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Cognitive Avoidance and Somatic Complaints in Adolescents: The Mediating Role of Interoceptive Awareness

Nur Aisyah. Binti Zulkifli[1], Bridget. Abalorio[2*], Nayelli. Muñoz[3]

[1] Department of Health Psychology, Universiti Kebangsaan Malaysia, Bangi, Malaysia
[2] Faculty of Psychology, Peruvian University of Applied Sciences, Lima, Peru
[3] Faculty of Health Sciences, Private University of the North, Lima, Peru

*** Corresponding author email address**: bridget.abaloro@upc.edu.pe

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A B S T R A C T

Objective: This study aimed to investigate the relationship between cognitive avoidance and somatic complaints in adolescents, with a specific focus on the mediating role of interoceptive awareness.

Methods and Materials: The research utilized a descriptive correlational design with a sample of 400 adolescents aged 13 to 18 years, selected from high schools in Peru based on the Morgan and Krejcie sample size table. Participants completed the Cognitive Avoidance Questionnaire (CAQ), the Children's Somatization Inventory (CSI-24), and the Multidimensional Assessment of Interoceptive Awareness – Youth Version (MAIA-Y). Data analysis was conducted using SPSS-27 for descriptive and Pearson correlation analyses, and AMOS-21 was employed for structural equation modeling (SEM) to evaluate the mediating effect of interoceptive awareness on the relationship between cognitive avoidance and somatic complaints.

Findings: Pearson correlation results indicated that cognitive avoidance was positively correlated with somatic complaints ($r = .42$, $p < .001$), while interoceptive awareness was negatively correlated with both cognitive avoidance ($r = –.44$, $p < .001$) and somatic complaints ($r = –.39$, $p < .001$). The structural model showed excellent fit indices ($\chi^2/df = 1.68$, CFI = .97, RMSEA = .041). SEM results confirmed that cognitive avoidance had a significant direct effect on somatic complaints ($\beta = .32$, $p < .001$) and a significant indirect effect through interoceptive awareness ($\beta = –.12$, $p = .004$), supporting the mediating role of interoception.

Conclusion: Enhancing interoceptive awareness may serve as an effective intervention target for reducing psychosomatic distress in youth who rely on maladaptive cognitive coping strategies.

Keywords: *Cognitive avoidance, interoceptive awareness, somatic complaints, adolescents.*

1. Introduction

Adolescence is a critical developmental stage marked by substantial physiological, psychological, and social transitions. These transitions can render adolescents particularly vulnerable to internalizing problems, including somatic complaints—physical symptoms that lack sufficient medical explanation but cause significant distress and impairment. The prevalence of such complaints has been steadily increasing among adolescents globally, highlighting the importance of understanding the psychological mechanisms underlying their manifestation. Somatic complaints in youth have been consistently associated with emotional dysregulation, stress sensitivity, and maladaptive coping strategies, among which cognitive avoidance is particularly salient. Cognitive avoidance refers to an individual's tendency to mentally disengage from distressing thoughts or emotions, and while it may offer temporary relief, over time it is known to intensify physiological stress responses and bodily discomfort (Datta & Lock, 2023; Kiera, 2025). Emerging research suggests that interoceptive awareness—the ability to sense and interpret internal bodily signals—may serve as a critical mediating mechanism between cognitive avoidance and somatic experiences in adolescents (Barmpagiannis & Baldimtsi, 2025; Bijsterbosch et al., 2023).

Cognitive avoidance is a form of experiential avoidance in which individuals attempt to suppress or alter distressing internal experiences, such as anxious thoughts or negative affect, through mental strategies like distraction, denial, or thought suppression. While such strategies may reduce immediate emotional discomfort, they tend to limit emotional processing and lead to the accumulation of unresolved physiological arousal. In adolescents, cognitive avoidance has been associated with a wide range of psychosomatic outcomes, including fatigue, gastrointestinal complaints, and musculoskeletal pain (Braet & Braet, 2024; Meneguzzo et al., 2023). Avoidance-driven behaviors, such as emotional suppression and body disconnection, may prevent individuals from accurately identifying or responding to internal physiological cues, thereby exacerbating bodily symptoms. Furthermore, adolescents who rely heavily on avoidance may be less likely to seek help or communicate their distress, further contributing to chronic somatic symptoms and reduced functioning (Liné et al., 2022; Riboli, 2022).

