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Investigation of Associations Between Self-Reported Sensory Processing, Eating Disorder Symptoms, Neurodivergence, and Gender Congruence from a Lived Experience Lens

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Abstract

Background: Eating disorders (EDs) are increasingly recognised among neurodivergent and transgender and gender diverse (TGD) individuals, yet most assessment and treatment models remain grounded in cisnormative and neuronormative assumptions and frameworks. Sensory processing, spanning interoception and exteroception, has been proposed as a potential factor that may help explain observed associations between neurodivergent traits, gender incongruence, and EDs. Empirical evidence, however, remains limited. This study examined whether sensory processing characteristics accounted for variance in observed associations between neurodivergent traits (with a focus on Autism and attention deficit/hyperactivity disorder, ADHD), gender incongruence, and ED symptoms in an adult community sample. **Methods:** Participants (N = 195) completed an online Qualtrics survey involving validated self-report measures of exteroception, interoceptive sensibility, gender

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congruence, and ED symptoms (for example, Eating Disorder Examination Questionnaire Short, EDE-QS and Nine Item Avoidant or Restrictive Food Intake Disorder Screener, NIAS). Correlation, regression, and effects analyses were used to explore associations among self-reported neurodivergent traits, gender incongruence, sensory processing, and ED symptoms. **Results:** Gender incongruence and Autistic traits showed positive associations with restrictive and avoidant ED symptoms. ADHD traits showed positive associations with a broader range of ED symptoms, including restrictive, avoidant, and binge eating presentations. Gender incongruence also showed positive associations with sensory processing differences across both exteroceptive and interoceptive domains: namely, elevated visual and auditory sensitivity and reduced body trust. Furthermore, interoceptive sensibility, particularly lower body trust, showed significant statistical relations with ADHD motor traits and EDE-QS scores. Interoceptive sensibility also showed significant statistical relations in models including gender incongruence and EDE-QS scores. Exteroceptive hypersensitivity showed a partial statistical relation in models examining gender incongruence and NIAS scores. **Conclusions:** To the authors' knowledge, this study provides the first lived experience-led empirical intersectional investigation linking interoception and exteroception with neurodivergent traits, gender incongruence, and ED symptoms. Results highlight the relevance of intersectional, sensory-informed, and identity-affirming perspectives for future research and the ongoing development of ED assessment and care.

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Public Significance Statement

We invited adults to complete an anonymous online survey about eating disorder symptoms, how comfortable they felt with their gender, their sensory experiences, and traits linked with Autism or ADHD. A total of 195 people took part between July and September 2025. People who felt less comfortable or less congruent with their physical characteristics in relation to their gender identity reported more eating disorder symptoms. How people make sense of internal bodily cues and trust their bodies (interoceptive sensibility) helped explain these links. Lower trust in bodily signals and lower noticing of internal sensations were associated with more eating problems. Heightened exteroception, particularly sensitivity to sights and sounds, was also linked with gender incongruence and eating disorder symptoms. Autistic traits were mostly related to avoidant or restrictive eating. ADHD traits were related to a wider set of disordered eating behaviours, including restricting and binge eating. These findings suggest that more investigations into the role of sensory processing in disordered eating in the context of neurodivergence and gender diversity might help tailor treatment in order to better meet the support needs of gender diverse and neurodivergent individuals.

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Key words: neurodiversity, gender diversity, eating disorders, sensory processing, exteroception, interoception

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1. Introduction

1.1. Background

Eating disorders (EDs) are complex conditions shaped by interacting psychosocial, biological, and genetic factors, with lifetime prevalence estimates ranging between 0.74 and 8.4 percent [1–8]. Although EDs have been the focus of extensive research, current evidence does not yet provide a comprehensive account of how these conditions develop, present, or persist over time [7,9,10]. One notable shortcoming of the literature is the limited consideration of intersectional influences, including gender diversity and neurodivergence, within mainstream ED research [7,8,11]. Consequently, relatively little empirical work has examined the diversity of lived experiences associated with EDs, particularly among populations whose identities, embodiment, or sensory experiences fall outside historically dominant research samples [8,12–14].

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Much of the existing ED knowledge base has been derived from studies centred on young, white, neurotypical, cisgender women, contributing to illness models that insufficiently reflect social, cultural, and identity-related variation [7,8,15–25]. This narrow evidentiary foundation constrains understanding of the breadth of ED presentations and risks overlooking differences in motivations, symptom expression, and support needs. Growing acknowledgment of ED heterogeneity highlights the need for conceptual approaches that attend to intersecting psychosocial and identity dimensions [7,12,26,27], including those related to gender

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diversity [28–31] and neurodivergence [8,11,32,33], to more accurately capture the range of ED-related experiences.

1.2. Eating Disorders: Beyond Cognitive-Behavioural Accounts

Dominant frameworks for understanding EDs have historically prioritised cognitive-behavioural constructs, including body image disturbance, behavioural control, perfectionism, weight and shape concerns, and maladaptive beliefs about food [7,15–25] . While these frameworks have informed much of the existing ED literature and treatment development, they do not fully capture the breadth and heterogeneity of ED-related experiences observed across diagnoses, populations, and developmental contexts [7,8,12,26,29]. In particular, prevailing models offer limited explanatory scope for eating-related distress that is closely tied to sensory-based experiences, bodily discomfort, difficulties interpreting internal cues, or motivations that are not primarily driven by weight or shape concerns [11,34–36].

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These conceptual constraints are reflected in clinical outcomes. Despite the availability of interventions deemed evidence-based, most individuals experience incomplete recovery, relapse, or prolonged illness trajectories, indicating that existing frameworks may not account for all dimensions relevant to variation in ED presentations and outcomes [7,9,10]. This mismatch is especially evident in presentations characterised by avoidant or restrictive eating, mixed or atypical symptom profiles (e.g., atypical anorexia), and eating-related difficulties reported by Autistic individuals, individuals with attention

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deficit/hyperactivity disorder (ADHD), and transgender and gender diverse (TGD) individuals [8,10,12,33]. When ED experiences do not align with dominant cognitive-behavioural narratives, they risk being marginalised within research and clinical settings rather than examined as central features requiring theoretical attention [7,8,12–14].

There is therefore increasing recognition of the need for broader explanatory approaches that extend beyond cognitive-behavioural constructs alone and incorporate embodied aspects of experience [7,8,11]. Such approaches are not intended to replace existing ED frameworks, but to complement them by attending to how individuals perceive, interpret, and respond to bodily and environmental cues in relation to eating [34–36]. Within this context, sensory processing has been increasingly discussed as a theoretically relevant construct that may help organise observed associations between ED symptoms, bodily experience, and identity-related factors [8,11]. Integrating sensory processing into ED research offers a means of addressing limitations in current frameworks by foregrounding lived and embodied experiences that are frequently reported across ED populations yet remain under-theorised [8,12–14].

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1.3. Sensory Processing as an Under-Explored Factor in Eating Disorders

Sensory processing, encompassing both interoception and exteroception, has received increasing attention in ED research but remains under-integrated within dominant cognitive-behavioural frameworks [34–36].

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Sensory processing refers broadly to how internal bodily signals and external sensory cues are perceived, interpreted, and responded to, processes that are fundamental to eating behaviour, emotional regulation, and embodied experience [34,35]. Despite this relevance, sensory processing has often been treated as a peripheral or descriptive feature of EDs, rather than as a central dimension that may help organise diverse eating-related experiences across diagnoses and populations.

Differences in exteroceptive processing have been documented across ED presentations. Heightened sensitivity to taste, texture, smell, sound, or visual stimuli has been reported in individuals with anorexia nervosa (AN), bulimia nervosa (BN), and avoidant/restrictive food intake disorder (ARFID) [34–36]. In ARFID, sensory hypersensitivity is recognised as a defining feature of the avoidant subtype and is closely linked to selective and restrictive eating patterns [37,38]. Comparable exteroceptive sensitivities have also been observed in AN and BN, where aversive sensory responses, tactile discomfort, and heightened responsiveness to external bodily cues may contribute to eating-related distress and avoidance [35,39,40].

Alterations in interoceptive processing have likewise been reported across EDs, particularly at the level of interoceptive sensibility. Interoceptive sensibility refers to self-reported attention to, appraisal of, and beliefs about internal bodily sensations, rather than objectively measured interoceptive accuracy [34–36]. Individuals with EDs frequently report difficulty trusting, interpreting, or responding to

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internal cues such as hunger, satiety, and visceral discomfort, reflecting disturbances in subjective interoceptive experience [34,35]. Elevated difficulties in interoceptive sensibility have been observed across restrictive, binge eating, and mixed symptom presentations, and are associated with ED symptom severity, emotional dysregulation, and broader disturbances in embodiment [35,39,40]. Findings based on behavioural or physiological measures of interoceptive accuracy show more variable associations with ED symptoms, underscoring the importance of distinguishing between interoceptive constructs [34–36].

Beyond EDs, sensory processing differences have also been implicated across a range of mental health conditions, where alterations in interoception and exteroception are associated with emotional distress and differences in embodied self-experience [34,41,42]. This broader relevance supports the consideration of sensory processing as a transdiagnostic construct within mental health research. Within EDs, however, sensory processing may be particularly salient given the centrality of bodily sensations and food-related sensory cues to eating-related behaviour.

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Although this growing body of work highlights the relevance of sensory processing to ED-related experiences, it has not yet been systematically incorporated into mainstream ED models. As a result, sensory-driven eating behaviours and distress linked to bodily sensations are often described without being situated within a coherent explanatory framework [34–36]. Conceptualising sensory processing as a core

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organising construct offers a means of integrating findings across ED diagnoses and accommodating eating-related experiences that are not adequately explained by cognitive-behavioural constructs alone, without implying causal direction [8,11]. This framing provides a foundation for examining how sensory processing may intersect with neurodivergence and gender diversity in shaping heterogeneous ED presentations.

1.4. Sensory Processing, Eating Disorders, and Neurodivergence

Neurodivergent individuals, particularly Autistic individuals and individuals with ADHD, experience elevated rates of EDs compared with neurotypical populations. Meta-analytic and systematic review evidence indicates higher rates of Autism among individuals with AN, although prevalence estimates vary substantially due to differences in assessment approach, ascertainment practices, sample characteristics, and study design [43,44]. Reported estimates indicate that between 8 and 37 percent of individuals with AN met criteria for a formal Autism diagnosis, while separate studies using self-report measures identified elevated Autistic traits in approximately 8.8 to 24.5 percent of participants [43,44]. Among children with ARFID, prevalence estimates suggest that 8.2 to 54.8 percent are Autistic, with wide variability likely reflecting heterogeneity in ARFID presentations, referral pathways, and sampling contexts [45].

Elevated rates of EDs have also been documented among individuals with ADHD. A review of cross-sectional studies reported that among children and adolescents with ADHD, 31.37 percent met criteria for BED, 19.23

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percent for BN, and 9.38 percent for AN [46]. Similarly, a meta-analysis found that the prevalence of ADHD among adults with EDs ranged from 3 to 16.2 percent for AN, 9 to 34.9 percent for BN, and 19.8 percent for BED [47]. Together, these findings indicate substantial overlap between EDs and neurodivergent presentations, while also highlighting marked heterogeneity across diagnoses, age groups, and study designs.

Differences in sensory processing are well documented in both Autism and ADHD and are increasingly recognised as central features of neurodivergent experience. In Autism, sensory processing differences form part of diagnostic criteria and include heightened or reduced sensitivity to external sensory stimuli, alongside differences in interoceptive experience [41,42]. Autistic adults frequently describe heightened sensory awareness, sensory overload, and challenges filtering or integrating sensory input, which can influence emotional regulation, daily functioning, and embodied self-experience [41]. In ADHD, sensory processing differences are also common and appear to occur independently of co-occurring Autistic traits, with individuals reporting heightened sensory sensitivity, sensory seeking patterns, or fluctuating responsiveness across sensory modalities [48]. Large cross-diagnostic analyses further identify shared sensory phenotypes spanning Autism and ADHD, while also demonstrating diagnosis-specific patterns of sensory experience [49–51].

Sensory processing differences have been increasingly implicated in ED-related experiences among neurodivergent populations. In ARFID,

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sensory hypersensitivity is widely recognised as a central feature of the avoidant presentation and is particularly prevalent among Autistic individuals [37,52]. Beyond ARFID, emerging evidence suggests that sensory processing differences may also contribute to eating-related difficulties in AN and BN among Autistic individuals, with greater sensory sensitivity associated with more pronounced eating difficulties, reliance on familiar foods, and heightened distress during eating [53]. In adult community samples, higher levels of Autistic traits and sensory sensitivity have been associated with greater ED symptomatology, supporting the relevance of sensory processing across both categorical diagnoses and dimensional trait variation [54].

Differences in interoceptive processing have also been reported among Autistic and ADHD populations, particularly at the level of interoceptive sensibility. Autistic adults frequently report difficulty interpreting, trusting, or responding to internal bodily signals, alongside heightened or distressing awareness of internal sensations [41]. These interoceptive sensibility differences are closely linked to emotional regulation experiences and may influence how bodily cues are used to guide behaviour, including eating-related decision making [41]. Although interoceptive processing has been less extensively examined in ADHD, emerging evidence suggests altered interoceptive sensibility and heightened bodily reactivity, which may interact with impulsivity, emotional regulation, and eating-related difficulties [48,49].

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Taken together, this body of evidence indicates that sensory processing differences characterise both Autism and ADHD and are relevant to ED vulnerability across multiple diagnostic presentations. Positioning sensory processing as an organising construct provides a means of integrating prevalence patterns, sensory profiles, and eating-related experiences within neurodivergent populations, while accommodating heterogeneity in diagnosis, traits, and lived experience. This framework also establishes a foundation for examining how neurodivergence-related sensory profiles may intersect with other identity-related factors, including gender diversity, in shaping diverse ED presentations.

1.5. Sensory Processing, Eating Disorders, and Gender Diversity

TGD individuals experience elevated rates of EDs compared with cisgender populations. Population-based and clinical studies indicate high levels of disordered eating and ED symptoms among TGD people, although prevalence estimates vary across studies due to differences in assessment methods, sampling contexts, and barriers to care [20,27,45,55]. For example, Keski-Rahkonen [45] reported that between 20–50 percent of TGD individuals experience disordered eating, more than 30 percent screen positive for EDs on self-report measures such as the Eating Disorder Examination Questionnaire (EDE-Q), and 2–12 percent have a formal ED diagnosis. Linsenmeyer et al. [55] found that 75 percent of their TGD participants (N = 164) screened positive on the Nine Item avoidant/restrictive food intake disorder (ARFID) Screener

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(NIAS), while 28 percent screened positive on the SCOFF questionnaire[1]. In another study of a clinical sample involving participants with ARFID (N = 42), MacDonald et al. [56] found that 16.7 percent of participants identified as transgender (trans), nonbinary, or another diverse gender identity.

The factors contributing to ED-related distress in TGD populations may differ in important ways from those commonly described in cisgender samples. Many TGD individuals describe changes in eating behaviour as a means of managing gender incongruence embodiment. For some, restrictive eating may be used to suppress pubertal development, minimise secondary sex characteristics, or alter body shape in ways that feel more congruent with gender identity [57–59]. These motivations vary across gender identities. Trans masculine individuals may restrict food intake to flatten the chest, reduce curves, or suppress menstruation, while trans feminine individuals may pursue thinness in relation to gendered beauty norms. Nonbinary individuals may describe eating-related changes as a way of reducing gendered bodily cues or moving toward androgynous embodiment [27,60–65]. These experiences occur within broader contexts of transphobia, cisnormativity, weight stigma, and minority stress, which interact to shape vulnerability to EDs [60,61,66–70].

[1] SCOFF is an acronym that stands for: Sick, Control, One stone, Fat, Food.

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Emerging evidence suggests that sensory processing differences may also be relevant to ED-related experiences among TGD individuals. Quantitative research indicates that TGD adults report elevated exteroceptive sensitivity compared with cisgender peers, and that these exteroceptive differences are associated with avoidant and restrictive eating patterns characteristic of ARFID, even after accounting for Autistic and ADHD traits [11]. Qualitative studies further describe experiences of sensory-related distress linked to gendered embodiment, including heightened sensitivity to tactile, visual, auditory, or other external cues that draw attention to body features or social gendering [71,72]. These sensory experiences may intensify discomfort with bodily visibility or incongruence in everyday contexts, including eating situations.

Differences in interoceptive sensibility have also been reported among TGD individuals. TGD adults report lower body trust [73]. These interoceptive sensibility differences may interact with gender incongruence and dysphoria by amplifying the salience of internal bodily cues that feel incongruent. Together, exteroceptive and interoceptive experiences may shape how eating, bodily awareness, and gendered embodiment are experienced and navigated by TGD individuals.

