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WHAT EXPLAINS SOCIAL ANXIETY IN ADOLESCENTS WITH SOCIAL ANXIETY DISORDER AND HEALTHY CONTROLS? THE APPLICABILITY OF THE CLARK AND WELLS' MODEL

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Abstract

Clark and Wells' model for social anxiety proposed several maintenance factors for social anxiety (SA), which is assumed to exist in a continuum from normative to pathological levels (i.e., Social Anxiety Disorder – SAD). Based on these premises, we used a cross-sectional design to investigate pathways linking those maintenance factors to SA, in adolescents (M_{age} = 16.02, SD = .97) with SAD (n = 30) and healthy controls (n = 23), who filled in self-report questionnaires about those variables. Separate moderation models were tested using the same dependent variable (i.e., SA) and different independent variables (i.e., Negative Social Thoughts and Beliefs, Self-focused Attention, and Safety-seeking Behaviors); group was the moderating variable. All variables were significant predictors of SA, explaining between 80% (i.e., Self-focused Attention) and 83% (i.e., Safety-seeking Behaviors and Negative Social Thoughts and Beliefs) of its variance. Group was never a significant moderator. These results favor Clark and Wells' model for explaining SA along its continuum. The pervasiveness of negative cognitions, safety-seeking behaviors, and self-focused attention in adolescents with SAD seems to contribute to a more disrupting experience of SA. As such, addressing these maintenance factors may be useful, as a preventive and remedial approach to SA in adolescence.

Keywords: Social Anxiety; Clark and Wells model; Adolescents; Clinical and Non-Clinical.

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Experiencing mild levels of social anxiety is a common human experience, particularly when facing new, unfamiliar, or social-evaluative situations (Clark & Beck, 2011). Nonetheless, difficulties may arise when a variety of daily social situations are endured with intense anxiety causing multiple symptoms (e.g., mental blanks, blushing, refusing to participate in social gatherings) that associate with significant impairment. At this extreme of the social anxiety continuum lies Social Anxiety Disorder (SAD). SAD is characterized by a marked and persistent fear of social and/or performance situations in which one may be exposed to the scrutiny of others (American Psychiatric Association, 2013). Adolescence is a particularly sensitive period for the development of SAD (Haller et al., 2015). As such, SAD has its usual onset during that life period (Knappe et al., 2015; Stein et al., 2017) and it is highly prevalent among adolescents, with point-estimated prevalence rates between 1.29% (Jystad et al., 2021) and 9.4% (Alves et al., 2022). SAD is a highly debilitating condition that is associated with significant impairments in multiple areas of the adolescents' lives, such as romantic relationships (Hebert et al., 2013), friendships (Erath et al., 2007), and academic performance (Soohinda & Sampath, 2016). Additionally, research shows that adolescents with SAD are at a higher risk of presenting other mental health difficulties (Jystad et al., 2021; Mohammadi et al., 2020), and that, if not receiving specialized intervention, of SAD frequently persisting throughout life (Stein et al., 2017).

Given that adolescence is a crucial phase of social learning and that social interactions play a key role in adolescents' development (Leigh & Clark, 2018), experiencing SAD may hinder the acquisition of competencies that are crucially developed during that development phase, thus negatively impacting adult life (Masten & Cicchetti, 2010). Nonetheless, adolescence may as well be an opportunity to deliver effective intervention given that the increased plasticity associated with this developmental phase may facilitate emotional and social learning (Haller et al., 2015). Therefore, understanding the psychological processes that might explain the experience of social anxiety within adolescence is paramount.