In contrast to avoidance, interoceptive awareness enables individuals to attend to and make sense of internal bodily signals such as heartbeat, respiration, and muscle tension. It encompasses both sensory detection and cognitive-affective interpretation of interoceptive cues. Higher interoceptive awareness has been linked to better emotion regulation, health monitoring, and psychological resilience, while deficits in interoception are associated with alexithymia, anxiety, and psychosomatic disorders (Braet et al., 2024; Palser et al., 2021). Among adolescents, this capacity is still maturing, and its developmental trajectory may intersect with emotional learning and regulatory processes. Indeed, multiple studies have demonstrated that adolescents with heightened interoceptive awareness are more capable of recognizing the somatic aspects of emotion and therefore regulating their distress more effectively (Brown & Dunn, 2022; Jones et al., 2020).

The relevance of interoceptive awareness in understanding somatic symptoms is underscored by recent findings in both clinical and non-clinical adolescent populations. For example, adolescents with eating disorders or functional somatic syndromes frequently show diminished interoceptive differentiation, making it difficult for them to distinguish between emotional distress and physical illness (Datta & Lock, 2023; Laczkovics et al., 2022). This overlap contributes to a tendency to misinterpret emotional cues as physical illness, thereby reinforcing maladaptive illness behaviors. Conversely, interventions designed to enhance interoceptive sensitivity—such as mindfulness training and neurofeedback—have demonstrated promising outcomes in reducing somatic complaints and improving self-regulation among adolescents (Balconi et al., 2023; Yu et al., 2022).

In recent years, neurodevelopmental studies have deepened our understanding of how interoceptive processing is represented in the adolescent brain. Structural and functional neuroimaging studies have identified key interoceptive hubs in the insular cortex, anterior cingulate cortex, and default mode network—regions implicated in body awareness, emotion regulation, and self-referential thinking. Dysregulation within these networks has been linked to heightened somatic symptom burden and emotion processing difficulties in youth (Ho et al., 2020; Tymofiyeva et al., 2024). For instance, adolescents with altered insular activation show diminished capacity to monitor and label internal bodily states, increasing their susceptibility to psychosomatic symptoms. Notably, neurofeedback studies have demonstrated that enhancing connectivity in these regions can improve interoceptive differentiation and reduce symptom burden (Yu et al., 2022).

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Importantly, interoception does not function in isolation but is shaped by cognitive and environmental influences, including how individuals habitually respond to distress. Cognitive avoidance, in this regard, may hinder interoceptive development by discouraging attentional focus on internal experiences. Studies have shown that individuals who engage in frequent cognitive avoidance display reduced bodily awareness and diminished responsiveness to somatic cues (Braet & Braet, 2024; Engel & Schmidt, 2025). This suggests a potential mediating role of interoceptive awareness in the relationship between cognitive avoidance and somatic complaints. Adolescents who habitually avoid distressing thoughts may become disconnected from their bodies, failing to process somatic information in an adaptive way, and thus experience increased somatic symptomatology over time (Barmpagiannis & Baldimtsi, 2025; Bijsterbosch et al., 2023).

Several empirical studies support this proposed mediation pathway. For example, Donadeo et al. (2021) found that reduced interoceptive-exteroceptive integration in adolescents was associated with increased somatic concerns, particularly among those with elevated cognitive avoidance tendencies (Donadeo et al., 2021). Similarly, Kiera (2025) reported that autistic adolescents who struggled with interoceptive processing exhibited both high levels of cognitive avoidance and heightened physical symptom distress (Kiera, 2025). These findings highlight the complex and bidirectional interactions between avoidance, body awareness, and somatic distress. Moreover, interventions that combine interoceptive training with strategies for reducing cognitive avoidance, such as acceptance-based therapies or mindful movement practices, have shown enhanced efficacy in improving psychosomatic outcomes among adolescents (Lin, 2025; Sakaj, 2025).

The interplay between interoceptive awareness and somatic symptoms is also evident in special populations, such as individuals with autism spectrum disorder (ASD) or eating disorders. In these groups, interoceptive dysfunction is not merely a comorbid feature but a core characteristic of the condition. Research indicates that deficits in interoception are tied to difficulties in emotional identification and behavioral regulation, increasing the likelihood of somatic symptom misinterpretation (Itoi et al., 2022; Palser et al., 2021). For example, Barmpagiannis and Baldimtsi (2025) highlighted how enhancing interoceptive skills in autistic children through occupational therapy improved both emotional regulation and physical comfort, underscoring the therapeutic relevance of interoception (Barmpagiannis & Baldimtsi, 2025). Similarly, Colaianne et al. (2022) emphasized the benefits of school-based programs focused on cultivating interoceptive and compassionate awareness for reducing physical and emotional symptoms in adolescents identified as peer supporters (Colaianne et al., 2022).

