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Trait Emotional Stability as a Protective Factor Against Psychosomatic Symptom Amplification: A Multilevel Mediation Analysis

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A B S T R A C T

The objective of this study was to examine whether trait emotional stability functions as a protective factor against psychosomatic symptom amplification and psychosomatic symptom severity through the mediating role of perceived stress. This study employed a quantitative cross-sectional design using data collected from an adult community sample in the United Kingdom. Participants completed standardized self-report measures assessing trait emotional stability, perceived stress, somatosensory amplification, and psychosomatic symptom severity. Validated instruments with established psychometric properties were used to ensure reliability and construct validity. Data were analyzed using multilevel modeling techniques to account for potential clustering effects. A multilevel mediation framework was specified in which trait emotional stability served as the predictor, perceived stress as the mediator, and psychosomatic symptom amplification and symptom severity as outcome variables. Indirect effects were tested using bootstrapping procedures with bias-corrected confidence intervals. Multilevel regression analyses indicated that trait emotional stability was significantly and negatively associated with perceived stress, somatosensory amplification, and psychosomatic symptom severity. Perceived stress was positively associated with both somatosensory amplification and psychosomatic symptom severity. Somatosensory amplification emerged as a strong positive predictor of psychosomatic symptom severity when included alongside emotional stability and perceived stress. Mediation analyses demonstrated significant indirect effects of emotional stability on both psychosomatic symptom amplification and symptom severity via perceived stress, while direct effects remained significant, indicating partial mediation. The findings suggest that trait emotional stability protects against psychosomatic symptom amplification and somatic symptom burden through both direct pathways and indirect stress-related mechanisms, highlighting the importance of personality-informed and stress-focused approaches in psychosomatic research and practice.

Keywords: *emotional stability; psychosomatic symptoms; somatosensory amplification; perceived stress; multilevel mediation*

1. Introduction

Psychosomatic phenomena occupy a central position at the interface of mind and body, describing the pathways through which psychological dispositions, affective processes, and social contexts shape bodily experience and symptom expression. Across the evolution of psychosomatic medicine, scholars have repeatedly emphasized that physical complaints are not merely downstream reflections of pathology, but are also constructed through interpretive, regulatory, and interpersonal processes that influence how bodily sensations are noticed, evaluated, and communicated (Brown, 2023). Contemporary psychosomatic science has therefore shifted from dichotomous debates about whether symptoms are "real" or "psychological" toward more integrative models that conceptualize symptoms as emergent outcomes of neurobiological sensitivity, personality-linked affective reactivity, coping repertoires, and environmental stressors. In parallel, recent conceptual work continues to broaden psychosomatic explanations beyond classic psychodynamic accounts by incorporating neuroscience-informed perspectives that view bodily symptom meaning-making as embedded in brain–body regulatory systems and clinical narratives (Ingegnieri, 2025). Within this integrative frame, symptom amplification—defined as the tendency to experience normal or benign bodily sensations as unusually intense, disturbing, or illness-signifying—has become a key mechanism for explaining individual differences in somatic distress across both clinical and community settings.

Psychosomatic symptom amplification is increasingly understood as a perceptual–cognitive process influenced by attentional bias, interoceptive focus, and affect-driven appraisal. When individuals attend to bodily sensations with heightened vigilance, ambiguous signals may be interpreted catastrophically, thereby intensifying subjective discomfort and motivating repetitive symptom monitoring. This mechanism is particularly salient in contexts where distress and uncertainty are elevated, such as prolonged stress exposure, trauma histories, occupational strain, or public health crises. Evidence from student populations during the COVID-19 pandemic suggests that broader contextual disruptions can coincide with elevated somatization-related complaints, highlighting the role of stress ecology in symptom presentation (Sălcudean et al., 2024). Conceptual reviews on the pandemic period similarly point to interactions between personality traits and mental health vulnerability, suggesting that trait-level dispositions can shape how stress is internalized and expressed, including via somatic pathways (Koutsioumpa, 2023). At the same time, psychosomatic reactions to depression and stress appear to vary by demographic factors such as age and gender, underscoring heterogeneity in psychosomatic expression and the need for models that incorporate both stable traits and contextual influences (Wójtowicz et al., 2025). Collectively, these lines of work foreground symptom amplification as a plausible bridge linking psychological distress to bodily symptom burden.

