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Age-Related Effects on Self-Focused Attention Across Adolescence and the Relationship With Symptoms of Body Dysmorphia, Social Anxiety and Depression

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ABSTRACT
Introduction: Adolescence is a critical period for the development of several emotional disorders, including body dysmorphic disorder (BDD), social anxiety disorder (SAD) and depression. It has been suggested that this may be partly due to developmental changes in self-referential processing, including self-focused attention (SFA). However, to date little is known about normative changes in self-focused attention across adolescence. This study investigated age-related effects on SFA during adolescence, and its relationship with symptoms of BDD, SAD and depression.
Methods: A sample of 638 adolescents aged 11–18 years (53% male) were recruited through government-funded secondary school students in the United Kingdom and completed validated self-reported measures of SFA, BDD, SAD and depression.
Results: Age was positively associated with SFA, and with symptoms of BDD, SAD and depression. The associations of age with SFA, SAD and depression were, on average, greater in females, although this age by sex interaction effect only reached statistical significance for BDD symptoms. SFA fully mediated the effect of age on SAD symptoms, and partially mediated age effects on symptoms of BDD and depression.
Conclusions: The current findings indicate that self-focused attention increases during adolescence. Moreover, findings provide support for the notion that increased self-focused attention may partly account for the rise in symptoms of BDD, SAD and depression during this developmental period. Future research should seek to establish the direction of effects between self-focused attention and symptoms using longitudinal designs.

1 | Introduction

Emotional disorders, encompassing anxiety-related and depressive disorders, are common, chronic and disabling, and therefore a major public health concern (Arias et al. 2022). Social anxiety disorder (SAD), body dysmorphic disorder (BDD) and depression are three examples of emotional disorders, which commonly co-occur, typically emerge during adolescence

(Rapee et al. 2019), and are consistently shown to be more common in females than males (Racine et al. 2021). Among adolescents in the general population, the estimated prevalence is 1.9% for BDD (Krebs et al. 2025), 2.6% for SAD (Aune et al. 2022) and 8% for depression (Shorey et al. 2022). Onset of these emotional disorders in youth predicts a range of negative outcomes including lower life satisfaction, elevated risk of attempted suicide, and physical health sequela (Albertini and

Phillips 1999; Balázs et al. 2013; Beesdo-Baum et al. 2012; Chen et al. 2006; Copeland et al. 2021; Phillips et al. 2006). Understanding mechanisms underlying BDD, SAD and depression in adolescence is crucial to address these mental health needs early in life and to prevent the continuation of difficulties and compounding effects into adulthood.

It is unclear why SAD, BDD and depression typically develop during adolescence and have a female preponderance. Most likely these effects are due to a complex combination of biological, social, and psychological processes (Rapee et al. 2019). An important factor is likely to be that adolescence is a critical period for developing one's sense of self, and several self-referential cognitive processes undergo substantial change during this developmental period. Self-referential cognitive processes can be defined as "relating information, often from the external world, to the self" (Nejad et al. 2013). This definition may include processes such as self-judgement, rumination, and self-focused attention. Research commonly shows that heightened negative self-judgement, a type of self-referential process, increases during adolescence (McArthur et al. 2019; Van der Cruijsen et al. 2018). Furthermore, experimental methods have shown age-related effects on self-referential processing, whereby negative self-judgments increase substantially across adolescence up to the age of 19 years, before decreasing in early adulthood (Moses-Payne et al. 2022). There is also evidence demonstrating that information relating to the self, regardless of its valence, is remembered better during adolescence (Beesdo et al. 2009; Beesdo-Baum and Knappe 2012; Caouette and Guyer 2014; Elkind and Bowen 1979; Rankin et al. 2004; Somerville et al. 2013), and this effect has been shown to be stronger in adolescent females than males (Lewinsohn et al. 1998; Rankin et al. 2004; Rosenberg and Simmons 1975).

Self-focused attention is one form of self-referential cognition that involves focusing on internal thoughts, feelings, beliefs and physical states. Self-focused attention is often differentiated into two subtypes including private and public self-focused attention (Takishima-Lacasa et al. 2014). Takishima-Lacasa et al. (2014) define public self-focused attention as "attention to public aspects of the self, such as appearance and manners," and private self-focused attention as "attention directed to covert or personal aspects of the self, such as feelings and beliefs." Cognitive behavioral models propose that self-focused attention plays a critical role in the maintenance of social anxiety disorder (Clark and Wells 1995) and body dysmorphic disorder (Veale 2004), as SFA amplifies self-focused attention and perceived social and physical evaluation. This is supported by empirical studies demonstrating SAD to be associated with SFA in adolescent (Andrews et al. 1993; Garber et al. 1993; Lewinsohn et al. 1997; Leigh et al. 2021) and adult populations (Spurr and Stopa 2002; Veale et al. 2016), although there is not yet evidence to support the relationship between BDD and self-focused attention specifically. Although not directly included in the cognitive behavioural model for depression (Beck 2002), there is evidence in adult populations to suggest an association between SFA and depression (Mor and Winquist 2002). Depression is often experienced with self-critical and ruminative thinking (Lyubomirsky and Nolen-Hoeksema 1995; Nolen-Hoeksema and Morrow 1991; 1993), which is associated with self-focused

attention. Despite SFA being implicated in these adolescent-onset disorders, there is a limited evidence base investigating the age effects of self-focused attention during the adolescent period. However, some evidence suggests higher rates of SFA in adolescent girls compared with adolescent boys (Rankin et al. 2004), which aligns with findings of higher rates of depression and anxiety disorders in females (Racine et al. 2021).

In summary, despite the onset of BDD, SAD and depression typically being during adolescence, there is limited understanding of developmental processes that may contribute to the emergence and maintenance of these disorders. Existing evidence indicates that certain self-referential processes change during adolescence, but little is known about age effects on SFA during this developmental phase, and the relationship of SFA with BDD, SAD and depression. This study aimed to investigate the age-related changes in SFA across adolescence, and its relationship with symptoms of social anxiety, body dysmorphic disorder and depression. Based on existing research, we expected that SFA would be positively associated with age, and that this effect would be greater in females compared with males. We further hypothesised that age would be positively associated with symptoms of BDD, SAD and depression, and that these effects would be greater amongst females compared with males. Lastly, we expected that SFA would partially mediate the association between age and symptoms of BDD, SAD and depression. Data for sex, rather than gender will be used in the analyses as it is more directly relevant to the constructs examined in this study.

2 | Materials and Methods

2.1 | Participants and Design

This study used a cross-sectional survey-based design among a community-based adolescent sample. Participants were 769 adolescents recruited through two government-funded secondary schools in the United Kingdom in 2024. Although the definition of "adolescence" is disputed in the literature, the World Health Organisation (WHO) defines adolescence as occurring between ages 10 and 19 (Singh et al. 2019). This study collected data from pupils aged between 11 and 18 years old, as this aligns with the UK secondary school education system from which participants were recruited.

These schools included a grammar school in a rural part of Southwest England and a large comprehensive secondary school in South-West London. According to Ofsted 2022−2023 data (Department for Education 2023), the grammar school had just over 1000 students enrolled (45.2% female), of whom 6% did not speak English as their first language and 6.9% were eligible for free school meals. The comprehensive school in London had approximately 1400 students enrolled (40.4% female), of whom 25.3% did not speak English as their first language and 7.6% were eligible for free school meals. The two schools were approached and invited to support the study because the researchers had pre-existing links with the schools.