Cognitive-behavioral models of social anxiety have emphasized the role of cognitive (e.g., beliefs, negative thoughts) and behavioral (e.g. avoidance, safety-seeking behaviors) processes in explaining social anxiety (Beck et al., 1985; Clark & Wells, 1995; Rapee & Heimberg, 1997). Particularly, Clark and Wells' (1995) model offers a strong theoretical background for understanding the maintenance of social anxiety that has gathered extensive evidence, though more so for adults than for adolescent samples (see below). According to this model, dysfunctional beliefs about oneself and one's social world lead individuals to interpret social situations in a negative and threatening way. This appraisal of the social situation then triggers a chain of self-perpetuating cognitive, affective, and behavioral responses that prevent the disconfirmation of negative beliefs and thoughts, maintaining the individuals' distress (Leigh & Clark, 2018). Specifically, these responses include in-situation

processes such as excessive self-focused attention and safety-seeking behaviors (Clark, 2001).

About self-focused attention, Clark and Wells (1995) proposed that attention is shifted inwards so that individuals closely monitor themselves and how they are coming across. This shift in attention prevents individuals from noticing how others truly respond to them and increases awareness of internal information (e.g., anxiety symptoms). In turn, this internal information is interpreted as a confirmation of the individuals' own negative social thoughts and beliefs. In line with this model (Clark, 2001), individuals also engage in a variety of safety-seeking behaviors that aim to prevent or minimize anticipated feared outcomes. These strategies are unhelpful for several reasons, namely: they prevent individuals from realizing that feared outcomes were unlikely or not as catastrophic as expected if they do occur; they enhance the focus of attention on oneself; they can increase anxiety symptoms and draw attention to those symptoms; and they can impair social interactions/ performances and elicit fewer friendly responses from others (Leigh and Clark, 2018).

Empirical evidence supports the adequacy of Clark and Wells' (1995) model to explain social anxiety in adults (e.g., Canvin et al., 2016; Clark, 2001; Wells et al., 2016,). Regarding younger ages, a recent systematic review pointed to associations between social anxiety and social beliefs, safety-seeking behaviors, and self-focused attention in adolescence (Leigh & Clark, 2018) and a network analysis by Vogel and collaborators (2021) found that cognitive variables (particularly, dysfunctional cognitions) are central to social anxiety in children and adolescents. Concerning negative social thoughts and beliefs, higher levels of social anxiety have been associated with a higher frequency of negative social cognitions (Hodson et al., 2008, Schreiber et al., 2012). Moreover, adolescents with clinical and sub-clinical SAD were found to report more negative thoughts (Ranta et al.,2013) and engaged more frequently in negative self-talk than healthy controls (Alfano et al., 2006). Rudy and colleagues (2014) also reported a significant effect of negative self-referent cognitions on social anxiety in their study with children and adolescents.

Regarding self-focused attention, evidence suggests that adolescents with higher levels of social anxiety report experiencing more self-focused attention in comparison to their lowly socially anxious counterparts (Blöte et al. 2014; Hodson et al., 2008; Schreiber et al. 2012). Fontinho and Salvador (2012) found that adolescents with SAD scored significantly higher in self-focused attention in comparison to adolescents with other anxiety disorders and with adolescents without psychopathology. The independent predictive role of self-focused attention on social anxiety has been supported in samples of younger ages, (from 11 to 14 years old; Hodson et al., 2008), but not in samples of older adolescents (ages between 13 and 20; Fontinho, & Salvador, 2012; Schreiber et al., 2012).

In what concerns safety-seeking behaviors, findings suggest that adolescents with higher levels of social anxiety resort to safety-seeking behaviors more frequently than adolescents with low anxiety levels (Schreiber et al., 2012). Accordingly, safety-seeking behaviors were found to be more frequent in

adolescents with a clinical and sub-clinical diagnosis of SAD than in adolescents without a diagnosis (Ranta et al., 2013). Hodson and colleagues' (2008) study with young people (participants aged between 11 and 14 years old) also showed that, compared to a low socially anxious group, the high socially anxious group scored significantly higher in a measure of safety-seeking behaviors. Similar to findings regarding self-focused attention, research on the predictive effect of safety-seeking behaviors on social anxiety is inconsistent: safety-seeking behaviors independently and significantly predicted social anxiety in clinical and non-clinical samples of older adolescents (from 13 to 20 years old; Fontinho, & Salvador, 2012; Schreiber et al., 2012) but the same effect was not found for younger ages (from 11 to 14 years old; Hodson et al., 2008). Moreover, Leigh and colleagues' (2021) findings from an experimental study supported the causal role of self-focused attention and safety-seeking behaviors in adolescents' social anxiety. A longitudinal study with adolescents further pointed to the predictive independent role of social beliefs, safety-seeking behaviors, and self-focused attention on prospective levels of social anxiety (Chiu et al., 2021).