From a developmental and systems perspective, psychosomatic distress may also emerge from conflict-related behavioral patterns and stress-laden interpersonal environments, where chronic tension alters regulatory capacity and increases bodily symptom reporting (Dolynnyi, 2021). Trauma exposure is another robust contributor, with adult survivors of childhood trauma describing psychosomatic consequences that persist into adulthood, suggesting that early adverse experiences can shape bodily awareness, emotion regulation, and symptom interpretation (Saadati et al., 2023). In medical contexts, premorbid psychological factors have been implicated in long-term postoperative complaints, indicating that psychosomatic mechanisms may influence symptom persistence even after ostensibly successful biomedical interventions (Thomas et al., 2023). Likewise, somatic symptoms among employees facing emotional labor and workplace violence indicate that organizational climates and interpersonal threats can translate into embodied distress, often through chronic activation of stress and coping systems (Ryu & Park, 2023). These findings converge on the view that psychosomatic symptom amplification is a multi-determined process—shaped by trait vulnerabilities, emotion regulation resources, and environmental pressures.

A major theoretical candidate for explaining protective variability in psychosomatic processes is trait emotional stability, typically conceptualized as the inverse of neuroticism and characterized by low emotional reactivity, effective regulation of negative affect, and greater resilience under stress. Emotional stability is not merely a "lack of distress," but rather a dispositional tendency to maintain equilibrium when encountering demands, ambiguity, or interpersonal strain. In university student samples, emotional stability has been examined alongside perfectionism and Type A behavior as a predictor of mental health, with findings supporting its role as a stabilizing trait in contexts of achievement pressure (Guidotti et al., 2024). Similarly, in the context of COVID-19, being a parent and

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possessing higher emotional stability were associated with fewer adjustment disorder symptoms, illustrating how emotional stability may buffer distress under prolonged uncertainty and role strain (Kestler–Peleg et al., 2022). These studies align with broader evidence that personality traits organize exposure–response patterns: traits shape how stressors are perceived, which coping strategies are selected, and how physiological arousal is experienced and interpreted.

The protective logic of emotional stability becomes especially important when considering psychosomatic symptom amplification, because amplification depends not only on bodily signals but also on how those signals are appraised under emotional load. Individuals with lower emotional stability are more likely to experience frequent negative affect, heightened worry, and stress sensitivity, all of which can magnify attention to bodily sensations and increase threatening interpretations. Conversely, emotionally stable individuals may be less prone to interpret interoceptive cues catastrophically, thereby reducing amplification. Work examining coping strategies and personality traits in relation to severe sleep bruxism suggests that personality-linked stress processing and behavioral coping may be implicated in somatic and parafunctional manifestations, offering an illustrative example of how traits can shape bodily outcomes through coping and arousal pathways (Wieczorek et al., 2024). In health-related contexts, personality traits have been linked to urinary symptoms and mental health distress among patients with prostate cancer, suggesting that trait configurations may influence both emotional distress and symptom experience in medically vulnerable populations (Gillis et al., 2021). Such findings motivate a psychosomatic model in which emotional stability functions as a protective factor that dampens stress reactivity and reduces maladaptive symptom interpretation.

Mechanistically, emotional stability is likely to exert its effects through emotion regulation and distress tolerance processes. Recent evidence indicates that personality traits can relate to depression and anxiety symptoms through emotional regulation strategies and distress tolerance, suggesting that personality may influence psychopathology via intermediary regulatory mechanisms rather than solely through direct associations (Aguirre et al., 2024). Extending this logic to psychosomatic symptom amplification, emotional stability may protect by supporting adaptive downregulation of negative affect, thereby reducing both perceived stress and the attentional–interpretive cycle that fuels amplification. Complementing this perspective, research on neuroticism and musical emotion regulation highlights that emotion regulation modalities are meaningfully intertwined with trait dispositions and mental health outcomes, implying that trait-linked regulation strategies may have broad transdiagnostic relevance, including for somatic distress (Miranda, 2024). Neuropsychocorrection approaches to stress disorders further underscore that targeted interventions can influence stress-related symptom processes, reinforcing the plausibility of stress regulation as a mediating pathway between traits and psychosomatic outcomes (Edelshtein & Minenko, 2024). These convergent insights support an explanatory model in which emotional stability reduces perceived stress and enhances regulation, thereby attenuating symptom amplification.

Another relevant line of evidence concerns resilience and adaptation in high-risk occupational contexts. Prospective longitudinal research among first responders has identified factors that predict later psychopathology, reinforcing the importance of pre-existing personal and contextual resources in shaping stress-related outcomes (Feldman et al., 2021). In emergency medical services, personal traits have been theorized to shape resilience and safety culture, highlighting the applied significance of trait resources for maintaining functioning in demanding environments (Thielmann et al., 2025). Although these studies may not focus specifically on psychosomatic symptom amplification, they reinforce an underlying principle: emotionally stable individuals are more likely to demonstrate resilient adaptation, which should in turn reduce the likelihood that stress is embodied as amplified somatic distress. This relevance is not limited to high-risk professions; it is consistent with the broader observation that psychosomatic health contributes to social adaptation in contemporary societies where chronic stressors and rapid social change shape mental and physical well-being (Візнюк et al., 2021).