Across the two schools, approximately 1438 young people aged 11–18 years old were invited to take part. Of these, 769 young

people participated (37% female), giving a response rate of approximately 53%. Of those who started the survey, 17% had their data excluded either due to missing data ($n = 101$) or because they failed the attention check question, as described below ($n = 30$). The final sample therefore consisted of 638 adolescents.

2.2 | Measures

Core demographic information, including age, sex, gender, and ethnicity, were collected as part of the survey, along with several validated measures described below. Sex was assessed by asking participants their sex as registered at birth. Gender was assessed by asking participants with what gender they most identified with. A question was included mid-way through the questionnaire asking participants to select "5," to ensure they were reading the questions carefully and not randomly selecting options (i.e. an attention check). The survey was delivered online via Qualtrics.

2.2.1 | The Revised Child Anxiety and Depression Scale (RCADS)

The RCADS (Chorpita et al. 2000) is a 47-item self-report measure assessing symptoms of several anxiety disorders and depression in young people aged 8 to 18 years. Subscales of interest for this study included depression (10 items) and social anxiety (9 items). Each item is scored on a 0 to 3 Likert scale, yielding a total score ranging from 0 to 30 for depression and 0 to 27 for social anxiety. The clinical threshold is a t-score of 70 and above (Chorpita et al. 2015). The RCADS has been shown to have good internal consistency in clinical (Chorpita et al. 2005) and nonclinical samples (Donnelly et al. 2019), and favourable convergent validity (Bouvard et al. 2015; Donnelly et al. 2019; Esbjørn et al. 2012). Test-retest reliability has been shown to be good (Chorpita et al. 2000) and factor analysis has provided support for the 6-factor structure (Chorpita et al. 2005). In the current study sample, Cronbach's alpha was 0.88 for both the depression and social anxiety subscales, indicating excellent internal consistency.

2.2.2 | The Body Image Questionnaire-Child and Adolescent Version (BIQ-C)

The BIQ-C (Veale 2009) is a 9-item self-report measure of BDD symptoms. The questionnaire begins with a screening question asking about areas of appearance concern, followed by 9 items assessing preoccupation, appearance-related repetitive behaviours, distress and impairment associated with appearance concerns. Each item is scored on a 0 to 8 Likert scale, giving a total score ranging from 0 to 72. A total raw score of 40 and above indicates clinically significant symptoms (Blacker et al. Early View). In the current study, to ensure that the measure captured BDD symptoms and not eating disorder psychopathology (Sturmey 2020), participants were told to report on any appearance concerns *except* for worries about overall body weight. The BIQ-C has been found to have a two-

factor structure in adolescents, and good convergent and divergent validity (Schneider et al. 2018; Blacker et al. Early View) and has demonstrated excellent internal consistency for use with 12–18-year-olds (Cronbach's $\alpha = 0.88$; Schneider et al. 2018). The adult version of the measure, the BIQ, has been found to have good test-retest reliability and convergent validity with other measures of symptom severity and body image quality of life (Veale et al. 2012; Veale et al. 2014). Internal consistency in the current study sample was excellent (Cronbach's $a = 0.87$).

2.2.3 | The Revised Self-Consciousness Scale for Children (R-SCS-C)

The R-SCS-C is a 29-item scale, with factor analysis supporting a 3-factor division (Takishima-Lacasa et al. 2014). The items divided into the three subscales measure private self-focused attention (11 items, e.g. 'I notice my inner feelings a lot,' public self-focused attention (11 items, e.g. 'I spend a lot of time on my looks'), and social anxiety (7 items, e.g. 'large groups make me nervous'). Each item is measured on a 5-point Likert scale, giving total scores ranging from 29 to 145. For private and public subscales, total scores range from 11 to 55, and for the social anxiety subscale, total scores range from 7 to 25. The questionnaire demonstrates acceptable internal consistency, convergent and divergent validity, and test–retest reliability over 2 weeks (correlation $r = 0.76$: Takishima-Lacasa et al. 2014). Internal consistency in the current study sample for the R-SCS-C measure, excluding the social anxiety subscale, was excellent (Cronbach's $a = 0.89$). Internal consistency for the private subscale (Cronbach's $a = 0.84$), and public subscale (Cronbach's $a = 0.94$) were also excellent.

2.3 | Procedure

Students aged 16 and over were deemed competent to give consent. Students under 16 were recruited through an opt-out parental consent process and young person assent. A parental opt-out consent process was used to ensure a representative sample with minimal selection bias, given evidence that parental opt-in consent is likely to increase systematic bias against certain demographic groups (Anderman et al. 1995; Mobility, Social 2014; Tigges 2003).

In the current study, the opt-out parental consent process was as follows. Parents of students under 16 were sent an email with information about the study and a 2-week window to opt-out. The email included an opt-out form, with details of the researcher's contact information and instructions on how they may opt-out. In total, 31 parents opted their child out of the research. The school was made aware of students whose parents had opted-out, and they were not asked to participate in the study. Where parents did not opt-out, and parental consent was assumed, students under 16 were asked to give assent before proceeding to answer the online questionnaire.

Before young people were invited to take part in the study, teachers were asked to briefly introduce the survey, and subsequently provide a link to the online questionnaires.

Participants were provided with a broad description of the study, omitting specific study hypotheses, to minimise demand effects. Students were given the option to complete the online survey either during form tutor sessions or during PSHE lessons. Participants were provided with full information about the study and were asked to consent or assent to take part. All participants were provided with a written debrief explaining the purpose of the study after completing the survey. Participants were also given the option to enter a prize draw for a chance to win one of five £30 shopping vouchers.

The survey used was designed to collect data for this study only. All participant data were anonymised.

The study was approved by the ANONYMISED Ethics Committee (reference: ANONYMISED).

2.4 | Power Calculation

Since no comparable studies could be identified with data to estimate an expected effect size, we powered the study to detect an effect size of 0.3, striking a balance between being conservative but also clinically meaningful. A minimum sample size of 126 participants was identified a priori using G*Power 3.1 software (Faul et al. 2009) to yield 80% power to detect an effect size of $d = 0.3$ in the multiple linear regression model with three predictors, at an alpha level of 0.05.

Additionally, using structural equation modelling, with a simple mediation model including three indicators, and to detect a medium effect size with 80% power, a minimum sample size of 360 participants was identified to detect complete mediation and a minimum of 450 participants was identified to detect partial mediation (Sim et al. 2022).

2.5 | Statistical Analyses

A statistical analysis plan was pre-registered on the Open Science Framework before starting the analysis (https://osf.io/xfgny).

Data was excluded listwise if participants failed the attention check question, as described above. Total scores for the revised self-consciousness scale-child version (R-SCS-C) were calculated excluding the social anxiety subscale, to avoid measurement overlap with the RCADS social anxiety subscale. For each questionnaire, missing items were imputed using mean substitution if at least 80% of items within the scale had been completed.

To test the effect of age on SFA, a linear regression model was conducted. An interaction term of sex x age was introduced to examine the moderating effect of sex on the relationship between age and self-focused attention. Further, a series of linear regression models were used to test the effect of age on symptoms of BDD, SAD and depression. The moderating effect of sex on the relationship of age with BDD, SAD and depression was assessed by including a sex x age interaction term in three

additional linear regression models. Finally, three mediation models were run to test the potential mediating role of self-focused attention in the association of age with BDD, SAD and depression symptoms. Mediation analysis was performed using structural equation modelling and bootstrapping. All analyses were completed using R Statistical Software (v4.3.2; R Core Team 2021). Linear regression models were run in Base-R. Packages "lavaan" (Rosseel 2012) and "mediation" (Tingley et al. 2014) were installed for mediation analyses.

