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Personality Functioning and Organization Strongly Associated
with Anxiety in Clinical Adolescent Sample

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Introduction

Adolescent mental health has seen an unprecedented decline over the last 15 years (Haidt, 2024). Worldwide surveys (Fitzgerald et al., 2024), as well as Austrian data (Felder-Puig et al., 2023) show an increase in anxiety among adolescents over the last decade. Diagnosis of personality disorders in adolescence has long been neglected due to a fear of stigmatization and a notion of incurability (Sheehan et al., 2016), even though targeted interventions show promising results (van Gemert et al., 2009; Chanen et al., 2009; Chanen & McCutcheon, 2018) and recent expert opinions (Fonagy et al., 2015), as well as national guidelines (Deutsche Gesellschaft für Psychiatrie und Psychotherapie, Psychosomatik und Nervenheilkunde (DGPPN), 2022) advise for diagnosis in adolescence.

Previous studies show links between anxiety and personality organization, but data remains especially sparse for adolescents. This thesis aims to examine the results of a recently validated tool for personality disorder diagnosis in adolescents (STIPO-RA) (Laczkovics et al., 2025) compared to various measurements of anxiety.

Personality Disorders in Adolescence?

Personality disorders have been very cautiously diagnosed among adolescents in the past (Laurensen et al., 2013). The cited survey showed that while 57.8% of psychologists acknowledge the existence of personality disorders in adolescents, only a tiny fraction (8.7%) of them diagnose these disorders in practice. Other research shows that only 37% of child and adolescent psychiatrists considered Borderline Personality Disorder to be a valid diagnosis in adolescents (Griffiths, 2011).

Borderline Personality Disorder is a particularly relevant example of personality disorders, as research shows that this patient group makes up 20-22% of inpatient clinic stays (Ellison et al., 2018) and is the most commonly diagnosed personality disorder in psychiatric care (Dulz et al., 2022). Thus, concerns about the diagnosis of

personality disorders in adolescents will be discussed through the example of Borderline Personality Disorder in this chapter.

Borderline Personality Disorder suffers from stigmatization by mental health practitioners, the clinicians behaviour as a result of the stigmatization may however exacerbate the psychopathology of the patient and ultimately lead to a self fulfilling prophecy and a cycle of stigmatization (Aviram et al. 2006).

While stigmatization in diagnosis is a serious and legitimate concern, expert opinions converge that Borderline Personality Disorder in adolescents, given appropriate reason, should be diagnosed, especially using dimensional diagnostic criteria (Fonagy et al, 2015).

Diagnoses of Personality Disorders must not be seen as an abstract concept, or merely as a scientific debate, but as an integral part of mental health care upon which lives depend. The importance of this can not be understated; In a powerful opinion piece Cannon & Gould (2022) describe the story of how the Borderline Personality Disorder symptoms of their twin daughters were attributed to depression and anxiety, despite meeting relevant diagnostic criteria. After ultimately receiving Borderline Personality Disorder diagnoses, local and targeted care was unavailable to them, as it was only accessible to over 18-year olds. This was too late for Sam and Chris, who lost their lives to suicide at 16 and 17 after an extensive mental health care history.

Refusal to diagnose personality disorders because of the associated stigma does nothing to resolve the stigma, and may even contribute to it. A refusal to diagnose personality disorders in adolescence may ultimately lead to a refusal for appropriate mental health care.

The existing malleability and flexibility of Borderline Personality Disorder traits in adolescents (Chanen & McCutcheon, 2018; Conway et al., 2017) should not be a reason for withholding diagnosis, but rather present an opportunity to intervene in a key developmental period; Promising early interventions for this patient group exist (van Gemert et al., 2009; Chanen et al., 2009; Dulz et al., 2022).

Regarding adolescent Borderline Personality Disorder patients, Fonagy et al. (2015) emphasize:

“It is regrettable that the profession has thus far failed to respond to their needs.”

Categorical and Dimensional Diagnostics of Personality Disorders in the ICD and DSM

In order to describe the concepts of personality organization and personality functioning in detail, a brief introduction into the shifting approaches of the diagnosis of personality disorders is necessary.

The categorical system of diagnosing personality disorders, while still present in the ICD 10 (World Health Organization, 2019) and DSM-5 (American Psychiatric Association, 2022) has faced continuous criticism. Most commonly mentioned problems of this approach are arbitrary diagnostic thresholds, which fail to take into account the continuity of personality pathology and large co-occurrence, as well as heterogeneity in personality disorders (Clark, 2007; Widiger et al., 2005). Furthermore, the distinction between ten different personality pathologies (such as histrionic or dependent) could not be replicated in factor analyses (Krueger et al., 2018). Recent literature overwhelmingly favors a shift towards a dimensional model of classification of personality disorders (Widiger & Trull, 2007; Sharp & Wall, 2020), while broader adoption in clinical practice appears to be slower (Monaghan & Bizumic, 2023).

The alternative model for personality disorders (AMPD), while included in the DSM-5, is regarded as an emerging measure and not part of the official classification (American Psychiatric Association, 2022; Sharp & Wall, 2020). The AMPD includes a hybrid pathway to diagnosis, utilizing both categorical and dimensional approaches. Criterion A, the level of personality functioning, measures the severity of impairment in personality functioning by assessing lacking self-functioning (identity and self-direction), as well as interpersonal functioning (empathy and intimacy). This Criterion leads to a dimensional measurement across five levels of severity and is

described as the core of personality pathology (American Psychiatric Association, 2013). In criterion B personality pathology is measured across five additional traits: negative affectivity, detachment, antagonism, disinhibition and psychoticism. Based on Criterion B, one of six personality disorders (Schizoid, paranoid, histrionic and dependent personality disorders are no longer present due to a lack of validity) is diagnosed by the clinician categorically. Criteria C-G are omitted here due to spacial reasons and are usually determined through exploration, as part of personality disorder diagnostic instruments or in differential diagnosis.

The ICD-11, currently not usable in clinical practice in its German form (Bundesinstitut für Arzneimittel und Medizinprodukte, 2025), encompasses a more radical change to the diagnosis of personality disorders than the DSM-5 by no longer coding categorically different personality disorders (though a Borderline pattern specifier remains) (World Health Organization, 2025). As seen in the DSM-5 AMPD, personality disorders are classified based on severity, though only 3 categories (Mild, Moderate, Severe) are listed in the ICD-11. In contrast to the AMPD, the assignment of trait domain specifiers (such as Negative Affectivity or Disinhibition) is optional. The ICD-11 therefore is focused on features that apply to all personality disorders, such as impairments in self- and interpersonal functioning (Bach et al., 2022).

An Introduction to Personality Organization

The aforementioned new diagnostic systems for personality disorders generally converge with traditional psychoanalytic and psychodynamic conceptualizations of personality pathology (Blüml & Doering, 2021), which have long relied on the concept of personality organization in the diagnosis of personality disorders.

The current usage of personality organization is based on the modern psychoanalytic theory of object relations, especially the works of Otto Kernberg (1984), based on foundations laid much earlier by Klein (1932).

Kernberg's model represents an integration of classic psychoanalytic theories, attachment theory, neurobiology and developmental psychology (Kernberg & Caligor, 2005). The underlying theory is based on early interactions between the caregiver

and child during infancy, which are internalized as the foundations of personality organization. During early infancy, it is assumed that the child's experience of others is split between idealized good and persecutory bad experiences (e.g. there is a prototypical good father that responds to my needs, and a bad father who takes too long to respond). Over the course of normal childhood development, this, formerly split, view of others is gradually integrated and forms the basis of healthy object relations. Pathological personality structures are assumed to result from complications in these integration and differentiation processes, leading to identity diffusion and dysfunctional interpersonal relations (Clarkin et al., 2007). This is splitting is particularly visible in interpersonal interaction patterns of the Borderline Personality Disorder, where frequent shifts between idealization and devaluation are common.

These psychodynamic conceptualizations are based on the assumption that the aforementioned underlying and pathological psychological structures of patients with personality disorders can be assessed through examination of their behaviour and subjective impairments (Yeomans et al., 2018).

Three different levels of personality organization used for the diagnosis of personality disorders were proposed by Kernberg (1984): neurotic, borderline (not to be confused with Borderline Personality Disorder) and psychotic personality organization. Clinicians assess mild to severe deviations in the following areas: identity integration, object relations, reality testing and defense mechanisms. A normal personality organization shows, among other markers, an integrated identity and conceptualization of others, mature defense mechanisms and an intact reality testing, although slight deviations may be present. A neurotic personality organization still shows much of the same characteristics, but some elements of the psyche are not properly integrated and lead to at least mild impairments in functioning (Yeomans et al., 2018). Defense mechanisms often show rigidity (e.g. a tendency for perfectionism, somatization and/or paranoia in social interactions), but reality testing is still fully intact.

In the borderline personality organization, the experience of the self and of important others is marked by incoherence and instability (Yeomans et al., 2018). Defense

mechanisms and object relations are primitive and based on splitting, a process which aims to defend object relations in early childhood, but leads to impairments in later development (Dulz et al., 2022). Reality testing is intact, with slight temporal impairments in stressful situations (Yeomans et al., 2018). A psychotic personality organization is defined by all the above and additionally impaired reality testing. Notably, these factors are required to have a negative impact on the patients' functioning in work, social relations and other areas to confirm the diagnosis.

Diagnostic Framework of the STIPO-RA

Table 1 lists various diagnostic criteria for personality disorders in the ICD-11, as well as their STIPO-RA equivalents.

Table 1

Theory-driven comparisons between ICD-11 definitions and STIPO-R-A equivalents

ICD-11 definition	STIPO-R-A equivalent
Identity	Identity (Q1-Q11)
self-worth	Sense of self (Q5-Q11)
accuracy of self view	Sense of self (Q5,Q6)
self direction	Engagements (Q1, Q2), Higher Level defenses (Q39-42)
interpersonal dysfunction	Sense of others (Q12-Q15), Object relations (Q16-Q29)
ability to develop and maintain close and mutually satisfying relationships	Interpersonal relations (Q16-Q19), Intimate relationships and sexuality (Q20-Q23)
ability to understand others perspectives and to manage conflict in relationships	Sense of others (Q12-Q15), Object relations (Q16-Q29)

ICD-11 definition	STIPO-R-A equivalent
maladaptive patterns of inflexible or poorly regulated behaviour	Primitive and higher level defenses (Q30-Q43)
propensity to self-harm or violence	Aggression (Q43-Q51), Moral Values (Q47, Q49-Q51)

Note. Comparisons to individual STIPO items are based on underlying theories, not on statistical analyses and may thus be subject to individual interpretation.

Despite some differences in suspected etiology and explanations of observed behaviours, all noted aspects of the borderline personality organization generally converge with the ICD-11 (World Health Organization, 2025) information on personality disorders.

Dimensions of the STIPO-RA closely align with the characterization of Personality Disorders in the ICD-11 (WHO, 2025). The ICD-11 classifies personality disorders, among other aspects, as problems in functioning of aspects of the self (e.g. identity, self-worth, accuracy of self-view, self direction).

Overall, the STIPO-RA as a diagnostic instrument covers all diagnostic criteria for personality disorders and nearly all aspects of personality functioning which contribute to the determination of personality disorder severity. In addition, the STIPO-RA also includes a measurement of narcissism, an examination of moral values and reality testing, which exceed the necessary diagnostic criteria, but provide valuable information to the clinician. Particularly in moderate and severe personality disorders, these criteria allow for a more accurate assessment of the danger a patient may pose to others or themselves. The domain reality testing may also serve as an early warning sign for the onset of psychotic and dissociative disorders.

Links between Personality Organization, as well as Functioning, and Anxiety

Haidt (2024) argues that adolescent mental health has seen an unprecedented and alarming decline over the recent decade, drawing on statistics from the US: Emergency room visits for self-harm from 2010 to 2020 increased by 188% for girls and 48% for boys. Suicide rates among adolescents aged between 10-14 saw an increase of 167% for girls and 91% for boys in this timeframe.

Among nordic european nations, high psychological distress saw a 76% increase in girls and 51% increase in boys from 2010 to 2020 (Haidt, 2024). In the United Kingdom, adolescents aged 13-16 saw an increase in self-harm episodes from 2010 to 2020 for 76% in girls and 134% in boys (Cybulski et al, 2019). The argument that these increases are simply due to the fact that mental disorders are more commonly diagnosed nowadays falls apart when considering that many of these statistics do not measure subjective emotional states, but medical emergencies.

Austrian statistics show that 35% of girls and 12% of boys in the 11th year of school suffer from feelings of anxiety at least multiple times a week (Felder-Puig et al., 2023).

Because, as previously explained, personality disorder diagnoses in adolescence have only recently been a topic, the present scientific landscape on personality organization and functioning is still scarce. No studies directly examining both anxiety and personality organization in adolescents could be found. Therefore, studies on adult populations with various personality and anxiety disorders will be introduced in the next paragraphs.

One study (Górska, 2011) measured the Borderline Personality Inventory (Leichsenring, 1999), which relies on the same structural theories as the STIPO and is not only used in Borderline Personality Disorder diagnosis but in all personality disorders, as well as the Generalized Anxiety Disorder Questionnaire IV (Newman et al., 2002). The study is of particular interest for comparison due to its young mean age of 22.5 ($SD = 4.98$). A correlation of $r = .49$ ($p < .001$) between the severity of Generalized Anxiety Disorder and the levels of personality organization was found.

This further underlines the interconnectedness of the constructs examined in this thesis.

Kasen et al. (1999) examined associations between psychopathology in children and later personality disorders in young adulthood in a community sample of 551 adolescents. Through a logistic regression analysis, Odds ratio's were determined, which in this scenario describe the increased risk of developing a personality disorder in young adulthood, if an anxiety disorder was present during adolescence. If an anxiety disorder of any kind was present at age 9-16 (without a personality disorder diagnosis), the risk of developing a Cluster A (eccentric) personality disorder increased fivefold, and fourfold for Cluster C (anxious/avoidant). For Cluster B (impulsive) personality disorders, no significant association was found. This highlights associations between anxiety symptoms and personality disorders, warranting further research and the need for differential diagnosis in adolescents. In addition, the fact that anxiety disorders in childhood are associated with some, but not all, personality disorders in young adulthood presents an interesting finding: Possibly, specific personality disorders may be much more vulnerable to anxiety than others.

Another study by Johnson et al. (1999) using the same community sample found similar correlations for adolescents who were diagnosed with a personality disorder first, and later on with anxiety disorder. Participants diagnosed with a personality disorder at T0 were twice as likely to be diagnosed with an anxiety disorder around five years later.

A recent meta-analysis showed a pooled prevalence for current Generalized Anxiety Disorder in individuals with Borderline Personality Disorder of 16.4% in inpatient samples, and 30.6% in outpatient or community samples (Shah et al., 2023). Notably, other anxiety disorders were not examined here; In an analysis of all anxiety disorders this number may be even higher. Furthermore, anxiety prevalence in young adults is drastically higher than in older populations (Haidt, 2024), which points towards even higher rates among adolescents.

Doering et al. (2018) examined a sample of adults with a variety of anxiety disorders using the STIPO (Clarkin, 2003). A moderate impairment in personality organization was found with little to no difference between different anxiety disorders (Phobias, Panic Disorder, Generalized Anxiety Disorder). In a sample of 97 in- and outpatients in treatment for various anxiety disorders, comorbid personality disorders were found in 64.9% of the sample, further highlighting the high comorbidity between the disorders, although the authors argue that this percentage is somewhat inflated. A linear regression analysis further revealed that only a diagnosed personality disorder showed significant association with personality organization, as measured by the STIPO, but not any of the anxiety disorders. Still, an exclusion of all patients with a diagnosed personality disorder showed significantly worse personality organization in the remaining patient group when compared to controls ($F = 14$). This finding is in line with the psychoanalytic theory underlying the STIPO, postulating a transition from a neurotic personality organization (psychopathology present, but no personality disorder) to a borderline personality organization (personality disorder present). Patients with anxiety disorders but no personality disorder showed STIPO levels of personality organization of around three, indicating a low neurotic or high borderline personality organization, while patients with comorbid personality disorders showed levels of personality organization of around four.

Of particular interest to this thesis are the detailed differences between individual STIPO dimensions and their relation to anxiety presented by Doering et al. (2018). No other studies examining individual dimensions of any STIPO variant compared to measurements of anxiety could be found. Overall, patients with anxiety disorders showed low levels of aggression (including self harm), intact reality testing and moral values. The STIPO dimensions identity, object relations and primitive defenses were significantly worse than in the control group (STIPO-R-A scores ranging from 2.45 to 2.86) and indicate a low neurotic or high borderline personality organization.. Participants scored the worst in the dimension coping/rigidity: 3.04 for panic disorders, 3.36 for Generalized Anxiety Disorder and 3.04 for phobias, all indicating a low borderline personality organization. The elevated scores in coping/rigidity may represent the most important point of intersection between anxiety disorders and personality disorders. This thesis, in part, aims to explore whether these correlations can be replicated in an adolescent sample with personality disorder diagnoses.

Mazreku et al. (2023) adapted the existing LoPF-Q 12-18 (Goth et al., 2018) in cooperation with its initial authors, which is used in this thesis as a secondary measure of personality functioning, in order to track the course of personality development from the age of six to 18. To accomplish this, the self-report questionnaire was adapted to a parent-reported format, which showed great reliability (total scale 0.96) and good construct validity with measures of personality functioning such as the STiP 5.1 (Hutsebaut et al., 2017). As done in this thesis with the original LoPF-Q, the adapted LoPF-Q-PR was compared to the CBCL internalizing score and showed a highly significant and very large ($r = 0.70$) correlation.