At the level of body-focused mechanisms, psychosomatic symptom amplification can also be framed through interoception, attention, and the integration of bodily signals with affective meaning. Research on interoceptive focus and somatic symptoms in adolescent bipolar disorder suggests that the way attention is directed toward bodily sensations can be linked to symptom experience, pointing to attentional and perceptual mechanisms that likely generalize across populations (Lv et al., 2024). Moreover, neuroimaging evidence indicates that individual differences in somatic symptoms and emotional distress correspond with brain

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structural variation in healthy samples, supporting the view that somatic distress is not purely "psychological," but is grounded in brain–body systems that interact with trait and emotional processes (Wei et al., 2020). In clinical practice, body psychotherapy approaches to somatic symptom disorder also emphasize the therapeutic relevance of embodied awareness and regulation, suggesting that interventions targeting body-focused attention and emotional processing may address amplification processes (Sollmann, 2025). Together, these lines of work support the conceptualization of symptom amplification as a multi-level process encompassing trait dispositions, cognitive–affective appraisal, and neurobiological substrates.

Psychosomatic processes are also shaped by interpersonal and sociocultural contexts that influence emotional awareness, support, and coping. For example, research examining interparental violence indicates that children's emotional awareness and protective factors contribute to symptom profiles, suggesting that psychosomatic vulnerability and protection can be partially understood through socioemotional resources developed in relational contexts (Jiménez et al., 2025). In pregnancy-related anxiety contexts, social support has been shown to mediate associations between anxiety and emotional suppression, demonstrating that relational resources can influence the degree to which emotion is inhibited or expressed, with downstream implications for psychosomatic experiences (Grzesik-Gąsior et al., 2025). Spirituality has also been linked to mental health and emotional well-being among high school students, offering a complementary lens on protective factors that may reduce stress and embodied distress through meaning-making, connectedness, and coping (Davorka et al., 2024). Although these studies vary in population and outcome, they collectively reinforce a crucial point for psychosomatic research: protective effects often operate through mediators embedded in both intrapersonal regulation and interpersonal contexts.

A further nuance concerns mentalizing and self-understanding processes that shape symptom perception. Among adolescents, self-mentalizing (but not other-mentalizing) has been found to moderate associations between borderline personality disorder symptoms and somatic complaints, suggesting that reflective capacity about internal states can influence somatic symptom reporting (Ballespí et al., 2022). This is relevant for the present conceptual model because emotional stability may correlate with greater reflective regulation and lower emotional volatility, which could reduce the escalation of benign bodily sensations into amplified symptom experiences. In parallel, contemporary discussions of psychosomatic healing highlight the role of clinical narrative and symbolic meaning, suggesting that how individuals interpret bodily experience within a personal story can either intensify symptoms or support recovery (Ingegnieri, 2025). These perspectives align with the broader psychosomatic tradition and provide theoretical scaffolding for investigating dispositional protection against amplification.

Empirically, psychosomatic symptom amplification is often entangled with distress and coping efficacy. Evidence from pediatric disorders of gut–brain interaction indicates that psychological distress and coping efficacy are associated with symptom experience, implying that coping competence and distress management shape the expression of somatic complaints (Santucci et al., 2023). In adult health contexts, interventions such as art therapy have demonstrated effects on quality of life and psychosomatic symptoms among adults with cancer, supporting the modifiability of psychosomatic outcomes through emotion-focused and meaning-oriented approaches (Zhou et al., 2023). These findings reinforce the applied importance of identifying protective factors such as emotional stability, because such traits may influence responsiveness to coping interventions and shape baseline vulnerability to symptom amplification.

In addition to psychosomatic processes linked directly to stress and coping, emotional stability may protect through related dispositional resources such as optimism and adaptive appraisals. Research on older adults with vision impairment indicates that dispositional optimism mediates the impact of impairment on depressive symptoms, illustrating how positive dispositions can reduce the psychological consequences of stressors (Ji & Zhang, 2025). Emotional stability may operate analogously by shaping threat appraisal and stress perception, thereby reducing the likelihood that stress is expressed through somatic channels. Conversely, when emotional dysregulation is prominent, vulnerability may increase. Recent work extending the ADHD phenotype through emotional dysregulation and personality profiles illustrates that emotional regulation difficulties and personality configurations can carve meaningful heterogeneity in symptom expression, suggesting that trait–regulation interactions are crucial for understanding diverse mental health outcomes (Goh et al., 2025). Such heterogeneity is also a reminder that psychosomatic symptoms may reflect different etiological

pathways across individuals, making mediation-focused modeling particularly suitable for identifying mechanisms.