3 | Results

3.1 | Study Characteristics

A total of 769 participants opened the survey. Of these, 133 participants (5.8%) had missing data or incorrectly answered the attention check question and were removed from the data set. Of those with missing data, 30 had completed demographic information; these individuals did not differ statistically with respect to age, sex, nor ethnicity compared to the sample included in the main analyses (see Table S1).

After missing data were removed, the sample consisted of a total of 638 participants, with a mean age of $M = 15.2$ (SD = 2.2, range 11–18 years). The majority of the sample were male (53%) and White British (71%). Table 1 summarises the sample characteristics. Table 2 shows Pearson correlation coefficients indicating the strength of association between key variables.

3.2 | Effect of Age on Self-Focused Attention

A linear regression analysis was conducted to examine whether age was associated with self-focused attention. The model was statistically significant, $F(1, 502) = 26.29$, $p < 0.001$, explaining 4.79% of the variance in self-focused attention scores. A significant positive association was found between age and self-focused attention, ($B = 1.45$, $t(502) = 5.13$, $p < 0.001$). For every 1-year increase in age, the average self-focused attention score increased by 1.45 points.

A multiple linear regression model was performed to examine the moderating effect of sex on the relationship between age and self-focused attention. The overall model was statistically significant, $F(3, 476) = 22.89$, $p < 0.001$, explaining 12.61% of the variance in self-focused attention scores. However, the interaction effect between age and sex ($B = 0.74$, $p = 0.185$) was not significant (see Figure 1). The model examining the moderating effect of sex on the relationship between age and private self-focused attention was not statistically significant, while for public self-focused attention the model was statistically significant, $F(3, 476) = 38.74$, $p < 0.001$, explaining 19.62% of the variance in the public self-focused attention subscale. The interaction effect between age and sex for both private and public self-focused attention subscales were not significant. See Table S2.

As shown in Figure 1, females tended to report higher levels of self-focused attention than males at all ages. To test the effect of

TABLE 1 | Participant characteristics.

Demographic characteristics		Full sample	Females	Males	
Age, *M (SD)*		15.20 (2.22)	15.17 (2.21)	15.15 (2.22)	
Sex, *n* (%)					
Female		269 (42)	269	0	
Male		339 (53)	0	339	
Missing		30 (5)			
Ethnicity, *n* (%)					
Asian or Asian British		59 (9)	23 (38.98)	34 (57.63)	
Black, Black British, Caribbean or African		9 (1)	5 (55.56)	4 (44.44)	
Mixed or multiple ethnic group		39 (6)	8 (20.51)	30 (76.92)	
Other ethnic group		9 (1)	3 (33.33)	5 (55.56)	
White		522 (82)	230 (44.06)	266 (50.96)	
Questionnaires	*n*				d
BIQ-C, *M (SD)*	537	17.01 (12.78)	21.33 (13.85)	13.33 (10.12)	−0.67
Above clinical cut-off on BIQ-C, *n* (%)	537	29 (5.4)	23 (4.26)	6 (1.11)	
RCADS (SAD), *M (SD)*	460	13.3 (6.47)	15.63 (6.09)	11.23 (6.02)	−0.73
Above clinical cut-off on RCADS (SAD), *n* (%)	460	58 (12.60)	29 (15.43)	29 (11.65)	
RCADS (dep), *M (SD)*	460	10.53 (6.69)	12.15 (6.77)	9 (6.22)	−0.49
Above clinical cut-off on RCADS (dep), *n* (%)	460	94 (20.40)	55 (29.26)	39 (15.66)	
RSCS, *M (SD)*	504	70.40 (14.52)	74.97 (12.97)	67.1 (14.48)	−0.57
RSCS Public, *M (SD)*	504	33.96 (11.24)	38.38 (10.36)	30.75 (10.82)	−0.72
RSCS Private, *M (SD)*	504	36.45 (7.46)	36.56 (6.79)	36.36 (7.76)	−0.03

Abbreviations: BIQ-C, Body Image Questionnaire–Child and Adolescent version; RCADS (dep), Revised Children's Anxiety and Depression Scale (depression subscale); RCADS (SAD), Revised Children's Anxiety and Depression Scale (social anxiety subscale); RSCS, Revised Self-Consciousness Scale–Child and Adolescent version; RSCS Public, Revised Self-Consciousness Scale public subscale; RSCS Private, Revised Self-Consciousness Scale private subscale.

TABLE 2 | Correlation matrix of key variables.

	Age	RSCS Public	RSCS Private	BIQ-C	RCADS (SAD)	RCADS (dep)
Age	1	0.16	−0.01	0.21	0.1	0.15
RSCS Public		1	0.16	0.61	0.49	0.39
RSCS Private			1	−0.05	0.01	−0.07
BIQ-C				1	0.59	0.6
RCADS (SAD)					1	0.67
RCADS (dep)						1

Abbreviations: BIQ-C, Body Image Questionnaire-Child and Adolescent version; RCADS (dep), Revised Children's Anxiety and Depression Scale (depression subscale); RCADS (SAD), Revised Children's Anxiety and Depression Scale (social anxiety subscale); RSCS Public, Revised Self-Consciousness Scale public subscale; RSCS Prviate, Revised Self-Consciousness Scale private subscale.

sex on self-focused attention, an additional linear regression model was run, which showed a significant main effect of sex, with higher self-focused attention scores in females compared with males ($B = 7.86$, $t(478) = 6.18$, $p = < 0.001$).

3.3 | Effect of Age on Symptoms of BDD, Social Anxiety and Depression

The relationship between age and BDD, social anxiety and depressive symptoms, was examined using a series of linear regression models.

As shown in Table 3, age was significantly associated with BDD, social anxiety, and depression symptoms.

The moderating effect of sex on the relationship of age with BDD, SAD and depression was assessed using multiple linear regression models. A summary of the results can be found in Table 4. The age × sex interaction for BDD was significant ($B = 1.82$, $t(509) = 3.98$, $p = < 0.001$). This interaction effect is shown in Figure 2, whereby the strength of association of age with BDD symptoms is greater among females than males. The age × sex interactions for SAD and depression were not statistically significant ($p > 0.05$).
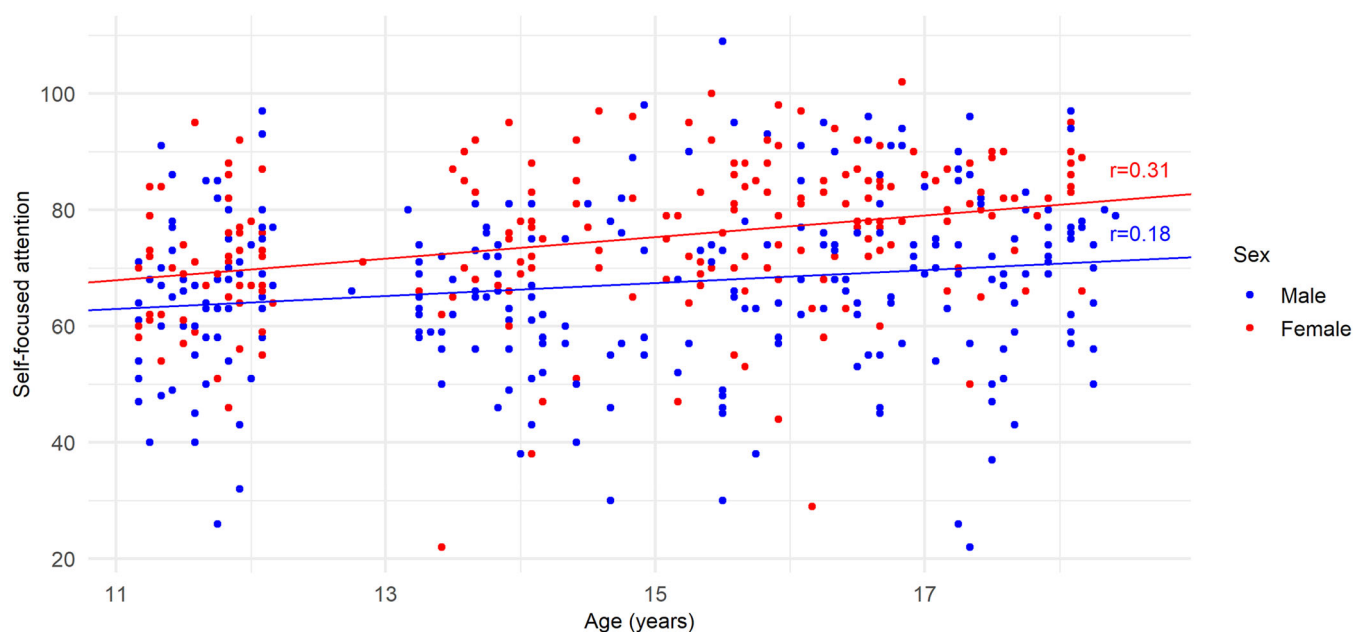
FIGURE 1 | The relationship between age and self-focused attention by sex. [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 3 | Results of a series of univariable linear regression models showing the effect of age on mental health outcomes.