Importantly, existing ED diagnostic frameworks do not consistently capture the lived experiences of TGD people, and ED-related distress in this population is sometimes over-attributed to gender dysphoria alone [31,74,75]. Such assumptions risk obscuring the role of sensory

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processing, embodiment, and contextual stressors in shaping ED-related experiences, and may contribute to misinterpretation or inadequate support. Situating sensory processing within discussions of EDs among TGD populations offers a means of integrating sensory experiences within a gender-affirming framework, while recognising the diversity of TGD lived experience.

1.6. Intersecting Developmental Trajectories

Neurodivergence and gender diversity frequently co-occur, and converging evidence suggests that this overlap reflects intersecting developmental trajectories rather than coincidental associations [8,11,33,51,76,77]. Autistic individuals and individuals with ADHD are more likely than neurotypical peers to identify as TGD, and TGD populations show elevated rates of neurodivergent traits and diagnoses [8,33,78]. These patterns have been observed across age groups and methodological approaches [50,78]. Taken together, this literature indicates that neurodivergence and gender diversity intersect in systematic ways that warrant integrated conceptualisation.

Sensory processing provides a unifying lens through which these intersecting trajectories can be examined as emerging empirical evidence supports the relevance of this intersection. Quantitative research has demonstrated that sensory processing differences uniquely predict avoidant and restrictive eating patterns among TGD adults, even after accounting for Autistic and ADHD traits [11]. Lived experience-informed research further highlights how sensory processing and gender-

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related embodiment can converge in everyday experiences of eating, bodily self-representation, and social participation [8,79]. These findings suggest that sensory processing may function as a shared experiential dimension through which neurodivergence and gender diversity intersect in relation to ED symptoms, without implying a single pathway or uniform outcome.

Neurobiological research also offers preliminary support for this integrative perspective. A resting-state functional magnetic resonance imaging (fMRI) study of TGD adolescents identified distinct patterns of default mode network (DMN) functional connectivity associated with Autism traits, including hyperconnectivity between medial prefrontal regions and visual, sensorimotor, and attention networks [50]. These patterns were observed when Autism was modelled both categorically and dimensionally. The identification of an intermediate neurophenotype among individuals with subthreshold Autistic traits further underscores the relevance of dimensional neurodevelopmental variation within TGD populations.

Critically, our interpretation of this overlap adopts a non-pathological, neurodiversity and gender-affirming lens. Higher rates of Autism or ADHD within TGD populations do not imply that expressions of gender diversity in this context reflect pathology. Rather, these associations reflect intersecting neurodevelopmental trajectories, sensory-cognitive and embodiment profiles, and lived experiences. We explicitly reject the misuse of Autism or ADHD diagnoses to gatekeep access to gender-

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affirming care or to delegitimise TGD identities as pathological features of Autism or ADHD. Such practices weaponise diagnostic labels to reinforce psychiatry's longstanding history of enforcing and policing cisheteronormativity and perpetuating systemic oppression against the TGD community [80]. A neurodiversity- and gender-affirming perspective recognises that sensory processing, neurodivergence, and gender diversity are all valid, and sometimes intersecting, dimensions of human variation, and that TGD neurodivergent individuals' self-determination and agency ought to be respected.

From this intersectional perspective, examining ED-related experiences requires attention to how sensory processing, embodiment, neurodevelopmental variation, and gender diversity interact. TGD neurodivergent individuals report poorer health outcomes and less affirming healthcare experiences compared with both neurotypical TGD peers and neurodivergent cisgender individuals [8,33,51,76,77]. These disparities highlight the limitations of single-axis models and underscore the need for integrative approaches that centre lived experience, contextual factors, and intersectionality. Situating ED symptoms within intersecting developmental trajectories provides a foundation for research that is theoretically coherent, inclusive, and responsive to the real-life circumstances of TGD neurodivergent individuals.

1.7. The Present Study: Aims and Hypotheses

Building on evidence linking ED symptoms with sensory processing, neurodivergent traits, and gender diversity, the present study examined

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associations between gender incongruence, ED symptom dimensions, sensory processing, and neurodivergent traits in a community sample. Sensory processing was operationalised in terms of exteroceptive sensitivity and interoceptive sensibility, reflecting subjective sensory experience rather than objective sensory accuracy. Neurodivergent traits were assessed dimensionally, with a focus on Autistic and ADHD traits.

The first aim of this study was to investigate whether gender incongruence is statistically associated with ED symptom dimensions. It was hypothesised that higher gender incongruence would be associated with higher levels of disordered eating.

The second aim was to examine whether gender incongruence is statistically associated with sensory processing. It was hypothesised that higher gender incongruence would be associated with greater differences in sensory processing, spanning both exteroceptive and interoceptive domains.

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The third aim focused on whether neurodivergent traits are statistically associated with gender incongruence. It was hypothesised that both Autistic and ADHD traits would be associated with gender incongruence.

The fourth aim was to assess whether Autistic and ADHD traits are statistically associated with ED symptom dimensions. It was hypothesised that higher levels of Autistic and ADHD traits would be associated with more pronounced disordered eating.

The fifth aim was to examine whether sensory processing differences, encompassing both exteroceptive and interoceptive dimensions, account

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for variance in the association between gender incongruence and ED symptoms. It was hypothesised that sensory processing would account for unique variance in this association.

The sixth aim was to examine whether Autistic and ADHD traits account for variance in the association between gender incongruence and ED symptoms. It was hypothesised that both Autistic and ADHD traits would partially account for variance in the association between gender incongruence and ED symptoms.

The seventh aim was to investigate whether sensory processing accounts for variance in the association between Autistic and ADHD traits and ED symptoms. It was hypothesised that sensory processing would account for unique variance in these associations.

These hypotheses were tested using cross-sectional data and are intended to inform future longitudinal research rather than to establish temporal or causal pathways.

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2. Methods

2.1. Recruitment

We recruited a community sample for this study. Individuals were eligible to participate in the study if they were 18 years of age or older and able to read and understand English, regardless of whether they identified as either neurodivergent, gender diverse, or as having self-reported lived experience of a diagnosed ED. Data collection took place between July and September 2025 using an anonymous online survey

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administered through the platform Qualtrics. The survey was promoted on several social media platforms primarily in Australia, however social media promotion organically spread internationally, including Facebook, Instagram, X (formerly Twitter), and LinkedIn. Organisations like the Butterfly Foundation, the National Eating Disorders Collaboration, the Australian and New Zealand Academy for Eating Disorders, Autism CRC, and Eating Disorders Neurodiversity Australia assisted with recruitment by sharing the study in their newsletters and on their social media accounts. A comprehensive description of the study's aims and activities, including potential discomfort risks, was provided online through a dedicated website for prospective participants. Consent was implied if participants decided to take part in the anonymous online survey. To incentivise participation, a prize draw took place in September 2025, offering ten Mastercard vouchers valued at $50 Australian dollars each. Email addresses were collected for those who opted into this prize draw option and were kept separate to study data to ensure confidentiality. Ethical clearance for the study was obtained from the University of New South Wales Human Research Ethics Committee (Reference Number: iRECS8352).

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2.2. Psychometric Self-Report Instruments

2.2.1. Eating Disorders Examination Questionnaire, Short Version (EDE-QS)

The Eating Disorder Examination Questionnaire Short (EDE-QS) [81] is a 12-item shortened form of the 28-item EDE-Q version (6.0) [82].

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Participants self-report the presence and frequency of disordered eating cognitions and behaviours over the last week (i.e., restrictive eating; eating, shape and weight concern; purging; driven exercise; binge eating). Each item is scored on a four-point response scale (values ranging from 0-3) between 0 (“0 days”) and 3 (“6-7 days”), with higher scores indicating higher symptom levels. The EDE-QS showed high internal consistency (α = .913) and was highly correlated with the original EDE-Q (r = .91 for people without ED; r = .82 for people with ED) [81]. Furthermore, the EDE-QS was validated for use in TGD populations and demonstrated strong internal consistency (α = .86) [83]. The EDE-QS also demonstrated excellent internal consistency in the present study, with a Cronbach’s alpha of .91 (see Appendix 10).

2.2.2. Nine Item ARFID Screen (NIAS)

The Nine Item Avoidant/Restrictive Food Intake disorder screen (NIAS) is a 9-item self-report measure of three restrictive eating patterns that are associated with ARFID (i.e., avoidance of food/eating due to lack of appetite/interest, fear of choking/vomiting or GI distress, selective/picky eating) [38]. Items are scored on a 6-point Likert scale (‘Strongly disagree,’ ‘Disagree,’ ‘Slightly disagree,’ ‘Slightly agree,’ ‘Agree,” and ‘Strongly agree’). The three items from each subscale are summed to create subscale scores ranging from 0 to 15, with a total score ranging from 0 to 45.

The NIAS has demonstrated strong psychometric properties across diverse populations. In the initial validation, Zickgraf and Ellis [38]

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reported good internal consistency for the NIAS total score (α = .84) and acceptable to good reliability for the three subscales: Picky Eating (α = .70), Appetite Loss (α = .80), and Fear (α = .77). The NIAS has also been validated among TGD individuals, where it demonstrated good internal consistency, with α = .87 for the total score and α = .88–.90 across the subscales [84]. The NIAS showed strong internal consistency in the present study overall, with a Cronbach's alpha of .89. Across NIAS subscales, alpha coefficients ranged from .85 to .91.

2.2.3. Binge Eating Disorders Screener (BEDS-7)

The EDE-Q is a useful measure for assessing AN and BN symptomatology; however, research suggests that it may have limitations related to the specific assessment of BED [85]. Therefore, we included the Binge Eating Disorder Screener (BEDS-7), which is a 7-item self-report screening tool for binge eating behaviours over the last 3 months [86]. Items 1-2 assess the presence of binge eating behaviour and distress ("Yes" or "No"). Answers to Item 1 are used as indicators of binge eating frequency (Item 1>0). Only respondents who report a lack of control during episodes of overeating (Item 2>0) are categorised as experiencing binge eating symptoms. Items 3-7 are scored according to a 4-point scale, ranging from 0 ("Never"); 2 ("Sometimes"); 4 ("Weekly"); 6 ("Daily") [87,88]. A score of ≥5 or more indicates binge eating symptoms. The BEDS-7 has been validated against the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) BED criteria and has demonstrated very high sensitivity (100 percent) and 38.7 percent

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specificity [86]. Furthermore, the BEDS-7 exhibited excellent internal consistency in the present study, with a Cronbach's alpha of .90.

2.2.4. Shortened Version of the Sensory Perception Quotient (SPQ-35)

The SPQ-35 is a self-report tool that was developed to assess sensory processing patterns in adults, with a focus on exteroception [89]. The questionnaire features several subscales that correspond to different exteroceptive modalities and provide insights into an individual's sensory profile: auditory, visual, gustatory, olfactory, tactile, and proprioceptive. This structured breakdown allows for the specific identification of sensory-based challenges (hypo or hyper-sensitivity) [89]. While several instruments are available to measure exteroception (e.g., the Glasgow Sensory Questionnaire, Adult/Adolescent Sensory Profile), the SPQ-35 was selected because it offers a psychometrically validated, multidimensional assessment of exteroception while minimising participant burden. Indeed, the SPQ-35 is shorter than comparable measures, making it particularly suitable for inclusion in a study like ours where multiple questionnaires were administered in a single session. Its concise structure, combined with robust internal consistency (α = .93), provided a balance between methodological rigour and feasibility. Although the SPQ-35 has not been validated for TGD populations, we are not aware of any exteroception-focused self-report instrument that has undergone such validation. Thus, the SPQ-35 represented the most appropriate available tool for our study. The SPQ-35 demonstrated excellent internal consistency in the present study overall, with a

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Cronbach's alpha of .92. Across SPQ-35 subscales, alpha coefficients ranged from .59 to .87.

2.2.5. Shortened Version of the Multidimensional Assessment of Interoceptive Awareness (Brief MAIA-2)

The MAIA-2 is a widely used self-report measure of interoceptive sensibility, referring to individuals' subjective perceptions of and responses to internal bodily states [90]. The brief version (Brief MAIA-2) consists of 24 items assessing self-reported attention to internal bodily sensations (for example, "I notice when I am uncomfortable in my body") and self-reported responses to internal sensations (for example, "When I feel pain or discomfort, I try to power through it") [91]. Respondents indicate how often these experiences apply to them in daily life using a 6-point Likert scale ranging from 0 ("Never") to 5 ("Always"). The Brief MAIA-2 has demonstrated acceptable to good internal consistency across subscales in prior validation work, with lower reliability observed for the Noticing subscale (Cronbach's α ranging between 0.67 for Noticing and 0.89 for Trusting) [90,91].

The full MAIA-2, which served as the basis for the development of the Brief MAIA-2, has been validated for use in TGD populations [73]. Internal consistency was measured with McDonald's ω, with omega coefficients ranging from .70–.93, suggesting that all subscales had at good to excellent reliability [73]. In accordance with recommendations by Frietchen et al. [73] regarding the use of the MAIA-2 in TGD people, we removed item 1 for participants who self-reported being trans, gender

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diverse, or trans and gender diverse. However, this item was retained for all cisgender participants. The Brief MAIA-2 also demonstrated excellent internal consistency in the present study overall, with a Cronbach's alpha of .91. Across Brief MAIA-2 subscales, alpha coefficients ranged from .70 to .92.

2.2.6. Transgender Congruence Scale (TCS)

The Transgender Congruence Scale (TCS) is a 12-item self-report measure to assess how comfortable a TGD person is with their identity and appearance [92]. The TCS consists of two subscales: 1) Appearance Congruence and 2) Gender Identity Acceptance. Appearance congruence measures how congruent a person's external appearance is with their internally felt sense of gender. Gender Identity Acceptance measures how comfortable and accepting a person is of their gender identity. Items are rated on a 5-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores indicating higher gender congruence. The TCS has demonstrated strong internal consistency, with Cronbach's alpha coefficients of .92 for the full scale, .94 for Appearance Congruence, and .77 for Gender Identity Acceptance [93]. The TCS demonstrated excellent internal consistency in the present study overall, with a Cronbach's alpha of .94. Across TCS subscales, alpha coefficients ranged from .71 to .96.

In this study, the TCS [93] was administered across the full sample, comprising both cisgender and TGD participants. Although originally developed for TGD populations, emerging evidence supports its

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meaningful use in mixed samples. For instance, Rasmussen et al. [64] administered the TCS to both clinical (N = 568) and non-clinical (N = 538) ED groups, including cisgender and TGD individuals. Their findings showed clear differentiation between gender identity groups, with TGD patients reporting lower gender identity acceptance and appearance congruence than cisgender peers, demonstrating the TCS's construct validity and clinical utility within ED contexts.

Further studies reinforce its broader applicability. Iliadis et al. [94] validated the Swedish TCS in a large case-control study including both individuals with gender dysphoria and cisgender controls, confirming good discriminant validity. Similarly, Özel et al. [95] used the TCS across cisgender and TGD participants in the Swedish Gender Dysphoria Study. The TCS also shows strong convergent validity with the Gender Congruence and Life Satisfaction Scale (GCLS; [96]), validated in both cisgender and TGD samples, highlighting shared constructs of gender congruence and acceptance.

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A further practical advantage is its brevity: with only 12 items, the TCS is the shortest validated measure of gender congruence, reducing participant burden in multi-measure online surveys. Taken together, these findings justify its inclusion across the full sample in this study.

2.2.7. Ritvo Autism and Asperger Diagnostic Scale Short Version (RAADS-14)

The RAADS-14 is a screening tool designed to assess Autistic traits in adults [97]. The RAADS-14 is a shortened version of the 80-item RAADS-

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R [98] and includes 14 items divided into four subscales: namely, social interaction, sensory-motor, language, and circumscribed interests [97]. Each item is typically answered on a Likert scale, allowing individuals to express the degree to which they agree with various statements about their experiences and behaviours [97]. The internal reliability coefficients of the RAADS-14 range from 0.85 to 0.92 [97]. The RAADS-14 showed good internal consistency in the present study overall, with a Cronbach's alpha of .89. Across RAADS-14 subscales, alpha coefficients ranged from .67 to .85.

2.2.8. Adult ADHD Self-Report Scale (ASRS)

The World Health Organisation (WHO) ASRS is an 18-item self-report measure screening for ADHD traits in adults in accordance with DSM-5 criteria [99]. Questions are scored against a 5-point Likert-type scale ranging from 0 ("never") to 4 ("very often"). The ASRS has demonstrated a 56.7 percent sensitivity, 98.3 percent specificity and total classification accuracy of 96.2 percent [100,101]. Additionally, the ASRS has been used to assess co-occurring ADHD traits in individuals with ED [92,102]. The ASRS demonstrated excellent internal consistency in the present study overall, with a Cronbach's alpha of .92. Across ASRS subscales, alpha coefficients ranged from .66 to .83.