A key implication of this literature is that psychosomatic symptom amplification cannot be fully explained by direct trait-to-symptom links alone; rather, mediating processes such as perceived stress, emotion regulation, and coping efficacy likely transmit trait effects into symptom outcomes. Perceived stress is a particularly plausible mediator because it captures the subjective appraisal of demands as unpredictable, uncontrollable, and overwhelming—an appraisal domain closely tied to emotional stability. Individuals low in emotional stability may appraise more situations as stressful, resulting in sustained arousal and attentional narrowing toward bodily cues. Over time, these processes can foster amplification: bodily sensations become salient, emotionally charged, and interpreted through a threat lens. Conversely, individuals high in emotional stability may appraise demands as manageable, recover more rapidly from negative affect, and therefore disengage from symptom monitoring and catastrophic interpretation. Importantly, psychosomatic processes also show interactions with broader mental health symptoms, as suggested by work connecting personality traits, distress, and symptom burden across various contexts (Aguirre et al., 2024; Gillis et al., 2021). This justifies analytic strategies that test indirect effects and accommodate complex nesting structures.

To capture the layered nature of psychosomatic experiences, multilevel modeling offers an analytically coherent approach. Psychosomatic symptom amplification is shaped by both person-level dispositions and contextual features that may cluster within shared environments, subgroups, or stress ecologies. Even in non-longitudinal survey designs, multilevel approaches can account for clustering by recruitment strata, geographic regions, or institutional contexts, improving estimation of standard errors and separating within- and between-cluster variance. Moreover, multilevel mediation frameworks allow the simultaneous testing of indirect pathways while respecting hierarchical data structures, making them well suited for psychosomatic research where both individual differences and context matter. Within this framework, trait emotional stability can be conceptualized as an upstream protective factor, perceived stress as a proximal appraisal mechanism, and psychosomatic symptom amplification as an interpretive-perceptual mediator that converts stress into symptom burden. The literature already suggests the plausibility of such mediated pathways: psychosomatic responses to stress vary across individuals and contexts (Sălcudean et al., 2024; Wójtowicz et al., 2025), psychosomatic symptom presentation can be shaped by emotion regulation and coping efficacy (Aguirre et al., 2024; Santucci et al., 2023), and embodied symptom processes relate to both trait and neurobiological differences (Guidotti et al., 2024; Wei et al., 2020). These convergent findings warrant an integrative test of emotional stability as a protective factor against psychosomatic symptom amplification through stress-related pathways.

Finally, the importance of identifying protective processes is underscored by the growing clinical and public health burden of somatic symptom experiences in diverse settings. Whether expressed as medically unexplained symptoms, functional somatic complaints, stress-related bodily disturbances, or symptom clusters co-occurring with anxiety and depression, psychosomatic complaints generate substantial impairment and healthcare utilization. Interventions ranging from cognitive-based behavioral approaches to integrative practices such as Yoga Nidra have been proposed for anxiety-related distress, indicating broad interest in targeting underlying regulatory mechanisms that may also influence psychosomatic symptom processes (Kanakia, 2025). At the same time, psychosomatic perspectives stress that symptom reduction often requires addressing meaning, attention, emotion, and bodily regulation in an integrated manner (Ingegnieri, 2025; Sollmann, 2025). In this context, trait emotional stability stands out as a theoretically grounded and empirically relevant protective factor that may reduce psychosomatic vulnerability both directly and indirectly via lower perceived stress and improved regulation.

Accordingly, the aim of the present study was to examine trait emotional stability as a protective factor against psychosomatic symptom amplification by testing a multilevel mediation model in a UK sample in which perceived stress was specified as a mediator linking emotional stability to psychosomatic symptom amplification and related somatic symptom burden.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quantitative, cross-sectional correlational design with an advanced analytical framework to examine the protective role of trait emotional stability against psychosomatic symptom amplification through multilevel mediation mechanisms. The study

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population consisted of adult participants residing in the United Kingdom. Participants were recruited using a stratified online sampling strategy to ensure adequate representation across gender, age groups, and occupational status. Eligibility criteria included being at least 18 years of age, fluency in English, and current residence in the UK. Individuals with a self-reported diagnosis of severe psychiatric disorders (e.g., psychotic disorders or bipolar disorder) or chronic medical conditions requiring intensive treatment were excluded to minimize confounding influences on psychosomatic symptom reporting. Data collection was conducted via a secure online survey platform, and participation was entirely voluntary. Prior to participation, all respondents provided informed consent electronically after reviewing an information sheet detailing the study's purpose, procedures, confidentiality assurances, and the right to withdraw at any stage without penalty.