Using a sample of 100 in-patient and 100 out-patient participants, Skodol et al. (1995) investigated anxiety and personality disorder comorbidity. In a methodically rigorous process, personality disorder evaluations were performed by two different professionals for each participant, one using the SCID-P and SCID-II (Spitzer et al., 1987), while the other used the IPDE (Loranger et al., 1985). Both interviewers were blind to the results of the other examination, and a personality disorder was only regarded as present if both interviewers confirmed it separately. No significant associations between Cluster A personality disorders and anxiety disorders were found, but results were significant for Cluster B and C personality disorders and personality disorders overall. The probability (OR) of an anxiety disorder occurring with a comorbid personality disorder was elevated by 370% as compared to these disorders occurring separately. The authors particularly underlined major comorbidities between the panic disorders, and Borderline, Avoidant and Dependent Personality Disorders. Social Phobia showed the highest comorbidities overall, particularly with Avoidant Personality Disorder. It should be mentioned that these significant and large associations are likely to be conservative estimates due to the consensus method for confirming personality disorder diagnoses used in this study.

Utilizing a sample of $n=149$ made up of participants with personality disorders, participants with mood disorders and healthy controls, Doubková et al. (2022) examined personality functioning impairment. Among other instruments, the Semi-Structured Interview for Personality Functioning DSM-5 (STiP-5.1) (Hutsebaut

et al., 2017), which measures personality functioning across comparable dimensions to the STIPO-R-A was used. Significant differences in personality functioning were found between all groups, with personality disorders scoring the worst, followed by anxiety and mood disorders. Furthermore, the Beck Anxiety Inventory (BAI) (Beck et al., 1988) was also measured in all groups. No significant differences in anxiety symptoms were found between participants diagnosed with anxiety (n=38) and mood disorders and those diagnosed with personality disorders (n=58), but both groups showed significantly higher values than healthy controls. Participants with personality disorders even showed slightly higher, though not significant, scores on the BAI compared to those with anxiety disorders. In addition and despite the larger sample size, the personality disorder group showed a large standard deviation in anxiety values, indicating more heterogenous results in this group.

Drawing on all aforementioned studies, it can be assumed that a considerable portion of all people diagnosed with personality disorders meet the diagnostic criteria for an anxiety disorder (Górska, 2011; Kasen et al., 1999; Johnson et al., 1999; Shah et al., 2023; Skodol et al., 1995; Doubková et al., 2022). People with personality disorders seem, however, to show additional deficits across multiple dimensions of personality organization and functioning, such as identity, self-functioning, interpersonal functioning, intimacy, object relations, etc. (Doering et al., 2018; Skodol et al., 1995; Doubková et al., 2022). These findings converge with Kernberg's dimensional model of personality pathology, describing a continuum of healthy, neurotic and borderline personality organization. This perspective explains both the common symptoms (in this example anxiety) of a neurotic and borderline personality organization as well as their differences.

Research Importance

The importance of research in the field of adolescent anxiety and personality disorders has been largely laid out. Personality disorders generally show high comorbidity with other psychiatric conditions and differential diagnosis is especially important in the diagnosis of personality disorders.

In light of a recent shift towards diagnosing personality disorders in adolescence, as well as the upcoming changes to the ICD-11 criteria for diagnosing personality disorders dimensionally, additional research in this field is needed. This is further underlined by previous negligence of this area (Fonagy et al., 2015) and by the obligation of the mental health field as a whole to treat a subgroup of clinical adolescents particularly vulnerable to self-harm and suicide.

Though a definitive link between personality organization and anxiety can be assumed based on the literature mentioned in the introduction, vast research gaps in the adolescent field justify exploratory research in this area. Nearly all research used tests and interviews that have not been validated for an adolescent population, hindering replication efforts further. In addition, few studies focused specifically on a clinical population with diagnosed personality disorders.

This thesis aims to tackle all aforementioned difficulties through multiple strategies and provides an overview of associations between anxiety and anxiety regulation strategies in a clinical adolescent population with diagnosed personality disorders, with specific attention paid to the level of personality organization and functioning. This is achieved by using a battery of instruments validated for adolescents, consisting of two measures of personality organization and functioning, as well as three conceptually varying measurements of anxiety.

Research Questions and Objectives

1. Do personality organization and functioning correlate with anxiety in the sample?
 - a. H0: There are no significant correlations between the aforementioned variables.
 - b. H1: There are significant correlations between the aforementioned variables.
2. Does personality organization or functioning show differing correlations between state and trait anxiety?

- a. H0: Correlations between state anxiety and personality organization and functioning are not significantly different to correlations between trait anxiety and personality organisation / functioning.
 - b. H1: Correlations between state anxiety and personality organization and functioning differ significantly from correlations between trait anxiety and personality organization and functioning
- 3. Do all STIPO-RA dimension significantly correlate with anxiety?
 - a. H0: No STIPO dimension shows a significant correlation with anxiety by itself.
 - b. H1: One, several or all STIPO-RA dimensions show a significant correlation with anxiety.

Note: Although the research questions focus on significance, effect sizes are the main point of interest due to the exploratory nature of the thesis.

Hypotheses

Research Question 1: Significant correlations are expected in all comparisons. If any correlations do not reach significance, this will likely be due to the conservative usage of bonferroni corrections.

Research Question 2: Based entirely on theoretical assumptions, personality organization and functioning is expected to correlate stronger with state anxiety than with trait anxiety, though the difference may be very small. According to theoretical assumptions of the STIPO, when confronted with perceived danger, reactions from personality disorder patients may be rigid, inflexible, anxiety-inducing, disassociating and/or somatizing.

Research Question 3: All multiple regression models are expected to reach significance. The dimensions identity, object relations, primitive defenses and coping/rigidity are expected to explain most of the variance as the preliminary work by Doering et al. (2018) indicates.

The strengths of this thesis lie in its large sample size for an *adolescent clinical subpopulation*, especially given that the examinations took around 4,5 hours in total per person. The study also includes various different perspectives (one test rated by therapist, one by a parent and three self reports) contributing to its validity. Furthermore, the inclusion of a control group aids in the statistical analyses because it leads to a more heterogenic distribution of the levels of personality organization.

Methods

Sample, Study Design and Software

The total sample included 101 participants, out of which 69 were in outpatient or inpatient psychiatric care while taking part in the study. The remaining 32 were control group participants, recruited in local schools and currently not in psychiatric care. The mean age of participants was 15.7 ($SD=1.3$), and the majority of participants had austrian citizenship (90%). The vast majority of participants were of female sex (92.1% female, 6.9% male). Regarding gender, 79.2 % identified as female, 9.9% as male, 4.0% as neutral and 3.6% as other (remaining participants did not disclose their gender). Similar gender and sex distributions are reported in other clinical studies (Kaeser et al., 2024; Thomson et al., 2024). As mentioned in the discussion, this distribution only permits the generalization of results to adolescents of female sex and gender, especially since recent evidence hints towards different symptomatology between sexes (Qian et al., 2022). Furthermore, all participants were proficient in german and completed all questionnaires and interviews in this language. While the total sample size included 101 participants, sample sizes for individual subanalyses differ slightly, as not every participant completed every test. This was, in part, due to the integration of the study in day-to-day care at the university clinic. In particular, the Child Behaviour Checklist (CBCL) (Achenbach, 1991) showed a lower sample size, as this questionnaire had to be filled out by a caregiver. In an effort to use all available data, participants were included in each subanalysis if they filled out both personality organization tests, as well as the relevant anxiety measurement of the subanalysis. Individual sample sizes of each subanalysis are reported in the corresponding tables in the results section and did not differ drastically.

The criterias for inclusion were a determined or probable personality disorder diagnosis as measured by the International Personality Disorder Examination (IPDE) (Loranger et al., 1994; Mombour et al., 1996) and sufficient knowledge in german. Exclusion criteria included the presence of an intellectual disability, acute psychosis or acute suicidality. Informed consent was obtained from patients and their legal guardians and the study was approved by the local ethics committee. Patients were and excluded from the study if missing values in any test exceeded 5%. Participants completed a battery of tests more extensive than those included in this study; this included various sociodemographic measures, personality disorder examinations and other tests to determine symptoms of e.g. depression.

Main statistical analyses were done using IBM SPSS Statistics (IBM Corp, 2025). Ridge regressions found in the Appendix also used R Studio (R Core Team, 2025), including the haven (Wickham et al., 2023) and glmnet (Friedman et al., 2010; Tay et al., 2023) packages. Generative AI was used to clarify questions regarding translation (DeepL, 2025; OpenAI, 2025), as well as statistics, citation and operation of statistical software (OpenAI, 2025). All answers were checked and verified, no sentences (except for code found in the appendix) were written by generative AI and no calculations were done by generative AI. Upon request, a more detailed german declaration of the use of generative AI is available, as well as a version history of the document showcasing a human workflow.

Measures

The approach of utilizing both a self-report questionnaire and specifically semi-structured interviews for the diagnosis of personality disorders, as it is used in this thesis, has been recommended by highly cited guidelines (Widiger & Samuel, 2005).

The Structured Interview of Personality Organization in Adolescents (STIPO-R-A) (Laczkovics et al., 2025)

The STIPO-R-A is an adaptation of the German STIPO-R (Clarkin et al., 2016/2020), which in turn is the translation of the STIPO-R (Clarkin et al., 2016). The style of

language of the STIPO-R was adapted to fit adolescents, e.g. by removing more formal expressions, and changing the content of multiple questions regarding areas such as school and romantic relationships to fit the age group. In addition, the dimension reality testing, which was removed in the STIPO-R, but present in previous works, was also included for its clinical utility. In a validity analysis (Laczkovics et al., 2025), the test showed convergent validity with already validated tests for all STIPO domains. The test consists of six dimensions: Identity, object relations, defenses, aggression, moral values and reality testing. Most dimensions include subscales, which are however not explicitly analyzed in this thesis. An overall rating of narcissism is also included, which consists of various items from different dimensions that also measure (or at least indicate) narcissistic features.

The STIPO-R-A consists of 63 items, which are rated based on one or more questions. Deviations from standardized questions are viable and common if the clinician cannot confidently rate the answers based on the given questions alone. Each item is rated on a three point scale with operationalizations as follows:

0 = pathology absent; the trait being queried is not present at all, or, if slightly present, has no impact on respondent's functioning. 1 = the trait being queried is present, and reflective of some pathology, sub-threshold; minor impairment
2 = the trait being assessed is clearly present, and reflects significant to severe pathology; significant to severe impairment.

(Laczkovics et al., 2025)

An example of a short item is Q11, which serves as a measure of identity, self-worth and narcissism: "Does your self-worth alternate between times where you feel special and wonderful, and times where you feel small and inferior? If yes, can you describe these fluctuations, maybe with an example?" A rating of zero would correspond to stable, positive and realistic self-esteem, while a rating of one indicates a certain instability of self-esteem, strongly affected by outside events. A rating of two can indicate a very to immensely unstable, a thoroughly negative, or an

obviously grandiose and unrealistically positive self-esteem. Since all extremes of this particular spectrum are rated as a two, this item in particular showcases a focus on the severity of personality pathology, as opposed to a categorizing approach.

Interrater reliability was measured across twelve raters from two research centers with mostly good to excellent results. Intraclass correlation coefficients were .83 for identity, .85 for object relations, .69. for primitive defenses, .67 for coping, .85 for aggression, .53 for moral values, .84 for reality testing and .85 for the total level of personality organization.

To date, internal consistencies of the STIPO-R-A have not been calculated, but previous studies of the long-form german STIPO (Doering et al., 2013) have shown satisfactory to excellent results. Cronbach's Alpha was .97 for the total test, .93 for identity, .88 for object relations, .88 for primitive defenses, .80 for coping and rigidity, .83 for aggression, .84 for moral values and .69 for reality testing. Internal consistencies for the STIPO-R-A are expected to be somewhat lower due to reduced length of the test, but still satisfactory.

Levels of Personality Functioning Questionnaire 12-18 (LoPF-Q 12-18) (Goth et al., 2018)

The LoPF-Q 12-18 is an instrument for measuring impairments in personality functioning in adolescents. It was created in accord with the DSM-V alternative model for Personality Disorders (American Psychiatric Association, 2022) and fits the ICD-11 (World Health Organization, 2025) diagnostic recommendations for personality disorders. The test measures personality functioning across four domains: Identity, self-direction, empathy and intimacy, with each domain consisting of two subscales. Items are rated on a four point Likert-scale, from zero (no) to four (yes). Domains showed medium to high intercorrelations, and Cronbach's alpha was measured at .97 for the entire test, .92 for identity, .95 for self-direction, .88 for empathy and .92 for intimacy. The authors explicitly regard the use of the total scale (as it is used in this thesis) as appropriate due to its high internal consistency. Example items include "I often feel lost, as if I'm lacking an inner centre" (identity;

congruence), “I often don’t understand others reactions to my behaviour” (self-direction; goal-orientedness).

State-Trait Anxiety Inventory (Laux et al., 1981)

The State-Trait Anxiety Inventory is the German version of the English original by Spielberger et al. (1970). In addition to trait anxiety, which is what most anxiety tests usually measure, it also tests for state anxiety. The test defines state anxiety as a temporary emotional state, which varies in its intensity over time, as opposed to trait anxiety, which represents a relatively stable personality trait. Internal consistency was rated at $\alpha = .90$ for both scales. As expected, retest reliability for state anxiety was much lower than that of trait anxiety, at $r = .77$ to $r = .90$ as compared to $r = .22$ to $r = .53$). Items are rated on an eight point Likert scale ranging from zero (does not apply to me at all) to eight (applies fully to me) and are formulated very concisely such as: “I am relaxed” (State Anxiety, inverse rating), or “I tend to get tired fast” (Trait Anxiety).

Questionnaire for the Assessment of Emotional Regulation in Children and Adolescents (Grob & Smolenski, 2005)

The “Fragebogen zur Erhebung der Emotionsregulation bei Kindern und Jugendlichen” [=Questionnaire for the Assessment of emotional regulation in children and adolescents] is not available in English and is not limited to the diagnosis of certain disorders, but represents a larger instrument also used for measuring psychosocial competences and mental resources.

Participants rate on a five point Likert-scale (from almost never to almost always) how they act when experiencing emotions such as anger, anxiety and sadness. The items are then categorized into adaptive and maladaptive strategies. For the purpose of this thesis, only the 30 items which measure strategies when experiencing anxiety are included. This does not represent a problem since internal consistencies and retest reliability were also measured separately for each emotion in the original study. For adaptive strategies, Cronbach’s alpha for anxiety was measured at .83,

and retest reliability at .63, for maladaptive strategies. Example items, measuring strategies for dealing with anxiety, include: "When I'm afraid, I talk to someone about how I'm feeling", or "When I'm afraid, I keep my feelings to myself".

Child Behaviour Checklist (CBCL) (Achenbach, 1991)

The CBCL is a tool for assessing behavioural, somatic and emotional problems, as well as social competences in children and adolescents aged 6-18. As opposed to other previously cited instruments, the CBCL is rated by a caregiver of the patient. The tests measures three competence scales and eight syndroms (e.g. somatic problems, social isolation, attention deficits). For the purpose of this thesis, only the scale anxious/depressed is examined. Even though this scale therefore does not measure anxiety in an isolated fashion, as the other tests do, it was still included in this thesis because the rating from an additional perspective (therapist, child and parent) provides additional relevance and validity for the entire thesis. While the internal consistency for all behavioural problems combined was measured at Cronbach's Alpha = .93, the internal consistencies for the anxious/depressed scale are not available. Among other ratings and demographic descriptions, parents rate items on a three point Likert-scale from zero (not applicable to my child) to two (exactly or often applicable to my child). Examples items for the anxious/depressed scale include: "My child is afraid to think or do something bad", or "My child is too afraid or timid".

Statistical Analyses

All analyses in this thesis were two-tailed and all statistical analyses, including additional analyses in the case of assumption violations, were determined before the data was analyzed by the author. Only proposed post-hoc power analyses were deemed unnecessary given highly significant results. An exposé of the study plan is available upon request.

In a first step, spearman correlations were used to determine associations between all predictor and outcome variables. Pearson correlations showed similar results but due to the ordinal value of STIPO-RA scores and slight violations of normality due to

the small control group size, spearman correlations were deemed to be the safer and more robust measure.

Assumption test were performed and are found in Appendix C. The majority of assumptions for linear regressions were fulfilled in all analyses. Notable exceptions are Levene-Tests, which often indicated heterogenous variances. This exception could be safely ignored because it only affects the p-values, which were degrees of magnitude below .01 in the main analyses. See Appendix C for additional reasoning and detailed SPSS outputs.

Research Question 1: Do personality organization and functioning correlate with anxiety in the sample?

Eight Bonferroni-corrected simple linear regressions were conducted comparing the predictor (STIPO-RA, LoPF-Q) and outcome variables (STAI-Trait, STAI-Anxiety, FEEL-KJ, CBCL).

Research Question 2: Does personality organization show differing correlations between state and trait anxiety?

Steiger's z-test to compare two dependent correlations (STIPO-RA;STAI-State & STIPO-RA; STAI-Trait) were used.

Research Question 3: Do all STIPO-RA dimension significantly correlate with anxiety?

Four bonferroni-corrected multiple regressions models were calculated. Predictor variables are all separate STIPO-RA dimensions in each model, outcome variables are STAI-Trait, STAI-State, FEEL-KJ and CBCL in each model respectively. Due to high (but not critical) variance inflation factors (VIF), robust ridge regressions were additionally calculated and are found in the Appendix.

Results

Descriptive Statistics

Table 2 shows descriptive statistics of the sample for all groups, as well as the sample sizes for all analyses. Notably, both the STIPO-RA and LoPF-Q showcase a clear difference in personality functioning as well as organization. As visible in the mean score of the STIPO-RA in the personality disorder group, the clinical sample mostly showed mild to moderate personality disorders. Differences between difference anxiety measures in the personality disorder group and the control group are already visible, particularly in the CBCL score.