Collectively, these findings underscore the importance of investigating interoceptive awareness as a dynamic and modifiable construct with profound implications for adolescent well-being. While cognitive avoidance has long been recognized as a maladaptive strategy for coping with distress, its impact on bodily awareness and somatic symptoms has received comparatively less empirical attention. Interoceptive awareness may provide the missing link in this relationship, serving both as a vulnerability factor and a potential target for intervention. Moreover, adolescence represents a unique developmental window during which interoceptive capacities and emotion regulation strategies are still forming, making early detection and targeted support particularly valuable (Braet et al., 2024; Jones et al., 2020).

The present study aims to examine the relationship between cognitive avoidance and somatic complaints in adolescents, and to test whether interoceptive awareness mediates this relationship.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive correlational research design to examine the relationship between cognitive avoidance and somatic complaints in adolescents, with interoceptive awareness considered as a potential mediating variable. The target population consisted of high school students in Peru. Based on the Morgan and Krejcie (1970) sample size determination table, a total of 400 participants were selected through a multi-stage cluster sampling method to ensure adequate representation. Inclusion criteria required participants to be adolescents aged between 13 and 18 years, currently enrolled in school, and able to complete the self-report questionnaires independently. Parental consent and student assent were obtained for all participants prior to data collection.

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2.2. Measures

2.2.1. Somatic Complaints

To assess somatic complaints in adolescents, the Children's Somatization Inventory–24 (CSI-24), developed by Walker, Beck, Garber, and Lambert in 2009, is an appropriate and widely used self-report measure. The CSI-24 consists of 24 items that capture the frequency of various somatic symptoms such as headaches, stomachaches, dizziness, and muscle pain over the past two weeks. Participants rate each item on a 5-point Likert scale ranging from 0 (not at all) to 4 (a whole lot), with total scores indicating the severity of somatic symptomatology. The CSI-24 does not include formal subscales, but its items broadly represent common physical symptoms experienced by adolescents. The instrument has demonstrated strong internal consistency (Cronbach's alpha > 0.85) and has been validated across multiple adolescent populations, confirming its reliability and construct validity in both clinical and non-clinical settings (Seiffge-Krenke & Sattel, 2024; Wazir, 2023).

2.2.2. Interoceptive Awareness

Interoceptive awareness was measured using the Multidimensional Assessment of Interoceptive Awareness – Youth Version (MAIA-Y), an adaptation of the original MAIA developed by Mehling et al. in 2012, with the youth version tailored by Jones et al. in 2021. The MAIA-Y includes 32 items divided into eight subscales: Noticing, Not-Distracting, Not-Worrying, Attention Regulation, Emotional Awareness, Self-Regulation, Body Listening, and Trusting. Items are rated on a 5-point Likert scale from 0 (never) to 4 (always), with higher scores reflecting greater interoceptive awareness across dimensions. This multidimensional tool captures both awareness and attitudes toward internal bodily sensations. Studies have confirmed the MAIA-Y's internal consistency (subscale alphas ranging from 0.68 to 0.86) and construct validity in adolescent populations, supporting its use in psychological and health-related research (Hooshmandi et al., 2024; Riboli, 2022).

2.2.3. Cognitive Avoidance

Cognitive avoidance was assessed using the Cognitive Avoidance Questionnaire (CAQ), developed by Sexton and Dugas in 2008. This self-report instrument contains 25 items and measures five cognitive avoidance strategies: Thought Substitution, Transformation of Images into Thoughts, Distraction, Thought Suppression, and Avoidance of Threatening Stimuli. Each item is rated on a 5-point Likert scale from 1 (not at all true for me) to 5 (very true for me), with subscale and total scores reflecting the tendency to engage in cognitive strategies that inhibit the processing of distressing information. The CAQ has shown strong psychometric properties, including high internal consistency ($\alpha > 0.80$) for both the total score and subscales, as well as confirmed validity in adolescent and adult samples across various cultural contexts (Scotta et al., 2022; Tahoon, 2023).

2.3. Data Analysis

For data analysis, both descriptive and inferential statistical methods were used. Initially, Pearson correlation coefficients were calculated using SPSS version 27 to assess the bivariate relationships between the dependent variable (somatic complaints) and each independent variable (cognitive avoidance and interoceptive awareness). To examine the hypothesized mediating role of interoceptive awareness in the relationship between cognitive avoidance and somatic complaints, Structural Equation Modeling (SEM) was performed using AMOS version 21. Model fit indices such as the Chi-square test (χ^2), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA) were evaluated to determine the adequacy of the proposed model.