Age	n	Beta	SE	R^2	F	p
BIQ-C (BDD)	535	1.09	0.24	0.03	20.33	< 0.001
RCADS (SAD)	458	0.30	0.14	0.01	4.94	0.03
RCADS (dep)	458	0.45	0.14	0.02	10.44	0.001

Note. BIQ-C, Body Image Questionnaire – Child and Adolescent version; RCADS (dep), Revised Children's Anxiety and Depression Scale (depression subscale); RCADS (SAD), Revised Children's Anxiety and Depression Scale (social anxiety subscale).

TABLE 4 | Multiple linear regressions displaying the effect of sex on the relationship between age and mental health outcomes.

Effect	n	Beta	SE	R^2	F	p
BIQ-C (BDD)	509			0.15	31.97	< 0.001
Age		0.24	0.29			0.404
Sex		−19.24	6.91			0.006
Age * Sex		1.82	0.46			< 0.001
RCADS (SAD)	433			0.16	20.89	< 0.001
Age		0.07	0.17			0.688
Sex		−1.55	3.94			0.695
Age * Sex		0.40	0.27			0.129
RCADS (dep)	433			0.08	11.82	< 0.001
Age		0.21	0.18			0.238
Sex		−2.97	4.20			0.480
Age * Sex		0.42	0.28			0.143

Note. BIQ-C, Body Image Questionnaire – Child and Adolescent version; RCADS (dep), Revised Children's Anxiety and Depression Scale (depression subscale); RCADS (SAD), Revised Children's Anxiety and Depression Scale (social anxiety subscale).

As shown in Figure 2, and Figures S1 and S2, girls tended to score higher than boys on all three symptom measures. To test the main effect of sex on each of the symptom domains, three additional linear regression models were performed, which showed a significant main effect of sex, on symptoms of BDD ($B = 8.00$, $t(511) = 7.56$, $p = < 0.001$), SAD ($B = 4.40$, $t(435) = 7.54$, $p = < 0.001$) and depression ($B = 3.15$, $t(435) = 5.04$, $p = < 0.001$).
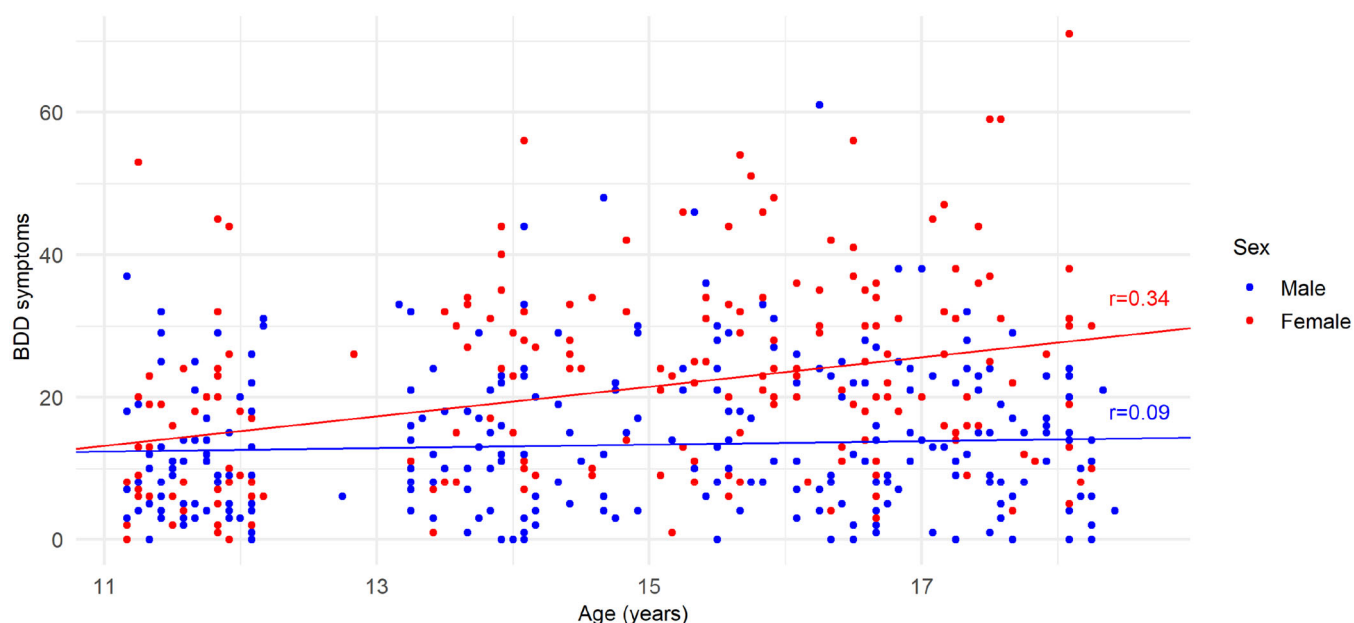
FIGURE 2 | The relationship between age and symptoms of BDD by sex. [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 5 | Results of three mediation models testing the extent to which self-focused attention mediates age effects on symptoms.

Outcome	Effect	Path	n	Beta (95% CI)	SE	z	p
BIQ-C (BDD)			504				
	Total	Age – BDD		1.24 (0.78, 1.71)	0.25	4.98	< 0.001
	Indirect	Age – SFA - BDD		0.50 (0.27, 0.74)	0.11	4.51	< 0.001
	Direct	Age – BDD (accounting for SFA)		0.75 (0.30, 1.20)	0.24	3.17	0.002
RCADS (SAD)			460				
	Total	Age – SAD		0.30 (0.05, 0.57)	0.14	2.23	0.026
	Indirect	Age – SFA - SAD		0.23 (0.13, 0.35)	0.06	4.03	< 0.001
	Direct	Age – SAD (accounting for SFA)		0.07 (−0.18, 0.33)	0.13	0.53	0.595
RCADS (dep)			460				
	Total	Age – depression		0.45 (0.19, 0.72)	0.14	3.24	0.001
	Indirect	Age – SFA - depression		0.16 (0.08, 0.25)	0.05	3.49	< 0.001
	Direct	Age – depression (accounting for SFA)		0.30 (0.03, 0.58)	0.14	2.14	0.032

Note. Beta, unstandardized coefficients; BIQ-C, Body Image Questionnaire – Child and Adolescent version; RCADS (dep), Revised Children's Anxiety and Depression Scale (depression subscale); RCADS (SAD), Revised Children's Anxiety and Depression Scale (social anxiety subscale); SFA, self-focused attention.