Table 2
Descriptive Statistics

Measurements	Both groups		Clinical Group		Control Group	
	n	M(SD)	n	M(SD)	n	M(SD)
STIPO-RA Total	101	2.83(1.48)	69	3.64(.68)	32	.91(1.00)
LoPF-Q Total	101	2.03(.58)	69	2.30(.36)	32	1.44(.53)
STAI-Trait	101	2.80(.60)	69	3.08(.39)	32	2.17(.52)
STAI-State	101	2.64(.58)	69	2.90(.41)	32	2.05(.44)
FEEL-KJ adaptive regulation	98	2.96(.61)	66	2.75(.58)	32	3.39(.42)
FEEL-KJ maladapt. regulation	98	3.08(.73)	66	3.37(.61)	32	2.48(.58)
CBCL anxious/depressed	95	.69(.52)	63	.93(.47)	32	.22(.23)

Note. The total score of the STIPO-RA is reported in the same way as other variables here despite its ordinal measurement to provide a clearer and more interpretable table.

Correlations and Simple Regression Models

Spearman correlations in Table 3 showcase moderate to large associations between the outcome and predictor variables. All results were highly significant, even after the conservative usage of Bonferroni-corrections. All different anxiety measures showed similarly high correlations, except for the FEEL-KJ adaptive regulation strategies. Steiger's z-test showed no significant difference in correlations of STAI-State and STAI-Trait to the STIPO-RA total score.

Table 3

Spearman Correlations between predictor and outcome variables

Outcome	n	STIPO-RA	LoPF-Q
STAI-State	101	.609***	.587***
STAI-Trait	101	.557***	.685***
FEEL-KJ adaptive regulation strategies	98	-.377***	-.423***
FEEL-KJ maladaptive regulation strategies	98	.501***	.711***
CBCL anxious/depressed	95	.607***	.530***

Note. Spearman correlations for different STIPO-RA dimensions are found in the Appendix. Parts of the STIPO-RA and LoPF-Q show construct overlap with anxiety measurements contributing to high correlations.

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Simple linear regression models using the STIPO-RA Total Score as a predictor variable and each outcome variable respectively as a predictor (Table 4) showed very significant results in all analyses. The STAI showed the highest explained variances (up to $R^2=.457$), followed by the CBCL anxious/depressed scale and adjusted R^2 were nearly identical.

Table 4

Simple linear regression model, Predictor: STIPO-RA Total Score

Outcome	n	R	R^2	Adj. R^2
STAI-State	101	.676***	.457	.452
STAI-Trait	101	.650***	.423	.417
FEEL-KJ adaptive regulation strategies	98	.378***	.143	.134
FEEL-KJ maladaptive regulation strategies	98	.528***	.279	.271
CBCL anxious/depressed	95	.602***	.362	.357

Note. Parts of the STIPO-RA show construct overlap with anxiety measurements by design, contributing to explained variances.

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Simple linear regression models using the LoPF-Q total score as a predictor variable and each anxiety measure as an outcome variable respectively (Table 5) showed mostly similar results to the aforementioned results in Table 3. However, the LoPF-Q showed higher explained variance in the analyses examining the STAI-Trait (and the FEEL-KJ maladaptive regulation strategies). Adjusted R^2 of theses analyses were exceptionally high, exceeding values of 0.5.

Table 5*Simple linear regression models, Predictor: LoPF-Q Total score*

Outcome	n	R	R ²	Adj. R ²
STAI-State	101	.651***	.423	.418
STAI-Trait	101	.770***	.593	.589
FEEL-KJ adaptive regulation strategies	98	.431***	.186	.178
FEEL-KJ maladaptive regulation strategies	98	.717***	.514	.509
CBCL anxious/depressed	95	.473***	.224	.215

Note. Parts of the LoPF-Q show construct overlap with anxiety measurements by design, contributing to explained variances.

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Analyses of STIPO-RA Dimensions

Multiple linear regressions in Table 6 showed insignificant results after applying Bonferroni-corrections. Yet, one clear tendency remains visible: The STIPO-RA domain defenses seems to be the best predictor of anxiety measures when compared to the other domains. This finding is further supported by robust ridge regressions found in Appendix A. Results of the multiple linear regression model using the maladaptive regulation strategies of the FEEL-KJ as a predictor variable showed model overfitting and should not be interpreted. Steiger's z-test showed no significant difference in correlations of STAI-State and STAI-Trait to the LoPF-Q total score.

Table 6*Standardized Beta Coefficients of multiple regression analyses*

Outcome	Total Model R ²	STIPO-RA identity	STIPO-RA object relations	STIPO-RA defenses	STIPO-RA aggression	STIPO-RA moral values	STIPO-RA reality testing	STIPO-RA narcissism
STAI-State	.466	-.098	.195	.466*	.098	-.220	.057	.178
STAI-Trait	.516	-.190	.271	.502*	.055	-.287*	.161	.178
FEEL-KJ adaptive	.171	.180	-.442*	-.201	-.177	.013	.063	.172
FEEL-KJ maladaptive	.407 ¹	-.557*	.359	.405	.111	-.188	.376**	.106
CBCL anx/depr.	.391	.277	.157	.364	-.087	-.165	-.023	.036

Note. Number of participants were identical to those reported in the simple linear regression analyses. Due to high Variance Inflation Factors, a robust ridge regression was performed to confirm the ratios of coefficients to one another, confirming the results. See Appendix A for more details.

¹ Model overfitting and potential bias due to self-report questionnaires. Interpret with severe caution and refer to ridge regressions.

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Discussion

Research Questions and Hypotheses

Overall, personality organization and functioning were shown to be significant predictors of various measurements of anxiety.

The first and most important hypotheses on the correlations between the constructs of personality organization and functioning and anxiety was confirmed. Correlations and simple regression analyses yielded moderate to very large effect sizes and very significant results. Despite previous literature indicating strong links between the constructs of personality organization, as well as functioning, and anxiety, the magnitude of the effect sizes was still surprising. Explained variances as high as $R^2=.593$ showcase construct overlap between the measurements, which carries important implications for practical diagnostics that are discussed later. The results of the FEEL-KJ anxiety regulation analyses show that personality organization as well as functioning, are very good predictors of anxiety regulation strategies. In particular, maladaptive strategies were considerably more present in patients with lower personality functioning. While adaptive strategies were also less present, the effect was weaker for this measure. This subanalysis presents a novel finding, since no other studies examining both anxiety regulation strategies and personality disorder diagnosis instruments could be found.

The second research question, hypothesizing a difference in correlation between measures of personality organization, as well as functioning could not be confirmed. Differences between state and trait anxiety were too small to reach significance. Even in a larger sample, differences in correlations between state and trait anxiety and personality measurements are likely too small to carry any important implications.

The third research question, examining differences in correlations between individual STIPO-RA dimensions and measurements of anxiety showed inconclusive and mostly insignificant results. Results of the multiple regression analyses to determine which STIPO-RA dimensions serve as the best predictors of anxiety did not reach

significance, in part due to Bonferroni-corrections. High variance inflation factors (up to nine) resulting from considerable intercorrelations between individual STIPO-RA dimensions seem to make analyses of individual dimensions difficult. This could be solved with larger sample sizes, but those remain difficult to attain obtain due to a time intensive study procedure requiring a clinical adolescent subpopulation. Still, the multiple linear regression models, as well as robust ridge regressions found in the Appendix, indicate that defenses (Both primitive and higher defenses) is the best predictor of anxiety, which is supported by previous correlational data (Doering et al., 2018) and fits theoretical assumptions. Object relations and moral values seem to be the next best predictors, but interpretation of these results requires caution. Based on the underlying theory of the STIPO-RA, object relations may be a good predictor of social anxiety, as dysfunctional object relations cause difficulties in interpreting others behaviours and others opinions of oneself. The negative relationship to moral values can be easily explained theoretically, as patients high in anxiety typically avoid risky or illegal behaviour.

Surprisingly, the personality disorder group did not show large standard deviations in anxiety, indicating more homogenous anxiety levels than expected; Nearly all participants showed high anxiety levels. This could be due to the sampling, as people with personality disorders who show more antisocial tendencies, externalising behaviour and less anxiety may also seek less help from mental institutions and therefore remain underrepresented in studies. Female borderline personality disorder patients have been shown to show higher levels of anxiety than male patients (Qian et al., 2022) and more internalizing symptoms in general, which may have contributed to this.

Comparisons to Previous Literature

Many factors hinder meaningful comparison of the results of this thesis and literature described in the introduction: a) Methods between studies examining anxiety and personality organization and functioning differ drastically, and a variety of different diagnostic instruments are used. b) Most studies focused on adult populations. c) Sample selection may play a critical role, as some studies did not work with clinical samples. d) The majority of studies did not examine anxiety in people with anxiety

disorders, but personality organization in people with anxiety disorders. e) Recent rises in adolescent psychopathology (Haidt, 2024), especially anxiety, complicate comparisons of studies published in other decades.

Because of these accumulating factors, only very few comparisons between the results of this thesis and studies listed in the introduction can be made. While this thesis overall supports previously found associations between anxiety and personality organization as well as functioning, further research on clinical adolescent populations would be required to draw more meaningful conclusions out of comparisons.

Mazreku et al. (2023) found a correlation between the LoPF-Q and the CBCL internalizing score of $r = .70$. This thesis only examined a subscore of the CBCL internalizing score (anxious/depressed) and found a comparable correlation of $\rho = .53$. It is unclear whether the differences in correlations are caused by differing correlations in clinical populations as compared to school samples, by differing correlations for the individual subscale or by chance.

Doubková et al. (2022) found no significant differences in measures of anxiety between people diagnosed with anxiety and people diagnosed with personality disorders. Though measures of anxiety differ between this thesis and the aforementioned study, the personality disorder group in this thesis showed highly elevated levels of anxiety, supporting the results of Doubková et al. (2022).

The vast majority of literature in the field examined comorbidities between anxiety and personality disorders (Doering et al., 2018; Skodol et al., 1995; Shah et al., 2023; Górska, 2011; Kasen et al., 1999). Although this thesis is not strictly about comorbidity, as the used anxiety measurement instruments are auxiliary diagnostic tests as compared to other measures such as the BAI (Beck et al., 1988), the results fit the larger scientific picture. Unfortunately, effect sizes can't be compared directly and thus differences in associations of the aforementioned constructs between adults and adolescents can't be confirmed. However, the magnitude of associations in adolescents found in this thesis and in Mazreku et al. (2022), point toward a

potentially stronger connection between the constructs in adolescents, warranting further research.

Clinical Relevance and Implications

The diagnostic value of the STIPO-RA was shown to go beyond the mere categorical differentiation between “personality disorder present” or “personality disorder not present” (Laczkovics et al., 2025), allowing the dimensional diagnosis of personality disorder severity, playing an important role in therapy planning.

When addressing practical implications it needs to be taken into account that the diagnostic value of a long and semi-structured interview such as the STIPO-RA extends beyond the quantitative results of the instrument. In the interview, which often spans two hours, therapists are generally able to obtain information which is not easily quantifiable by any instruments, such as transference, facial expressions or attitudes of the patient toward the therapist. Combining the results of diagnostic instruments with the practical experience of therapists allows for precise therapy planning and assessment of possible comorbidities. Simple linear regression models showed that the total score of measurements of personality organization serve as good statistical predictors of anxiety and anxiety regulation strategies. This result may be of use in practical diagnostics, as personality organization provides a rough estimate of the severity of anxiety and anxiety regulation problems.

Multiple linear regressions models, confirmed by ridge regressions, showed that the domain defenses was responsible for a significant part of the explained variance. Very high spearman correlations and R^2 indicate that parts of the STIPO-RA show construct overlap with various measurements of anxiety. This overlap is not the result of insufficient validity of the STIPO-RA: It is present by design, as personality organization also allows for the assessment of a neurotic personality structure (Kernberg, 1981), which does not meet the criteria for a personality disorder diagnosis.

This thesis showcases why the author of the German version of the STIPO and expert in personality disorders, Stephan Doering, considers them to be the diagnosis with the highest error rate (Hager, 2025).

The main possible practical implication of this thesis concerns differential diagnoses of anxiety disorders and personality disorders: In this sample, elevated (clinical) levels of anxiety are present in nearly all adolescent personality disorder patients. Therefore, in a small subset of patients, clinical levels of anxiety may be better explained as symptoms of a personality disorder, as compared to those of an anxiety disorder. Given sufficient indications, for example extended mental health care histories, multiple diagnoses, or indications of decreased personality functioning, an assessment of personality organization in anxious patients may provide diagnosticians with valuable information leading to a more accurate diagnosis. The failure to diagnose personality disorders in adolescents can potentially lead to grave consequences (Cannon & Gould, 2022).

Limitations

This thesis remains exploratory and can only provide a rough estimation of the links between anxiety and personality organization, as well as functioning, which limits potential implications. The lack of comparable studies in adolescent populations further limits the interpretation of results.

The sample of this thesis primarily consisted of adolescents of female sex and the sample size as well as the sex distribution does not enable a meaningful analysis of male or intersex subsamples. The same applies for gender, whereby the sample sizes of male or other genders are not sufficient to be interpreted on their own.

Further studies on this topic should utilize larger control groups to guarantee a more even mix of different levels of personality organization, as most participants in this study showed a personality organization of Borderline 1 or 2. The larger research project was focused on validating the STIPO-RA, and a larger control group was not necessary for this endeavour.

A recent scoping review (Qian et al., 2022) examining sex differences in Borderline Personality Disorder found that males presenting with Borderline Personality Disorder showed significantly more externalizing symptoms (e.g. aggressiveness), while females with Borderline Personality Disorder showed more internalizing symptoms, as well as differing comorbidities between sexes. Based on this study, comorbidities between anxiety and personality disorders could possibly be lower in male populations. Therefore, the author advises strongly against generalizing the results to a male population.

Further Research

The analyses done in this thesis examined anxiety and anxiety regulations, as well as a combined measure of anxiety and depression. Explained variances and correlations between other measures of psychopathology and personality organization/functioning were not considered and could be investigated in further analyses. Based on the underlying theoretical understanding of personality organization, similar results could be plausible for other measurements of psychopathology. The domains aggression and moral values may serve as a good predictor of antisocial tendencies, while reality testing should by design be related to measures of psychotic symptoms. Furthermore, defenses may also serve as a good statistical predictor of depressive symptoms and object relations may show higher coefficients if social anxiety in particular is examined.

As briefly touched on before, the magnitude of correlations found in this thesis and in Mazreku et al. (2022) could indicate a larger association between personality organization, as well as functioning, and anxiety in adolescents, as compared to adults. A similar study design examining adult populations could provide critical insights that could indicate to what degree findings in adult populations can be generalized to adolescent populations.

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Appendix A: Abstracts

English abstract

Recent expert opinions and national guidelines recommend the use of measures of personality functioning to diagnose personality disorders in adolescents and current data also shows rising levels of anxiety in adolescents. Previous research indicates large associations between anxiety and personality functioning, as well as organization, but studies with adolescent participants remain sparse. Using a sample of 69 personality disorder patients and 32 control group participants, this thesis aimed to examine associations between anxiety and personality functioning, as well as organization. A battery of clinical interviews, self-report questionnaires as well as caregiver-report questionnaires were completed by participants and their legal guardians. This included measurements of personality organization, as well as functioning, state and trait anxiety, anxiety regulation strategies and a scale examining both anxious and depressive symptoms. The clinical sample showed homogenously elevated anxiety levels. Significant correlations ranging between multiple measurements of anxiety and personality functioning were found. Absolute values of correlations (one scale included reverse scoring) ranged from $\rho = .37$ to $\rho = .67$. Simple linear regression models utilizing personality organization, as well as functioning, as predictors and measures of anxiety as outcomes resulted in explained variances ranging from $R^2 = .14$ to $R^2 = .59$. Multiple linear regressions to determine influences of individual subscales of a personality organization measurement on anxiety showed inconclusive results. Overall, results indicate that relations between anxiety and personality organization, as well as functioning, in adolescents are comparable to those in adults. Practical implications concern differential diagnostics: Given sufficient indications in anxious adolescents, such as indications of low personality functioning, measures of personality organization or functioning may provide additional diagnostic value.

German Abstract

Aktuelle nationale Leitlinien sowie Expertenartikel empfehlen die Verwendung von Tests zur Messung von Persönlichkeitsfunktion in der Diagnostik von Persönlichkeitsstörungen im Jugendalter. Weiters wurde in aktuellen Daten ein Anstieg von Angstsymptomatik bei Jugendlichen verzeichnet. Bisherige Forschungsergebnisse zeigten hohe Verbindungen zwischen Angstsymptomatik und Persönlichkeitsfunktion sowie Persönlichkeitsorganisation, jedoch ist die Forschungslage bei Adoleszenten spärlich. Mit einer Stichprobe von 69 Persönlichkeitsstörungspatient*innen sowie 32 Kontrollgruppenteilnehmer*innen untersuchte diese Arbeit Relationen zwischen Messungen von Angst und Persönlichkeitsorganisation sowie -funktion. Dabei wurden klinische Interviews, Fragebögen zur Selbsteinschätzung sowie Einschätzungen von Erziehungsberechtigten verwendet. Es wurden Persönlichkeitsorganisation und -funktion, State-Angst und Trait-Angst und Angstregulationsstrategien gemessen sowie eine kombinierte Skala von ängstlicher und depressiver Symptomatik verwendet. Die klinische Stichprobe zeigte homogen erhöhte Angstwerte. Signifikante Spearman-Korrelationen zwischen verschiedenen Messungen von Angst und Persönlichkeitsorganisation sowie -funktion wurden gemessen. Beträge von Korrelationen (eine Skala verwendete umgekehrte Wertung) reichten von $p = .37$ bis $p = .67$. Simple lineare Regressionsmodelle mit Persönlichkeitsfunktion bzw. -organisation als Prädiktorvariablen und Angstmessungen als Outcome-Variablen zeigten erklärte Varianzen von $R^2 = .14$ bis $R^2 = .59$. Multiple lineare Regressionsmodelle zur Darstellung der Einflüsse von Subskalen eines Persönlichkeitsorganisationstests auf Angst zeigten uneindeutige Ergebnisse. Allgemein waren die Relationen von Angst und Persönlichkeitsorganisation sowie -funktion im Jugendalter vergleichbar mit Studien an Erwachsenen. Praktische Implikationen beziehen sich auf Differentialdiagnostik: Wenn bei Adoleszenten mit Angstsymptomatik gewisse Indikatoren wie z.B. Verdacht auf niedrige Persönlichkeitsfunktion vorliegen, kann eine Messung von Persönlichkeitsorganisation oder -funktion die diagnostische Genauigkeit erhöhen.