3. Findings and Results

The study sample consisted of 400 adolescents from various secondary schools in Peru. Among the participants, 226 were female (56.5%) and 174 were male (43.5%). The age of participants ranged from 13 to 18 years, with a mean age of 15.71 years (SD = 1.42). In terms of educational level, 118 students (29.5%) were in the first year of high school, 101 (25.3%) in the second year, 89 (22.3%) in the third year, and 92 (23.0%) in the final year. Regarding socioeconomic status, 136 participants (34.0%) reported low income, 198 (49.5%) reported middle income, and 66 (16.5%) reported high income. These distributions provided a diverse and representative sample of Peruvian adolescents for the current analysis.

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Table 1

Descriptive Statistics for Study Variables (N = 400)

Variable	M	SD
Somatic Complaints	45.28	12.41
Cognitive Avoidance	72.35	10.96
Interoceptive Awareness	88.64	13.77

Participants reported moderate to high levels of cognitive avoidance (M = 72.35, SD = 10.96) and interoceptive awareness (M = 88.64, SD = 13.77). The mean score for somatic complaints was 45.28 (SD = 12.41), indicating a moderate level of physical symptom reporting across the sample (Table 1).

Prior to conducting the main analyses, the assumptions of normality, linearity, multicollinearity, and homoscedasticity were examined. Skewness and kurtosis values for all key variables were within acceptable ranges (skewness: −0.21 to 0.88; kurtosis: −0.47 to 1.13), suggesting approximate normal distribution. Scatterplots indicated linear relationships among the study variables, and no significant outliers were detected. Multicollinearity was assessed using Variance Inflation Factor (VIF) values, which ranged from 1.04 to 1.36, well below the threshold of 10. Homoscedasticity was confirmed through the examination of residual plots, showing consistent variance across predicted values. These results confirmed that the data met the necessary assumptions for Pearson correlation and structural equation modeling analyses.

Table 2

Pearson Correlation Coefficients and Significance Levels Between Variables

Variable	1	2	3
1. Somatic Complaints	—		
2. Cognitive Avoidance	.42** (p < .001)	—	
3. Interoceptive Awareness	–.39** (p < .001)	–.44** (p < .001)	—

There was a significant positive correlation between cognitive avoidance and somatic complaints (r = .42, p < .001), suggesting that higher avoidance was associated with increased somatic symptoms. Interoceptive awareness was negatively correlated with both somatic complaints (r = –.39, p < .001) and cognitive avoidance (r = –.44, p < .001), supporting its role as a protective factor in this model (Table 2).

Table 3

Fit Indices for the Structural Equation Model

Index	Value
χ^2	141.36
df	84
χ^2/df	1.68
GFI	.95
AGFI	.92
CFI	.97
RMSEA	.041
TLI	.96

The model demonstrated excellent fit with the data, as indicated by a χ^2/df ratio of 1.68, which is well below the recommended cutoff of 3. Fit indices including GFI (.95), AGFI (.92), CFI (.97), and TLI (.96) exceeded the threshold of .90. RMSEA was also within the acceptable range (.041), confirming the adequacy of the model (Table 3).

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Table 4

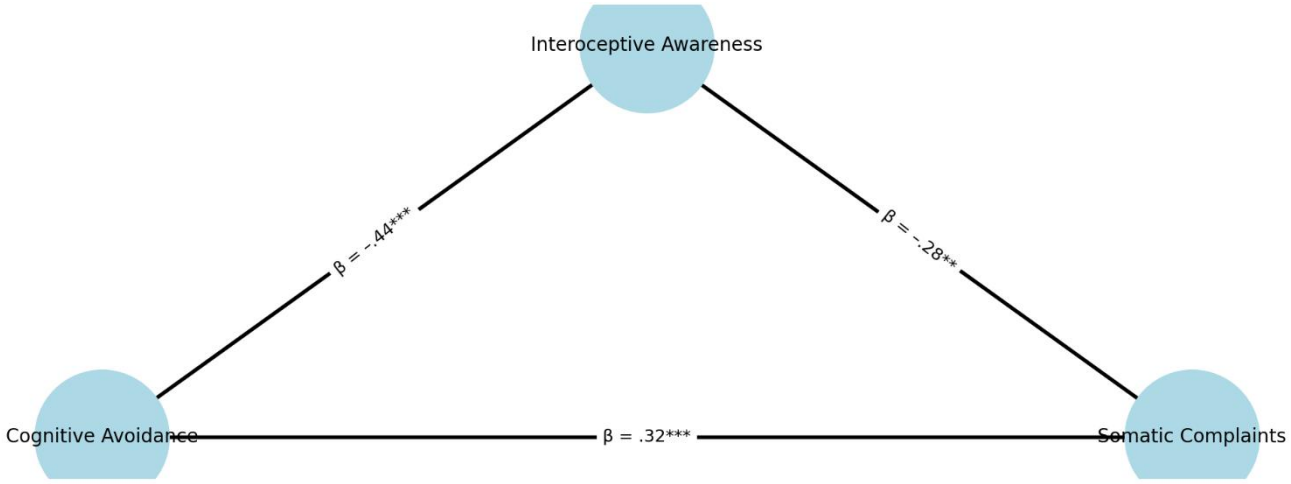
Direct, Indirect, and Total Path Coefficients Between Variables in the Structural Model