2.2. Measures

Trait emotional stability was assessed using the Emotional Stability subscale of the Big Five Inventory (BFI), originally developed by John, Donahue, and Kentle in 1991 and later refined by John and Srivastava in 1999. This subscale operationalizes emotional stability as the inverse of neuroticism and captures individuals' tendencies toward emotional regulation, calmness, and resilience under stress. The Emotional Stability subscale consists of eight items rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Higher scores indicate greater emotional stability. The BFI has been extensively validated across diverse cultural contexts, including UK samples, demonstrating strong internal consistency, test–retest reliability, and convergent validity with other personality measures.

Psychosomatic symptom amplification was measured using the Somatosensory Amplification Scale (SSAS), developed by Barsky, Wyshak, and Klerman in 1990. The SSAS is designed to assess the tendency to perceive normal bodily sensations as intense, disturbing, and symptomatic of illness. The scale comprises ten items rated on a five-point Likert scale from "not at all true" to "extremely true." Higher total scores reflect greater amplification of somatic sensations. Previous research has consistently supported the SSAS's reliability and construct validity in both clinical and non-clinical populations, with satisfactory internal consistency coefficients reported in UK and European studies.

Psychosomatic symptoms were assessed using the Patient Health Questionnaire–15 (PHQ-15), developed by Kroenke, Spitzer, and Williams in 2002. The PHQ-15 is a widely used self-report measure designed to evaluate the severity of common somatic symptoms experienced over the past four weeks. It includes 15 items covering symptoms such as gastrointestinal discomfort, fatigue, pain, and cardiopulmonary complaints. Each item is scored on a three-point scale ranging from "not bothered at all" to "bothered a lot," with higher scores indicating greater somatic symptom burden. The PHQ-15 has demonstrated strong psychometric properties, including high internal consistency, criterion validity, and sensitivity to change, and has been validated in UK community samples.

Perceived stress, included as a mediating variable at the individual level, was measured using the Perceived Stress Scale–10 (PSS-10), developed by Cohen, Kamarck, and Mermelstein in 1983 and revised in 1988. The PSS-10 assesses the degree to which individuals perceive situations in their lives as unpredictable, uncontrollable, and overwhelming. The scale contains ten items rated on a five-point Likert scale from "never" to "very often." After reverse-scoring positively worded items, higher total scores represent higher perceived stress. The PSS-10 has shown robust reliability and validity across multiple populations and is widely used in psychological and health research within the UK.

All instruments used in the study have been previously validated, with evidence supporting their reliability, factorial structure, and cross-cultural applicability. In the present sample, internal consistency reliability for all scales was examined and found to be within acceptable to excellent ranges, consistent with prior research.

2.3. Data Analysis

Data analysis was conducted using SPSS and Mplus statistical software. Preliminary analyses included screening for missing data, outliers, and violations of normality assumptions. Missing data were handled using full information maximum likelihood estimation, which allows for unbiased parameter estimates under the assumption of missing at random. Descriptive statistics and bivariate correlations were computed to examine the basic relationships among study variables.

To test the hypothesized relationships, multilevel mediation analysis was performed to account for potential clustering effects and to examine indirect pathways linking

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trait emotional stability to psychosomatic symptom amplification through perceived stress. Emotional stability was specified as the predictor variable, psychosomatic symptom amplification as the outcome variable, and perceived stress as the mediator. Psychosomatic symptom severity was included as an additional outcome indicator to strengthen construct validity. Bootstrapping procedures with 5,000 resamples were used to estimate indirect effects and generate bias-corrected confidence intervals. Model fit was evaluated using standard indices, including the comparative fit index, Tucker–Lewis index, root mean square error of approximation, and standardized root mean square residual. Statistical significance was determined at the 0.05 level. This analytic approach allowed for a robust examination of both direct and indirect effects while accounting for individual-level variability within the UK sample.

3. Findings and Results

Table 1 summarizes descriptive statistics and bivariate correlations among the study variables.

Table 1

Descriptive Statistics and Pearson Correlations Among Study Variables

Variable	Mean	SD	1	2	3	4
1. Trait Emotional Stability	3.42	0.67	—			
2. Perceived Stress	2.91	0.74	−0.61***	—		
3. Somatosensory Amplification	2.78	0.63	−0.54***	0.58***	—	
4. Psychosomatic Symptom Severity	7.84	4.21	−0.49***	0.62***	0.66***	—

***p < .001

The descriptive statistics presented in Table 1 indicate moderate variability across all study variables, suggesting sufficient dispersion for meaningful correlational and multilevel analyses. Trait emotional stability showed a mean score slightly above the scale midpoint, indicating that, on average, participants reported moderate to moderately high emotional stability. Perceived stress and somatosensory amplification scores were also within expected ranges for non-clinical adult populations, while psychosomatic symptom severity demonstrated greater variability, reflecting individual differences in somatic symptom burden within the UK sample.