Appendix B: Supplementary Tables and Detailed Ridge Regressions

Supplementary Tables

Supplementary Table 1

Spearman correlations between STIPO dimensions and anxiety measurements

Outcome	n	STIPO- RA identity	STIPO- RA object relations	STIPO- RA defenses	STIPO- RA aggress- ion	STIPO- RA moral values	STIPO- RA reality testing	STIPO- RA narcissm
STAI-State	105	.560***	.602***	.607***	.474***	.373***	.486***	.517***
STAI-Trait	105	.544***	.602***	.613***	.456***	.346***	.543***	.493***
FEEL-KJ adaptive	98	-.321***	-.400***	-.343***	-.337***	-.251*	-.313**	-.296**
FEEL-KJ maladaptive	98	.426***	.542***	.516***	.463***	.316**	.568***	.430***
CBCL anx/depr.	96	.597***	.586***	.617***	.430***	.408***	.623***	.520***

Note. Spearman correlations must be interpreted with severe caution, as they are affected by very high intercorrelations between STIPO-RA dimensions. Regressions give a clearer picture of actual relationships between the variables.

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

Supplementary Table 2*Un(!)standardized Beta Coefficients of multiple regression analyses*

Outcome	Total Model R ²	STIPO- RA identity	STIPO- RA object relations	STIPO- RA defenses	STIPO- RA aggression	STIPO- RA moral values	STIPO- RA reality testing	STIPO- RA narcissm
STAI-State	.466	-.049	.100	.246*	.040	-.136	.038	.105
STAI-Trait	.516	-.099	.145	.267*	.024	-.185*	.110	.110
FEEL-KJ adaptive	.171	.093	-.230*	-.108	-.077	.008	.043	.104
FEEL-KJ maladaptive	.407 ¹	-.345*	.224	.263	.058	-.148	.310**	.077
CBCL anx/depr.	.391	.126	.071	.173	-.035	-.097	-.004	-.020

* p-values are indicated via *, whereby $p < .05 = *$, $p < .01 = **$, $p < .001 = ***$

¹ Model overfitting and potential bias due to self-report questionnaires. Interpret with severe caution and refer to ridge regressions.

Supplementary Table 3*Confirming results of multiple linear regression via Ridge regression*

Outcome	Best fitting Lambda	STIPO- RA identity	STIPO- RA object relations	STIPO- RA defenses	STIPO- RA aggress- ion	STIPO- RA moral values	STIPO- RA reality testing	STIPO- RA narcissm
STAI-State	.140	-.046	.100	.243	.040	-.135	..038	.105
STAI-Trait	.095	-.096	.148	.274	.024	-.184	.110	.110
FEEL-KJ adaptive	1.171	.074	-.214	-.010	-.073	.013	.037	.093
FEEL-KJ maladaptive	.94	-.301	.212	0.237	.057	-.146	.305	.071
CBCL anx/depr.	.74	.123	.072	.169	-.033	-.094	-.003	.022

Note. Best fitting Lambda was obtained using standardized coefficients by cross-validating the mean squared error. Shrinking of Beta coefficient is to be expected with this method, ratios of individual coefficients confirm the results of the multiple linear regression. The corresponding cross-validating curves and R-Studio Code is found below.

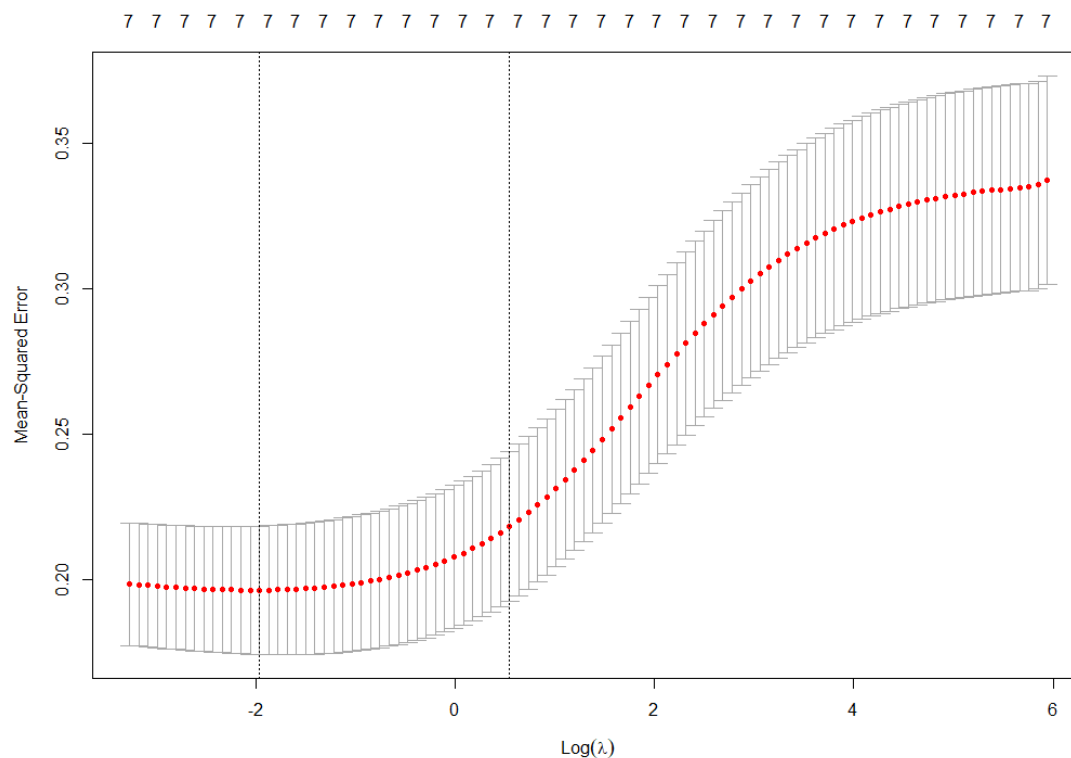
Details on Multiple and Ridge Regressions

STIPO-RA and STAI_State analyses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,683 ^a	,466	,426	,44057470355

a. Predictors: (Constant), stipo_Na, stipo_Re, stipo_Ag, stipo>We, stipo_Ob, stipo_Ab, stipo_Id

Coefficients ^a								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1,607	,129		12,433	<,001		
	stipo_Id	-,049	,119	-,098	-,412	,681	,102	9,810
	stipo_Ob	,100	,089	,195	1,127	,263	,192	5,210
	stipo_Ab	,246	,114	,466	2,151	,034	,123	8,154
	stipo_Ag	,040	,050	,098	,812	,419	,396	2,526
	stipo>We	-,136	,076	-,220	-1,783	,078	,378	2,646
	stipo_Re	,038	,085	,057	,445	,658	,345	2,897
	stipo_Na	,105	,097	,178	1,086	,280	,214	4,678
a. Dependent Variable: stai_state_mean								



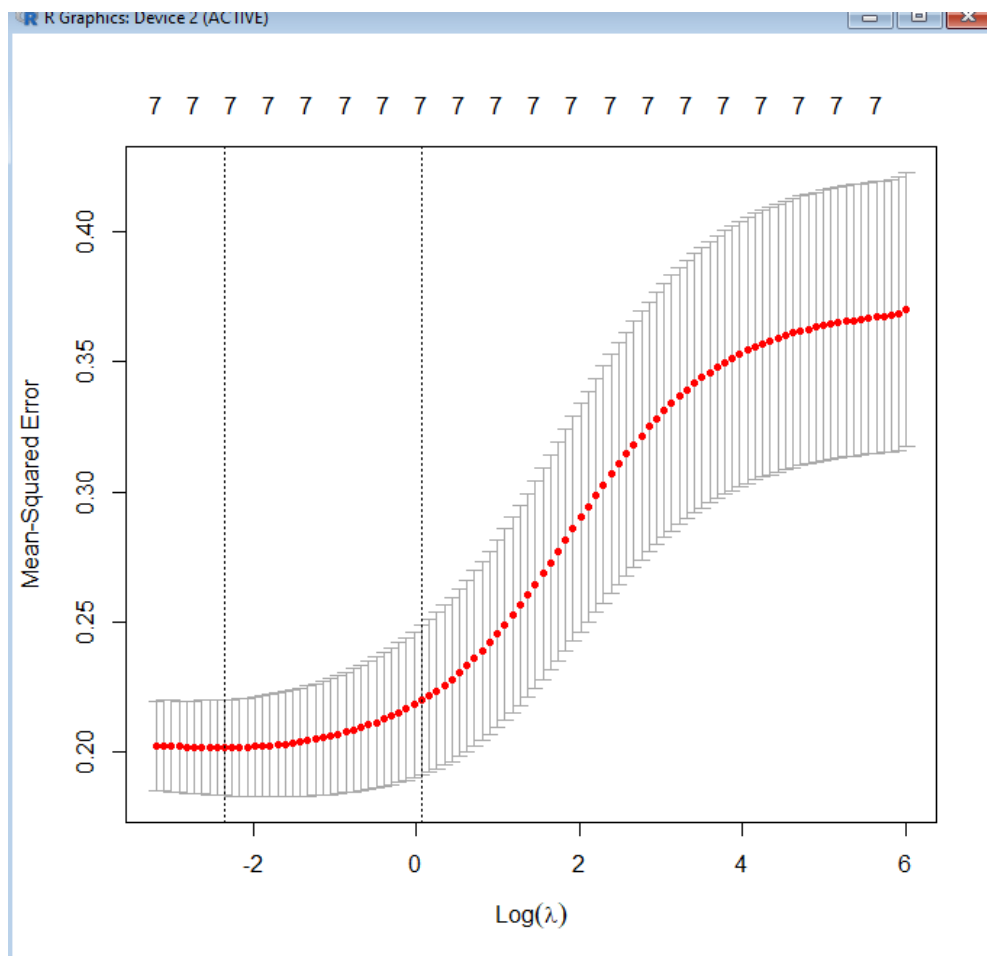
STIPO-RA and STAI_Trait analyses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,683 ^a	,466	,426	,44057470355

a. Predictors: (Constant), stipo_Na, stipo_Re, stipo_Ag, stipo_We, stipo_Ob, stipo_Ab, stipo_Id

Coefficients ^a								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	1,701	,128	13,271	<,001			
	stipo_Id	-,099	,118	-,839	,404	,102	9,810	
	stipo_Ob	,145	,088	,271	,104	,192	5,210	
	stipo_Ab	,276	,113	,502	,017	,123	8,154	
	stipo_Ag	,024	,049	,055	,631	,396	2,526	
	stipo_We	-,185	,075	-,287	,016	,378	2,646	
	stipo_Re	,110	,084	,161	,194	,345	2,897	
	stipo_Na	,110	,096	,178	,255	,214	4,678	

a. Dependent Variable: stai_trait_mean



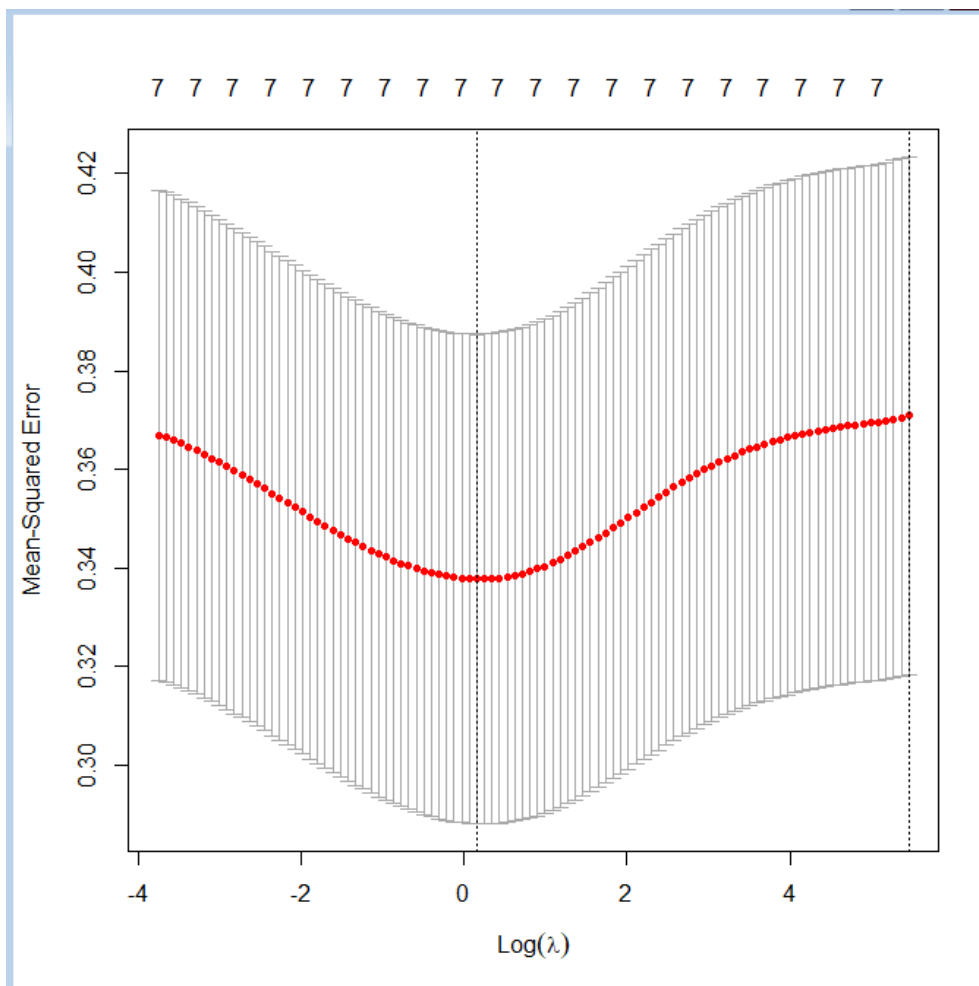
STIPO-RA and FEEL_KJ adaptive anxiety regulation analyses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,413 ^a	,171	,106	,57294

a. Predictors: (Constant), stipo_Na, stipo_Re, stipo>We, stipo_Ag, stipo_Ob, stipo_Ab, stipo_Id

Coefficients ^a								
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	VIF
1	(Constant)	3,489	,167		20,944	<,001		
	stipo_Id	,093	,153	,180	,607	,545	,104	9,586
	stipo_Ob	-,230	,115	-,442	-1,995	,049	,188	5,330
	stipo_Ab	-,108	,145	-,201	-,744	,459	,127	7,891
	stipo_Ag	-,077	,075	-,177	-1,030	,306	,311	3,211
	stipo>We	,008	,104	,013	,082	,935	,363	2,756
	stipo_Re	,043	,111	,063	,387	,700	,349	2,865
	stipo_Na	,104	,136	,172	,764	,447	,182	5,490

a. Dependent Variable: feel_adapt_mean



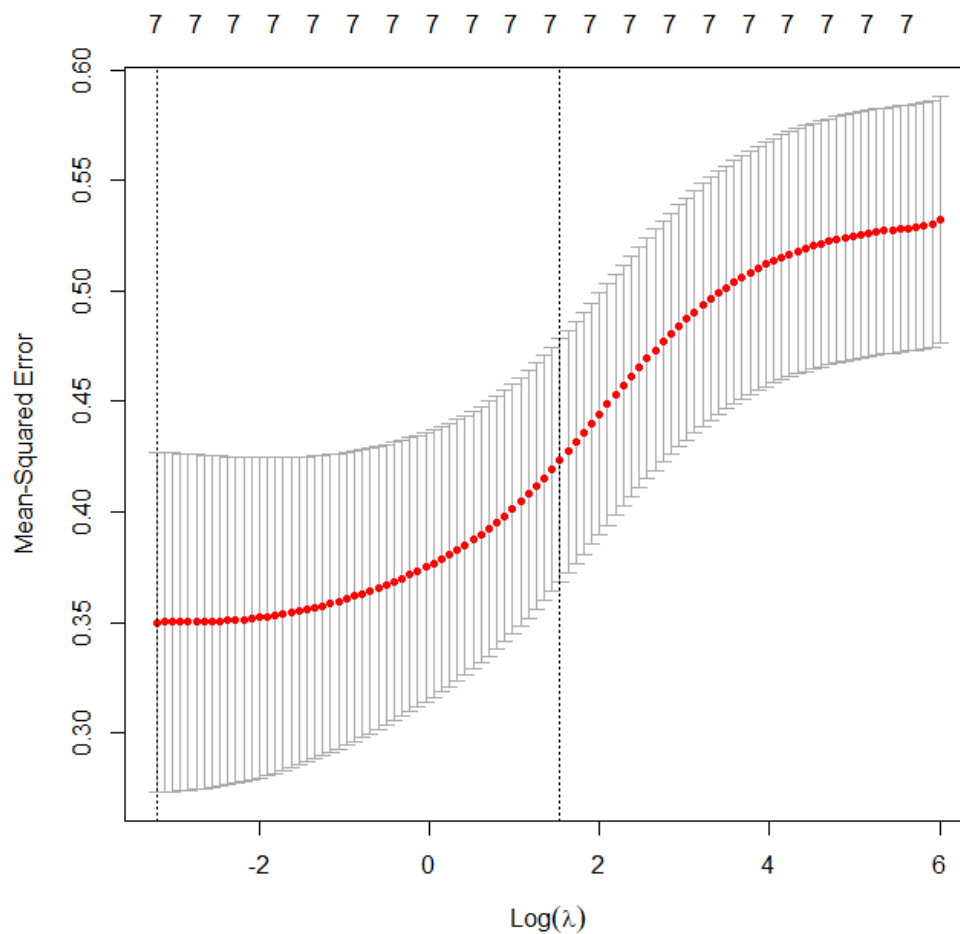
STIPO-RA and FEEL_KJ maladaptive anxiety regulation analyses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,638 ^a	,407	,361	,58298

a. Predictors: (Constant), stipo_Na, stipo_Re, stipo>We, stipo_Ag, stipo_Ob, stipo_Ab, stipo_Id