3.4 | Mediating Role of Self-Focused Attention in the Relationship Between Age and Symptoms of BDD, Social Anxiety and Depression

Three separate mediation models were undertaken to test the potential mediating role of self-focused attention in the association of age with BDD, SAD and depression symptoms. For BDD and depression, the relationship between age and symptoms was partially mediated by self-focused attention, as demonstrated by the significant indirect (mediating) paths in addition to significant direct paths (see Table 5). The models estimated that self-focused attention accounted for approximately 34.6% of the effect of age on depression and 39.8% of the association between age and BDD. For SAD, the association between age and symptoms was fully mediated by self-focused attention, as demonstrated by a significant indirect path but nonsignificant direct path (see

Table 5). The model estimated that self-focused attention accounts for 77.5% of the age effect on SAD.

3.5 | Exploratory Analyses

The above analyses of self-focused attention were repeated with the private and public self-focused attention subscales separately. Age was not significantly associated with private self-focused attention, whereas it was significantly and positively associated with public self-focused attention (see Table S2). Furthermore, the relationship between age and each of the three symptom domains was fully mediated by public self-focused attention. In contrast, private self-focused attention was not found to mediate the relationship between age and any of the symptom domains (Table S3 and S4).

4 | Discussion

To our knowledge, the current study represents the first investigation of age-related effects on SFA across adolescence, and its relationship with symptoms of BDD, SAD and depression. In relation to our first aim, findings indicate that levels of SFA increase with age during adolescence, consistent with our hypothesis. This novel finding aligns with previous research exploring other self-referential cognitive processes during adolescence (McArthur et al. 2019; Moses-Payne et al. 2022; Van der Cruijsen et al. 2018). Additionally, our finding is consistent with a broader literature demonstrating that adolescence is characterised by significant biological and cognitive changes (Blakemore 2008; Gowers 2005; Luna 2009), where young people are starting to develop their sense of self and learn how to navigate peer social environments (Koepke and Denissen 2012). These factors may contribute to increased self-consciousness and SFA during adolescence. The findings of this study also indicate that adolescent females tend to experience higher levels of SFA than males, consistent with previous research (Rankin et al. 2004). However, in our analyses sex did not significantly moderate the relationship between age and SFA, indicating that age-related changes in SFA are comparable in males and females, although females scored higher on average than males. Further exploration found evidence of a relationship between age and the public self-focused attention subscale. However, there was no evidence of a relationship between age and the private self-focused attention subscale. Additionally, sex was not found to moderate either relationship. This shows the importance of distinguishing these subscales as separate constructs.

In relation to our second aim, we found that symptoms of BDD, SAD and depression increase with age during adolescence, consistent with previous research (Racine et al. 2021). Females reported higher levels of SAD and depression symptoms overall, but sex did not significantly moderate age effects on SFA, in contrast with our hypothesis. However, BDD symptoms increased more sharply for females compared with males as predicted, and this age by sex interaction effect was statistically significant. This observation is consistent with previous epidemiological research suggesting that the population prevalence of BDD and appearance preoccupation increases substantially from childhood to adolescence, but to a greater extent among females (Krebs et al. 2025). This may be explained partially by societal norms and expectations dictating females' appearance and the portrayal of idealised beauty standards in the media, which become increasingly influential during adolescence (Dakanalis et al. 2015) and have been found to increase body dissatisfaction to a greater extent in girls than boys (Hargreaves and Tiggemann 2004). Additionally, appearance-related teasing may be a risk factor for BDD (Zimmer-Gembeck et al. 2018), and is more commonly experienced by girls compared with boys (Ata et al. 2007; Lieberman et al. 2001).

Relating to our third study aim, results suggested that self-focused attention (SFA) has an indirect effect on the relationship between age and all three symptom domains. To our knowledge, this is the first study to examine such effects. While the cross-sectional study design precludes causal inferences from being drawn, our findings are consistent with the notion that SFA may contribute to age-related effects on BDD, SAD and depression. Our findings were particularly striking in relation to social anxiety, where SFA fully mediated the relationship between age and social anxiety symptoms. This raises the possibility that SFA may be an important factor in explaining the increase in symptoms of social anxiety with age through adolescence, consistent with the cognitive model of SAD which proposes SFA to be a central mechanism underpinning the disorder (Clark and Wells 1995).

Further exploration found an indirect effect of public self-focused attention on the relationship between BDD, SAD and depression, and no effect of private self-focused attention. This suggests that public self-focused attention specifically may play an important role in explaining the increase of these symptom domains with age. However, the current findings should be interpreted cautiously given the cross-sectional design, meaning that direction of effects cannot be determined.

This study has several important theoretical implications. Our results indicate that the increase in SFA during adolescence may be normative. Previous research has found that self-referential processing, such as rating negative words as descriptive of oneself, peaks around age 19 and reduces in early adulthood (Moses-Payne et al. 2022), aligning with biological and cognitive stabilization (Luna 2009). Future research is needed to determine whether the normative increase in SFA during adolescence also drops off in early adulthood, and its continued relationship with BDD, SAD and depression, given rates of these disorders do not necessarily spontaneously reduce in early adulthood (Enander et al. 2018; Kessler et al. 2005; Merikangas et al. 2010). While SFA may follow a normative trajectory, its combination with other risk factors may contribute to the persistence of these disorders.

The findings also have clinical implications. Cognitive behavioural models include self-focused attention as a key component in understanding the maintenance of social anxiety (Clark and Wells 1995) and BDD (Veale 2004; Veale et al. 2016) in adults. There is also evidence in adult populations to suggest an association between SFA and depression (Mor and Winquist 2002). Results of the current study highlight the need to assess SFA in people presenting with symptoms of BDD, SAD and depression in adolescents, to support the formulation of these young people's experiences. Findings also raise the possibility that targeting SFA may be beneficial in cognitive behavioral interventions in the adolescent population. Existing research suggests that SFA is modifiable in the treatment of adolescent social anxiety (Kley et al. 2012; Leigh et al. 2021) and adult depression (Haukaas et al. 2018; Papageorgiou and Wells 2000) using attention training techniques (Wells 2011). Further research should be carried out to explore the outcomes of targeting SFA in the treatment of BDD, and depression in adolescence.

