at the University of Tübingen (ID: 888/2020B01), and all procedures performed were in accordance with the ethical standards of the committee and with the 1964 Helsinki declaration and its later amendments.

Author Note: A version of the study reported in this article was included as Study I in the first author's doctoral dissertation (Herzog, 2025).

Preregistration: The study was preregistered at OSF (https://osf.io/ujm9s).

Reporting Guidelines: The reporting of this study followed the APA Journal Article Reporting Standards for Quantitative Research (JARS–Quant) for nonexperimental studies.

Social Media Accounts: *Eva Herzog:* LinkedIn, *Celina L. Müller:* LinkedIn

Data Availability: Data and analysis code are openly available at OSF (https://osf.io/5rcuz).

Supplementary Materials

The Supplementary Materials contain the following items:

- Preregistration (Herzog et al., 2022S)
- Research data and analysis code (Wolf et al., 2026S)
- Supplementary tables (Herzog et al., 2026S):

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- Table S1. ANOVA results for TEIQue-SF subscales and global score
- Table S2. Nonparametric results of pairwise comparisons for TEIQue-SF subscales and global score across groups

Index of Supplementary Materials

Herzog, E., Ehring, T., Cludius, B., Takano, K., & Studnitz, T. (2022S). *Associations between trait emotional intelligence and depression, insomnia and anxiety disorders – Focusing on subdimensions* [Preregistration]. OSF Registries. https://osf.io/ujm9s

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