Path	b	S.E	β	p
Cognitive Avoidance → Somatic Complaints	0.27	0.06	0.32	< .001
Cognitive Avoidance → Interoceptive Awareness	–0.41	0.05	–0.44	< .001
Interoceptive Awareness → Somatic Complaints	–0.22	0.07	–0.28	.002
Cognitive Avoidance → Somatic Complaints (Indirect via Interoceptive Awareness)	–0.09	0.03	–0.12	.004
Cognitive Avoidance → Somatic Complaints (Total Effect)	0.18	0.05	0.20	< .001

The direct path from cognitive avoidance to somatic complaints was significant (b = 0.27, β = 0.32, p < .001), indicating that adolescents who engage in higher levels of avoidance report more somatic symptoms. Cognitive avoidance was also a strong negative predictor of interoceptive awareness (b = –0.41, β = –0.44, p < .001), while interoceptive awareness negatively predicted somatic complaints (b = –0.22, β = –0.28, p = .002). The indirect effect of cognitive avoidance on somatic complaints through interoceptive awareness was also statistically significant (b = –0.09, β = –0.12, p = .004), supporting the mediating role of interoception in this model (Table 4).

Figure 1

Model with Path Coefficients



4. Discussion and Conclusion

The present study investigated the relationship between cognitive avoidance and somatic complaints among adolescents and examined the mediating role of interoceptive awareness. The results indicated that cognitive avoidance was positively correlated with somatic complaints, while interoceptive awareness was negatively associated with both cognitive avoidance and somatic complaints. Structural Equation Modeling (SEM) revealed a significant indirect effect of cognitive avoidance on somatic complaints through interoceptive awareness, supporting the hypothesized mediating role. These findings provide empirical support for the conceptual framework that positions interoceptive awareness as a critical psychological mechanism that modulates the influence of cognitive coping strategies on somatic symptom expression in adolescence.

The observed positive relationship between cognitive avoidance and somatic complaints aligns with prior research indicating that avoidance-based strategies are associated with heightened somatization in youth populations. Adolescents who habitually avoid distressing internal experiences may fail to cognitively process emotional arousal, leading to a buildup of unresolved affect that is ultimately channeled into somatic symptoms (Braet & Braet, 2024; Datta & Lock, 2023). This process is particularly concerning during adolescence, a developmental period marked by heightened emotional reactivity and a growing need for adaptive emotion regulation strategies. The findings echo those of Kiera (2025), who documented that autistic

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adolescents employing cognitive avoidance experienced intensified somatic distress, reinforcing the maladaptive nature of such coping patterns (Kiera, 2025).

The results also revealed a strong negative association between interoceptive awareness and somatic complaints, indicating that adolescents who demonstrate greater attunement to their internal bodily states report fewer physical symptoms. This finding supports the growing body of literature identifying interoceptive awareness as a protective factor against psychosomatic expression (Braet et al., 2024; Yu et al., 2022). For example, Bijsterbosch et al. (2023) found that adolescents with higher interoceptive awareness were less prone to body dissatisfaction and somatic symptom misinterpretation, particularly when facing uncertainty (Bijsterbosch et al., 2023). Similarly, Donadeo et al. (2021) reported that individuals with psychotic symptoms displayed impaired interoceptive-exteroceptive integration, which was associated with elevated physical symptomatology and poor emotional differentiation (Donadeo et al., 2021).

In addition to these bivariate relationships, the mediating effect of interoceptive awareness was statistically significant, indicating that cognitive avoidance exerts its influence on somatic complaints partly by impairing one's ability to perceive and understand bodily signals. This supports theoretical models suggesting that cognitive avoidance disrupts somatic monitoring by redirecting attention away from internal cues, which may, over time, impair interoceptive capacity and heighten somatic symptom expression (Braet & Braet, 2024; Engel & Schmidt, 2025). This mediation is consistent with the findings of Barmpagiannis and Baldimtsi (2025), who emphasized the importance of interoceptive training in improving emotional regulation and reducing somatic symptoms in autistic children (Barmpagiannis & Baldimtsi, 2025). Furthermore, Tymofiyeva et al. (2024) demonstrated that mindfulness-based training, which enhances interoceptive awareness, led to significant changes in interoceptive brain networks and reduced psychosomatic distress in adolescents (Tymofiyeva et al., 2024).