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2.3. Eating Disorder History and Demographic Questions

Participants were asked if they had ever been formally diagnosed with an ED, and whether they were currently experiencing an ED or not. Response options included specific diagnostic categories: anorexia

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nervosa – binge-purge subtype (AN-bp), anorexia nervosa – restrictive subtype (AN-r), avoidant/restrictive food intake disorder (ARFID), binge eating disorder (BED), and bulimia nervosa (BN). Participants could also select from a range of options under "other specified feeding or eating disorder/eating disorder not otherwise specified (OSFED / EDNOS)," which encompassed atypical anorexia nervosa, night eating syndrome, orthorexia, purging disorder, and subthreshold bulimia nervosa or binge eating disorder. Additional diagnostic categories included pica, rumination disorder, and unspecified feeding and eating disorders (UFED).

Orthorexia nervosa (ON) is not recognised as a distinct diagnosis in the DSM-5-TR. However, its inclusion in this study is justified based on emerging consensus that it reflects a clinically relevant pattern of disordered eating marked by obsessive focus on healthy eating, significant psychological distress, and functional impairment. An international expert panel has proposed preliminary diagnostic criteria and a definition for ON, highlighting converging evidence that it represents a meaningful clinical construct [103]. Given that individuals increasingly self-identify with orthorexic symptoms and that researchers have begun to operationalise and investigate this presentation, allowing participants to endorse orthorexia captures important lived experiences that may not be reflected within existing DSM categories.

For participants without a formal self-reported ED diagnosis, the response options asked them to clarify their experiences. They could

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indicate that they believed they had experienced an ED despite not receiving a formal diagnosis, or that they had never experienced one. We then asked participants whether they believed they were currently experiencing an ED. The three response options were: currently experiencing an ED, not currently experiencing one but having experienced an ED in the past, or never having experienced an ED.

To assess participants' racial background, they were asked, "What would best describe your racial background? (Select all that apply)." Furthermore, participants were asked whether they are Autistic and/or have ADHD ("Are you Autistic and/or have attention-deficit/hyperactivity disorder (ADHD)?"), with the option to select multiple responses reflecting both formal diagnosis and self-identification. Specifically, response options included: "Yes, Autistic (formally diagnosed)," "Yes, Autistic (self-identified)," "Yes, ADHD (formally diagnosed)," "Yes, ADHD (self-identified)," and "No." A follow-up question asked whether participants identified with another form of neurodivergence: "Do you identify with other forms of neurodivergence?"

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Self-identification options related to neurodivergence were included to reflect evidence that self-identified Autistic adults show trait and related profile patterns broadly comparable to formally diagnosed Autistic adults, as well as documented barriers that can limit access to formal diagnostic assessment [130,131,135]. This approach is increasingly used in neurodiversity-affirming research to improve inclusivity when studying community-based samples, particularly where requiring a formal

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diagnosis would exclude individuals facing structural or systemic barriers to assessment [130,134].

Questions about sex assigned at birth and gender identity were also included. Participants were asked what sex they were assigned at birth, with options of female or male. In addition, we asked participants whether they were intersex, with options of yes, no, or unsure. They were then asked whether they identified as trans and/or gender diverse, with response options including: 'No, I identify as cisgender'; 'Yes, gender diverse'; 'Yes, trans'; or 'Yes, trans and gender diverse.' Finally, participants were asked to indicate the gender identity that best described them. Options included agender, bigender, demiboy, demigirl, genderfluid, genderqueer, gendervoid, man, nonbinary, and woman.

2.4. Statistical Analyses

Descriptive statistics were first calculated for all study variables to provide an overview of their distributions. Most variables approximated normality, supporting the use of parametric analyses (see Appendix 1). For correlational analyses (Pearson), effect sizes were interpreted using benchmarks derived from Gignac and Szodorai [104]. Specifically, observed correlations of approximately r = .10, .20, and .30 were considered small, medium, and large, respectively. These cut-offs are more appropriate for psychological and individual differences research than Cohen's original guidelines [105], which tend to overestimate what constitutes a 'large' correlation [104].

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The final phase comprised a series of regression and effect analyses models. Regression was applied, and bootstrapping with 1,000 resamples was used to generate bias-corrected and accelerated 95 percent confidence intervals (CIs). Effects were considered significant when CIs did not include zero. Regression and effect analyses were undertaken using the PROCESS macro (model 4, version 4.2) [106], which implements automated bootstrapping for estimating direct and indirect effects. Effects were further examined using PROCESS model 1, with significant interactions further probed using conditional effects to facilitate interpretation.

Given the number of inferential tests conducted, including correlational analyses, hierarchical regressions, and regression-based effects models, Bonferroni correction was applied across all p-values to control the family-wise error rate. All reported p-values for inferential analyses reflect this correction.

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To aid clarity, the analytic strategy was structured around the study aims. Correlational analyses were conducted to address Aims 1 to 4, examining bivariate associations between gender incongruence, ED symptoms, sensory processing, and neurodivergent traits. Hierarchical regression and regression-based effects models were then used to address Aims 5 to 7, examining whether sensory processing and neurodivergent traits statistically accounted for variance in associations between gender incongruence and ED symptoms, and between neurodivergent traits and ED symptoms.

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No analyses were conducted on TGD-only subsamples. All regression and effects models were estimated using the full sample, with gender incongruence treated as a continuous variable. Given the number of models tested, Bonferroni correction was applied to control for family-wise error rates across related model families.

Although regression-based models consistent with mediation frameworks were used to examine patterns of association among variables, the analyses in this study are cross-sectional and do not test temporal sequencing or causal mechanisms. Accordingly, these models are used to examine whether sensory processing and neurodivergent traits account for variance in associations between gender incongruence and ED symptoms, rather than to establish mediation in a causal sense. Findings should therefore be interpreted as hypothesis-generating and informative for future longitudinal research.

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3. Results

3.1. Participants

A total of 195 participants (M = 35.87 years, SD = 11.69) were included in the study. As shown in Table 1 below, most were young to middle-aged adults, with the largest age groups being 25–39 years. Nearly three-quarters identified as cisgender, while around one-quarter identified as TGD. Most participants identified as cisgender and were assigned female at birth. Of those who were assigned male at birth, two identified as TGD. The sample was predominantly white, with smaller representation from East and Central Asian, Australian Aboriginal and/or Torres Strait

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Islander, Middle Eastern/North African, and Hispanic backgrounds. Educational attainment was high, with most participants holding at least a bachelor's degree. Sexual orientation was diverse, with approximately 60 percent identifying as a sexual minority (e.g., bisexual, gay, or lesbian).

The high levels of post-secondary education and representation of Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, and Asexual (LGBTQIA+) participants may reflect the recruitment strategy, which involved outreach by the first author (a PhD candidate and LGBTQIA+ community member) and subsequent snowball sampling through social and professional networks.

Regarding self-reported neurodivergence, the majority reported at least one form of neurodivergence, with nearly one-fifth of the sample self-reporting a formal diagnosis of both Autism and ADHD.

When comparing ASRS scores based on self-reported neurodivergence, a significant effect was found for ADHD traits measured by the ASRS, $H(9) = 69.55$, $p < .001$ (Appendix 7). The Bonferroni-corrected pairwise comparisons revealed that the group of participants who did not self-report any form of neurodivergence had the lowest ASRS scores. The highest ASRS scores were observed among participants who self-reported an ADHD diagnosis, either formal or self-identified, whereas participants who self-reported an Autism diagnosis, whether formal or self-identified, had intermediate scores.

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A similar pattern was observed for Autistic traits measured by the RAADS-14, $H(9) = 88.22$, $p < .001$ (Appendix 8). Participants who did not self-report any form of neurodivergence, or who reported only ADHD (either formally diagnosed or self-identified), had the lowest RAADS-14 scores. In contrast, participants who self-reported being Autistic, whether formal or self-identified, alone or in combination with ADHD, scored substantially higher. There were no statistically significant differences between the “Autistic formally diagnosed”, “Autistic self-identified,” “ADHD and Autistic self-identified”, “Autistic diagnosed, ADHD self-identified”, “ADHD diagnosed, Autistic self-identified”, and “ADHD and Autism formally diagnosed” subgroups.

Table 1

Demographic Features of the Study Participants (N=195)

Feature	**N**	**Percentage**
Age range		
18–24	26	13.3
25–39	112	57.5
40–59	49	25.1
60–69	5	2.6

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Trans or gender diverse		
Yes, trans (all assigned female at birth)	7	3.6
Yes, gender diverse (2 assigned male at birth and 26 assigned female at birth)	28	14.4
Yes, trans and gender diverse (all assigned female at birth)	15	7.7
No, I identify as cisgender	145	74.4
Intersex		
Yes or Unsure	10	5.1
No	185	94.9
Gender identity		
Agender	7	3.6
Nonbinary	26	13.3

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Woman	132	67.7
Man	16	8.2
Genderqueer, Genderfluid, Demigirl	14	7.2
Sex assigned at birth		
Female	181	92.8
Racial background (multiple entries allowed)		
Aboriginal / Torres Strait Islander	5	2.6
Central Asian	6	3.1
East Asian	10	5.1
Hispanic / Latino/a/x/e	4	2.1
Middle Eastern / North African	5	2.6
White	177	90.8

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Education level		
Some post-secondary education, no degree or Secondary School / High School	26	13.3
Certificate, Diploma, or Associate's degree	27	13.8
Bachelor's degree	77	39.5
Master's degree or PhD	65	33.3
Employment status (multiple entries allowed)		
Casual employment	36	18.5
Full-time employment	67	34.4
Part-time employment	45	23.1
Not employed or Retired	35	18

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Student (part-time or full-time)	46	23.6
Sexual orientation		
Asexual	20	10.3
Bisexual	38	19.5
Pansexual	15	7.7
Straight (Heterosexual)	78	40.0
Lesbian	10	5.1
Queer	26	13.3
Would rather not say	6	3.1
Neurodivergence		
None (no Autism or ADHD)	24	12.3
ADHD only - formally diagnosed	16	8.2
ADHD only - self-identified	12	6.2

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Autism only - formally diagnosed	30	15.4
Autism only - self-identified	16	8.2
ADHD and Autism both self-identified	13	6.7
Autism diagnosed, ADHD self-identified	6	3.1
ADHD diagnosed, Autism self-identified	12	6.2
ADHD and Autism both formally diagnosed	38	19.5
Other forms of neurodivergence (e.g., OCD, dyslexia, dyspraxia)	28	14.4

Note. **N** = 195, representing the total number of participants. Participants could select multiple options for Racial background and Employment status; **ADHD** = Attention Deficit/Hyperactivity Disorder; **OCD** = Obsessive-Compulsive Disorder.

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The sample self-reported a wide range of ED diagnoses (Table 2). The most common was AN-r, followed by OSFED/EDNOS, BED, ARFID, and BN. Together, AN-r and AN-bp accounted for over one third of the sample. Less common diagnoses included pica, rumination disorder, and UFED, reflecting considerable diagnostic diversity. Furthermore, almost one quarter of participants indicated that they had never been formally diagnosed but believed they had experienced an ED, and a further one fifth reported never having received an ED diagnosis.

Among participants with more than one self-reported ED diagnosis, 11 individuals had a self-reported diagnosis both AN-bp and AN-r, six of whom also self-reported additional ED diagnoses, including OSFED, ARFID, BED, BN, and/or night eating disorder (NED). Additionally, nine individuals self-reported both AN-r and OSFED (atypical AN). All three participants with NED also self-reported BED. While 10 participants self-reported ARFID only, the remaining 14 with ARFID self-reported another ED, 10 self-reported AN (among whom two also self-reported BN) and four self-reported BED (with one also self-reporting BN). In contrast, the two individuals who self-reported purging did not self-report any additional ED diagnoses.

Multiple self-reported ED diagnoses were allowed because diagnostic crossover is well-established. Research shows that transitions between EDs are common, including from AN to BN, from BN to BED, or from AN to OSFED, particularly atypical AN [107–109]. Subtype shifts within AN are also common, with restricting presentations sometimes developing

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into binge-purge presentations [107,109]. As noted by Miskovic-Wheatley et al. [7], “research examining specific diagnostic profiles potentially misses outcomes where symptom experience transforms rather than alleviates.”

Furthermore, ARFID was recognised as a distinct diagnosis only with the DSM-5. Before that change, individuals with avoidant or restrictive eating patterns were often classified under AN or OSFED despite clear differences in motivation and presentation [110,111]. Even after its formal recognition, clinicians frequently report uncertainty when distinguishing ARFID from other restrictive EDs [110,111]. These challenges show the need for flexible, transdiagnostic approaches that better represent the evolving and overlapping nature of ED presentations.

More than half of the participants self-reported currently experiencing an ED, with nearly one third describing a past ED and a smaller group indicating no lifetime history. As shown in Appendix 4, individuals who currently experienced an ED reported significantly higher scores on the EDE-QS compared to those with past or no ED history ($p < .001$). There was no significant difference between participants who had never experienced an ED and those with a past ED ($p = .475$). The same pattern was observed for the BEDS-7, $H(2) = 26.33$, $p < .001$ (Appendix 3). Both groups without current ED symptoms scored significantly lower than participants currently experiencing an ED.

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Similar findings were obtained for the NIAS, $H(2) = 27.78$, $p < .001$ (Appendix 2). There was no difference between participants who had never experienced an ED and those who self-reported having experienced an ED in the past ($p > .999$). In contrast, both groups reported significantly lower scores than participants with a current ED ($p < .001$). This pattern was consistent across all NIAS subscales.

Among the TGD subsample (N = 50), a wide range of ED diagnoses were self-reported (Appendix 5). The most common self-reported diagnoses were AN-r, ARFID, BED, and AN-bp. OSFED/EDNOS presentations were also self-represented, most frequently atypical AN. Among Autistic participants (Appendix 9), AN-r was the most frequently self-reported diagnosis, followed by OSFED (atypical AN) and ARFID. In the ADHD group, self-reported EDs were common and varied across both restrictive and binge-type presentations, with AN-bp and AN-r most frequently self-reported. BED and BN were also prevalent. The Autism and ADHD combined group showed the greatest diversity of self-reported ED diagnoses.

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Table 2

Self-Reported Eating Disorders

ED (multiple entries allowed)	**N**	**Percentage of overall sample**
Anorexia nervosa – binge-purge subtype (AN-bp)	20	10.3

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Anorexia nervosa – restrictive subtype (AN-r)	52	26.7
Avoidant / restrictive food intake disorder (ARFID)	24	12.3
Binge eating disorder (BED)	24	12.3
Bulimia nervosa (BN)	17	8.7
Other specified feeding or eating disorder / eating disorder not otherwise specified (OSFED / EDNOS) - atypical anorexia	29	14.9
Other specified feeding or eating disorder / eating disorder not otherwise specified (OSFED / EDNOS) - night eating syndrome	3	1.5
Other specified feeding or eating disorder / eating disorder not otherwise specified (OSFED / EDNOS) - orthorexia	4	2.1
Other specified feeding or eating disorder / eating disorder not otherwise specified (OSFED / EDNOS) - purging disorder	2	1.0
Other specified feeding or eating disorder / eating disorder not otherwise specified (OSFED / EDNOS) - subthreshold bulimia nervosa or binge eating disorder	4	2.1
Pica	2	1.0
Rumination disorder	1	0.5
Unspecified feeding and eating disorders (UFED)	2	1.0
While I was never diagnosed with an eating disorder, I believe I have experienced one	44	22.6

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I have never been diagnosed with an eating disorder	37	19.0
ED Status		
Currently experiencing an eating disorder (current)	110	56.4
Not currently experiencing an eating disorder (past)	58	29.7
I have never experienced an eating disorder	27	13.8
Self-reported ED diagnosis (quantity)		
One diagnosis	71	36.4
Two diagnoses	30	15.4
More than two diagnoses	16	8.2

Note. **N =** 195, representing the total number of participants. Participants could select multiple options for ED diagnoses; Eating Disorder Status allowed only one response. **AN-bp** = Anorexia Nervosa, binge-purge subtype; **AN-r** = Anorexia Nervosa, restrictive subtype; **ARFID** = Avoidant/Restrictive Food Intake Disorder; **BED** = Binge Eating Disorder; **BN =** Bulimia Nervosa; **OSFED** = Other Specified Feeding or Eating Disorder; **EDNOS** = Eating Disorder Not Otherwise Specified; **UFED** = Unspecified Feeding and Eating Disorder.

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3.2. Descriptive Statistics

Descriptive statistics for all study measures (Appendix 1) indicated that the data were generally well distributed and approximated normality. For most instruments, score distributions were balanced, with only a few

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subscales showing mild positive skew. Specifically, the NIAS Fear subscale, the Brief MAIA-2 Not Distracting and Trusting subscales, and the SPQ-35 Olfactory subscale showed a modest concentration of lower scores. Importantly, none of the variables demonstrated substantial skew, suggesting that overall, the data were well proportioned. Taken together, these results indicate that while minor deviations from normality were present, the data overall satisfied the assumptions required for parametric analyses.