The current findings should be considered in the context of several limitations. First, the cross-sectional design means that we are unable to establish the direction of effects between SFA and symptoms. Our mediation models were based on theorised causal mechanisms, but nevertheless further research using longitudinal designs and experimental manipulations is required to establish a causal role of SFA on symptoms of BDD, SAD and depression. Second, an important consideration in interpreting our

findings is the potential overlap between self-focused attention, particularly public self-focus, and social anxiety at both the item and construct levels. Given that both constructs involve heightened self-awareness in social contexts, the strong associations observed in our study may, in part, reflect conceptual and/or measurement overlap. This is particularly the case for certain items included in the self-focused attention measure (e.g. 'I spend a lot of time on my looks'), which may overlap with social anxiety and BDD. Future research could consider using methodologies to better distinguish these related constructs and determine the extent to which measurement overlap influences the observed relationships. Third, as this study relied on self-report methods for both dependent and independent variables, it is possible that estimates of association may have been artificially inflated by common method variance. Future research should seek to replicate the current findings using parent- or teacher-report measures, as well as observational or physiological methods of assessment. A fourth limitation is that this study investigated the effect of sex on outcomes, rather than gender. Future research could consider looking at these effects in minoritised gender groups such as transgender, nonbinary and gender dysphoric adolescents. Research suggests there is a higher prevalence of internalising mental health difficulties in marginalised gender groups (Lereya et al. 2024) and thus we might expect to see a greater association of gender with SFA, compared to sex. Fifth, the current study utilised a community sample of adolescents with symptom scores across the full continuum. Although substantial research supports dimensional representations of emotional disorders (Bala et al. 2021; Ruscio and Ruscio 2000; Ruscio 2010), nevertheless future research should seek to replicate findings in adolescents meeting diagnostic threshold. Lastly, this study focused on age-effects, rather than indicates of pubertal development, despite existing research highlighting the importance of pubertal timing (onset of puberty in relation to peers) and pubertal status (maturation of puberty) on the risk of BDD, SAD and depression (Guyer et al. 2016; Klump 2013; Mendle 2014), as well as on self-focused attention (Hyde et al. 2008). Hormonal and physical changes associated with puberty, as well as social and interpersonal consequences of these, have all been found to influence mental health outcomes (Rapee et al. 2019). Future research should explore the impact of pubertal development on SFA, as well as its relationship with BDD, SAD and depression, which often emerge during adolescence alongside puberty.

5 | Conclusions

This study provides evidence of age-related effects on SFA, and symptoms of SAD, BDD and depression over adolescence. The findings are consistent with the notion that increased self-focus during adolescence may contribute to the development of symptoms of BDD, SAD and depression. Future research should investigate the causal contribution of SFA in clinical BDD, SAD and depression, using longitudinal data, to help inform the development of treatment models for these common mental health disorders amongst adolescence.

Author Contributions

All named authors have contributed substantially to this study and have all agreed to the final submission version. All authors have contributed to the research design, acquisition of data, analysis and interpretation of the results.

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Ethics Statement

Ethical approval was granted through the University College London Research Ethics Committee on 4th May 2023 (reference: 24633/001).

Consent

All participants provided consent to take part and for their data to be included in this study. Where participants were under 16, parent or guardian consent was obtained and assent was obtained from the child.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

Albertini, R. S., and K. A. Phillips. 1999. "Thirty-Three Cases of Body Dysmorphic Disorder in Children and Adolescents." *Journal of the American Academy of Child and Adolescent Psychiatry* 38, no. 4: 453–459.

Anderman, C., A. Cheadle, S. Curry, P. Diehr, L. Shultz, and E. Wagner. 1995. "Selection Bias Related to Parental Consent in School-Based Survey Research." *Evaluation Review* 19, no. 6: 663–674. https://doi.org/10.1177/0193841x9501900604.

Andrews, J. A., P. M. Lewinsohn, H. Hops, and R. E. Roberts. 1993. "Psychometric Properties of Scales for the Measurement of Psychosocial Variables Associated With Depression in Adolescence1." *Psychological Reports* 73, no. 3_part_1: 1019–1046.

Arias, D., S. Saxena, and S. Verguet. 2022. "Quantifying the Global Burden of Mental Disorders and Their Economic Value." *EClinicalMedicine* 54: 101675.

Ata, R. N., A. B. Ludden, and M. M. Lally. 2007. "The Effects of Gender and Family, Friend, and Media Influences on Eating Behaviors and Body Image During Adolescence." *Journal of Youth and Adolescence* 36: 1024–1037.

Aune, T., H. M. Nordahl, and D. C. Beidel. 2022. "Social Anxiety Disorder in Adolescents: Prevalence and Subtypes in the Young-HUNT3 Study." *Journal of Anxiety Disorders* 87: 102546.

Bala, M., R. Quinn, A. Jassi, B. Monzani, and G. Krebs. 2021. "Are Body Dysmorphic Symptoms Dimensional or Categorical in Nature? A Taxometric Investigation in Adolescents." *Psychiatry Research* 305: 114201.

Balázs, J., M. Miklósi, Á. Keresztény, et al. 2013. "Adolescent Subthreshold-Depression and Anxiety: Psychopathology, Functional Impairment and Increased Suicide Risk." *Journal of Child Psychology and Psychiatry* 54, no. 6: 670–677.

Beck, A. T. 2002. "Cognitive Models of Depression." *Clinical Advances in Cognitive Psychotherapy: Theory and Application* 14, no. 1: 29–61.

Beesdo, K., S. Knappe, and D. S. Pine. 2009. "Anxiety and Anxiety Disorders in Children and Adolescents: Developmental Issues and Implications for DSM-V." *Psychiatric Clinics of North America* 32, no. 3: 483–524.

Beesdo-Baum, K., and S. Knappe. 2012. "Developmental Epidemiology of Anxiety Disorders." *Child and Adolescent Psychiatric Clinics of North America* 21, no. 3: 457–478.

Beesdo-Baum, K., S. Knappe, L. Fehm, et al. 2012. "The Natural Course of Social Anxiety Disorder Among Adolescents and Young Adults." *Acta Psychiatrica Scandinavica* 126, no. 6: 411–425.

Blacker, L., M. Gupta, and R. Quinn, et al. Early View. "A Psychometric Evaluation of the Body Image Questionnaire Child and Adolescent Version." Child Psychiatry & Human Development.

Blakemore, S.-J. 2008. "Development of the Social Brain During Adolescence." *Quarterly Journal of Experimental Psychology* 61, no. 1: 40–49.

Bouvard, M., A. Denis, and J.-L. Roulin. 2015. "The French Version of the Revised Child Anxiety and Depression Scale (RCADS) in a Non-clinical Sample." *Swiss Journal of Psychology* 74: 119–127.

Caouette, J. D., and A. E. Guyer. 2014. "Gaining Insight Into Adolescent Vulnerability for Social Anxiety From Developmental Cognitive Neuroscience." *Developmental Cognitive Neuroscience* 8: 65–76.

Chen, H., P. Cohen, S. Kasen, J. G. Johnson, K. Berenson, and K. Gordon. 2006. "Impact of Adolescent Mental Disorders and Physical Illnesses on Quality of Life 17 Years Later." *Archives of Pediatrics & Adolescent Medicine* 160 1: 93–99.

Chorpita, B. F., C. Ebesutani, and S. H. Spence. 2015. "Revised Children's Anxiety and Depression Scale." *Los Angeles, UCLA Child First.*

Chorpita, B. F., C. E. Moffitt, and J. Gray. 2005. "Psychometric Properties of the Revised Child Anxiety and Depression Scale in a Clinical Sample." *Behaviour Research and Therapy* 43, no. 3: 309–322. https://doi.org/10.1016/j.brat.2004.02.004.

Chorpita, B. F., L. Yim, C. Moffitt, L. A. Umemoto, and S. E. Francis. 2000. "Assessment of Symptoms of DSM-IV Anxiety and Depression in Children: A Revised Child Anxiety and Depression Scale." *Behaviour Research and Therapy* 38, no. 8: 835–855. https://doi.org/10.1016/s0005-7967(99)00130-8.

Clark, D. M., and A. Wells. 1995. "A Cognitive Model of Social Phobia." In *Social Phobia: Diagnosis, Assessment, and Treatment*, 69–93. The Guilford Press.