These findings also support recent neurobiological evidence suggesting that the interoceptive system is shaped by both sensory experience and cognitive style. Cognitive avoidance may not only alter psychological processing but also neural activity within key interoceptive hubs, such as the insular cortex and anterior cingulate cortex. Ho et al. (2020) reported disruptions in default mode and salience networks in adolescents with internalizing symptoms and maladaptive cognitive styles, reinforcing the neural correlates of interoceptive dysfunction (Ho et al., 2020). In another study, Yu et al. (2022) found that neurofeedback-enhanced mindfulness training elicited changes in insular cortex activity, supporting the idea that interoceptive awareness is not static but can be cultivated through targeted interventions (Yu et al., 2022).

The current study's findings also align with earlier research suggesting that adolescents with better interoceptive awareness are more capable of emotion regulation, which in turn may reduce the need for cognitive avoidance and its somatic consequences. Braet et al. (2024) noted that interoception is a precursor to effective emotion regulation in adolescents and that greater bodily awareness enhances the ability to manage stress (Braet et al., 2024). This notion is further supported by Brown and Dunn (2022), who developed tools to assess interoceptive participation and found a strong link between body awareness and psychosocial well-being in youth (Brown & Dunn, 2022). Moreover, interventions aiming to improve interoception, such as breath-based training or movement-focused mindfulness, have shown to reduce cognitive avoidance and somatic reactivity simultaneously (Lin, 2025; Sakaj, 2025).

The observed mediation pathway may also offer insight into specific adolescent populations at higher risk for somatic complaints. For example, adolescents with eating disorders or autism spectrum disorder often present with both cognitive avoidance and interoceptive dysfunction. Studies by Datta and Lock (2023) and Laczkovics et al. (2022) indicated that interoceptive deficits play a central role in the emotional and somatic dysregulation of youth with restrictive eating patterns and personality disorders (Datta & Lock, 2023; Laczkovics et al., 2022). Similarly, Palser et al. (2021) documented that individuals with autism have reduced differentiation of bodily sensations linked to emotions, contributing to somatic and emotional misinterpretation (Palser et al., 2021). These findings lend further support to the mediating role of interoception observed in the current study.

Importantly, the study also contributes to the applied understanding of how adolescents might be supported in educational and clinical contexts. Colaianne et al. (2022) emphasized the importance of cultivating compassion and body awareness through peer-based programs, which could serve as a model for addressing interoceptive deficits in schools (Colaianne et al., 2022). In addition, Barmpagiannis and Baldimtsi (2025) suggested that occupational therapy approaches targeting interoception have utility beyond

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neurodivergent populations, offering potential benefits for all adolescents struggling with body-mind integration and emotional coping (Barmpagiannis & Baldimtsi, 2025).

5. Limitations & Suggestions

Despite the strengths of the present study, including a large sample size and the use of validated measurement tools, several limitations should be noted. First, the cross-sectional design of the study limits the ability to infer causality between variables. While mediation was statistically supported, longitudinal data would be required to confirm directional pathways over time. Second, the reliance on self-report instruments may have introduced response biases, particularly in assessing interoceptive awareness, which is a complex and often unconscious process. Third, cultural factors may have influenced both the expression of somatic symptoms and the use of cognitive avoidance strategies, and although the sample was drawn from adolescents in Peru, findings may not be generalizable to adolescents from other cultural backgrounds. Finally, while the study focused on cognitive avoidance, it did not account for other avoidance-based coping strategies (e.g., behavioral avoidance or experiential suppression), which may also play a role in somatic symptom development.

Future studies should consider employing longitudinal designs to examine the temporal relationships among cognitive avoidance, interoceptive awareness, and somatic complaints. This would allow researchers to better understand whether interoceptive awareness serves as a true mediator or whether reciprocal relationships exist among these variables. In addition, integrating objective measures of interoception, such as heartbeat detection tasks or neuroimaging techniques, could complement self-report data and provide a more comprehensive assessment of interoceptive functioning. Cross-cultural comparative studies would also be valuable in exploring how cultural norms shape interoceptive development and the expression of somatic symptoms. Finally, future research could investigate whether targeted interventions—such as interoceptive exposure therapy or acceptance-based programs—are effective in modifying the pathways identified in this study.