3.3. Correlation Analyses

To test our first hypothesis that higher gender incongruence would be associated with higher levels of ED symptoms, we performed correlational analyses. As shown in Table 3 below, individuals who reported higher discomfort with their gender-related appearance and identity reported higher levels of ED symptoms, as measured by the EDE-QS and the NIAS. This pattern was consistent across dimensions of gender incongruence, with the strongest associations observed for the NIAS Fear subscale, followed by Picky Eating and Appetite. In contrast, gender incongruence was not significantly correlated with binge eating symptoms as measured by the BEDS-7.

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Table 3

Pearson Correlations Between ED Measures and Gender Congruence (TCS) (Significance in Parentheses)

Measure	**TCS**	Appearance	Acceptance
EDE-QS	-.22* (.002)	-.20* (.005)	-.20* (.004)

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Measure	TCS	Appearance	Acceptance
NIAS	-.29** (<.001)	-.29** (<.001)	-.22* (.002)
Picky Eating	-.22* (.002)	-.21* (.004)	-.17* (.015)
Appetite	-.20* (.004)	-.20* (.006)	-.15 (.032)
Fear	-.29** (<.001)	-.29** (<.001)	-.20* (.004)
BEDS-7	-.08 (.260)	-.07 (.303)	-.08 (.298)

Note. *$p < .05$. **$p < .001$. **EDE-QS** = Eating Disorder Examination–Questionnaire Short; **NIAS** = Nine Item ARFID Screen; **BEDS-7** = Binge Eating Disorder Screener–7; **TCS** = Transgender Congruence Scale. All p-values reported are Bonferroni-corrected for multiple comparisons.

As shown in Table 4 below, gender incongruence was associated with heightened sensory differences, particularly in relation to appearance-related comfort and gender identity acceptance. For exteroception (SPQ-35), individuals who experienced higher gender incongruence tended to report higher sensitivity to external stimuli, most notably within the visual and auditory domains. Although the associations between exteroception and gender incongruence were small to moderate, they suggest that hypersensitivity may accompany higher gender incongruence.

Gender incongruence was associated with reduced interoceptive sensibility. Individuals who experienced gender incongruence tended to report altered interoceptive sensibility and greater difficulty regulating attention toward internal cues. This was particularly evident for the Noticing and Attention Regulation subscales. Lower levels of body trust,

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reflecting reduced confidence and comfort in one's bodily sensations, were most strongly linked with gender incongruence, while Emotional Awareness showed weaker but still statistically significant associations. Overall, these findings suggest that gender incongruence is accompanied by altered interoceptive sensibility, especially body trust.

Table 4

Pearson Correlations Between Sensory Processing (SPQ-35 and Brief MAIA-2) and Gender Congruence (TCS) (Significance in Parentheses)

Measure	**TCS**	Appearance	Acceptance
SPQ-35	.18* (.013)	.17* (.017)	.14* (.048)
Visual	.21* (.003)	.22* (.002)	.17 (.165)
Auditory	.23* (.001)	.23* (.002)	.16* (.029)
Tactile	.17 (.114)	.17 (.113)	.13 (.301)
Gustatory	.13 (.073)	.12 (.120)	.10 (.059)
Olfactory	.10 (.150)	.10 (.245)	.13 (.076)
Brief MAIA-2	.28** (<.001)	.28** (<.001)	.20* (.004)
Noticing	.27** (<.001)	.25** (<.001)	.24** (<.001)
Not Distracting	.14 (.141)	.13 (.132)	.08 (.375)
Not Worrying	-.01 (.921)	-.02 (.754)	.04 (.583)

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Measure	TCS	Appearance	Acceptance
Attention Regulation	.22* (.003)	.22* (.002)	.13 (.062)
Emotional Awareness	.15* (.032)	.13 (.065)	.16* (.022)
Self-Regulation	.11 (.138)	.10 (.165)	.00 (.950)
Body-Listening	.11 (.141)	.09 (.190)	.07 (.734)
Trusting	.44** (<.001)	.42** (<.001)	.37** (<.001)

Note. *$p < .05$. **$p < .001$. **SPQ-35** = Sensory Perception Quotient–35; **Brief MAIA-2** = Multidimensional Assessment of Interoceptive Awareness, Brief Version; **TCS** = Transgender Congruence Scale. Higher SPQ-35 scores indicate *lower* responsiveness, while lower scores indicate *greater* responsiveness. Higher Brief MAIA-2 scores indicate *greater* interoceptive sensibility, whereas lower scores indicate *poorer* interoceptive sensibility. All p-values reported are Bonferroni-corrected for multiple comparisons.

As shown in Table 5 below, higher levels of Autistic and ADHD traits were associated with higher gender incongruence. For Autistic traits (RAADS-14), gender incongruence was linked to higher overall scores and, more specifically, to greater difficulties with mentalising, elevated social anxiety, and increased sensory sensitivity. These associations were strongest for appearance-related gender incongruence and somewhat weaker for gender identity acceptance.

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ADHD traits (ASRS) showed even stronger associations with gender incongruence. Higher levels of inattentive, motor, and verbal ADHD traits were all related to gender incongruence across appearance and identity domains. The inattentive ADHD dimension demonstrated the strongest relationships, followed by motor and verbal traits. Overall, these findings indicate that elevated Autistic and ADHD characteristics are associated with higher gender incongruence.

Table 5

Pearson Correlations Between Autistic and ADHD Traits (RAADS-14 and ASRS) and Gender Congruence (TCS) (Significance in Parentheses)

Measure	**TCS**	Appearance	Acceptance
RAADS-14	-.26** (<.001)	-.27** (<.001)	-.17* (.021)
Mentalizing	-.25** (<.001)	-.25** (<.001)	-.17* (.020)
Social Anxiety	-.20* (.006)	-.20* (.006)	-.14 (.060)
Sensory	-.22* (.002)	-.24** (<.001)	-.11 (.140)
ASRS	-.34** (<.001)	-.33** (<.001)	-.27** (<.001)
Inattentive	-.34** (<.001)	-.33** (<.001)	-.26** (<.001)
Motor	-.26** (<.001)	-.26** (<.001)	-.17* (.018)
Verbal	-.26** (<.001)	-.24** (<.001)	-.22* (.002)

Note. *$p < .05$. **$p < .001$. **RAADS-14** = Ritvo Autism and Asperger Diagnostic Scale–14; **ASRS** = Adult ADHD Self-Report Scale; **TCS** = Transgender Congruence Scale; **ADHD** = Attention Deficit/Hyperactivity Disorder. All p-values reported are Bonferroni-corrected for multiple comparisons.

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As shown in Table 6 below, both Autistic and ADHD traits were positively associated with ED symptoms, but these associations differed depending on the type of symptom assessed. For Autistic traits (RAADS-14), higher total scores were linked to greater ARFID-related symptoms on the NIAS. In contrast, RAADS-14 total scores were not related to EDE-QS scores, which assess disordered eating relative to weight and shape concerns, nor to BEDS-7 scores, which capture binge eating symptoms. Significant associations were observed across the Picky Eating, Appetite, and Fear subscales of the NIAS. Within the RAADS-14 subscales, mentalising traits showed the most consistent relationships with ED symptoms, followed by social anxiety and sensory sensitivity. In contrast, although several RAADS-14 subscales were correlated with EDE-QS scores, BEDS-7 scores were not associated with any RAADS-14 subscale.

Compared with Autistic traits (RAADS-14), ADHD traits (ASRS) showed stronger associations with a wider range of ED symptoms. Higher scores on the Inattentive, Motor, and Verbal subscales of the ASRS were linked to elevated scores on both the EDE-QS and NIAS, as well as to binge eating symptoms on the BEDS-7. These associations suggest that ADHD traits are connected to a broader spectrum of ED presentations than Autistic traits, encompassing both restrictive and binge-type behaviours. Across ASRS subscales, motor traits were most strongly related to the EDE-QS, whereas inattentive traits showed the strongest associations with the BEDS-7. Motor traits were associated with both restrictive and fear-based eating behaviours (NIAS), while verbal traits showed smaller associations.

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Overall, these findings indicate that Autistic traits are primarily associated with restrictive or avoidant ED symptoms as measured by the NIAS, while ADHD traits show broader and stronger relationships spanning both restrictive and binge-type ED symptoms.

Table 6

Pearson Correlations Between Characteristics of Autistic and ADHD Traits (RAADS-14 and ASRS) and ED Symptoms (EDE-QS, NIAS, BEDS-7) (Significance in Parentheses)

Measure	**EDE_QS**	**NIAS**	Picky eating	Appetite	Fear	**BEDS-7**
RAADS-14	.14 (.058)	.20* (.004)	.19* (.007)	.14* (.045)	.16* (.030)	.11 (.123)
Mentalizing	.15* (.041)	.20* (.006)	.19* (.009)	.14 (.057)	.15* (.031)	.09 (.224)
Social Anxiety	.14* (.049)	.15* (.034)	.18* (.013)	.14 (.059)	.05 (.482)	.07 (.364)
Sensory	.06 (.370)	.19* (.010)	.15* (.030)	.14 (.060)	.17* (.020)	.08 (.240)
ASRS	.27** (<.001)	.23* (.002)	.23* (.001)	.16* (.023)	.15* (.033)	.27** (<.001)
Inattentive	.22* (.002)	.16* (.026)	.19* (.007)	.12 (.098)	.07 (.328)	.23* (.001)

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Measure	**EDE_QS**	**NIAS**	Picky eating	Appetite	Fear	**BEDS-7**
Motor	.27** (<.001)	.23* (.001)	.18* (.014)	.17* (.017)	.21* (.003)	.18* (.014)
Verbal	.19* (.008)	.15* (.036)	.15* (.042)	.11 (.114)	.10 (.155)	.18* (.011)

Note. *$p < .05$. **$p < .001$. **RAADS-14** = Ritvo Autism and Asperger Diagnostic Scale–14; **ASRS** = Adult ADHD Self-Report Scale; **EDE-QS** = Eating Disorder Examination–Questionnaire Short; **NIAS** = Nine Item ARFID Screen; **BEDS-7** = Binge Eating Disorder Screener–7; **ADHD** = Attention Deficit/Hyperactivity Disorder; **ED** = Eating Disorder. All p-values reported are Bonferroni-corrected for multiple comparisons.

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3.4. Regression Analyses

3.4.1. Gender Congruence and Interoception

To examine Hypothesis 5, which proposed that sensory processing differences account for variance in the association between gender incongruence and disordered eating, a series of regression-based analyses were conducted across interoception and exteroception. Only sensory-based subscales that showed statistically significant correlations with ED measures were included as predictors in multivariable regression models to ensure conceptual and statistical relevance. This section focuses on interoceptive sensibility. Section 3.4.2 addresses exteroception.

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The first set of analyses examined the two Brief MAIA-2 subscales that were significantly associated with disordered eating, Noticing and Trusting. These analyses tested whether facets of interoceptive sensibility accounted for variance in the association between gender incongruence, measured by the TCS, and ED psychopathology, measured by the EDE-QS. Gender incongruence alone accounted for a small proportion of variance in EDE-QS scores ($R^2 = .05$, $p = .006$), with higher gender incongruence associated with more severe ED psychopathology.

When Noticing and Trusting were added to the regression model, both variables were significantly associated with EDE-QS scores. Inclusion of these interoceptive sensibility variables was associated with attenuation of the association between gender incongruence and ED psychopathology. Specifically, lower Noticing scores were associated with higher EDE-QS scores (bootstrapped coefficient = 0.05, 95 percent CI [0.01, 0.10]), and lower Trusting scores were likewise associated with higher levels of ED psychopathology (bootstrapped coefficient = −0.17, 95 percent CI [−0.24, −0.10]). In the fully adjusted model, the coefficient for gender incongruence was no longer statistically significant (B = −0.06, 95 percent CI [−0.18, 0.06]), indicating that Noticing and Trusting together accounted for substantial variance in EDE-QS scores beyond gender incongruence alone. The full model explained 19 percent of the variance in EDE-QS scores ($R^2 = .19$, $p < .001$). Bootstrapped coefficients are reported in Figure 1.

Figure 1.

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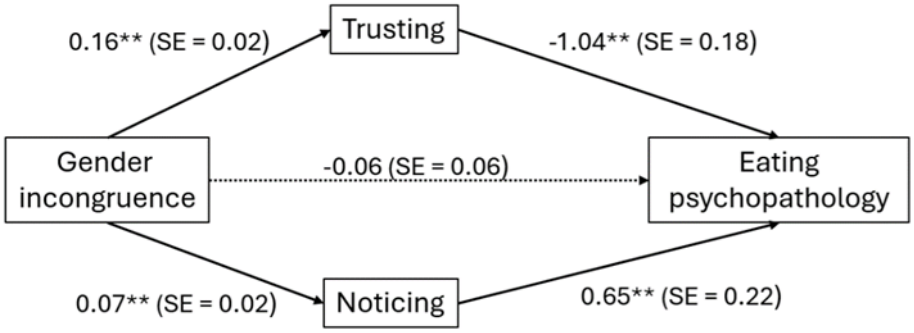
Associations of Interoceptive Noticing and Trusting with Eating Psychopathology in the Context of Gender Incongruence



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .19, p < .001.

To further examine Hypothesis 5, regression analyses tested whether interoceptive sensibility accounted for variance in the association between gender incongruence and NIAS scores. Higher gender incongruence, measured by the TCS, was significantly associated with higher NIAS scores. This initial model explained 12.8 percent of the variance in avoidant eating (p < .001), with only the Appearance subscale of the TCS showing a statistically significant association (B = −0.27, 95 percent CI [−0.48, −0.04]).

Among the Brief MAIA-2 subscales, only Not Distracting was significantly associated with NIAS scores. Inclusion of Not Distracting in the model increased the explained variance by 4.2 percent (p = .003), indicating that individuals who were less likely to disengage from bodily sensations tended to report more avoidant eating behaviours. However, because Not Distracting was not significantly correlated with gender incongruence in earlier analyses, its inclusion did not attenuate the association between

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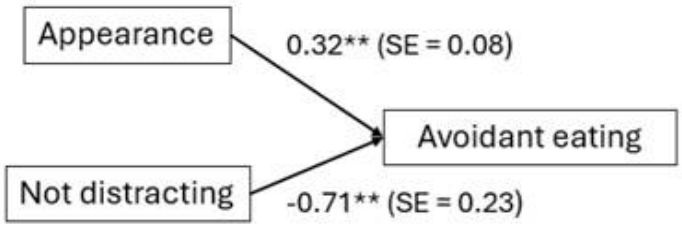
gender incongruence and avoidant eating. The association between gender incongruence and NIAS scores remained statistically significant in the adjusted model (B = −0.32, 95 percent CI [−0.49, −0.16]), and bootstrapped estimates indicated that Not Distracting did not account for additional shared variance in this association (bootstrapped coefficient = −0.03, 95 percent CI [−0.07, 0.01]).

Taken together, these findings indicate additive patterns of association rather than overlapping variance between gender incongruence, interoceptive sensibility, and avoidant eating. Gender incongruence and avoidant eating were independently associated with lower tendencies to distract from bodily sensations. Figure 2 displays the corresponding regression model.

Figure 2

Associations Between Appearance-Based Gender Incongruence, Not Distracting, and NIAS Scores



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .12, p < .001.

3.4.2. Gender Congruence and Exteroception

Continuing the evaluation of Hypothesis 5, regression-based analyses examined whether exteroception accounted for variance in the

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association between gender incongruence and disordered eating. Exteroceptive variables were associated with avoidant eating as measured by the NIAS but were not associated with broader ED psychopathology as reflected in the EDE-QS. Accordingly, NIAS scores were selected as the dependent variable. Because earlier analyses indicated that the Appearance subscale of the TCS, rather than the Acceptance subscale, was associated with NIAS scores, Appearance was used as the independent variable. Analyses were conducted first at the SPQ-35 subscale level and subsequently using the total SPQ-35 score.

Among the NIAS subscales, only Picky Eating was significantly associated with exteroceptive variables when included alongside Appearance. This association was specific to gustatory processing. On the NIAS Picky Eating subscale, lower SPQ-35 Gustatory scores, indicating greater gustatory hypersensitivity, were associated with higher levels of selective and restrictive eating (B = −0.74, 95 percent CI [−1.05, −0.42]). Together, Appearance-based gender incongruence and gustatory exteroception accounted for 14.0 percent of the variance in Picky Eating scores ($p < .001$).