Coefficients ^a								
Model	Unstandardized Coefficients			Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
	B	Std. Error					Tolerance	VIF
1	(Constant)	2,039	,170		12,028	<,001		
	stipo_Id	-,345	,155	-,557	-2,216	,029	,104	9,586
	stipo_Ob	,224	,117	,359	1,915	,059	,188	5,330
	stipo_Ab	,263	,148	,405	1,777	,079	,127	7,891
	stipo_Ag	,058	,076	,111	,762	,448	,311	3,211
	stipo>We	-,148	,106	-,188	-1,398	,166	,363	2,756
	stipo_Re	,310	,113	,376	2,735	,008	,349	2,865
	stipo_Na	,077	,138	,106	,555	,580	,182	5,490

a. Dependent Variable: feel_mal_mean



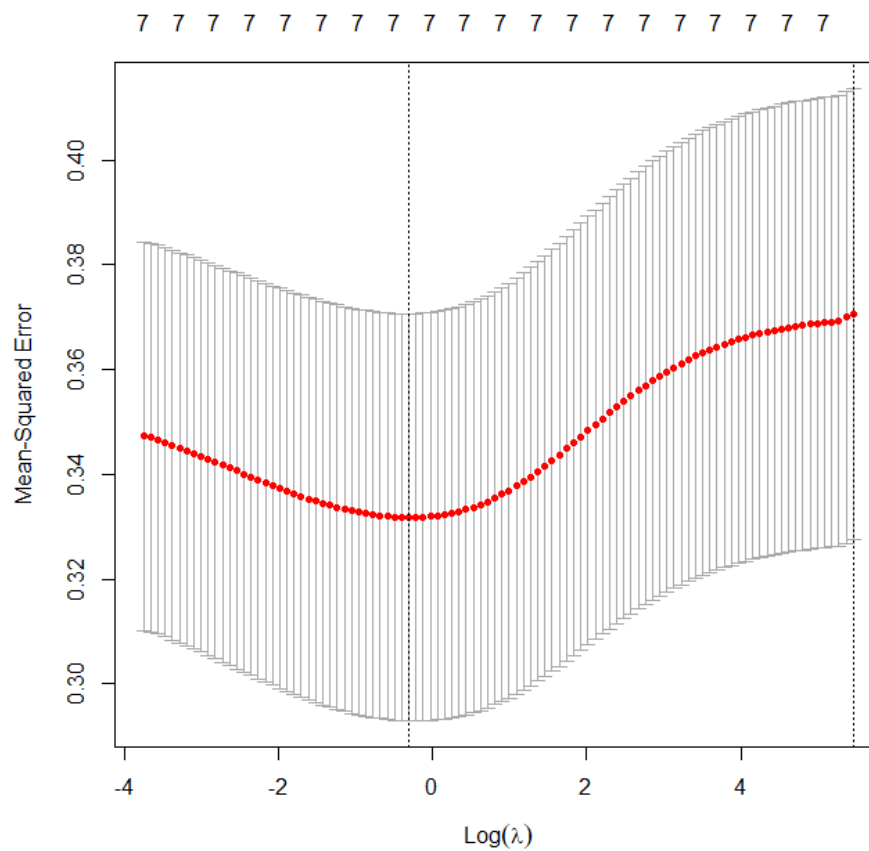
STIPO-RA and CBCL_anxious_depressed_subscale analyses

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,626 ^a	,391	,342	,42737

a. Predictors: (Constant), stipo_Na, stipo_Re, stipo>We, stipo_Ag, stipo_Ob, stipo_Ab, stipo_Id

Coefficients ^a								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	-,102	,126	-,808	,421			
	stipo_Id	,126	,114	,277	,106	,113	8,837	
	stipo_Ob	,071	,084	,157	,403	,204	4,901	
	stipo_Ab	,173	,105	,364	,105	,143	6,969	
	stipo_Ag	-,035	,057	-,087	,543	,346	2,888	
	stipo>We	-,097	,079	-,165	,223	,390	2,564	
	stipo_Re	-,004	,015	-,023	,805	,787	1,270	
	stipo_Na	,020	,099	,036	,838	,224	4,469	

a. Dependent Variable: cbcl_anxdepr_mean



R-Studio Code to determine Best-fitting Lambda using standardized coefficients by cross-validating the mean squared error (CHAT-GPT assisted)

```
# Loading libraries
library(haven)
library(glmnet)

# Loading SPSS file into a dataframe named 'df'
df <- read_sav("REDACTED_FILE_PATH")

# Prepare design matrix (X) and outcome vector (y)
x <- model.matrix(OUTCOME_VARIABLE ~ stipo_Id + stipo_Ob + stipo_Ab + stipo_Ag +
stipo_We + stipo_Re + stipo_Na, data = df)[, -1]
y <- df$OUTCOME_VARIABLE

# Fit ridge regression using cross-validation to select best lambda
cv_ridge <- cv.glmnet(x, y, alpha = 0)

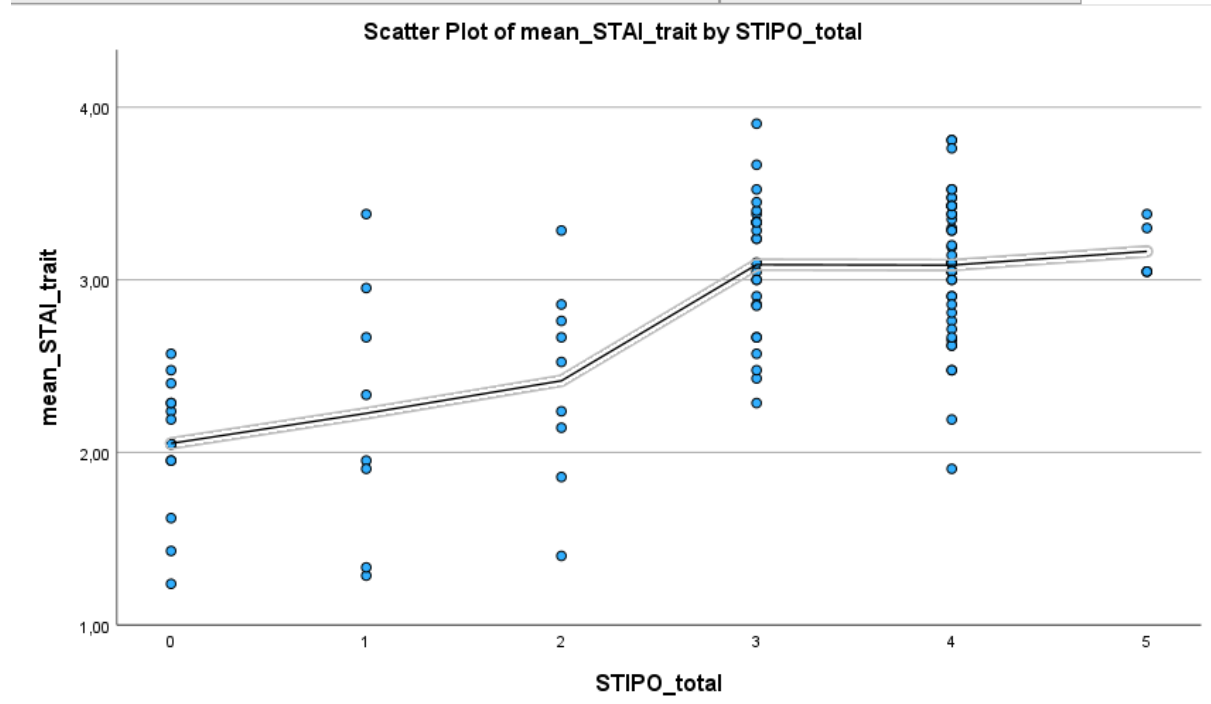
# Show best lambda value)
print(cv_ridge$lambda.min)

# Plot cross validation curve
plot(cv_ridge)
```

Appendix C: Assumption Tests

Linear regression, Predictor: STIPO_Total, Outcome: STAI_Trait

Linearity



Interpolation line indicates a sufficiently linear relationship. Interpolation line shows monotonous increase, although not strictly monotonous.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,656 ^a	,430	,425	,45608	2,077
a. Predictors: (Constant), STIPO_total					
b. Dependent Variable: mean_STAI_trait					

Durbin-Watson Test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
mean_STAI_trait	Based on Mean	2,917	5	102	,017
	Based on Median	2,828	5	102	,020
	Based on Median and with adjusted df	2,828	5	87,785	,020
	Based on trimmed mean	2,901	5	102	,017

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

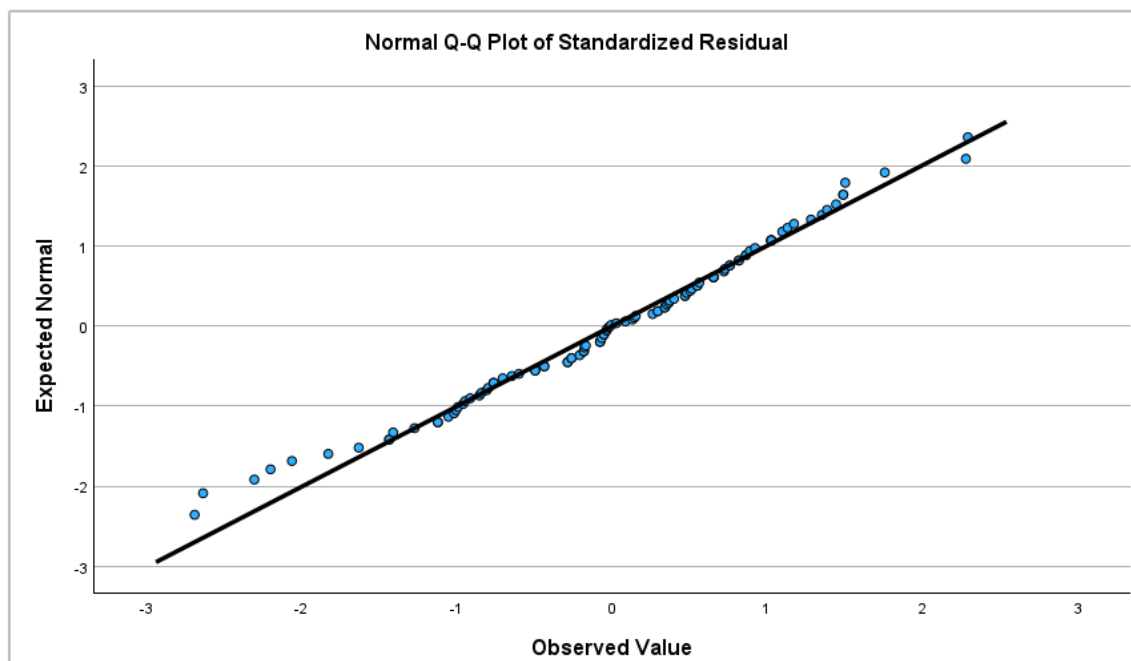
Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis. In addition, all other assumptions were met.

Normal distribution of residuals

Tests of Normality						
		Kolmogorov-Smirnov ^a			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	Sig.
Standardized Residual		,072	108	,200 [*]	,985	,275

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Standardized Residual



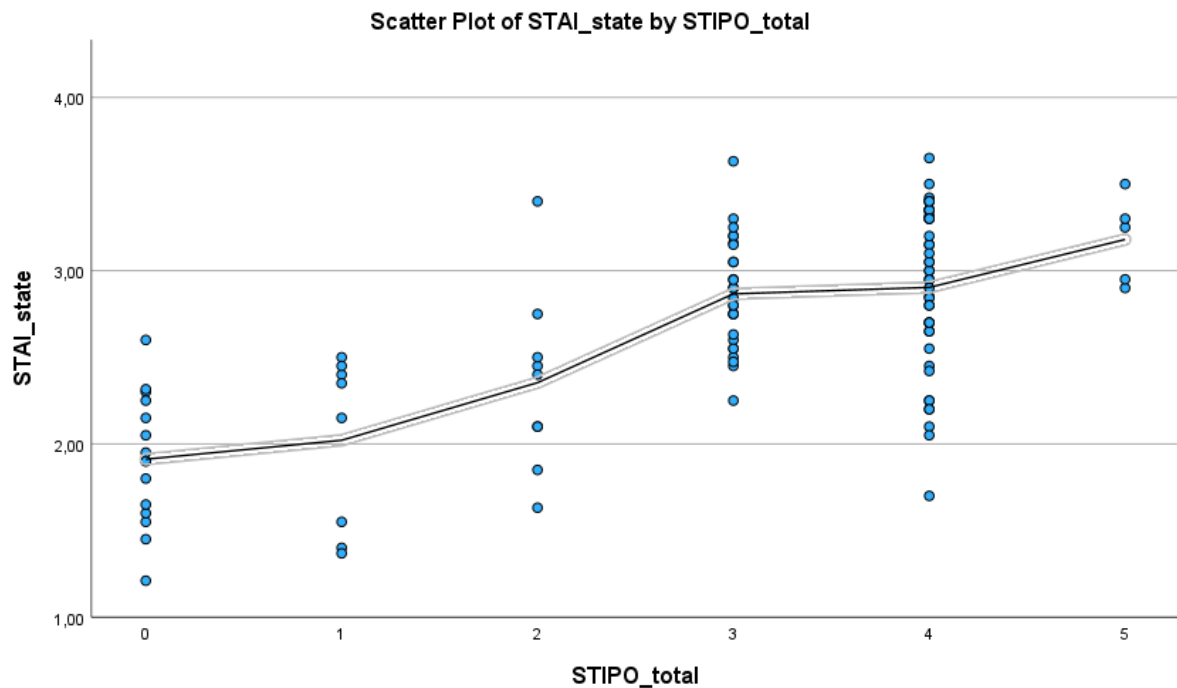
Shapiro-Wilk test and Q-Q Plot indicate normal distribution of residuals.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: STIPO_Total, Outcome: STAI_State

Linearity



Interpolation line indicates a sufficiently linear relationship.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,680 ^a	,463	,458	,42454	2,113

a. Predictors: (Constant), STIPO_total
b. Dependent Variable: STAI_state

Durbin-Watson Test within parameters

Homoskedasticity.

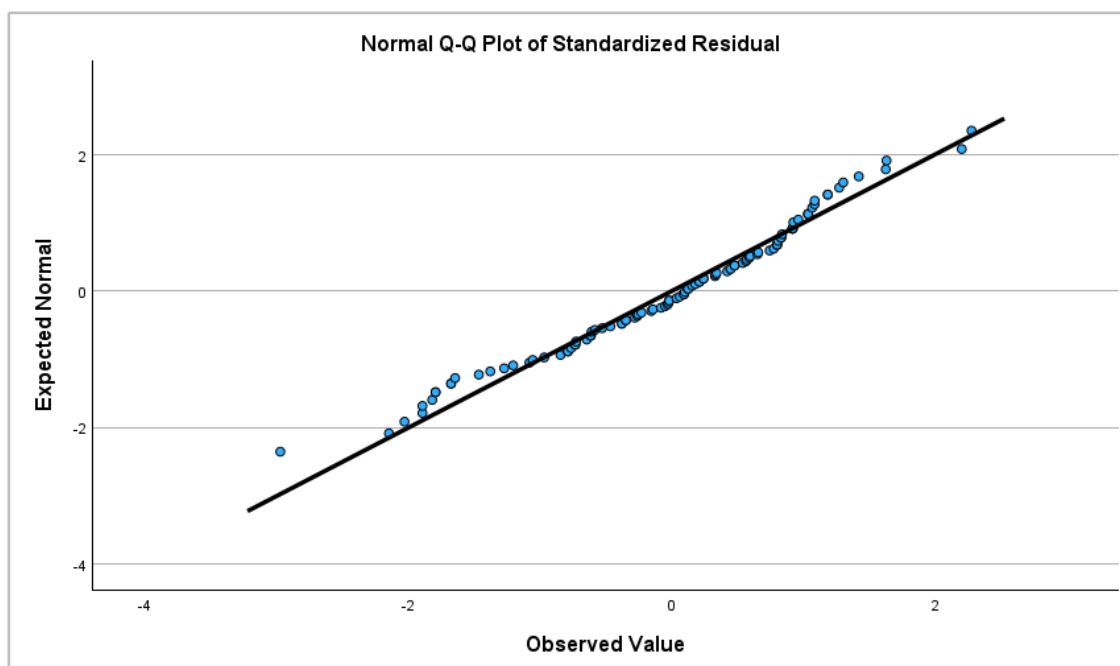
Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
STAI_state	Based on Mean	1,720	5	102	,137
	Based on Median	1,288	5	102	,275
	Based on Median and with adjusted df	1,288	5	86,371	,276
	Based on trimmed mean	1,663	5	102	,150

Levene Test insignificant.