Copeland, W. E., I. Alaie, U. Jonsson, and L. Shanahan. 2021. "Associations of Childhood and Adolescent Depression With Adult Psychiatric and Functional Outcomes." *Journal of the American Academy of Child and Adolescent Psychiatry* 60, no. 5: 604–611.

Van der Cruijsen, R., S. Peters, L. P. E. Van der Aar, and E. A. Crone. 2018. "The Neural Signature of Self-Concept Development in Adolescence: The Role of Domain and Valence Distinctions." *Developmental Cognitive Neuroscience* 30: 1–12.

Dakanalis, A., G. Carrà, R. Calogero, et al. 2015. "The Developmental Effects of Media-Ideal Internalization and Self-Objectification Processes on Adolescents' Negative Body-Feelings, Dietary Restraint, and Binge Eating." *European Child & Adolescent Psychiatry* 24: 997–1010.

Department for Education. 2023. Ofsted Report. https://www.gov.uk/government/publications/ofsted-annual-report-202324-education-childrens-services-and-skillshttps://www.gov.uk/government/publications/ofsted-annual-report-202324-education-childrens-services-and-skills.

Donnelly, A., A. Fitzgerald, M. Shevlin, and B. Dooley. 2019. "Investigating the Psychometric Properties of the Revised Child Anxiety and Depression Scale (RCADS) in a Non-Clinical Sample of Irish Adolescents." *Journal of Mental Health* 28, no. 4: 345–356. https://doi.org/10.1080/09638237.2018.1437604.

Elkind, D., and R. Bowen. 1979. "Imaginary Audience Behavior in Children and Adolescents." *Developmental Psychology* 15, no. 1: 38–44.

Enander, J., V. Z. Ivanov, D. Mataix-Cols, et al. 2018. "Prevalence and Heritability of Body Dysmorphic Symptoms in Adolescents and Young Adults: A Population-Based Nationwide Twin Study." *Psychological Medicine* 48, no. 16: 2740–2747.

Esbjørn, B. H., M. J. Sømhovd, C. Turnstedt, and M. L. Reinholdt-Dunne. 2012. "Assessing the Revised Child Anxiety and Depression Scale (RCADS) in a National Sample of Danish Youth Aged 8–16 Years." *PLoS One* 7, no. 5: e37339. https://doi.org/10.1371/journal.pone.0037339.

Faul, F., E. Erdfelder, A. Buchner, and A.-G. Lang. 2009. "Statistical Power Analyses Using G*Power 3.1: Tests for Correlation and Regression Analyses." *Behavior Research Methods* 41, no. 4: 1149–1160. https://doi.org/10.3758/brm.41.4.1149.

Garber, J., B. Weiss, and N. Shanley. 1993. "Cognitions, Depressive Symptoms, and Development in Adolescents." *Journal of Abnormal Psychology* 102, no. 1: 47–57.

Gowers, S. 2005. "Development in Adolescence." *Psychiatry* 4, no. 6: 6–9.

Guyer, A. E., J. S. Silk, and E. E. Nelson. 2016. "The Neurobiology of the Emotional Adolescent: From the Inside Out." *Neuroscience and Biobehavioral Reviews* 70: 74–85.

Hargreaves, D. A., and M. Tiggemann. 2004. "Idealized Media Images and Adolescent Body Image: 'Comparing' Boys and Girls." *Body image* 1, no. 4: 351–361.

Haukaas, R. B., I. B. Gjerde, G. Varting, H. E. Hallan, and S. Solem. 2018. "A Randomized Controlled Trial Comparing the Attention Training Technique and Mindful Self-Compassion for Students With Symptoms of Depression and Anxiety." *Frontiers in Psychology* 9: 827.

Hyde, J. S., A. H. Mezulis, and L. Y. Abramson. 2008. "The ABCs of Depression: Integrating Affective, Biological, and Cognitive Models to Explain the Emergence of the Gender Difference in Depression." *Psychological Review* 115, no. 2: 291–313.

Kessler, R. C., W. T. Chiu, O. Demler, and E. E. Walters. 2005. "Prevalence, Severity, and Comorbidity of 12-month DSM-IV Disorders in the National Comorbidity Survey Replication." *Archives of General Psychiatry* 62, no. 6: 617–627.

Kley, H., B. Tuschen-Caffier, and N. Heinrichs. 2012. "Safety Behaviors, Self-Focused Attention and Negative Thinking in Children With Social Anxiety Disorder, Socially Anxious and Non-Anxious Children." *Journal of Behavior Therapy and Experimental Psychiatry* 43, no. 1: 548–555.

Klump, K. L. 2013. "Puberty as a Critical Risk Period for Eating Disorders: A Review of Human and Animal Studies." *Hormones and Behavior* 64, no. 2: 399–410.

Koepke, S., and J. J. A. Denissen. 2012. "Dynamics of Identity Development and Separation–Individuation in Parent–Child Relationships During Adolescence and Emerging Adulthood—A Conceptual Integration." *Developmental Review* 32, no. 1: 67–88.

Krebs, G., B. R. Clark, T. J. Ford, and A. Stringaris. 2025. "Epidemiology of Body Dysmorphic Disorder and Appearance Preoccupation in Youth: Prevalence, Comorbidity and Psychosocial Impairment." *Journal of the American Academy of Child & Adolescent Psychiatry* 64, no. 1: 30–40.

Leigh, E., K. Chiu, and D. M. Clark. 2021. "Self-Focused Attention and Safety Behaviours Maintain Social Anxiety in Adolescents: An Experimental Study." *PLoS One* 16, no. 2: e0247703.

Lereya, S. T., S. Norton, M. Crease, et al. 2024. "Gender, Marginalised Groups, and Young People's Mental Health: A Longitudinal Analysis of Trajectories." *Child and Adolescent Psychiatry and Mental Health* 18, no. 1: 29.

Lewinsohn, P. M., I. H. Gotlib, M. Lewinsohn, J. R. Seeley, and N. B. Allen. 1998. "Gender Differences in Anxiety Disorders and Anxiety Symptoms in Adolescents." *Journal of Abnormal Psychology* 107, no. 1: 109–117.

Lewinsohn, P. M., I. H. Gotlib, and J. R. Seeley. 1997. "Depression-Related Psychosocial Variables: Are They Specific to Depression in Adolescents?" *Journal of Abnormal Psychology* 106, no. 3: 365–375.

Lieberman, M., L. Gauvin, W. M. Bukowski, and D. R. White. 2001. "Interpersonal Influence and Disordered Eating Behaviors in Adolescent Girls." *Eating Behaviors* 2, no. 3: 215–236.

Luna, B. 2009. "Developmental Changes in Cognitive Control Through Adolescence." *Advances in Child Development and Behavior* 37: 233–278.

Lyubomirsky, S., and S. Nolen-Hoeksema. 1995. "Effects of Self-Focused Rumination on Negative Thinking and Interpersonal Problem Solving." *Journal of Personality and Social Psychology* 69, no. 1: 176–190.

McArthur, B. A., T. A. Burke, S. L. Connolly, et al. 2019. "A Longitudinal Investigation of Cognitive Self-Schemas Across Adolescent Development." *Journal of Youth and Adolescence* 48: 635–647.

Mendle, J. 2014. "Why Puberty Matters for Psychopathology." *Child Development Perspectives* 8, no. 4: 218–222.

Merikangas, K. R., J.-p He, M. Burstein, et al. 2010. "Lifetime Prevalence of Mental Disorders in Us Adolescents: Results From The National Comorbidity Survey Replication–Adolescent Supplement (NCS-A)." *Journal of the American Academy of Child and Adolescent Psychiatry* 49, no. 10: 980–989.