Inclusion of gustatory exteroception did not attenuate the association between Appearance-based gender incongruence and Picky Eating. Bootstrapped estimates indicated that gustatory exteroception did not account for additional shared variance in this association (bootstrapped coefficient = −0.02, 95 percent CI [−0.05, 0.00]), indicating that gender incongruence and gustatory exteroception were independently

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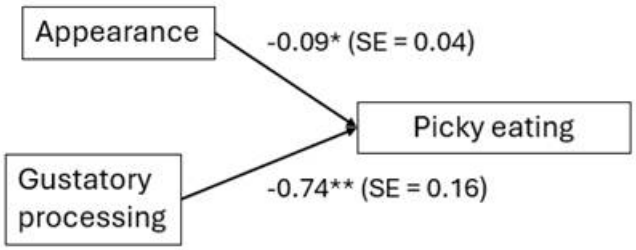
associated with NIAS Picky Eating scores. Figure 3 presents the corresponding regression model.

Figure 3

Associations of Appearance-Based Gender Incongruence and Gustatory Exteroception with NIAS Picky Eating Scores



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .12, p < .001.

When the SPQ-35 total score was included in the regression model alongside gender incongruence, exteroception accounted for variance in NIAS total scores. Higher gender incongruence, measured by the TCS, was associated with higher overall exteroception on the SPQ-35. Higher levels of exteroception were, in turn, associated with higher NIAS scores (B = −0.21, 95 percent CI [−0.31, −0.11]). In the adjusted model, the association between gender incongruence and NIAS scores remained statistically significant (B = −0.29, 95 percent CI [−0.45, −0.13]), indicating partial attenuation rather than full attenuation. Bootstrapped estimates indicated that inclusion of exteroception was associated with a modest but statistically reliable reduction in the strength of the association between gender incongruence and NIAS scores

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(bootstrapped coefficient = −0.06, 95 percent CI [−0.13, −0.01]). Figure 4 presents the corresponding regression model.

In summary, Hypothesis 5 received partial support. Interoceptive sensibility accounted for substantial variance in the association between gender incongruence and ED psychopathology as measured by the EDE-QS, whereas exteroception accounted for a smaller proportion of shared variance in the association between gender incongruence and NIAS scores. In contrast, interoceptive attention and gustatory exteroception showed additive patterns of association rather than overlapping variance with gender incongruence. Taken together, these findings indicate that different facets of sensory processing are associated with distinct patterns of ED symptom presentation among individuals experiencing gender incongruence.

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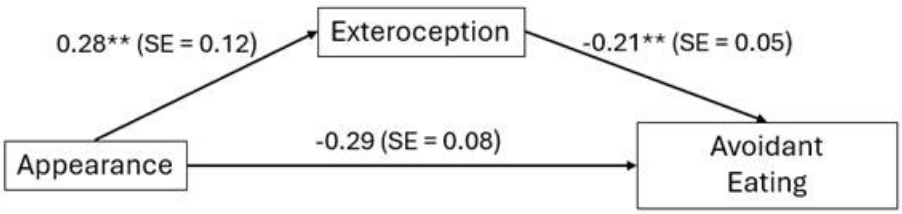
Figure 4

Associations Between Appearance-Based Gender Incongruence, Exteroception, and NIAS Scores



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .16, p < .001.

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3.4.3. Gender Congruence and Neurodivergent Traits

This section evaluates Hypothesis 6, which proposed that neurodivergent traits account for variance in the association between gender incongruence and disordered eating. Regression-based analyses were conducted to examine whether Autistic and ADHD traits statistically accounted for associations between gender incongruence and ED symptoms. Consistent with the correlation results, analyses focused on the EDE-QS and the NIAS, as gender incongruence was not associated with BEDS-7 scores.

For the EDE-QS, Autistic and ADHD traits were examined as predictors of ED psychopathology after accounting for overall gender incongruence as measured by the total TCS score, as neither TCS subscale was independently associated with EDE-QS scores. Gender incongruence alone explained 4.9 percent of the variance in ED symptoms, $F(1, 193) = 9.92$, $p = .002$. Inclusion of ASRS and RAADS-14 scores increased the explained variance by an additional 6.5 percent, and the full model was statistically significant, $F(7, 187) = 3.43$, $p = .002$. Among the neurodivergent indicators, only the ASRS Motor subscale was significantly associated with EDE-QS scores ($B = 1.21$, $SE = 0.50$, BCa 95 percent CI [0.25, 2.30]). Inclusion of neurodivergent traits was associated with partial attenuation of the association between gender incongruence and ED psychopathology, although the association between gender incongruence and EDE-QS scores remained statistically significant in the adjusted model ($B = -0.13$, $SE = 0.06$, 95 percent CI [−0.25, −0.02]). Bootstrapped estimates indicated a small but

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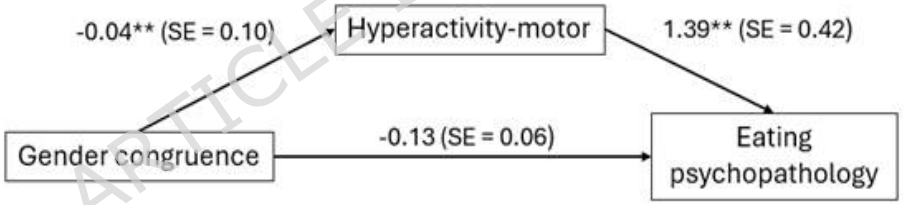
statistically reliable reduction in the strength of this association when neurodivergent traits were included (bootstrapped coefficient = −0.05, SE = 0.02, 95 percent CI [−0.10, −0.01]). Figure 5 presents the corresponding regression model.

For the NIAS, analyses focused on the Appearance subscale of the TCS, which was the only dimension of gender incongruence that showed significant correlations with NIAS scores. Inclusion of ASRS and RAADS-14 variables did not account for additional variance in NIAS scores, Fchange(6, 187) = 1.31, p = .253. Neither Autistic traits nor ADHD traits were significantly associated with NIAS scores in this model.

Figure 5

Associations of Gender Incongruence and ADHD Motor Traits with EDE-QS Scores



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .10, p < .001.

3.4.4. Neurodivergent Traits and Sensory Processing

To evaluate Hypothesis 7, hierarchical regression analyses were conducted to examine whether sensory processing, measured by the SPQ-35 and the Brief MAIA-2, accounted for variance in the associations between neurodivergent traits, assessed using the RAADS-14 and ASRS, and ED symptoms as measured by the EDE-QS, BEDS-7, and NIAS.

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3.4.4.1. EDE-QS Model

In the first step, EDE-QS scores were regressed on the RAADS-14 and ASRS subscales. This model explained 9.6 percent of the variance in ED psychopathology, $F(6, 188) = 3.34$, $p = .004$. Among the neurodivergent trait measures, only the ASRS Motor subscale was significantly associated with EDE-QS scores ($B = 1.26$, $SE = 0.51$, 95 percent BCa CI [0.13, 2.45]).

In the second step, interoceptive sensibility variables from the Brief MAIA-2, alongside SPQ-35 subscales, were added to the model, resulting in an increase of 18.4 percent in explained variance, $F_{change}(13, 175) = 3.45$, $p < .001$. Following inclusion of interoceptive sensibility variables, the association between ASRS Motor scores and EDE-QS scores was attenuated and no longer statistically significant ($B = 1.06$, $SE = 0.52$, 95 percent CI [−0.04, 2.19]). Among the interoceptive sensibility measures, two Brief MAIA-2 subscales were significantly associated with EDE-QS scores. Noticing showed a positive association ($B = 0.82$, $SE = 0.29$, 95 percent BCa CI [0.30, 1.46]), whereas Trusting showed a negative association ($B = −0.91$, $SE = 0.23$, 95 percent BCa CI [−1.38, −0.47]).

Bootstrapped estimates indicated that inclusion of interoceptive sensibility was associated with a reduction in the strength of the association between ASRS Motor traits and EDE-QS scores. Interoceptive sensibility, particularly the Trusting subscale, accounted for a substantial proportion of shared variance in EDE-QS scores (95 percent BCa CI [0.24, 1.09]), with a smaller contribution from Noticing (95 percent BCa

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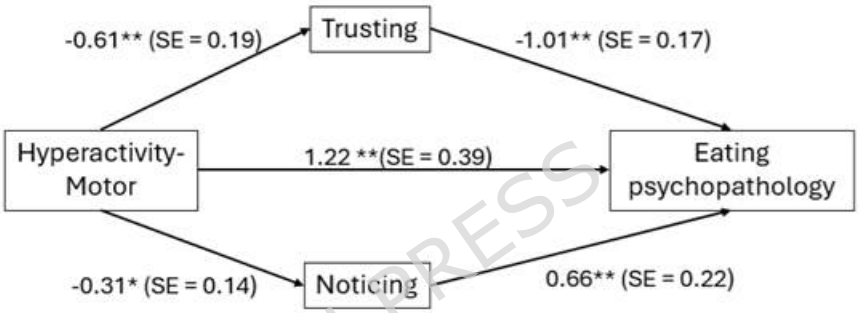
CI [−0.50, −0.01]). The association between ASRS Motor traits and ED psychopathology remained statistically reliable when accounting for uncertainty in the bootstrapped estimates (95 percent BCa CI [0.45, 2.00]), indicating partial attenuation rather than full attenuation. Figure 6 presents the corresponding regression model.

Figure 6

Associations of ADHD Motor Traits and Interoceptive Sensibility with EDE-QS Scores



Note. **SE** = Standard Error. *p < .05. **p < .001. R^2 = .23, p < .001.

3.4.4.2. BEDS-7 Model

Parallel hierarchical regression analyses were conducted with BEDS-7 scores as the dependent variable. The full model, which included neurodivergent traits and sensory processing predictors, was not statistically significant, F(19, 175) = 1.40, p = .130, indicating that these variables did not account for a reliable proportion of variance in BEDS-7 scores when considered together.

When only total RAADS-14 and ASRS scores were entered as predictors, a smaller model was statistically significant, consistent with the zero order correlation between ADHD traits and BEDS-7 scores (r = .27). This

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reduced model explained 7 percent of the variance in BEDS-7 scores, R^2 = .07, F(2, 192) = 7.67, p < .001.

3.4.4.3. NIAS Model

For NIAS scores, the combined RAADS-14 and ASRS subscales accounted for 7.6 percent of the variance, F(6, 188) = 2.57, p = .020, although none of the individual neurodivergent trait predictors were statistically significant. When SPQ-35 and Brief MAIA-2 subscales were added to the model, the explained variance increased by 14.3 percent, Fchange(13, 175) = 2.46, p = .004. Within this expanded model, only the Brief MAIA-2 Not Distracting subscale was significantly associated with NIAS scores, showing a negative association (B = −0.52, SE = 0.23, 95 percent BCa CI [−1.01, −0.70]).

4. Discussion

4.1. Summary of Findings

The primary aim of this study was to examine cross-sectional associations between gender incongruence, sensory processing, and neurodivergent traits in relation to ED symptom dimensions. The study was designed to characterise patterns of co-occurrence among these variables, with the goal of supporting hypothesis generation for future longitudinal and mechanistic research rather than testing causal or explanatory processes.

Consistent with Aim 1 and Hypothesis 1, gender incongruence was positively associated with ED symptoms. Lower comfort with gender-related appearance was associated with higher levels of ED

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symptomatology across both cisgender and TGD participants. This pattern was evident across EDE-QS and NIAS total and subscale scores, with the strongest associations observed for the NIAS Fear subscale. In contrast, gender incongruence was not associated with binge eating symptoms as measured by the BEDS-7, contrary to the initial hypothesis.

In line with Aim 2 and Hypothesis 2, gender incongruence was also associated with differences in sensory processing, although these associations varied across sensory domains. Higher gender incongruence was associated with greater exteroceptive responsiveness, particularly within visual and auditory modalities, as well as with lower interoceptive sensibility. Among interoceptive dimensions, reduced body trust as measured by the Brief MAIA-2 emerged as the most robust correlate of gender incongruence.

Consistent with Aim 3 and Hypothesis 3, higher levels of Autistic and ADHD traits were associated with higher gender incongruence. Associations were observed across both appearance and acceptance dimensions of gender incongruence, with ADHD inattentive traits showing the strongest and most consistent associations.

In accordance with Aim 4 and Hypothesis 4, neurodivergent traits were associated with distinct ED symptom profiles. Autistic traits were associated with higher NIAS scores but showed no association with BEDS-7 scores. In contrast, ADHD traits demonstrated broader associations across EDE-QS, NIAS, and BEDS-7 scores, with inattentive

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traits emerging as the most consistently associated dimension across measures.

For Aim 5 and Hypothesis 5, sensory processing was associated with attenuation in the strength of associations between gender incongruence and ED symptoms in a domain-specific manner. Interoceptive sensibility was associated with a substantial reduction in the association between gender incongruence and EDE-QS scores, whereas exteroception was associated with a more modest reduction in the association between gender incongruence and NIAS scores. Other sensory dimensions, including interoceptive attention and gustatory exteroception, showed additive rather than overlapping patterns of association with gender incongruence.

Regarding Aim 6 and Hypothesis 6, neurodivergent traits were associated with a limited reduction in the strength of associations between gender incongruence and ED symptoms. For EDE-QS scores, ADHD motor traits accounted for a small proportion of variance in the association, while the relationship between gender incongruence and ED psychopathology remained evident. For NIAS scores, inclusion of Autistic and ADHD traits did not account for additional variance. Overall, these findings provided only modest support for Hypothesis 6.

For Aim 7 and Hypothesis 7, sensory processing showed a restricted pattern of associations with ED symptoms in relation to neurodivergent traits. Lower interoceptive sensibility, particularly reduced body trust and altered interoceptive noticing, was associated with attenuation in the

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association between ADHD motor traits and EDE-QS scores, although the association between ADHD traits and ED psychopathology remained evident. Sensory processing was not associated with attenuation in models involving Autistic traits, and no statistically reliable associations were observed for BEDS-7 scores. Taken together, these findings provide partial and domain-specific support for Hypothesis 7.

Finally, exploratory analyses examined convergence between self-identification and formal diagnosis of Autism and ADHD. Participants who self-identified as Autistic or ADHD showed comparable trait profiles on the RAADS-14 and ASRS, respectively, to those who reported a formal diagnosis. This convergence suggests that self-identification and diagnostic status captured similar neurodivergent trait profiles in this sample. These analyses were exploratory and were not specified a priori.

4.2. Integration with Existing Literature

The present findings are consistent with existing evidence indicating that gender incongruence is associated with elevated levels of disordered eating [57,64,67]. TGD individuals frequently describe changes in eating-related behaviours in the context of distress associated with gender incongruence, including experiences commonly described as gender dysphoria, such as efforts to minimise secondary sex characteristics or to alter body shape in ways that feel more congruent with gender identity [28,29,58,60]. Similar patterns have been observed in general population research [112]. In a national study of more than two hundred thousand US college students, trans participants reported higher levels of eating-

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related pathology than all other gender identity groups [112]. The current findings extend this literature by demonstrating that interoceptive and exteroceptive differences are associated with the co-occurrence of gender incongruence and ED symptoms, highlighting sensory processing as a relevant dimension for future longitudinal and mechanistic research rather than establishing explanatory processes [35,79].

Although gender incongruence is most commonly examined in relation to TGD populations, discomfort with gendered embodiment is not limited to gender diverse individuals [113,114]. Cisgender people may also experience distress when their bodies diverge from socially enforced gendered appearance norms [113,114]. The observation that lower comfort with gender-related appearance was associated with higher ED symptom levels across both cisgender and TGD participants suggests that discomfort with gendered embodiment may represent a shared psychosocial vulnerability [113,114]. Among cisgender populations, internalisation of gendered appearance norms has been linked to self-objectification, body surveillance, and body shame, processes that are reliably associated with disordered eating and broader psychological distress [113,114]. Comparable dynamics have been documented among cisgender men, for whom internalisation of masculinity-focused appearance ideals and muscularity norms is associated with body dissatisfaction and appearance-related distress [115]. Disability and embodiment research further indicates that individuals whose bodies diverge from dominant cultural expectations may experience elevated

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body-related distress, although supportive social environments can mitigate these effects [116,117]. Within TGD populations, gender-related appearance incongruence is well established as a correlate of body dissatisfaction and disordered eating [57,58,60,64]. Collectively, this body of work suggests that discomfort with gendered appearance reflects a broader psychosocial context associated with ED vulnerability rather than a phenomenon unique to any single gender group [113,114,116,117].

Associations between visual and auditory exteroceptive responsiveness and gender incongruence are consistent with research highlighting the salience of external gender-coded cues in experiences of dysphoria [58,119]. Visual aspects of embodiment, including exposure to incongruent body features through mirrors or photographs, have been described as particularly distressing for many TGD individuals, while higher appearance congruence has been associated with improved wellbeing [58,93,94,96]. Auditory cues are also relevant, as misgendering related to voice pitch or intonation has been linked to poorer mental health outcomes [119,128,129]. Gender-affirming voice interventions have been shown to support both acoustic changes and improvements in self-perceived gender congruence [122,123,124]. Together, these findings provide context for the observed associations between visual and auditory exteroception and gender incongruence, suggesting that heightened responsiveness to external sensory cues may be associated with increased awareness of incongruent gendered signals, without implying a directional or causal relationship [58,119,122,123,124].