Normal distribution of residuals

Tests of Normality						
Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	,073	108	,199	,978	108	,066
a. Lilliefors Significance Correction						

Standardized Residual



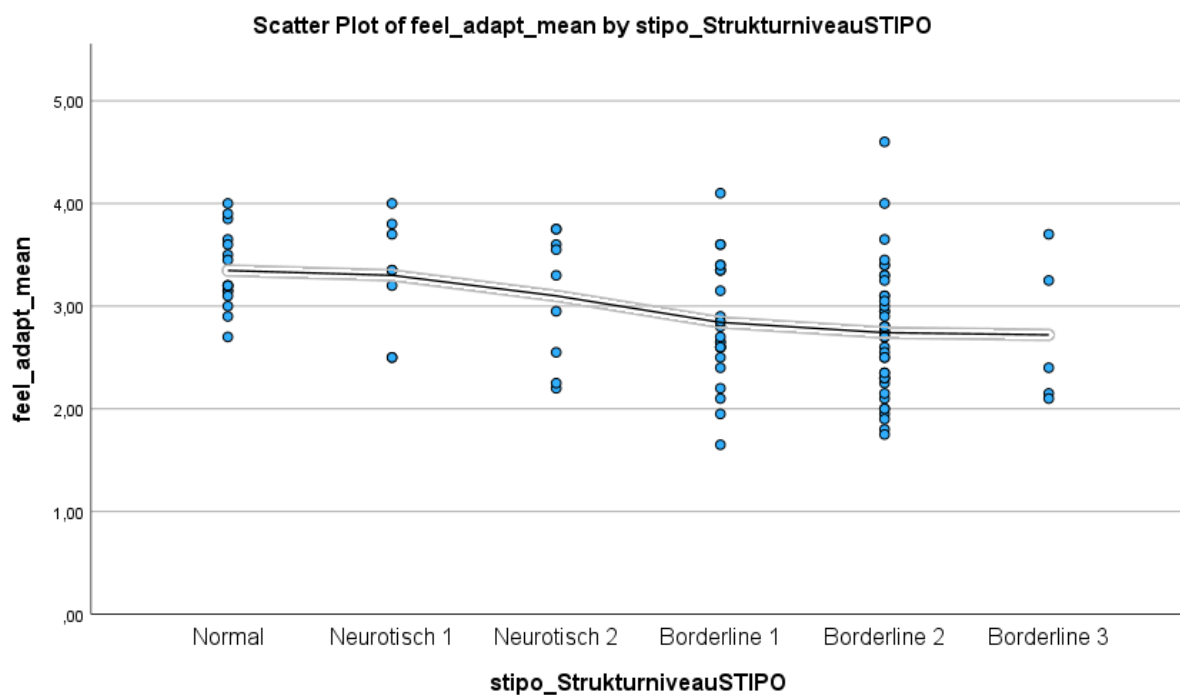
Shapiro-Wilk test and Q-Q Plot indicate normal distribution of residuals.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: STIPO_Total, Outcome: FEEL_KJ_Adapt

Linearity



Interpolation line indicates a sufficiently linear relationship.

Independence of residuals

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,387 ^a	,149	,141	,56517	1,730

a. Predictors: (Constant), stipo_StrukturniveauSTIPO

b. Dependent Variable: feel_adapt_mean

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances

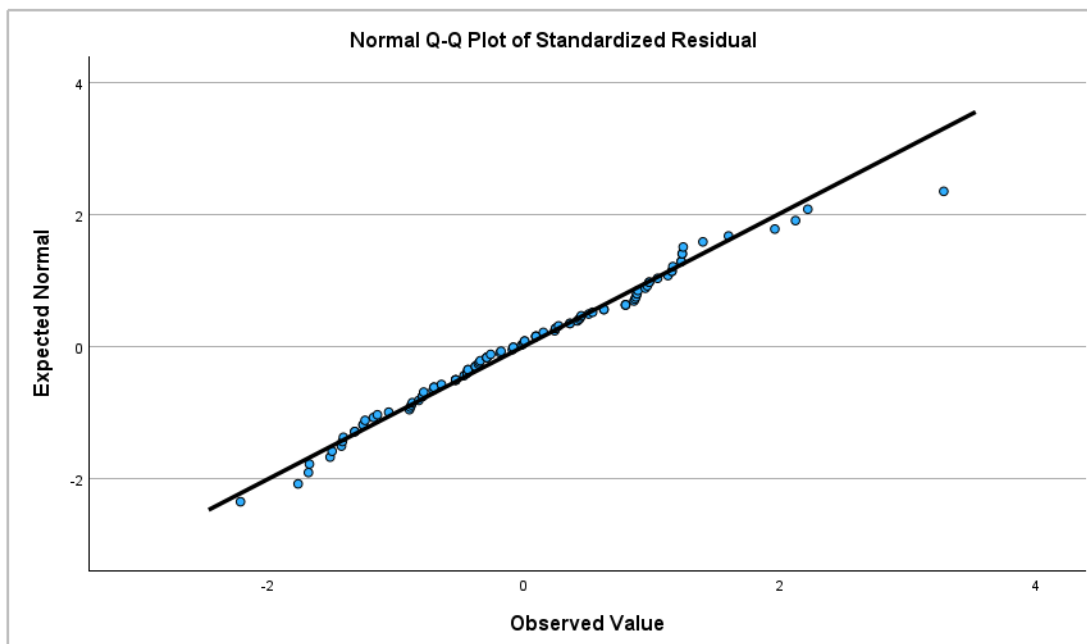
		Levene Statistic	df1	df2	Sig.
feel_adapt_mean	Based on Mean	,946	5	99	,455
	Based on Median	,702	5	99	,624
	Based on Median and with adjusted df	,702	5	91,508	,624
	Based on trimmed mean	,932	5	99	,464

Levene test insignificant.

Normal distribution of residuals

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	,065	105	,200 [*]	,984	105	,248
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Standardized Residual

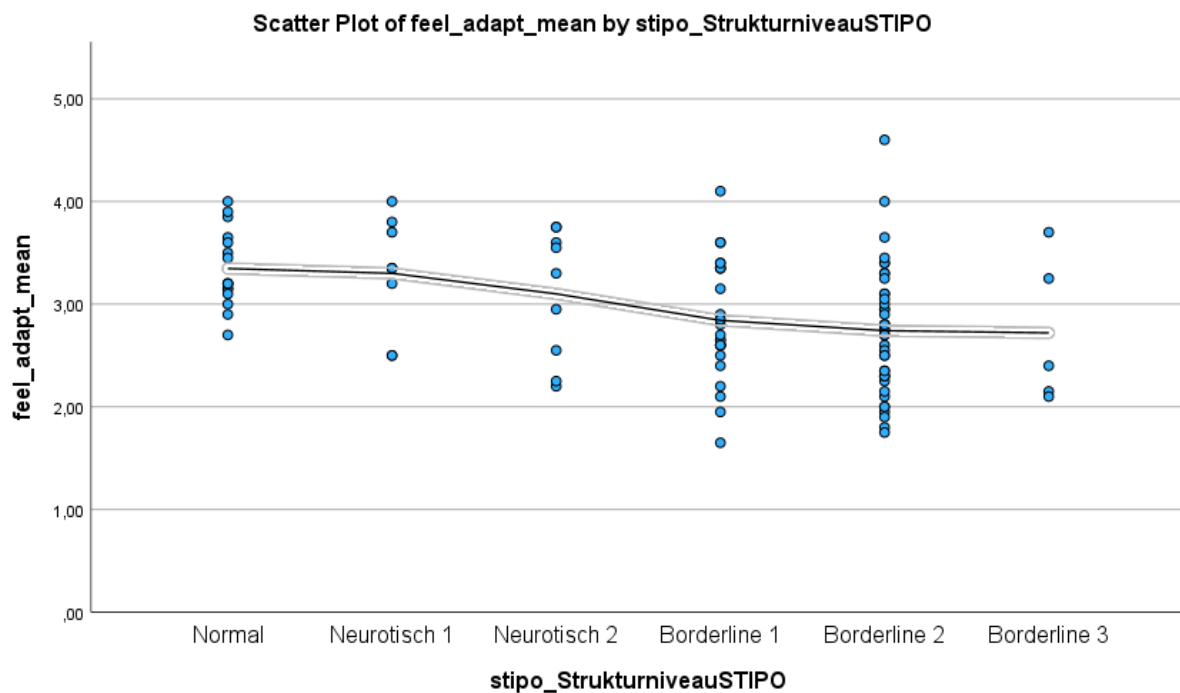


Shapiro-Wilk test and Q-Q Plot indicate normal distribution of residuals.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: STIPO_Total, Outcome: FEEL_KJ_Maladapt Linearity



Interpolation line indicates a sufficiently linear relationship.

Independence of residuals

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,387 ^a	,149	,141	,56517	1,730

a. Predictors: (Constant), stipo_StrukturniveauSTIPO

b. Dependent Variable: feel_adapt_mean

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances

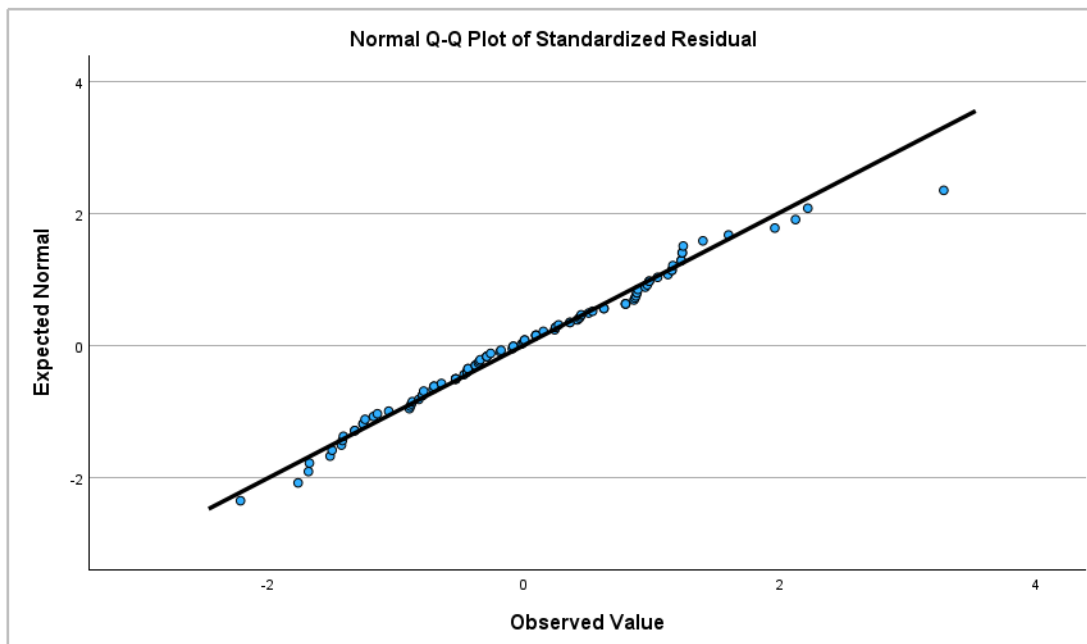
		Levene Statistic	df1	df2	Sig.
feel_adapt_mean	Based on Mean	,946	5	99	,455
	Based on Median	,702	5	99	,624
	Based on Median and with adjusted df	,702	5	91,508	,624
	Based on trimmed mean	,932	5	99	,464

Levene test insignificant.

Normal distribution of residuals

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	,065	105	,200 [*]	,984	105	,248
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Standardized Residual



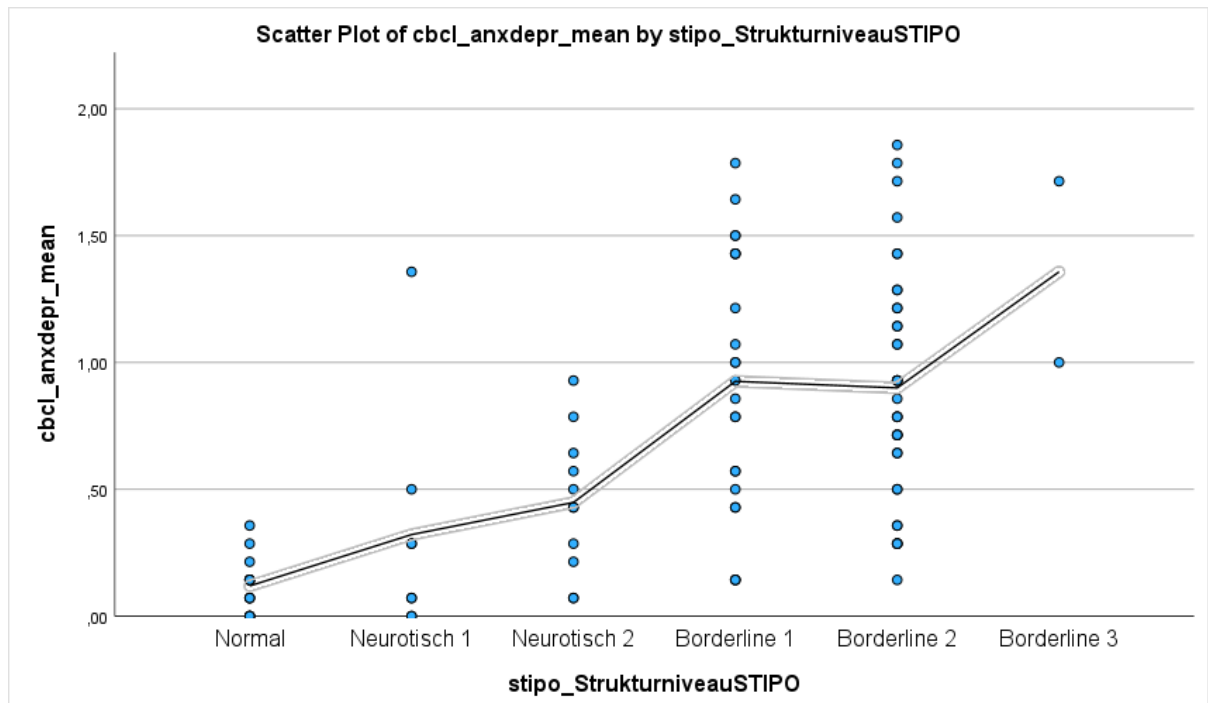
Shapiro-Wilk test and Q-Q Plot indicate normal distribution of residuals.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: STIPO_Total, Outcome: CBCL_Anxious_Depressed

Linearity



Interpolation line indicates a sufficiently linear relationship.

Independence of residuals

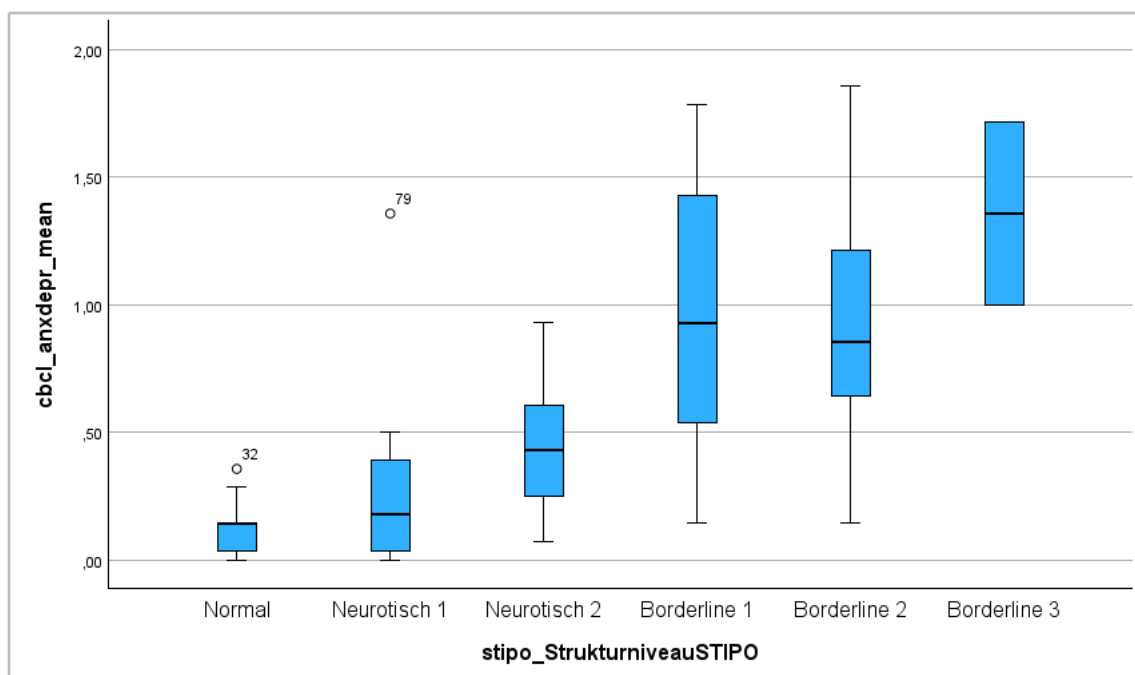
Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,602 ^a	,362	,356	,41976	2,061
a. Predictors: (Constant), stipo_StrukturniveauSTIPO					
b. Dependent Variable: cbcl_anxdepr_mean					

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
cbcl_anxdepr_mean	Based on Mean	4,531	5	90	<,001
	Based on Median	4,263	5	90	,002
	Based on Median and with adjusted df	4,263	5	68,072	,002
	Based on trimmed mean	4,438	5	90	,001

Levene test indicated very heterogenous variances, which could potentially skew results of a linear regression. Detailed visual analysis below indicates a higher variance of CBCL results in patients with a borderline personality structure.