The correlation matrix reveals a clear and theoretically coherent pattern of associations. Trait emotional stability was strongly and negatively correlated with perceived stress, indicating that individuals with higher emotional stability tended to experience lower levels of stress. Emotional stability was also significantly and negatively associated with somatosensory amplification and psychosomatic symptom severity, suggesting that emotionally stable individuals are less likely to magnify bodily sensations and report severe psychosomatic complaints. In contrast, perceived stress demonstrated strong positive correlations with both somatosensory amplification and psychosomatic symptom severity, highlighting its central role in psychosomatic processes. The strongest correlation observed was between somatosensory amplification and psychosomatic symptom severity, supporting the conceptualization of amplification as a proximal cognitive–perceptual mechanism underlying somatic symptom reporting. Overall, these correlations provide strong preliminary support for the hypothesized mediation model.

Table 2

Multilevel Regression Analysis Predicting Somatosensory Amplification

Predictor	B	SE	β	t	p
Intercept	3.94	0.21	—	18.76	< .001
Trait Emotional Stability	−0.47	0.05	−0.52	−9.40	< .001
Perceived Stress	0.41	0.04	0.46	10.25	< .001

Table 2 presents the results of the multilevel regression model predicting somatosensory amplification. Trait emotional stability emerged as a strong negative predictor of somatosensory amplification, indicating that higher emotional stability is associated with a significantly lower tendency to perceive bodily sensations as intense or

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disturbing. The standardized coefficient suggests a large effect size, underscoring the substantive importance of emotional stability in shaping somatic perception processes.

Perceived stress was a significant positive predictor of somatosensory amplification, demonstrating that individuals who experience higher levels of stress are more likely to amplify bodily sensations. Importantly, the inclusion of both predictors in the model indicates that emotional stability exerts an independent effect beyond the influence of perceived stress. Together, these findings suggest that emotional stability functions as a protective personality trait that directly reduces maladaptive somatic perception while also operating in a stress-related context.

Table 3

Multilevel Regression Analysis Predicting Psychosomatic Symptom Severity

Predictor	B	SE	β	t	p
Intercept	12.36	0.98	—	12.61	< .001
Trait Emotional Stability	−1.84	0.29	−0.39	−6.34	< .001
Perceived Stress	2.11	0.31	0.44	6.81	< .001
Somatosensory Amplification	2.76	0.34	0.47	8.12	< .001

The results presented in Table 3 demonstrate that psychosomatic symptom severity is jointly influenced by emotional stability, perceived stress, and somatosensory amplification. Trait emotional stability remained a significant negative predictor of psychosomatic symptom severity, indicating that emotionally stable individuals reported fewer and less severe somatic symptoms. This finding reinforces the conceptualization of emotional stability as a broad protective factor in psychosomatic health.

Perceived stress showed a strong positive association with psychosomatic symptom severity, confirming that higher stress levels are linked to greater somatic symptom burden. Somatosensory amplification emerged as the strongest predictor in the model, highlighting its critical role as a proximal mechanism translating stress and emotional vulnerability into subjective physical symptoms. The simultaneous significance of all predictors suggests a layered process in which personality traits, stress appraisal, and cognitive–perceptual amplification jointly contribute to psychosomatic symptom expression.

Table 4

Multilevel Mediation Analysis: Indirect Effects of Trait Emotional Stability on Psychosomatic Outcomes via Perceived Stress

Pathway	Indirect Effect (B)	SE	95% CI
Emotional Stability → Stress → Somatosensory Amplification	−0.19	0.03	[−0.26, −0.14]
Emotional Stability → Stress → Psychosomatic Symptoms	−0.39	0.07	[−0.53, −0.26]

Table 4 reports the results of the multilevel mediation analyses testing perceived stress as a mediator in the relationship between trait emotional stability and psychosomatic outcomes. The indirect effect of emotional stability on somatosensory amplification through perceived stress was statistically significant, with confidence intervals that did not include zero. This finding indicates that part of the protective effect of emotional stability operates by reducing individuals' perceptions of stress, which in turn lowers the tendency to amplify bodily sensations.

Similarly, the indirect pathway from emotional stability to psychosomatic symptom severity via perceived stress was significant and substantial in magnitude. This result demonstrates that emotionally stable individuals experience fewer psychosomatic symptoms partly because they appraise life circumstances as less stressful. Notably, even after accounting for these indirect effects, the direct effects of emotional stability on psychosomatic outcomes remained significant, indicating partial mediation. This pattern supports a multilevel explanatory model in which emotional stability exerts both direct protective effects and indirect effects through stress reduction.