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Patterns observed in relation to neurodivergent traits were also broadly consistent with prior literature [11,46,47]. Autistic traits were primarily associated with NIAS scores, whereas ADHD traits showed broader associations across ED symptom measures [11,46,47]. This aligns with existing research linking Autistic traits to avoidant and restrictive eating presentations and extends work on ADHD that has largely focused on binge eating or binge-purging patterns [11,46,47]. The absence of strong sensory-based associations involving Autistic traits is consistent with findings suggesting that other psychosocial and identity-related factors, such as camouflaging, minority stress, and experiences of social misunderstanding, may be more salient correlates of disordered eating among Autistic individuals [125,141]. In contrast, ADHD traits were associated with ED symptoms alongside differences in interoceptive sensibility, highlighting interoception as a dimension warranting further investigation in future longitudinal and mechanistic research [36,46,47].

Exteroception was strongly associated with NIAS scores and showed a more limited association with broader ED symptomatology [35,38,110,111]. This pattern is consistent with research indicating that exteroceptive differences are particularly relevant to selective and avoidant eating [35,38,110,111]. Previous studies have documented elevated exteroceptive sensitivity among TGD individuals with ARFID-like presentations [11]. The present findings extend this work by situating exteroception within a broader network of associations involving gender incongruence and eating-related distress, without implying causal direction or explanatory pathways [11,35,45].

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Interoceptive sensibility, particularly body trust as measured by the Trusting subscale of the Brief MAIA-2, emerged as a consistent correlate across several models [90,91]. Differences in interoceptive sensibility have been widely reported in ED research, and prior work has linked lower body trust to disordered eating among TGD adults [36,73]. Intuitive eating, which relies on interoceptive processes, has been associated with lower disordered eating in gender nonbinary populations [126]. At the same time, sensory processing differences may shape how interoceptive cues are experienced and interpreted, underscoring the importance of considering sensory and embodiment-related diversity in future research rather than assuming uniform access to interoceptive awareness or body trust [35,41,42,49].

The association between gender incongruence and NIAS Fear scores may be understood within broader contexts of minority stress and chronic threat exposure [66,128,129]. Beyond eating-related concerns, large epidemiological datasets show that TGD individuals experience elevated rates of depression, anxiety, and suicidality, patterns consistently linked to experiences of discrimination, rejection, and gender-related stigma [127,128,129]. Within such contexts, avoidance in eating-related situations may reflect broader stress responsivity rather than food-specific processes [66,128,129].

Taken together, these findings suggest that vulnerability to disordered eating in TGD and neurodivergent populations is shaped not by gender incongruence or neurodivergence alone, but by how bodies are sensed,

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interpreted, and situated within social and environmental contexts [8,35,45,77]. Structural factors such as minority stress, discrimination, and barriers to affirming care may interact with sensory and embodiment-related experiences in ways that heighten eating-related distress, without implying a single explanatory mechanism [66,77,120,128,129].

Finally, findings related to self-identified and formally diagnosed Autistic and ADHD participants align with research demonstrating comparable sensory, cognitive, and identity-related profiles across these groups [130,131,134,135]. Self-identification often reflects systemic barriers to diagnostic access, particularly among individuals assigned female at birth [134,135]. The present findings support self-identification as a meaningful indicator of neurodivergent experience and underscore the importance of inclusive research practices that recognise diverse pathways to identity recognition and access to affirming care [130,134,138].

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4.3. Clinical Implications

The finding that more than 20 percent of both the TGD and neurodivergent subsamples reported believing they had experienced an ED without having received a formal diagnosis raises important questions regarding access to care and the potential for diagnostic overshadowing within these populations [11,21,45,64,127]. This pattern is consistent with evidence that prevailing ED diagnostic constructs and conceptual frameworks have been developed largely on the basis of

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cisgender and neurotypical populations, and may insufficiently capture the experiences of individuals with marginalised gender identities or neurodivergent profiles [17,21,45,75,136]. Barriers to recognition and diagnosis may therefore reflect systemic limitations rather than absence of clinically meaningful eating-related distress [21,45,75,136].

Importantly, identity-affirming, autonomy-informed, and sensory-informed approaches are not intended to replace attention to physical health, nutritional rehabilitation, or medical risk management. Rather, these frameworks can be integrated across all stages of care, including meal support and nutritional intervention, and in the context of ongoing medical monitoring, in ways that enhance engagement and safety. Examples include using sensory accommodations during meals, prioritising increases in food volume before expanding variety when clinically appropriate, and collaboratively identifying non-eating disorder strategies for gender affirmation that may reduce reliance on eating-related behaviours to manage dysphoria. Framing care in this integrative manner challenges the false dichotomy between affirmation and medical responsibility, and instead positions sensory-informed and gender-affirming practices as mechanisms for supporting nutritional and physical health outcomes within eating disorder treatment.

Similarly, many existing ED interventions were developed within cisgender and neurotypical contexts and tend to prioritise cognitive restructuring, weight restoration, or standardised eating patterns [3,7,10,26]. For some TGD and neurodivergent individuals, these

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approaches may not align with lived experiences of embodiment, sensory processing, or gendered identity, particularly when care models implicitly assume cisnormative or neuronormative baselines [8,12,60,71,77]. This highlights the need for continued critical examination of how ED frameworks are applied across diverse populations, rather than implying that any single intervention approach is inherently appropriate or inappropriate [10,17,26,75].

The present findings of interoceptive and exteroceptive differences among TGD and neurodivergent participants underscore the relevance of gender-affirming and neurodiversity-affirming frameworks that conceptualise sensory differences as meaningful dimensions of human variation rather than intrinsic deficits [33,35,73,77,138]. Within such frameworks, care models emphasise accessibility, relational safety, autonomy, and collaborative decision making, with the aim of reducing distress and supporting wellbeing rather than enforcing normative standards of behaviour or embodiment [31,75,120,138].

Prior qualitative and participatory research has documented experiences of epistemic invalidation among neurodivergent individuals, whereby sensory and bodily perceptions are questioned, minimised, or overridden within healthcare contexts [32,71,141,142]. Such invalidation may undermine self-trust and contribute to avoidance or masking behaviours that co-occur with eating-related distress [125,141,145]. Neurodiversity-affirming approaches instead position individuals as experts in their own

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sensory and bodily experiences and prioritise shared understanding in the development of supportive strategies [33,75,77,138].

Emerging evidence also suggests that sensory processing differences are particularly relevant to restrictive and avoidant eating patterns among TGD adults [11]. For example, Thomas et al. reported that sensory processing differences were associated with ARFID-related symptoms in TGD adults even after accounting for Autistic and ADHD traits [11]. These findings indicate that sensory factors may contribute to eating-related distress in ways that are not fully explained by neurodivergent characteristics alone [11,35]. From a research perspective, this underscores the importance of incorporating sensory dimensions into future studies of ED phenomenology and care experiences [35,39,79].

Research further illustrates how sensory processing intersects with gendered embodiment and neurodivergent experience [63,71,77]. Cooper et al. described experiences of “sensory dysphoria” among Autistic TGD individuals, in which heightened responsiveness to tactile or bodily sensations intensified discomfort with specific gendered features [72]. Related work has shown that sensory overload may exacerbate distress during puberty or medical transition, particularly when clinicians conflate sensory experiences with gender dysphoria [71,77]. These findings highlight the importance of conceptual models that integrate sensory processing, gender affirmation, and neurodiversity without collapsing these dimensions into a single explanatory construct [33,77,138].

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Existing gender-affirming care frameworks, such as the Gender Affirming Care Protocol and the Quality-of-Life-Oriented Gender-Affirming Care (QOL-GAC) model, emphasise flexibility, identity-congruent language, and quality-of-life outcomes rather than rigid behavioural or weight-based endpoints [31,120,137]. While the present study does not evaluate treatment processes or outcomes, its findings align conceptually with approaches that prioritise embodied safety, autonomy, and contextual fit as meaningful dimensions of wellbeing [31,75,138].

More broadly, these findings underscore the importance of intersectional perspectives in ED research and care [8,17,69]. Gender-affirming, neurodiversity-affirming, and sensory-informed frameworks converge on the recognition that eating-related distress is shaped by relational, contextual, and embodied factors [8,33,69,138]. The observed associations between sensory processing, gender incongruence, neurodivergent traits, and ED symptoms highlight the need for models that foreground epistemic humility, sensory accessibility, and patient autonomy [75,77,138]. Such approaches move beyond deficit-oriented paradigms and instead support person-led understandings of wellbeing that are responsive to intersecting identities and lived experiences [33,75,138].

5. Limitations and Recommendations for Future Research

Several limitations should be acknowledged. As this study did not involve a clinical sample and relied on self-reported diagnostic history for neurodivergence and EDs, findings cannot be generalised to clinical

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populations. Furthermore, due to limited subgroup sizes highlighted in Appendix 6, this study was underpowered to examine specific intersections such as neurodivergent TGD participants compared with cisgender neurodivergent participants. Another limitation is the use of a cross-sectional design, which prevents any causal inferences. Longitudinal research would make it possible to examine how sensory processing, gender congruence, and neurodivergent traits shape eating experiences over time and would allow stronger inferences regarding the causality and direction of these associations. Future research should investigate these intersections to clarify how eating experiences and support needs vary between neurodivergent TGD and neurotypical TGD people.

Measurement considerations also warrant caution. The SPQ-35, like other exteroception measures, has not been validated for use in TGD populations, thus findings should be interpreted as preliminary. Similarly, although the TCS has been administered across both cisgender and TGD samples [64,94,95], it was originally validated only in TGD populations. Therefore, while comparisons across groups are supported by prior work, the psychometric properties of the TCS in cisgender samples remain to be established. Additionally, the Acceptance subscale of the TCS ($\alpha = .71$) and several SPQ-35 subscales, particularly the Gustatory ($\alpha = .59$) and Auditory ($\alpha = .66$) scales, showed internal consistency coefficients on the lower end of acceptability.

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Further limitations relate to the psychometric tools used to assess neurodivergence. Current instruments for Autism and ADHD were not co-developed (participatory research) with neurodivergent people and remain grounded in outdated, deficit-based and gender biased frameworks. These measures were primarily normed on participants assigned male at birth and may not capture the full range of lived experiences, particularly across the gender spectrum [144,145]. Moreover, ED diagnostic constructs and psychometric instruments were developed within neuronormative and cisnormative frameworks and may not accurately reflect the lived experiences of EDs among TGD and/or neurodivergent people [61,74]. For example, restrictive or selective eating behaviours may have distinct sensory or identity-related functions that existing measures pathologise or overlook. Ongoing co-production and validation of assessment tools in collaboration with lived experience communities, such as neurodivergent and TGD communities, are essential for more accurate, culturally valid, and inclusive measurement.

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Recruitment through ED advocacy organisations may have introduced selection bias by attracting participants with greater awareness of or engagement with ED-related issues. The sample was also predominantly white, assigned female at birth, and highly educated, which restricts applicability to more diverse sociodemographic groups. While our demographic questionnaire followed best practices for asking about intersex status [75,146], the low number of intersex respondents meant there was not adequate statistical power to compare intersex and endosex groups. Recruitment efforts for future research on these topics

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may need to intentionally collaborate with organisations serving racially minoritised, transfeminine and nonbinary people assigned male at birth, and intersex individuals to increase representation of these populations. To further explore the relationship between gender incongruence and disordered eating observed in this study, future research with increased representation of intersex and racial minority populations may be able to better assess how race and intersex status may impact gender incongruence (in both cisgender and TGD populations) as societal gendered body ideals tend to centre White bodies without intersex traits. Increased recruitment of disabled individuals and research questions assessing relationship to disability status could also provide additional information about potential relationships between disability (including and in addition to the experience of neurodivergence as disability), gender incongruence, and disordered eating.

Finally, the study primarily focused on Autism and ADHD. Findings cannot be generalised to other forms of neurodivergence such as dyspraxia, dyslexia, intellectual disability, giftedness, or Tourette's syndrome, which may also intersect with eating and sensory experiences. Future research should broaden this scope to include a wider range of neurotypes and adopt participatory, intersectional approaches that centre lived experience and address structural inequities within ED research.

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6. Conclusions

This study provides novel empirical evidence of cross-sectional associations between sensory processing, neurodivergent traits, gender incongruence, and ED symptom dimensions. The findings highlight interoceptive sensibility and exteroception as salient dimensions that co-occur with eating-related distress among neurodivergent and TGD individuals. In particular, ADHD-related traits were consistently associated with ED symptoms alongside differences in interoceptive sensibility, while exteroception was specifically associated with NIAS-assessed eating concerns in the context of gender incongruence. Together, these results indicate that vulnerability to disordered eating among TGD and neurodivergent individuals is shaped not by identity alone, but by how embodiment is experienced, interpreted, and situated within social, environmental, and clinical contexts.

The findings underscore the relevance of identity-affirming and sensory-informed perspectives in ED research and conceptualisation. Prevailing ED assessment and treatment frameworks, which have largely been developed within cisnormative and neuronormative contexts, may insufficiently attend to sensory and embodiment-related dimensions that are salient for many neurodivergent and TGD individuals. While the present study does not examine treatment processes or outcomes, its findings support the need for continued critical evaluation of how existing ED models are applied across diverse populations.

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From a research perspective, this work highlights several priorities for future investigation. There is a need to extend beyond Autism and ADHD to consider a broader range of neurotypes, to employ participatory and lived experience-informed methodologies, and to co-develop psychometrically robust assessment tools in collaboration with neurodivergent and TGD communities. Longitudinal and mechanistic research designs will be essential to clarify temporal relationships and to examine how sensory, identity-related, and contextual factors interact over time.

Overall, this study advances an intersectional, lived experience-led understanding of the relationships between sensory processing, neurodivergence, gender incongruence, and ED symptoms. By situating eating-related distress within broader sensory, embodied, and sociocultural contexts, it contributes conceptual directions for future research and supports the development of more inclusive, person-centred, and affirming frameworks in ED scholarship and practice.

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Abbreviations and Acronyms

ADHD: Attention Deficit/Hyperactivity Disorder

AN: Anorexia Nervosa

AN-bp: Anorexia Nervosa, Binge-Purge Subtype

AN-r: Anorexia Nervosa, Restricting Subtype

ARFID: Avoidant/Restrictive Food Intake Disorder

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ASRS: Adult ADHD Self-Report Scale

BED: Binge Eating Disorder

BEDS-7: Binge Eating Disorder Screener-7

BN: Bulimia Nervosa

Brief MAIA-2: Multidimensional Assessment of Interoceptive Awareness, Brief Version 2

CBT: Cognitive Behavioural Therapy

CI: Confident Interval (CIs: Confidence Intervals)

DMN: Default Mode Network

DSM-5: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition

ED: Eating Disorder (EDs: Eating Disorders)

EDNOS: Eating Disorder Not Otherwise Specified

EDE-QS: Eating Disorder Examination Questionnaire Short

fMRI: functional Magnetic Resonance Imaging

GCLS: Gender Congruence and Life Satisfaction Scale

LGBTQIA+: Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, and Asexual

MAIA-2: Multidimensional Assessment of Interoceptive Awareness, Version 2

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NIAS: Nine-Item Avoidant/Restrictive Food Intake Disorder Screen

OCD: Obsessive-Compulsive Disorder

OSFED: Other Specified Feeding or Eating Disorder

PROCESS: PROCESS Macro for Mediation, Moderation, and Conditional Process Analysis

QOL-GAC: Quality-of-Life-Oriented Gender-Affirming Care

RAADS-14: Ritvo Autism Asperger Diagnostic Scale-14

SCOFF: Sick, Control, One stone, Fat, Food (screening tool for eating disorders)

SE: Standard Error

SPQ: Sensory Perception Quotient

TCS: Transgender Congruence Scale

TGD: Transgender and Gender Diverse

UFED: Unspecified Feeding or Eating Disorder

WHO: World Health Organization

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Ethics approval and consent to participate

A detailed overview of the study and its goals, including potential risks of discomfort, was made available online to prospective participants. By choosing to complete the anonymous online survey, participants provided implied consent.

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Ethics approval for this study was obtained from the University of New South Wales Human Research Ethics Committee (Reference Number: iRECS8352).

Availability of Data and Materials

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Competing Interests

Laurence Cobbaert is on the Board of Directors of not-for-profit organisation Eating Disorders Neurodiversity Australia (EDNA). They receive no direct financial remuneration from their Directorship position with EDNA. Laurence Cobbaert is also the Founder and Chair of the neurodiversity special interest group at the Australia and New Zealand Academy for Eating Disorders (ANZAED). Laurence Cobbaert is a PhD candidate and receives a PhD stipend from the University of New South Wales, Sydney, Australia.