Robust standard errors were obtained via SPSS and compared to regular standard errors.

Parameter Estimates

Dependent Variable: cbcl_anxdepr_mean

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	,131	,088	1,482	,142	-,044	,306
stipo_StrukturniveauSTIPO	,210	,029	7,310	<,001	,153	,267

Parameter Estimates with Robust Standard Errors

Dependent Variable: cbcl_anxdepr_mean

Parameter	B	Robust Std. Error ^a	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	,131	,053	2,447	,016	,025	,237
stipo_StrukturniveauSTIPO	,210	,022	9,516	<,001	,166	,254

a. HC3 method

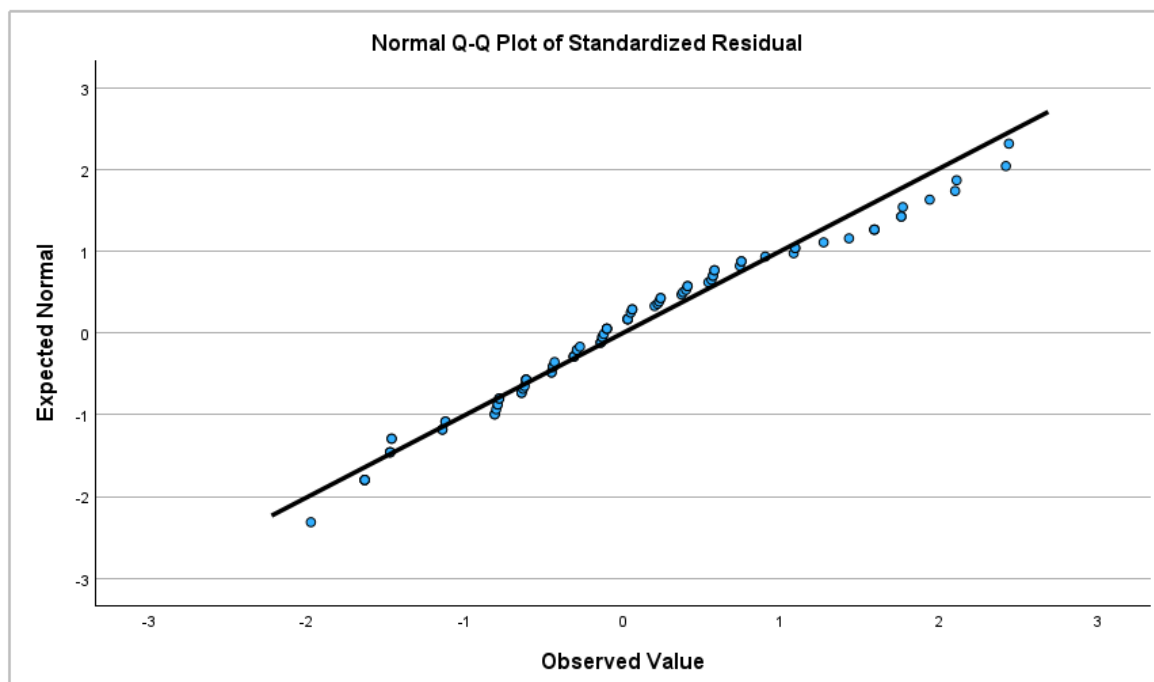
Robust standard errors only differed slightly from regular standard errors, indicating that the violation of the assumption of homoskedasticity does not affect the linear regression model sufficiently to warrant using a different statistical method considering the robustness of the linear regression.

Normal distribution of residuals

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	,102	96	,016	,969	96	,023

a. Lilliefors Significance Correction



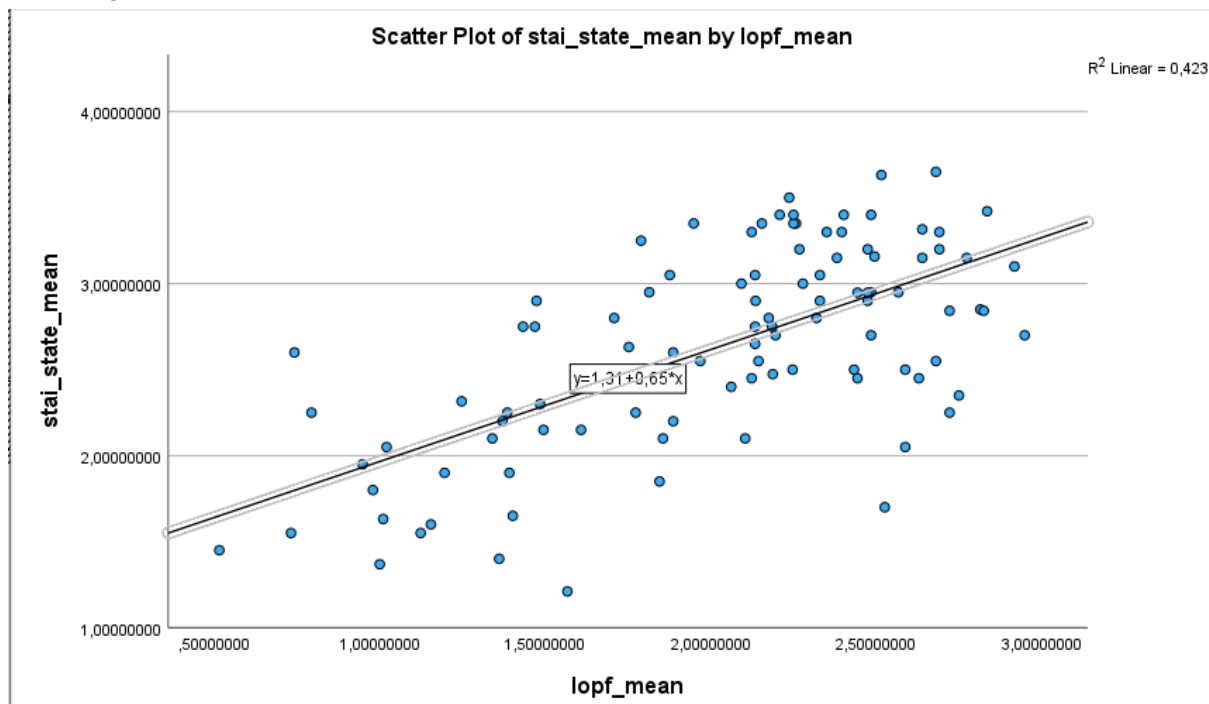
The significant Shapiro-Wilk test can be safely ignored, as a) visual confirmation from the Q-Q Plot does not show a violation of normal distribution b) The central limit theorem given the sample size c) possible effects likely only warp p-values, which are degrees of magnitude below .01 in these analyses.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: LoPF_Q_Mean, Outcome: STAI_State

Linearity



Sufficient linear relationship.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,651 ^a	,423	,418	,44366814589	1,979
a. Predictors: (Constant), lopf_mean					
b. Dependent Variable: stai_state_mean					

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
stai_state_mean	Based on Mean	37,518	13	16	<,001
	Based on Median	9,743	13	16	<,001
	Based on Median and with adjusted df	9,743	13	3,935	,021
	Based on trimmed mean	34,045	13	16	<,001

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis.

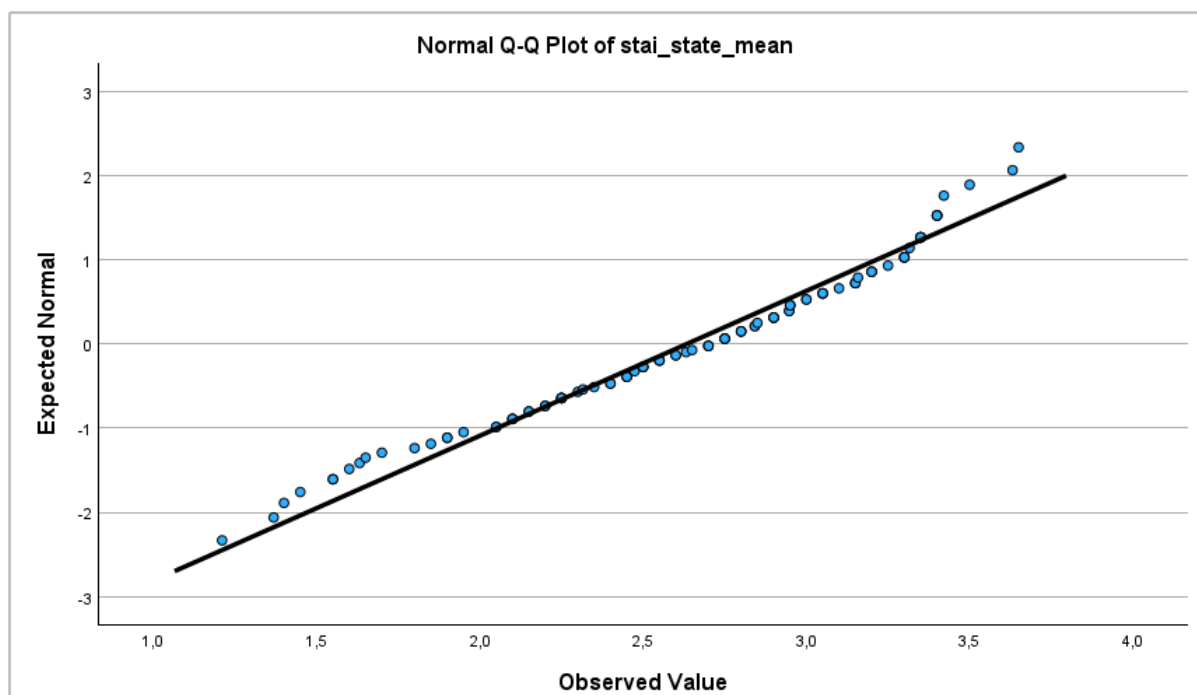
Normal distribution of residuals

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
stai_state_mean	,074	101	,200 [*]	,967	101	,012

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



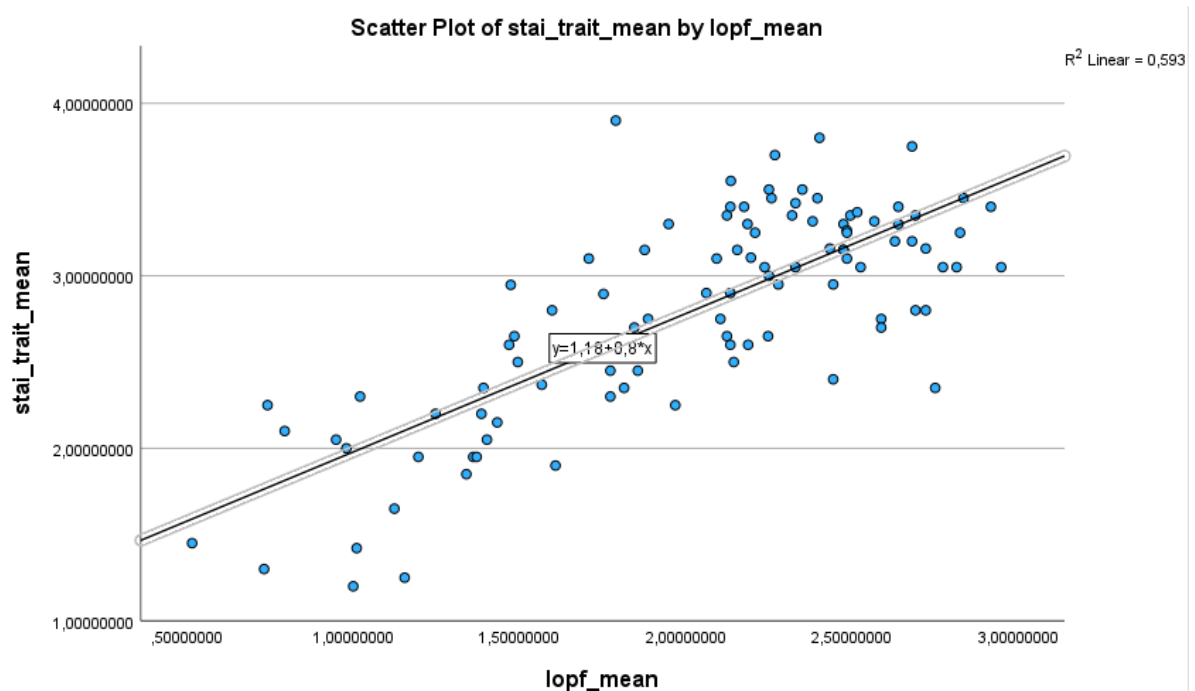
The significant Shapiro-Wilk test can be safely ignored, as a) visual confirmation from the Q-Q Plot does not show a violation of normal distribution b) The central limit theorem given the sample size c) possible effects likely only warp p-values, which are degrees of magnitude below .01 in these analyses.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: LoPF_Q_Mean, Outcome: STAI_Trait

Linearity



Sufficient linear relationship.

Independence of residuals

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,770 ^a	,593	,589	,38830121787	1,766

a. Predictors: (Constant), lopf_mean

b. Dependent Variable: stai_trait_mean

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
stai_trait_mean	Based on Mean	5,417	13	16	,001
	Based on Median	2,959	13	16	,021
	Based on Median and with adjusted df	2,959	13	2,467	,239
	Based on trimmed mean	5,240	13	16	,001

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

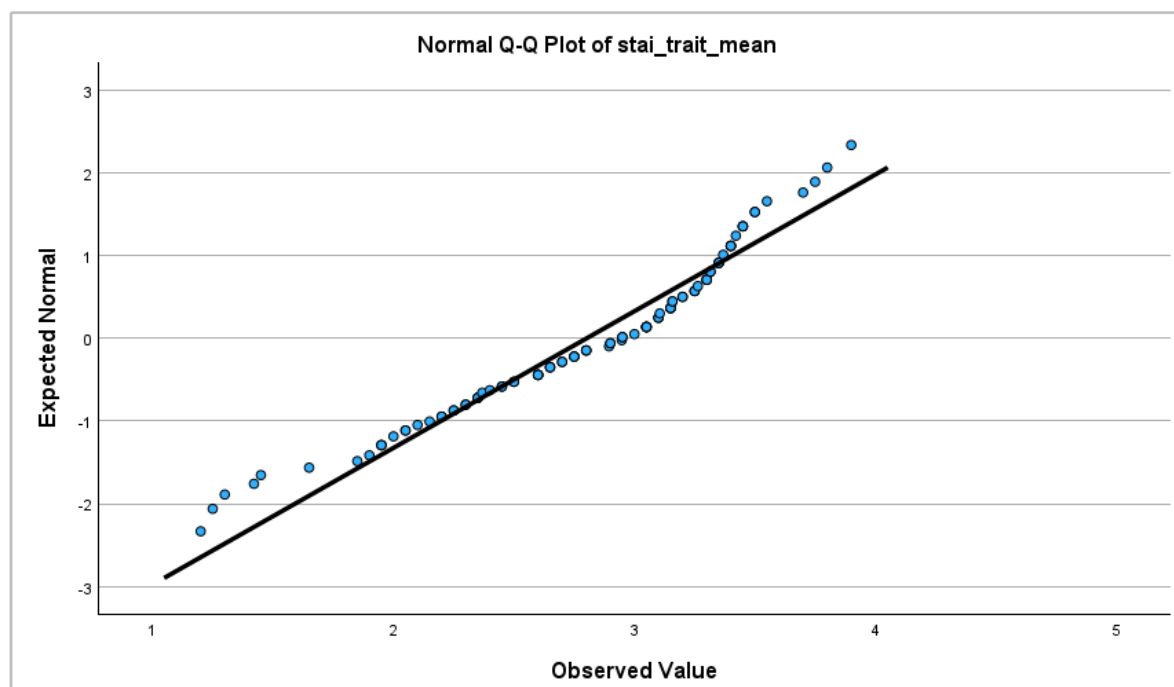
Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis.