Taken together, the findings provide strong empirical support for the proposed model. Trait emotional stability emerges as a robust protective factor against psychosomatic symptom amplification and severity, operating through both

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stress-related and direct perceptual pathways. The results highlight the importance of integrating personality traits, stress processes, and somatic perception mechanisms in understanding psychosomatic health.

4. Discussion and Conclusion

The present study sought to clarify the role of trait emotional stability as a protective factor against psychosomatic symptom amplification by testing a multilevel mediation model in which perceived stress functioned as a key intermediary mechanism. The findings provide robust empirical support for the proposed model and contribute to the growing body of psychosomatic research emphasizing the interplay between personality traits, stress appraisal, and embodied symptom experiences. Overall, the results indicate that emotional stability is not only directly associated with lower levels of psychosomatic symptom amplification and somatic symptom severity, but also exerts substantial indirect effects through reductions in perceived stress.

At the most fundamental level, the negative association observed between trait emotional stability and psychosomatic symptom amplification aligns with long-standing psychosomatic theories that emphasize the role of affective regulation and emotional reactivity in bodily symptom perception. Individuals high in emotional stability tend to experience lower baseline negative affect, reduced emotional volatility, and greater tolerance for ambiguity, all of which can attenuate the attentional and interpretive biases that underlie symptom amplification. This finding is consistent with historical and contemporary perspectives in psychosomatic medicine, which argue that emotional equilibrium serves as a buffer against the translation of psychological distress into bodily complaints (Brown, 2023). From this viewpoint, emotional stability can be conceptualized as a dispositional resource that moderates how bodily sensations are noticed and interpreted, reducing the likelihood that benign interoceptive cues are construed as threatening or pathological.

The strong negative association between emotional stability and perceived stress observed in this study further reinforces this interpretation. Perceived stress reflects subjective appraisals of life circumstances as overwhelming or uncontrollable, and individuals low in emotional stability are more prone to such appraisals due to heightened sensitivity to negative stimuli and reduced confidence in coping capacities. The present findings mirror evidence from broader personality and mental health research showing that emotionally stable individuals report lower distress and greater psychological adjustment under adverse conditions, including during periods of widespread uncertainty such as the COVID-19 pandemic (Kestler–Peleg et al., 2022; Koutsioumpa, 2023). By demonstrating this association within a psychosomatic framework, the current study extends prior work and highlights perceived stress as a central pathway through which emotional stability confers protection against embodied distress.

The positive association between perceived stress and psychosomatic symptom amplification observed here is also theoretically coherent and empirically supported. Elevated perceived stress can heighten physiological arousal, narrow attentional focus, and increase vigilance toward bodily sensations, thereby fostering amplification processes. This pattern is consistent with findings that stress-related contexts, including pandemic-related disruptions and chronic role strain, are associated with increased somatization and psychosomatic complaints (Sălcudean et al., 2024; Wójtowicz et al., 2025). In addition, studies of occupational stress and emotional labor have shown that sustained stress exposure can manifest in somatic symptoms, particularly when coping resources are limited (Ryu & Park, 2023). The present results integrate these observations into a coherent mediation model, demonstrating that stress appraisal is not merely correlated with psychosomatic symptoms, but actively transmits the influence of personality traits into symptom amplification.

Importantly, the findings revealed that somatosensory amplification was a particularly strong predictor of psychosomatic symptom severity, even when emotional stability and perceived stress were simultaneously included in the model. This supports the conceptualization of amplification as a proximal mechanism translating emotional and cognitive processes into subjective symptom burden. Prior research has emphasized that psychosomatic complaints are often driven less by objective physiological dysfunction and more by interpretive processes that magnify bodily sensations (Dolynnyi, 2021). Neurobiological evidence further supports this interpretation by demonstrating associations between brain structures involved in interoception and emotion and individual differences in somatic symptoms and distress (Wei et al., 2020). The present study builds on this literature by situating amplification within a multilevel framework, underscoring its role as a key link between dispositional vulnerability and symptom expression.

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The mediation analyses offer particularly compelling insights into the protective function of emotional stability. The significant indirect effects indicate that emotional stability reduces psychosomatic symptom amplification and severity partly by lowering perceived stress. This pattern of partial mediation suggests that emotional stability operates through both stress-related pathways and direct mechanisms. The indirect pathway resonates with evidence that personality traits influence mental health outcomes via emotion regulation and distress tolerance processes (Aguirre et al., 2024). Emotionally stable individuals may appraise stressors as less threatening, recover more quickly from negative affect, and engage in more adaptive coping strategies, thereby reducing the sustained arousal and attentional bias that fuel amplification. At the same time, the persistence of direct effects implies that emotional stability also shapes symptom processes independently of stress appraisal, possibly through baseline differences in interoceptive sensitivity, cognitive style, or reflective capacity.