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Authors' Contributions

Laurence Cobbaert: Conceptualisation; data curation; formal analysis; investigation; methodology; project administration; resources; writing – original draft; writing – review and editing. **Jane Miskovic-Wheatley:** Conceptualisation; methodology; writing – review and editing. **Kai Schweizer:** Conceptualisation; methodology; writing – review and editing. **Kai S. Thomas:** Conceptualisation; methodology; writing – review and editing. **Rosiel Elwyn:** Conceptualisation; methodology; writing – review and editing. **Caide Bier:** Conceptualisation; methodology; writing – review and editing. **Sam L. Sharpe:** Conceptualisation; methodology; writing – review and editing. **Phillipa Hay:** Supervision; writing – review and editing. **Philip B. Mitchell:** Supervision; writing – review and editing.

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Authors' Information

The majority of this paper's authors are TGD, neurodivergent, and have lived or living experience of EDs (LC, KS, KST, RE, CB, SLS).

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Appendix 10. Summary of Psychometric Instruments Used in the Study

Appendix 11. Glossary

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Supplementary Materials

Appendix 1. Descriptive Statistics for the Entire Sample (N = 195)

Variable	α	Range	Min	Max	M	SD	Skew.	Kurt.
EDE-QS	.91	0-36	0	36	14.28	9.49	0.24	-1.00
NIAS	.89	0-45	0	45	17.54	11.34	0.44	-0.69
Picky Eating	.90	0-15	0	15	7.50	4.86	0.01	-1.24
Appetite	.85	0-15	0	15	6.08	4.64	0.41	-0.89
Fear	.91	0-15	0	15	3.96	4.54	0.95	-0.27
BEDS	.90	0-15	0	15	4.63	4.81	0.50	-1.25
SPQ-35	.92	0-105	2	73	32.68	15.29	0.35	-0.42
Visual	.70	0-18	0	16	5.73	3.22	0.40	-0.32
Auditory	.66	0-15	0	15	5.30	2.83	0.47	0.05

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Tactile	.79	0-30	0	20	7.54	4.47	0.47	-0.23
Gustatory	.59	0-12	0	10	3.30	2.07	0.49	-0.07
Olfactory	.87	0-30	0	30	10.81	6.18	0.53	0.19
Brief MAIA-2	.91	0-120	10	104	52.30	18.38	0.35	-0.11
Noticing	.70	0-15	0	15	8.64	3.16	0.03	-0.38
Not Distracting	.90	0-15	0	15	4.94	3.31	0.64	0.25
Not Worrying	.86	0-15	0	15	6.40	3.75	0.17	-0.93
Attention Regulation	.89	0-15	0	15	6.15	3.55	0.35	-0.49
Emotional Awareness	.89	0-15	0	15	7.87	3.88	-0.06	-0.77
Self-Regulation	.86	0-15	0	15	6.23	3.55	0.15	-0.66
Body-Listening	.87	0-15	0	15	5.71	3.54	0.45	-0.42
Trusting	.92	0-15	0	15	5.74	4.20	0.52	-0.67

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TCS	.94	12-60	19	60	47.07	11.47	-0.64	-0.73
Appearance	.96	8-40	8	40	31.13	9.30	-0.85	-0.45
Acceptance	.71	4-20	5	20	15.93	3.22	-0.51	-0.44
RAADS-14	.89	0-42	0	42	29.72	10.13	-1.10	0.33
Mentalizing	.85	0-21	0	21	14.44	6.40	-0.86	-0.39
Social Anxiety	.72	0-12	0	12	7.67	3.44	-0.69	-0.36
Sensory	.67	0-9	0	9	7.16	2.56	-1.40	1.10
ASRS	.92	0-72	8	72	46.78	13.23	-0.68	0.04
Inattentive	.83	0-9	0	9	6.31	2.52	-0.78	-0.45
Motor	.72	0-5	0	5	3.23	1.59	-0.64	-0.72
Verbal	.66	0-4	0	4	2.47	1.30	-0.43	-0.87

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Note. **EDE-QS** = Eating Disorder Examination–Questionnaire Short; **NIAS** = Nine Item ARFID Screen; **BEDS-7** = Binge Eating Disorder Screener–7; **SPQ-35** = Sensory Perception Quotient (35-item version); **Brief MAIA-2** = Multidimensional Assessment of Interoceptive Awareness, Brief Version; **TCS** = Transgender Congruence Scale. **M** = mean; **SD** = standard deviation; **α** = Cronbach's alpha; **Skew** = Skewness; **Kurt.** = Kurtosis.

Descriptive statistics for all study measures indicated that the distributions were generally close to normal. Across most instruments, skewness values fell between –0.5 and +0.5, suggesting approximate symmetry, with only a few subscales showing moderate positive skew. For instance, the NIAS Fear subscale, the Brief MAIA Not Distracting and Trusting subscales, and the SPQ-35 Olfactory subscale were somewhat positively skewed, reflecting a greater proportion of lower scores. Importantly, none of the variables demonstrated extreme skewness (≥ |1.0|), indicating that overall distributions were well-balanced. Kurtosis values were mostly negative, ranging between –1.25 and 0.25, suggesting that the distributions tended to be platykurtic, flatter than the normal distribution with lighter tails. This pattern was particularly apparent in measures such as the EDE-QS, NIAS, and TCS, as well as in several Brief MAIA subscales. A few subscales, including SPQ-35 Auditory and Olfactory, showed kurtosis values close to zero, indicating a shape more consistent with a normal distribution. Taken together, these results suggest that while minor deviations from

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normality were present, the majority of measures approximated normal distributions. The data therefore meet assumptions for parametric analyses for the correlational investigations.

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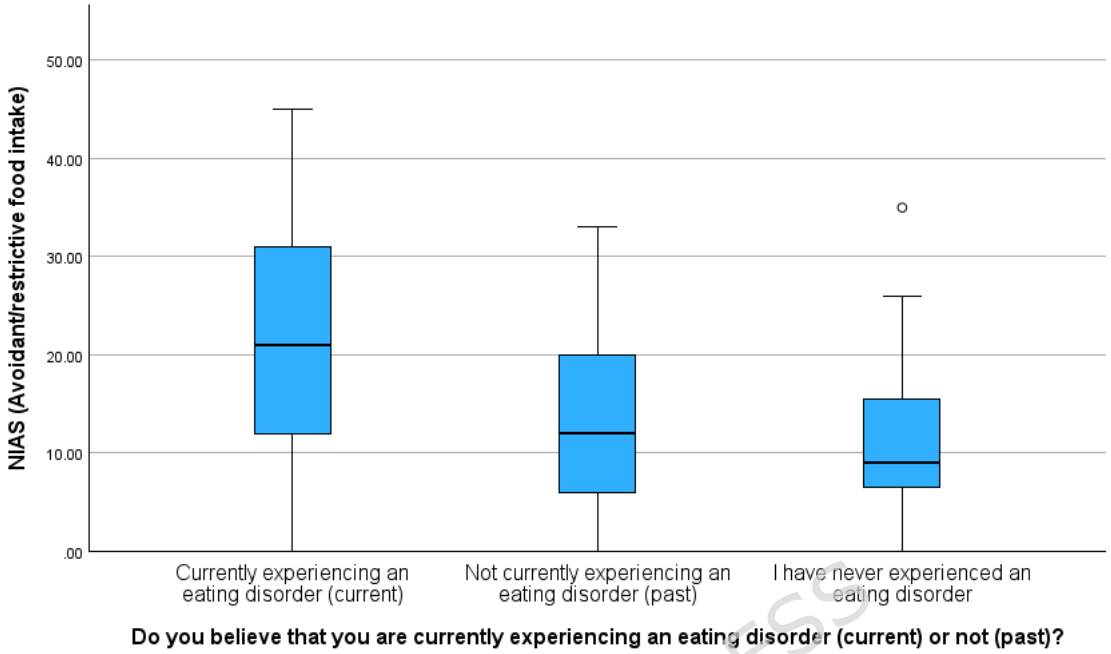
Appendix 2. Boxplots of NIAS According to Eating Disorder Status (i.e., Current, Past, Never)



Note. Boxplots are based on Interquartile Ranges (IQRs) and medians.

NIAS = Nine Item ARFID Screen.

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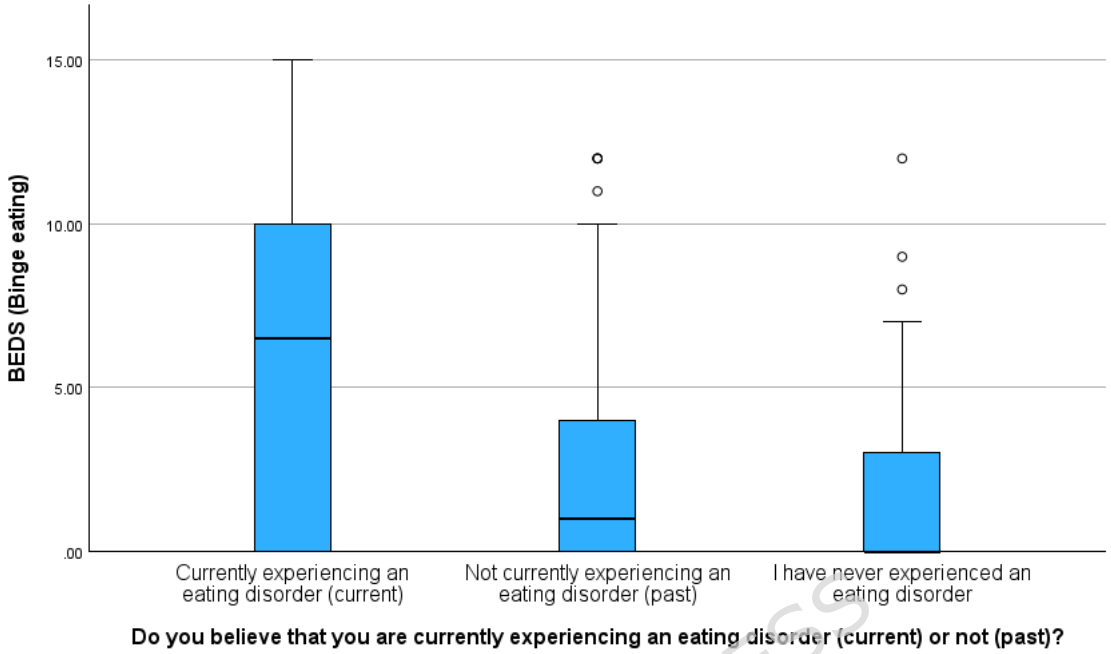
Appendix 3. Boxplots of Binge Eating (BEDS-7) According to Eating Disorder Status (i.e., Current, Past, Never)



Note. Boxplots are based on Interquartile Ranges (IQRs) and medians.

BEDS = Binge Eating Disorder Screener.

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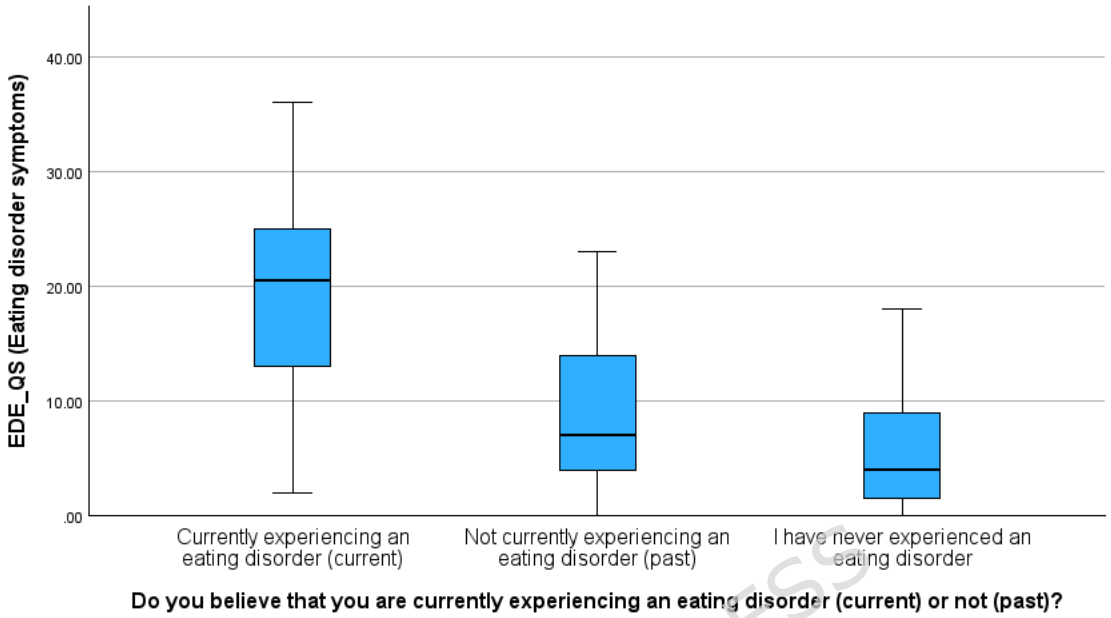
Appendix 4. Boxplots of Eating Disorder Symptoms (EDE-QS) According to Eating Disorder Status (i.e., Current, Past, Never)



Note. Boxplots are based on Interquartile Ranges (IQRs) and medians.

EDE-QS = Eating Disorder Examination Questionnaire Short.

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Appendix 5. Self-Reported Eating Disorders by TGD Subsample

ED (multiple entries allowed)	Subsample N = 50	Percentage of subsample
Anorexia nervosa – binge-purge subtype (AN-bp)	8	16.0
Anorexia nervosa – restrictive subtype (AN-r)	14	28.0
Avoidant / restrictive food intake disorder (ARFID)	9	18.0
Binge eating disorder (BED)	8	16.0
Bulimia nervosa (BN)	7	14.0
OSFED - atypical anorexia	7	14.0
OSFED - night eating syndrome	2	4.0
OSFED - orthorexia	2	4.0
OSFED - subthreshold bulimia nervosa or binge eating disorder	1	2.0
While I was never diagnosed with an eating disorder, I believe I have experienced one	11	22.0
I have never been diagnosed with an eating disorder	3	6.0

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Eating Disorder Status		
Currently experiencing an eating disorder (current)	28	56.0
Not currently experiencing an eating disorder (past)	19	38.0
I have never experienced an eating disorder	3	6.0

Note. N = 50, representing the TGD subsample rather than the overall sample. **AN-bp** = Anorexia Nervosa, binge-purge subtype; **AN-r** = Anorexia Nervosa, restrictive subtype; **ARFID** = Avoidant/Restrictive Food Intake Disorder; **BED** = Binge Eating Disorder; **BN =** Bulimia Nervosa; **OSFED** = Other Specified Feeding or Eating Disorder; **EDNOS** = Eating Disorder Not Otherwise Specified.

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Appendix 6. Intersection of Gender Diversity and Neurodivergence

	Trans	**Gender Diverse**	**Trans and Gender Diverse**	**Cisgender**
No Autism or ADHD				
Count	0	0	0	24
percent of Sample	0.0	0.0	0.0	12.3
ADHD formally diagnosed				
Count	1	2	2	11
percent of Sample	0.5	1.0	1.0	5.6
ADHD self-identified				
Count	0	2	0	10
percent of Sample	0.0	1.0	0.0	5.1

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Autistic formally diagnosed				
Count	2	1	4	23
percent of Sample	1.0	0.5	2.1	11.8
Autistic self-identified				
Count	0	3	1	12
percent of Sample	0.0	1.5	0.5	6.2
ADHD and Autistic self-identified				
Count	1	1	0	11
percent of Sample	0.5	0.5	0.0	5.6
Autistic diagnosed,				

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ADHD self-identified				
Count	0	2	1	3
percent of Sample	0.0	1.0	0.5	1.5
ADHD diagnosed, Autistic self-identified				
Count	0	2	2	8
percent of Sample	0.0	1.0	1.0	4.1
ADHD and Autism formally diagnosed				
Count	1	9	1	27
percent of Sample	0.5	4.6	0.5	13.8
Other forms of				

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neurodivergence (e.g., OCD, dyslexia, dyspraxia)				
Count	2	6	4	16
percent of Sample	1.0	3.1	2.1	8.2

Note. **N** = 195. Percentages represent proportions of the overall sample. **ADHD** = Attention Deficit/Hyperactivity Disorder; **OCD** = Obsessive-Compulsive Disorder. "**Other forms of neurodivergence**" include self-reported neurotypes such as obsessive-compulsive disorder, dyslexia, and dyspraxia.