The findings of this study suggest several implications for clinical and educational practice. Practitioners working with adolescents should assess not only overt physical symptoms but also cognitive and interoceptive processes that may underlie those complaints. Interventions aimed at increasing interoceptive awareness—such as mindfulness training, body scan exercises, or breathwork—could serve as effective strategies for reducing somatic symptomatology. Educators and school counselors may also benefit from incorporating interoceptive and emotional literacy programs into school curricula to help students develop healthier coping mechanisms. Additionally, psychoeducation for adolescents and their families regarding the connection between avoidance, body awareness, and somatic symptoms could foster earlier recognition and intervention, ultimately promoting both physical and emotional well-being.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

References

Balconi, M., Angioletti, L., & Crivelli, D. (2023). Neurofeedback as Neuroempowerment Technique for Affective Regulation and Interoceptive Awareness in Adolescence: Preliminary Considerations Applied to a Psychogenic Pseudosyncope Case. *Frontiers in Rehabilitation Sciences*, *4*. https://doi.org/10.3389/fresc.2023.1056972

Barmpagiannis, P., & Baldimtsi, E. (2025). Interoception and Emotional Regulation in Autistic Children Through an Occupational Therapy Perspective: A Literature Review.

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Brazilian Journal of Science, *4*(2), 1-14. https://doi.org/10.14295/bjs.v4i2.699

Bijsterbosch, J. M., Hasenack, B., Rooijen, B. v., Sternheim, L., Boelen, P. A., Dijkerman, H. C., & Keizer, A. (2023). Intolerable Feelings of Uncertainty Within the Body: Associations Between Interoceptive Awareness, Intolerance of Uncertainty, and Body Dissatisfaction. *Journal of adolescence*, *95*(8), 1678-1688. https://doi.org/10.1002/jad.12237

Braet, J., & Braet, C. (2024). I Can Feel My Heartbeat: The Relationship Between Interoceptive Abilities and Emotional States During Stress and Recovery in Healthy Adolescents. *Psychophysiology*, *61*(12). https://doi.org/10.1111/psyp.14679

Braet, J., Giletta, M., Desmedt, O., Wante, L., Rapp, L., Pollatos, O., & Braet, C. (2024). Should Adolescents Listen to Their Hearts? A Closer Look at the Associations Between Interoception, Emotional Awareness and Emotion Regulation in Adolescents. *Psychological Reports*. https://doi.org/10.1177/00332941241286435

Brown, C., & Dunn, W. (2022). Development of a Participation Focused Measure of Interoception for Adults. *Otjr Occupational Therapy Journal of Research*, *43*(2), 264-270. https://doi.org/10.1177/15394492221112651

Colaianne, B. A., Lavelle, B. D., Small, M. L., & Roeser, R. W. (2022). Cultivating Compassion for Self and Others: A School-Based Pilot Study for Peer-Nominated Caring Adolescents. *Journal of Research on Adolescence*, *33*(1), 169-187. https://doi.org/10.1111/jora.12795

Datta, N., & Lock, J. (2023). Exploration of Interoceptive Capabilities in Avoidant/Restrictive Food Intake Disorder and Anorexia Nervosa. *Journal of eating disorders*, *11*(1). https://doi.org/10.1186/s40337-023-00914-9

Donadeo, A., Politi, P., Silva, A., Civardi, S. C., Farinella, E., Brondino, N., Olivola, M., Sommi, F., & Damiani, S. (2021). Correlation Profiles Between Interoception and Exteroception in Psychotic Patients Versus Healthy Controls. *European Psychiatry*, *64*(S1), S536-S536. https://doi.org/10.1192/j.eurpsy.2021.1430

Engel, M. P., & Schmidt, M. (2025). All Extern? Exploring the Impact of Social Media and Physical Activity on Adolescents' Body Image and Interoception. *Current Issues in Sport Science (Ciss)*, *10*(2), 061. https://doi.org/10.36950/2025.2ciss061

Ho, T. C., Walker, J. C., Teresi, G. I., Kulla, A., Kirshenbaum, J. S., Gifuni, A. J., Singh, M. K., & Gotlib, I. H. (2020). Default Mode and Salience Network Alterations in Suicidal and Non-Suicidal Self-Injurious Thoughts and Behaviors in Adolescents With Depression. https://doi.org/10.1101/2020.09.20.304204

Hooshmandi, R., Aljaberi, M. A., Hammadi, F., & Ma, J. (2024). The Impact of Interoceptive Awareness on Pain Catastrophizing and Illness Perception. *Journal of Personality and Psychosomatic Research (JPPR)*, *2*(2), 4-10. https://doi.org/10.61838/kman.jppr.2.2.2

Itoi, C., Ujiie, Y., Matsushima, K., Takahashi, K., & Ide, M. (2022). Validation of the Japanese Version of the Interoception Sensory Questionnaire for Individuals With Autism Spectrum Disorder. *Scientific reports*, *12*(1). https://doi.org/10.1038/s41598-022-25883-y

Jones, A., Silas, J., Todd, J., Stewart, A. L., Acree, M., Coulson, M., & Mehling, W. (2020). Exploring the Multidimensional Assessment of Interoceptive Awareness in Youth Aged 7–17 Years. *Journal of Clinical Psychology*, *77*(3), 661-682. https://doi.org/10.1002/jclp.23067