Mobility, Social. 2014. *Cracking the Code: How Schools Can Improve Social Mobility*. Social Mobility and Child Poverty Commission.

Mor, N., and J. Winquist. 2002. "Self-Focused Attention and Negative Affect: A Meta-Analysis." *Psychological Bulletin* 128, no. 4: 638–662.

Moses-Payne, M. E., G. Chierchia, and S. J. Blakemore. 2022. "Age-Related Changes in the Impact of Valence on Self-Referential Processing in Female Adolescents and Young Adults." *Cogn Dev* 61: 101128. https://doi.org/10.1016/j.cogdev.2021.101128.

Nejad, A. B., P. Fossati, and C. Lemogne. 2013. "Self-Referential Processing, Rumination, and Cortical Midline Structures in Major Depression." *Frontiers in Human Neuroscience* 7: 666.

Nolen-Hoeksema, S., and J. Morrow. 1991. "A Prospective Study of Depression and Posttraumatic Stress Symptoms After a Natural Disaster: The 1989 Loma Prieta Earthquake." *Journal of Personality and Social Psychology* 61, no. 1: 115–121.

Nolen-Hoeksema, S., and J. Morrow. 1993. "Effects of Rumination and Distraction on Naturally Occurring Depressed Mood." *Cognition & emotion* 7, no. 6: 561–570.

Papageorgiou, C., and A. Wells. 2000. "Treatment of Recurrent Major Depression With Attention Training." *Cognitive and Behavioral Practice* 7, no. 4: 407–413.

Phillips, K. A., E. R. Didie, W. Menard, M. E. Pagano, C. Fay, and R. B. Weisberg. 2006. "Clinical Features of Body Dysmorphic Disorder in Adolescents and Adults." *Psychiatry Research* 141, no. 3: 305–314.

R Core Team. 2021. *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing.

Racine, N., B. A. McArthur, J. E. Cooke, R. Eirich, J. Zhu, and S. Madigan. 2021. "Global Prevalence of Depressive and Anxiety Symptoms in Children and Adolescents During COVID-19: A Meta-Analysis." *JAMA Pediatrics* 175, no. 11: 1142–1150.

Rankin, J. L., D. J. Lane, F. X. Gibbons, and M. Gerrard. 2004. "Adolescent Self-Consciousness: Longitudinal Age Changes and Gender Differences in Two Cohorts." *Journal of Research on Adolescence* 14, no. 1: 1–21.

Rapee, R. M., E. L. Oar, C. J. Johnco, et al. 2019. "Adolescent Development and Risk for the Onset of Social-Emotional Disorders: A Review and Conceptual Model." *Behaviour Research and Therapy* 123: 103501.

Rosenberg, F. R., and R. G. Simmons. 1975. "Sex Differences in the Self-Concept in Adolescence." *Sex Roles* 1, no. 2: 147–159.

Rosseel, Y. 2012. "Lavaan: An R Package for Structural Equation Modeling." *Journal of Statistical Software* 48: 1–36.

Ruscio, A. M. 2010. "The Latent Structure of Social Anxiety Disorder: Consequences of Shifting to a Dimensional Diagnosis." *Journal of Abnormal Psychology* 119, no. 4: 662–671.

Ruscio, J., and A. M. Ruscio. 2000. "Informing the Continuity Controversy: A Taxometric Analysis of Depression." *Journal of Abnormal Psychology* 109, no. 3: 473–487.

Schneider, S. C., A. J. Baillie, J. Mond, C. M. Turner, and J. L. Hudson. 2018. "Measurement Invariance of a Body Dysmorphic Disorder Symptom Questionnaire Across Sex: The Body Image Questionnaire–Child and Adolescent Version." *Assessment* 25, no. 8: 1026–1035. https://doi.org/10.1177/1073191116679504.

Shorey, S., E. D. Ng, and C. H. J. Wong. 2022. "Global Prevalence of Depression and Elevated Depressive Symptoms Among Adolescents: A Systematic Review and Meta-Analysis." *British Journal of Clinical Psychology* 61, no. 2: 287–305.

Sim, M., S.-Y. Kim, and Y. Suh. 2022. "Sample Size Requirements for Simple and Complex Mediation Models." *Educational and Psychological Measurement* 82, no. 1: 76–106.

Singh, J. A., M. Siddiqi, P. Parameshwar, and V. Chandra-Mouli. 2019. "World Health Organization Guidance on Ethical Considerations in Planning and Reviewing Research Studies on Sexual and Reproductive Health in Adolescents." *Journal of Adolescent Health* 64, no. 4: 427–429. https://doi.org/10.1016/j.jadohealth.2019.01.008.

Somerville, L. H., R. M. Jones, E. J. Ruberry, J. P. Dyke, G. Glover, and B. J. Casey. 2013. "The Medial Prefrontal Cortex and the Emergence of Self-Conscious Emotion in Adolescence." *Psychological Science* 24, no. 8: 1554–1562.

Spurr, J. M., and L. Stopa. 2002. "Self-Focused Attention in Social Phobia and Social Anxiety." *Clinical Psychology Review* 22, no. 7: 947–975.

Sturmey, P. 2020. *Functional Analysis in Clinical Treatment*. Academic Press.

Takishima-Lacasa, J. Y., C. K. Higa-McMillan, C. Ebesutani, R. L. Smith, and B. F. Chorpita. 2014. "Self-Consciousness and Social Anxiety in Youth: The Revised Self-Consciousness Scales for Children." *Psychological Assessment* 26, no. 4: 1292–1306.

Tigges, B. B. 2003. "Parental Consent and Adolescent Risk Behavior Research." *Journal of Nursing Scholarship* 35, no. 3: 283–289.

Tingley, D., T. Yamamoto, K. Hirose, L. Keele, and K. Imai. 2014. Mediation: R Package for Causal Mediation Analysis.

Veale, D. 2004. "Advances in a Cognitive Behavioural Model of Body Dysmorphic Disorder." *Body Image* 1, no. 1: 113–125.

Veale, D. 2009. Body Image Questionnaire–child and Adolescent Version.

Veale, D., N. Ellison, T. G. Werner, R. Dodhia, M. A. Serfaty, and A. Clarke. 2012. "Development of a Cosmetic Procedure Screening Questionnaire (COPS) for Body Dysmorphic Disorder." *Journal of Plastic, Reconstructive & Aesthetic Surgery: JPRAS* 65, no. 4: 530–532.

Veale, D., E. Eshkevari, N. Kanakam, N. Ellison, A. Costa, and T. Werner. 2014. "The Appearance Anxiety Inventory: Validation of a Process Measure in the Treatment of Body Dysmorphic Disorder." *Behavioural and Cognitive Psychotherapy* 42, no. 5: 605–616.

Veale, D., S. Miles, N. Valiallah, et al. 2016. "The Effect of Self-Focused Attention and Mood on Appearance Dissatisfaction After Mirror-Gazing: An Experimental Study." *Journal of Behavior Therapy and Experimental Psychiatry* 52: 38–44.

Wells, A. 2011. *Metacognitive Therapy for Anxiety and Depression*. Guilford press.

Zimmer-Gembeck, M. J., H. J. Webb, L. J. Farrell, and A. M. Waters. 2018. "Girls' and Boys' Trajectories of Appearance Anxiety From Age 10 to 15 Years Are Associated With Earlier Maturation and Appearance-Related Teasing." *Development and Psychopathology* 30, no. 1: 337–350.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.