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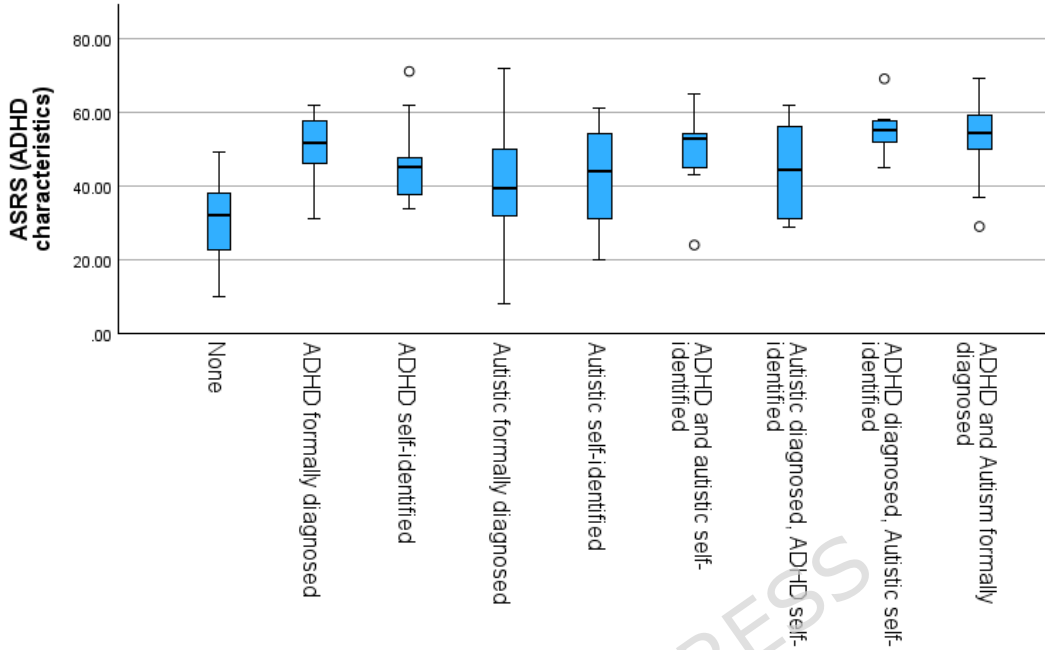
Appendix 7. ASRS Scores Based on Self-Reported Neurodivergence



Note. Boxplots are based on Interquartile Ranges (IQRs) and medians.

ADHD = Attention Deficit/Hyperactivity Disorder; **ASRS** = Adult ADHD Self-Report Scale.

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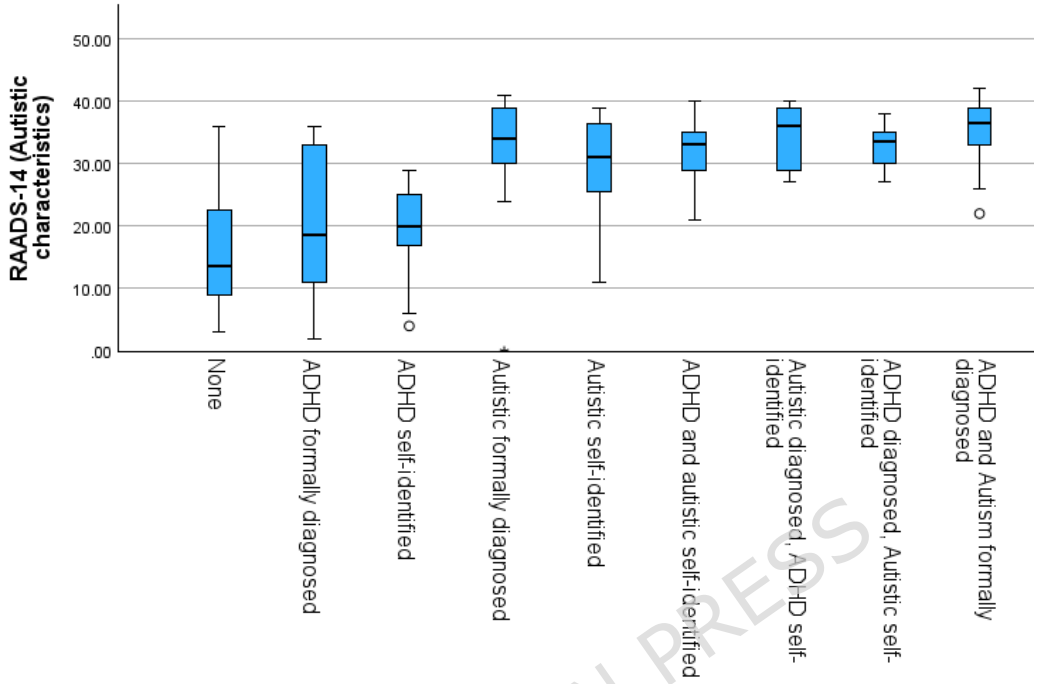
Appendix 8. RAADS-14 Scores Based on Self-Reported Neurodivergence



Note. Boxplots are based on Interquartile Ranges (IQRs) and medians. **ADHD** = Attention Deficit/Hyperactivity Disorder; **RAADS-14** = Ritvo Autism Asperger Diagnostic Scale.

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Appendix 9. Self-Reported Eating Disorders by Neurodivergence

ED (multiple entries allowed)	Autism (N = 46)		ADHD (N = 28)		Autism and ADHD (N = 69)	
	N	%	N	%	N	%
Anorexia nervosa – binge-purge subtype (AN-bp)	4	8.7	6	21.4	6	8.7
Anorexia nervosa – restrictive subtype (AN-r)	13	28.3	6	21.4	21	30.4
Avoidant / restrictive food intake disorder (ARFID)	5	10.9	1	3.6	8	11.6
Binge eating disorder (BED)	3	6.5	4	14.3	10	14.5
Bulimia nervosa (BN)	0	0	4	14.3	8	11.6
OSFED - atypical anorexia	6	13.0	4	14.3	14	20.3
OSFED - night eating syndrome	0	0	1	3.6	1	1.4
OSFED - orthorexia	0	0	0	0	3	4.3
OSFED - purging disorder	0	0	0	0	1	1.4
OSFED - subthreshold bulimia nervosa or binge eating disorder	0	0	0	0	1	1.4

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Pica	1	2.2	0	0	0	0
Rumination disorder	0	0	0	0	0	0
Unspecified feeding and eating disorders (UFED)	0	0	1	13.6	0	0
While I was never diagnosed with an eating disorder, I believe I have experienced one	12	26.1	6	21.4	18	26.1
I have never been diagnosed with an eating disorder	11	23.9	5	17.9	8	11.6
ED Status						
Currently experiencing an eating disorder (current)	26	56.5	17	60.7	38	55.1
Not currently experiencing an eating disorder (past)	11	23.9	7	25.0	27	39.1
I have never experienced an eating disorder	9	19.6	4	14.3	4	5.8

Note. The self-reported neurodivergence groups (i.e., Autism, ADHD, Autism and ADHD) merged self-identification and formal diagnosis; **%** = Percentage; **ED**: Eating Disorder; **N** = number of participants; **OSFED** = Other Specified Feeding or Eating Disorder.

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Appendix 10. Summary of Psychometric Instruments Used in the Study

Instrument	Constructs	Subscales	Example Item	Scoring	Interpretation	Citation
Eating Disorder Examination-Questionnaire Short (EDE-QS)	AN and BN symptoms	–	"Over the past 7 days, how often have you been preoccupied with your weight or shape?"	4-point scale (0–3)	Higher scores indicate more severe eating disorder symptoms	Gideon et al., 2016 [91]
Binge Eating Disorder	BED symptoms	–	"During the last 3 months, did you have any	Yes/No + 5-point scale	Higher total scores suggest	Herman et al., 2016 [95]

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Screener-7 (BEDS-7)			episodes of excessive overeating?”		probable BED diagnosis	
Nine Item ARFID Screen (NIAS)	ARFID symptoms	Picky eating, Appetite, Fear	“I am a picky eater”	5-point scale (0–5)	Higher scores reflect higher ARFID symptom severity	Zickgraf & Ellis, 2018 [93]
Sensory Perception Quotient (SPQ-35)	Exteroception	Visual, Auditory, Tactile, Gustatory, Olfactory	“Bright lights make me uncomfortable”	5-point scale (1–5)	Higher scores = lower sensory sensitivity	Tavassoli et al., 2014 [98]

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Brief Multidimensional Assessment of Interoceptive Awareness (Brief MAIA-2)	Interoception	Noticing, Not Distracting, Not Worrying, Attention Regulation, Emotional Awareness, Self-Regulation, Body Listening, Trusting	“I notice changes in my breathing, such as whether it slows down or speeds up”	6-point scale (0–5)	Higher scores = higher interoceptive awareness	Mehling et al., 2018 [99] and Rogowska et al., 2023 [100]

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Ritvo Autism and Asperger Diagnostic Scale-14 (RAADS-14)	Autistic traits	Mentalizing, Social Anxiety, Sensory Reactivity	“I find social situations confusing”	4-point scale (0–3)	Higher scores = stronger Autistic traits	Eriksson et al., 2013 [105]
Adult ADHD Self-Report Scale (ASRS)	ADHD traits	Inattentive, Motor, Verbal	“How often do you have trouble wrapping up the final details of a project?”	5-point scale (0–4)	Higher scores = stronger ADHD-related traits	Adler et al., 2006 [79]
Transgender Congruence Scale (TCS)	Gender congruence	Appearance, Acceptance	“I feel comfortable	5-point scale (1–5)	Higher scores = higher gender congruence	Kozee et al., 2012 [101]

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			with my gender identity”			

Note. **AN** = Anorexia Nervosa; **BN** = Bulimia Nervosa; **BED** = Binge Eating Disorder; **ARFID** = Avoidant/Restrictive Food Intake Disorder; **EDE-QS** = Eating Disorder Examination-Questionnaire Short; **BEDS-7** = Binge Eating Disorder Screener-7; **NIAS** = Nine Item ARFID Screen; **SPQ-35** = Sensory Perception Quotient, 35-item version; **MAIA** = Multidimensional Assessment of Interoceptive Awareness; **Brief MAIA-2** = Brief Multidimensional Assessment of Interoceptive Awareness, version 2; **RAADS-14** = Ritvo Autism and Asperger Diagnostic Scale, 14-item version; **ASRS** = Adult ADHD Self-Report Scale; **ADHD** = Attention Deficit Hyperactivity Disorder; **TCS** = Transgender Congruence Scale.

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Appendix 11. Glossary

Attention deficit/hyperactivity disorder

A neurodevelopmental variation characterised by differences in attention regulation, impulse control, emotional intensity, and activity level that arise from lifelong patterns of cognitive and sensory processing.

Autism

A neurodevelopmental variation involving characteristic patterns in social communication, sensory and emotional processing, learning, and information integration that are present across the lifespan. A neurodiversity-affirming perspective frames Autism as part of natural cognitive and sensory diversity, with strengths and support needs shaped by individual context rather than as a disorder rooted in inherent deficit.

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Autistic masking (camouflaging)

A conscious or unconscious strategy used by some Autistic people to hide or minimise Autistic traits in order to blend into neuronormative social environments. Masking may involve imitating social behaviours, suppressing stimming, or rehearsing responses to avoid being bullied or discriminated against. Although it can help individuals navigate social and professional contexts, prolonged masking is associated with exhaustion, burnout, identity confusion, anxiety, and suicidal ideation. Neurodiversity-affirming approaches aim to reduce the need for masking

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by fostering acceptance and sensory, communicative, relational, and environmental accommodations.

Double empathy problem

Mutual difficulties in understanding stemming from differences, expectations, and preferences in communication, social interaction, and sensory-cognitive processing. Misperception and misunderstanding of Autistic communication patterns, social and empathic processing and interaction have typically been framed in deficit models (i.e., Autistic social and communication ‘deficits’ and/or ‘problems with Theory of Mind’). The Double Empathy Problem identifies that cross-neurotype interaction may instead result in reciprocal social and communication difficulties between Autistic and non-Autistic (allistic) people due to difference. This emphasises a need for acceptance of diversity, and recognition of the impacts of neuronormativity and ableism that result in pathologisation of neurodivergence.

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Epistemic justice

The principle that all people should be treated fairly as knowers. It involves recognising and correcting forms of unfairness that silence, discredit, or undervalue someone’s knowledge or lived experience, particularly in social or institutional contexts.

Exteroception

Refers to the sensing and interpretation of information from the external environment through modalities such as touch, vision, hearing, smell,

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and taste. Exteroception shapes how individuals perceive, navigate, and regulate their surroundings, including responses to sensory cues, predictability, and environmental demands. Exteroceptive cues such as tastes, smells, and textures substantially influence eating-related behaviours by guiding food preferences, aversions, and sensory-based avoidance. More broadly, exteroception supports goal-directed behaviours by informing how individuals anticipate, interpret, and respond to environmental cues relevant to safety, comfort, and task engagement (salience).

Gender-affirming care

A range of social, psychological, communication, legal, and medical supports that validate and enable a person's gender identity. Examples include usage of correct names and pronouns, clothing and appearance support, voice training, hormone therapy, and surgical interventions accessed through informed consent. Care is individualised, trauma-informed, consent-based, and aimed at improving safety, wellbeing, functioning, and quality of life.

Gender congruence

The sense of alignment among gender identity, gender expression, and physical characteristics. Higher gender congruence is linked to better mental health and body satisfaction.

Gender diversity

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A broad term for the range of gender identities and expressions that do not conform to narrow Eurocentric binary norms. It includes nonbinary, genderqueer, agender, and culturally specific identities (e.g., Two-Spirit, Muxes), as well as diversity in gender roles, expression, and embodiment.

Gender dysphoria

The distress, discomfort, or sense of disconnect that can arise when a person's gender identity is (a) not aligned with their physical body and/or embodied experience, and/or (b) not aligned with or affirmed by societal or interpersonal perceptions of their gender. Not all trans or gender diverse people experience dysphoria, and relief often follows affirming environments and care.

Gender euphoria

Positive emotions such as comfort, joy, and authenticity that arise when one's gender is affirmed or aligned across identity, expression, and body. Gender euphoria is a strengths-focused counterpart to dysphoria. It is associated with improved psychosocial wellbeing and can inform person-centred goals in care.

Gender incongruence

A mismatch between an individual's experienced gender and the categorisation they were assigned at birth, or with aspects of their body or socially imposed gender role. Gender incongruence itself is a descriptive term referring to difference rather than distress. This distinguishes it from gender dysphoria, which refers to the psychological

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distress, discomfort, or embodied threat or disconnection that may arise when incongruence is met with social, medical, or environmental barriers to affirmation. Situating the source of mismatch within external systems of gendering underscores that the individual is not inherently incorrect and that distress typically reflects the impact of unaddressed incongruence or systemic invalidation.

Interoception

Refers to the sensing, interpretation, and integration of internal bodily signals such as heartbeat, breathing, hunger, thirst, temperature, and visceral sensations. Interoception supports emotional awareness, self-regulation, and goal-directed behaviours (e.g., eating, drinking, resting) and varies across individuals in strength, clarity, and reliability.

Intersectionality

A framework that examines how multiple social categories, such as gender, race, class, disability, and sexuality, interact to shape an individual's experiences of privilege and marginalisation. It highlights that these categories do not operate independently but combine to produce unique and compounded forms of advantage or disadvantage.

Neurodivergence

An individual-level, non-pathologising descriptor for people whose neurocognitive functioning differs from dominant social norms; for example, Autism, ADHD, obsessive-compulsive disorder, dyslexia, or dyspraxia.

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Neurodiversity

A concept that recognises natural variation in human neurocognitive functioning across individuals and groups. It frames differences in attention, perception, communication, socialising, and sensory processing as a neutral part of human diversity, not as deficits.

Neurodiversity-affirming care

Healthcare that challenges neuronormativity and starts from the premise that neurocognitive differences are part of natural human variation. It prioritises autonomy, self-determination, and human rights while resisting systemic biases that contribute to coercive normalisation (hegemonic normalcy). The goal is to improve participation and wellbeing while respecting neurotype.

Neuronormativity

Neuronormativity refers to the societal assumption that neurotypical modes of sensory perception, communication, attention, and emotional expression are the standard against which all others are measured and towards which everyone should aspire. This framework often marginalises neurodivergent lived experiences by framing cognitive or sensory differences as deficits rather than natural variations of human functioning. In clinical contexts, neuronormativity can lead to interventions that prioritise conformity to neurotypical norms and standards over accessibility, autonomy, and regulation that align with neurodivergent ways of processing and engaging with the world.

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Nonbinary

A gender identity that is not exclusively woman or man. Nonbinary people may experience gender as both, neither, or fluid across time and context. Expression and embodiment are heterogeneous, and affirmation needs are likewise individual.

Transgender and Gender Diverse

An umbrella term, often abbreviated as TGD, for people whose gender identity differs from their sex assigned at birth. TGD identities include binary, fluid, and nonbinary experiences. TGD people may or may not pursue social or medical affirmation, and needs vary across individuals and contexts.

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