Kiera, A. (2025). Experiences of Interoception and Anxiety in Autistic Adolescents: A Reflexive Thematic Analysis. *Autism*. https://doi.org/10.1177/13623613251314595

Laczkovics, C., Czernin, K., Carlitscheck, J., Zeiler, M. D., Schlund, P., Wunram, H. L., Lehmkuhl, G., & Krischer, M. (2022). Personality Disorder in Adolescent Patients With Anorexia Nervosa. *Psychopathology*, *56*(4), 268-275. https://doi.org/10.1159/000527555

Lin, H. (2025). A Review of Research on the Effects of Mindful Exercises on Emotion Regulation and Mental Health Among Adolescents. *Studies in Sports Science and Physical Education*, *3*(1), 24-35. https://doi.org/10.56397/ssspe.2025.03.03

Liné, C., Lachal, J., & Andrieu, B. (2022). Obesity and Interoceptive Awareness: A Preliminary Qualitative Study of Hospitalized Adolescent Girls With Obesity. *L Évolution Psychiatrique*, *87*(1), e1-e18. https://doi.org/10.1016/j.evopsy.2021.12.001

Meneguzzo, P., Pascoli, L. D., Bindolo, M. C., Collantoni, E., Meregalli, V., Zanetti, T., Veronese, A., Tenconi, E., & Favaro, A. (2023). The Psychological and Medical Landscape of Anorexia Nervosa Over a Decade: A Retrospective Study of Possible Physical and Psychological Shifts. *Journal of clinical medicine*, *12*(23), 7294. https://doi.org/10.3390/jcm12237294

Palser, E. R., Galvez-Pol, A., Palmer, C. E., Hannah, R., Fotopoulou, A., Pellicano, E., & Kilner, J. M. (2021). Reduced Differentiation of Emotion-Associated Bodily Sensations in Autism. *Autism*, *25*(5), 1321-1334. https://doi.org/10.1177/1362361320987950

Riboli, G. (2022). Multidimensional Interoceptive Awareness, Psychosomatic Symptoms, and Risk for Eating Disorders in a Female at Birth Adolescent Sample. *Curr Res Psychol Behav Sc*, *3*(2), 1-4. https://doi.org/10.54026/crpbs/1040

Sakaj, E. (2025). Wim Hof's Breathing Method: Influence on the Autonomic Nervous System and Somatosensory Perception. https://doi.org/10.31234/osf.io/n2d34

Scotta, A. V., Cortez, M. V., & Miranda, A. R. (2022). Insomnia is associated with worry, cognitive avoidance and low academic engagement in Argentinian university students during the COVID-19 social isolation. *Psychology, Health & Medicine*, *27*(1), 199-214. https://doi.org/10.1080/13548506.2020.1869796

Seiffge-Krenke, I., & Sattel, H. (2024). How Personality Factors, Coping With Identity-Stress, and Parental Rearing Styles Contribute to the Expression of Somatic Complaints in Emerging Adults in Seven Countries. *Frontiers in Psychiatry*, *15*. https://doi.org/10.3389/fpsyt.2024.1257403

Tahoon, R. (2023). Differences in Cognitive Avoidance, Anger Rumination, and the General Anxiety in Light of the Gender and Emotional Regulation Disturbance Among Undergraduate Students. *Sage Open*, *13*(4). https://doi.org/10.1177/21582440231187281

Tymofiyeva, O., Sipes, B. S., Luks, T., Hamlat, E. J., Samson, T. E., Hoffmann, T. J., Glidden, D. V., Jakary, A., Li, Y., Ngan, T., Henje, E., & Yang, T. (2024). Interoceptive Brain Network Mechanisms of Mindfulness-Based Training in Healthy Adolescents. *Frontiers in psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1410319

Wazir, M. N. K. (2023). Psychiatric Illnesses, Somatic Complaints, and Treatments in a Tertiary Care Hospital in Khyber Pakhtunkhwa, Pakistan: A Cross-Sectional Study. *Cureus*. https://doi.org/10.7759/cureus.43151

Yu, X., Cohen, Z. P., Tsuchiyagaito, A., Cochran, G., Aupperle, R. L., Stewart, J. L., Singh, M. K., Misaki, M., Bodurka, J., Paulus, M. P., & Kirlić, N. (2022). Neurofeedback-

Augmented Mindfulness Training Elicits Distinct Responses in the Subregions of the Insular Cortex in Healthy Adolescents. *Brain Sciences*, *12*(3), 363. https://doi.org/10.3390/brainsci12030363

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