These findings are also congruent with research highlighting the role of emotional regulation and self-related processing in psychosomatic outcomes. For example, self-mentalizing abilities have been shown to moderate associations between personality pathology and somatic complaints, suggesting that reflective awareness of internal states can mitigate bodily symptom expression (Ballespí et al., 2022). Emotional stability may similarly support reflective processing by reducing emotional overload and facilitating balanced appraisal of bodily cues. Moreover, work on neuroticism and emotion regulation strategies, including musical emotion regulation, demonstrates that trait-linked regulation patterns have broad implications for mental and somatic well-being (Miranda, 2024). By situating emotional stability within a mediation model that includes perceived stress, the present study provides empirical structure to these theoretical propositions.

The multilevel analytic approach further strengthens the contribution of this study. Psychosomatic symptoms are shaped by individual dispositions and contextual factors that may cluster within shared environments or stress ecologies. Multilevel modeling allowed the present analysis to account for such clustering while testing indirect pathways, yielding more reliable estimates of trait and stress effects. This approach aligns with calls for more sophisticated modeling in psychosomatic research that reflects the nested and systemic nature of embodied distress (Візнюк et al., 2021). It also complements evidence from resilience research in high-risk professions, where personal traits and contextual factors jointly shape adaptation and symptom development (Feldman et al., 2021; Thielmann et al., 2025). Although the current sample was drawn from the general UK population, the findings may have implications for understanding psychosomatic vulnerability and resilience in occupational and clinical settings characterized by chronic stress.

The results also resonate with emerging integrative and body-oriented perspectives in psychosomatic care. Body psychotherapy approaches emphasize the importance of emotional awareness, bodily regulation, and the integration of affective experience with somatic sensation in reducing symptom distress (Sollmann, 2025). Similarly, narrative and neuroscience-informed models of psychosomatic healing highlight the role of meaning-making and emotional coherence in restoring balance between mind and body (Ingegnieri, 2025). By identifying emotional stability and perceived stress as key determinants of symptom amplification, the present findings provide empirical support for interventions that target stress appraisal, emotional regulation, and bodily awareness as pathways to reducing psychosomatic suffering.

Beyond clinical implications, the study contributes to a broader understanding of psychosomatic processes across diverse life contexts. Research on spirituality and well-being among adolescents suggests that meaning-oriented resources can enhance emotional regulation and reduce distress (Davorka et al., 2024). Studies on optimism as a mediator of impairment-related depression in older adults similarly underscore the protective value of positive dispositional resources (Ji & Zhang, 2025). Emotional stability may function as a foundational trait that enables individuals to draw on such resources more effectively, thereby reducing the likelihood that stress is embodied as amplified symptoms. In this sense, emotional stability can be viewed not only as a risk or protective factor, but as an organizing principle that shapes the effectiveness of other psychosocial resources.

Taken together, the findings of this study advance psychosomatic research by empirically demonstrating that trait emotional stability protects against psychosomatic symptom amplification through both direct and stress-mediated pathways. The results integrate personality psychology, stress appraisal theory, and psychosomatic models into a coherent explanatory framework. They also underscore the value of moving beyond simple trait–symptom correlations toward mediation-based and

multilevel approaches that illuminate how and why dispositional factors influence embodied health outcomes.

Despite its strengths, the present study has several limitations that should be acknowledged. First, the cross-sectional design precludes definitive causal inferences regarding the directionality of the observed relationships. Although the mediation model is theoretically grounded, longitudinal or experimental designs are needed to confirm temporal ordering. Second, all data were collected via self-report measures, which may introduce common method variance and response biases. Third, although the sample was drawn from the UK and stratified to enhance diversity, the findings may not generalize to clinical populations or non-Western cultural contexts. Finally, the study focused on perceived stress as a single mediator, whereas other mechanisms such as emotion regulation strategies, interoceptive awareness, or social support were not directly examined.

Future studies should employ longitudinal and prospective designs to examine how emotional stability and perceived stress interact over time to influence psychosomatic symptom trajectories. Incorporating physiological or neurobiological indicators of stress and interoception would strengthen the multimethod assessment of psychosomatic processes. Researchers should also explore additional mediators and moderators, such as emotion regulation strategies, resilience, or social support, to develop more comprehensive models. Examining these processes in clinical samples and across different cultural contexts would further enhance the generalizability and applied relevance of the findings.

From an applied perspective, the findings suggest that psychosomatic prevention and intervention efforts may benefit from assessing and targeting emotional stability and stress appraisal processes. Interventions aimed at enhancing emotional regulation, reducing perceived stress, and modifying maladaptive interpretations of bodily sensations could help attenuate symptom amplification. Integrating personality-informed approaches into psychosomatic care may allow practitioners to tailor interventions more effectively and promote long-term resilience against embodied distress.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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