Normal distribution of residuals

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
stai_trait_mean	,134	101	<,001	,948	101	<,001

a. Lilliefors Significance Correction



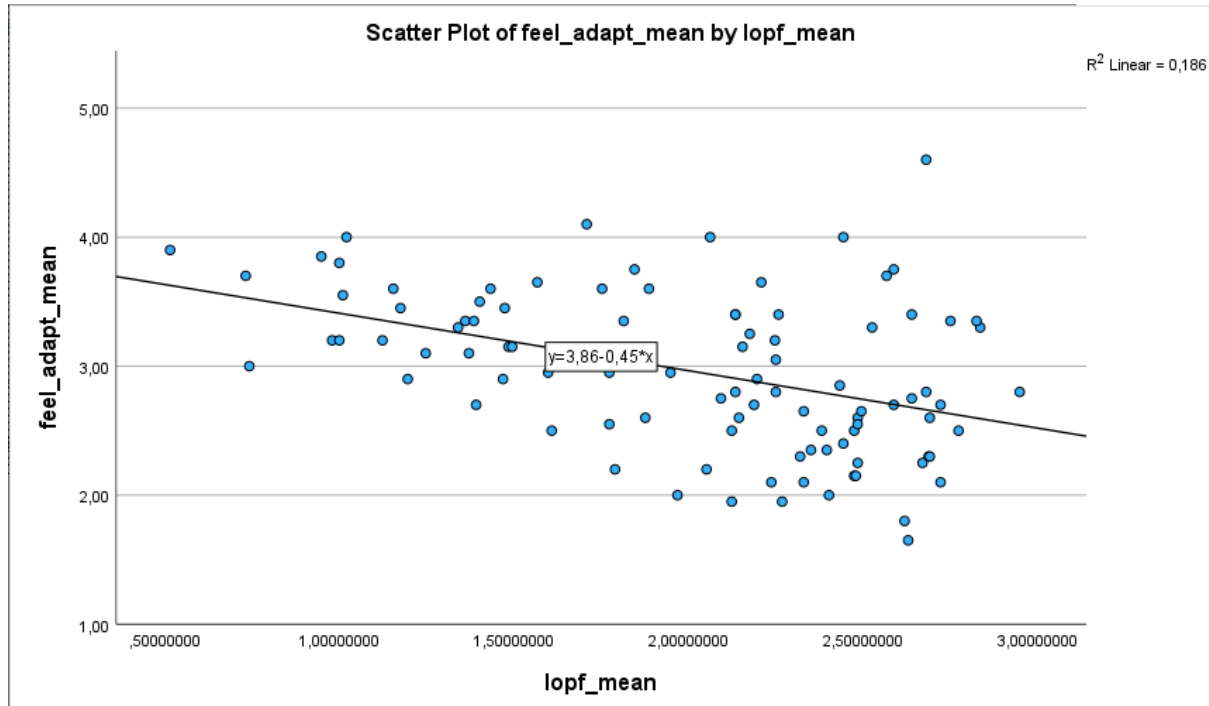
The significant Shapiro-Wilk test can be safely ignored, as a) visual confirmation from the Q-Q Plot does not show a violation of normal distribution b) The central limit theorem given the sample size c) possible effects likely only warp p-values, which are degrees of magnitude below .01 in these analyses.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: LoPF_Q_Mean, Outcome: FEEL_KJ_adapt

Linearity



Sufficient linear relationship.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,431 ^a	,186	,178	,54965	1,761
a. Predictors: (Constant), lopf_mean					
b. Dependent Variable: feel_adapt_mean					

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
feel_adapt_mean	Based on Mean	63,708	14	16	<,001
	Based on Median	7,264	14	16	<,001
	Based on Median and with adjusted df	7,264	14	2,000	,127
	Based on trimmed mean	51,657	14	16	<,001

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis.

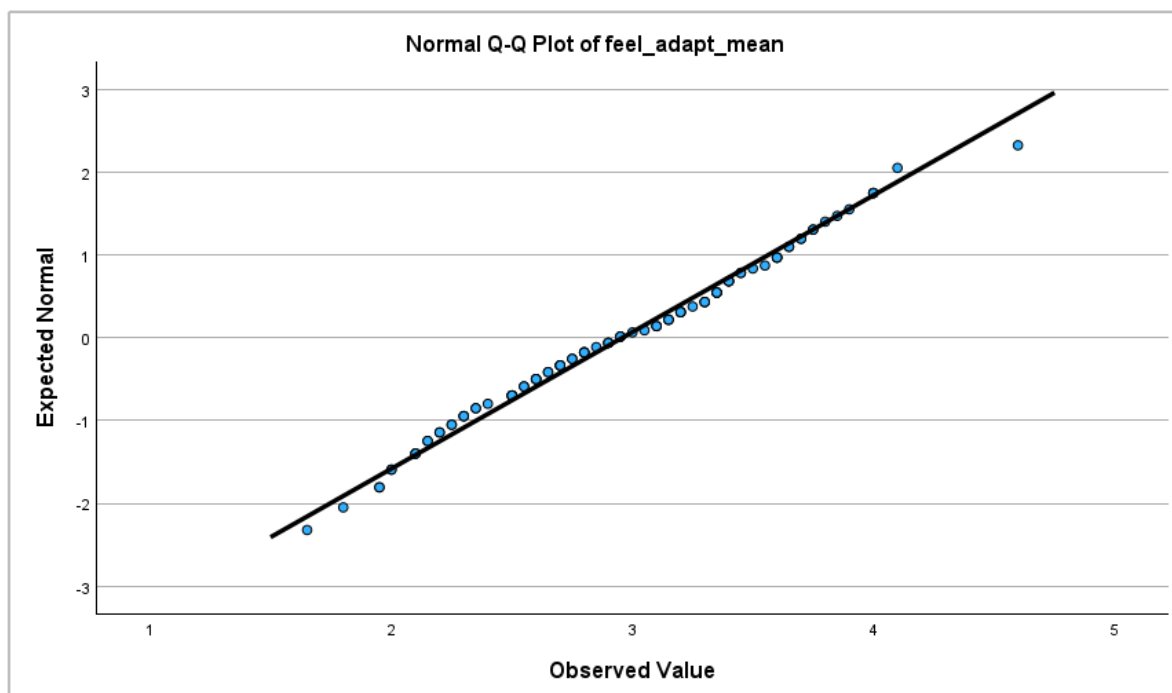
Normal distribution of residuals

Tests of Normality

Kolmogorov-Smirnov ^a				Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
feel_adapt_mean	,060	98	,200 [*]	,987	98	,484

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



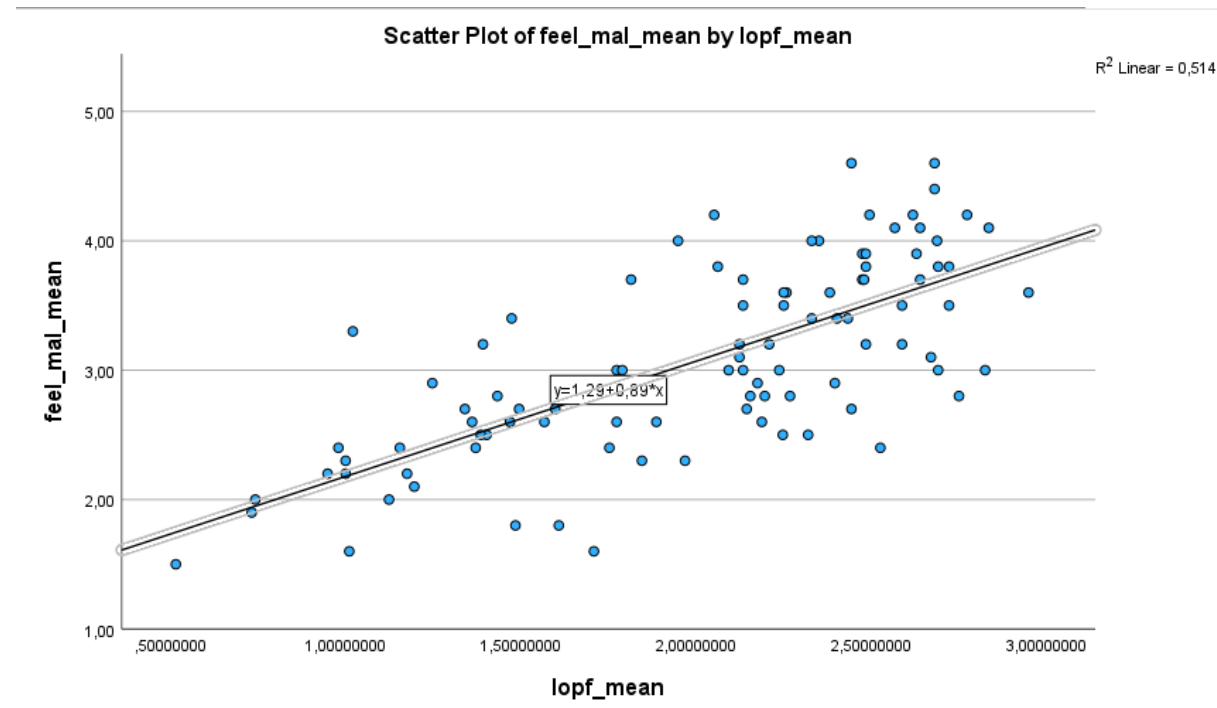
Shapiro-Wilk test insignificant.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: LoPF_Q_Mean, Outcome: FEEL_KJ_mal

Linearity



Sufficient linear relationship.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,717 ^a	,514	,509	,51083	2,172
a. Predictors: (Constant), lopf_mean					
b. Dependent Variable: feel_mal_mean					

Durbin-Watson test within parameters.

Homoskedasticity

Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
feel_mal_mean	Based on Mean	34,829	14	16	<,001
	Based on Median	12,791	14	16	<,001
	Based on Median and with adjusted df	12,791	14	2,000	,075
	Based on trimmed mean	32,686	14	16	<,001

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

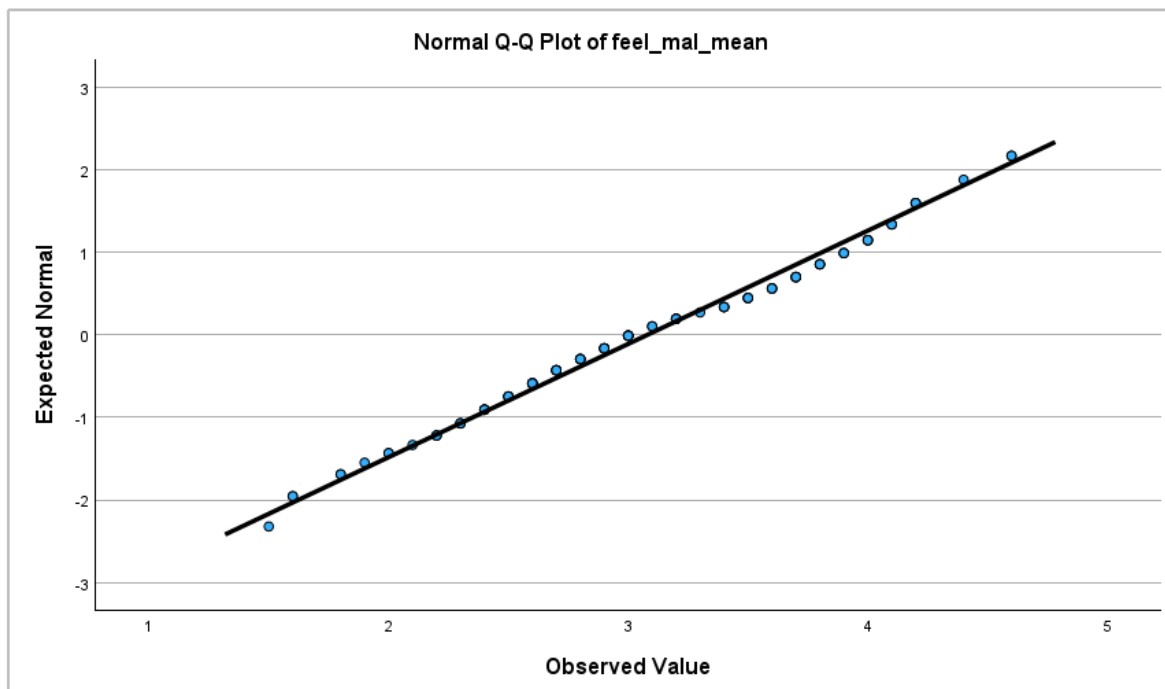
Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis.

Normal distribution of residuals

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
feel_mal_mean	,075	98	,200 [*]	,983	98	,234

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction



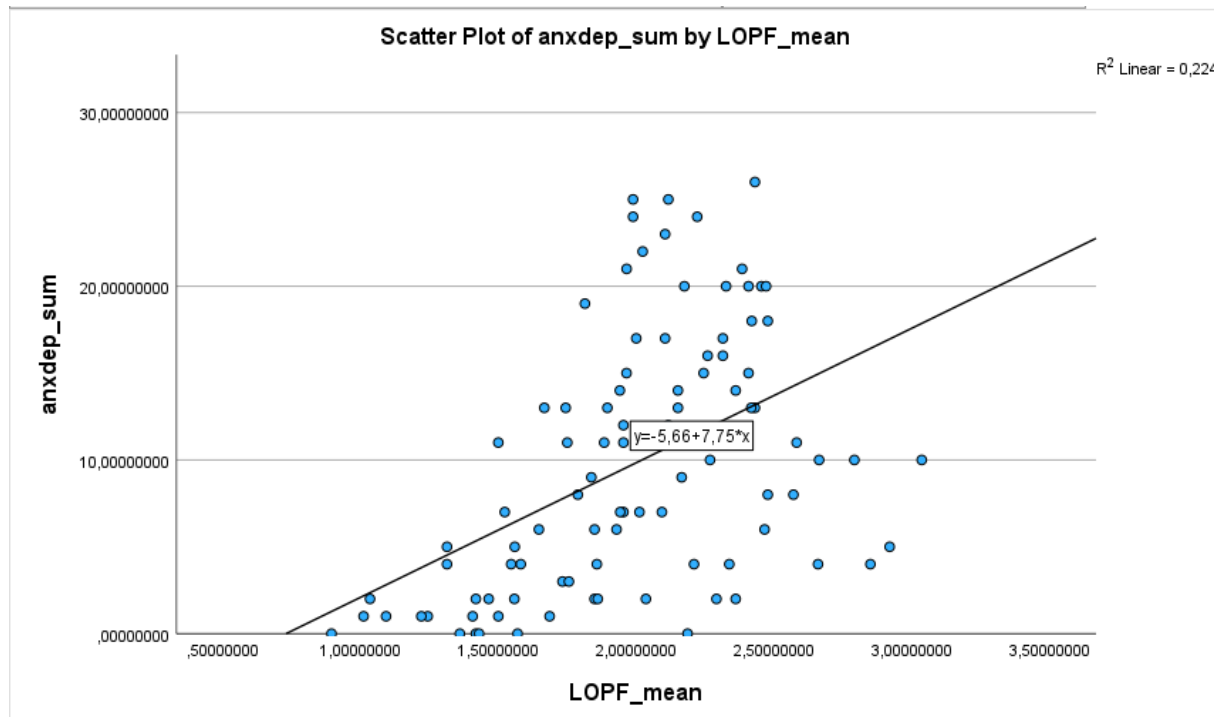
Shapiro-Wilk Test insignificant.

Outlier analysis

All Cook's distances were below .1.

Linear regression, Predictor: LoPF_Q_Mean, Outcome: CBCL_anx_depr

Linearity



Sufficient linear relationship.

LoPF_Q values above 2.5 seem to show lower values in the scale than values around 2. Because this effect was not observed for any of the other measures and few participants scored above 2.5 it was considered to be due to randomness.

Independence of residuals

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,473 ^a	,224	,215	6,5189169618	1,696

a. Predictors: (Constant), LOPF_mean

b. Dependent Variable: anxdep_sum

Durbin-Watson test within parameters.

Homoskedasticity

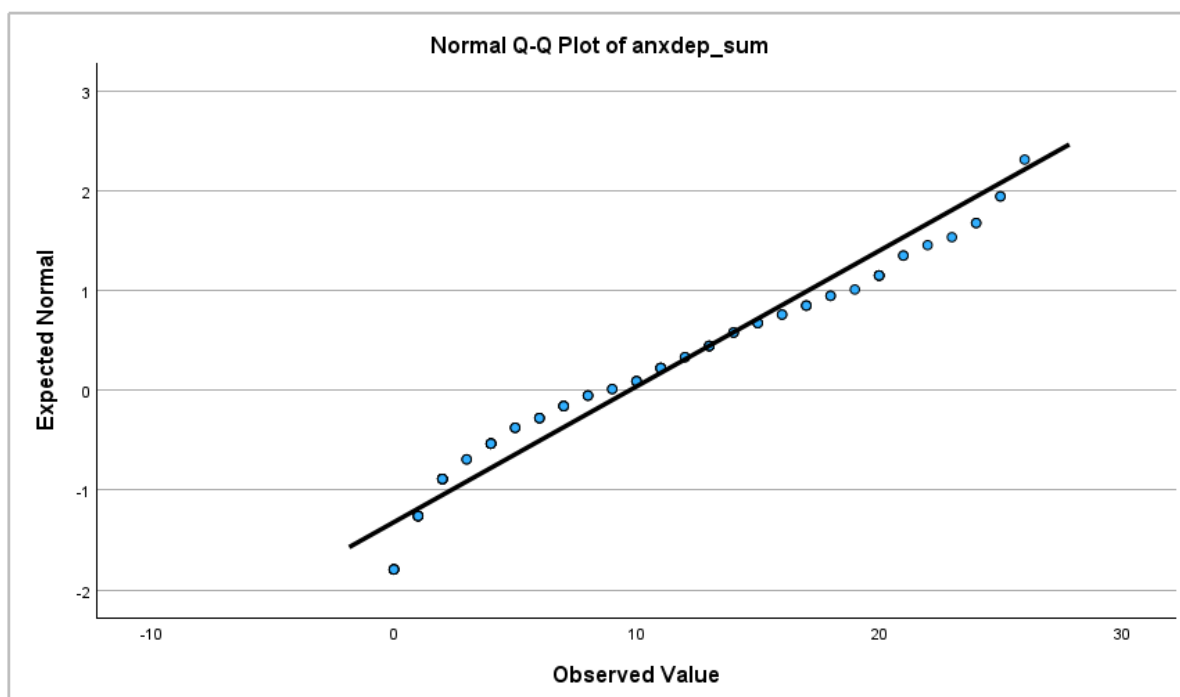
Tests of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
anxdep_sum	Based on Mean	84,562	14	16	<,001
	Based on Median	19,784	14	16	<,001
	Based on Median and with adjusted df	19,784	14	2,000	,049
	Based on trimmed mean	75,875	14	16	<,001

Levene test yielded significant result, indicating heterogenous variances. Linear Regression was performed despite this result.

Reasoning: The warping effect on p-values that a significant Levene test may indicate can be safely ignored, as p values are <0.00001 in this analysis.

Normal distribution of residuals

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
anxdep_sum	,118	95	,002	,935	95	<,001
a. Lilliefors Significance Correction						



The significant Shapiro-Wilk test can be safely ignored, as a) visual confirmation from the Q-Q Plot does not show a violation of normal distribution b) The central limit theorem given the sample size c) possible effects likely only warp p-values, which are degrees of magnitude below .01 in these analyses

Outlier analysis

All Cook's distances were below .1.