Taken together, this evidence supports the suitability of Clark and Wells' (1995) model to explain social anxiety in adolescents, though relying mostly on studies focusing on associations between variables within that model and social anxiety. Research addressing the predictive role of safety-seeking behaviors and self-focused attention on social anxiety is contradictory and lacking, as is limited the research into the pathways linking negative social thoughts and beliefs, self-focused attention, and safety-seeking behaviors to social anxiety, when considering adolescents with SAD and normative adolescents. Knowing the (dis)similarity of these pathways across normative and pathological levels of social anxiety may better inform what distinguishes and should be considered in intervention efforts for adolescent SAD.

The current study aimed to narrow this research gap by examining the moderating role of the presence of SAD/ absence of clinical diagnosis in the pathways linking the maintenance factors of Clark and Wells' (1995) model (i.e., negative social thoughts and beliefs, self-focused attention, and safety-seeking behaviors) to social anxiety. As a preliminary analysis intending to validate the quantitative between-group differences, we compared adolescents with SAD and healthy adolescents in measures of social anxiety and of the above-mentioned maintenance processes; following previous findings (e.g., Fontinho, & Salvador, 2012; Ranta et al.,2013) we expect the first to present higher scores. As for our main goal, considering previous research on the associations between negative social thoughts and beliefs, self-focused attention and safety-seeking behaviors, and social anxiety in non-clinical (e.g., Chiu et al., 2021) and clinical (e.g., Fontinho & Salvador, 2012; Ranta et al., 2013) samples of adolescents, we expected that all maintenance variables would predict social anxiety and that similar paths would emerge in both samples of adolescents.

Method

This work concerns outcomes taken form the research project *TeenSAD*: Changing the Course of Social Anxiety in Adolescence (PTDC/PSI-ESP/29445/ 2017; ClinicalTrials.gov Identifier: NCT04979676).

Participants

Participants were 53 adolescents aged between 15 and 18 years old (M_{age} = 16.02, SD = 0.97) of which 36 were girls (67.9%), and 17 were boys (32.1%). Regarding socioeconomic status (SES) estimated based on parents' occupation*, 49.1% of the participants came from low SES households (n = 26), 37.7% from medium SES households (n = 20), and 13.2% from high SES households (n = 7). Thirty participants (56.6%) presented a diagnosis of SAD (i.e., clinical group), and 23 (43.4%) presented no mental health diagnosis (i.e., non-clinical group). No significant differences were found between the clinical (M_{age}=16.20; SD=.81) and non-clinical (M_{age}=15.78; SD=.90) groups regarding age ($t_{(51)}$ = 1.78, p = .08); participants in those groups were homogenously distributed by gender ($\chi^2_{(1)}$ = .05; p =.82) and SES ($\chi^2_{(2)}$ = 2.591, p =.274).

Procedures

This work was conducted within the research project *TeenSAD*: Changing the Course of Social Anxiety in Adolescence (PTDC/PSI-ESP/29445/2017; ClinicalTrials.gov Identifier: NCT04979676) that proposes to investigate the efficacy of three diverse intervention conditions on adolescent SAD, against a waitlist control condition. As a secondary goal, this project intended to investigate the courses of social anxiety in adolescence by comparing participants in the waitlist control condition with normative peers. The current work is taken from that secondary goal. As such, a priori sample size determined using G*Power (two conditions across four assessment moments) was set at a minimum of 50 participants (i.e., 25 per group), with power analysis placed at .95, an expected effect size of 0.25 and an expected correlation between repeated measures placed at 0.30. In the present work we only considered the first assessment moment for the normative and the clinical groups. To ensure the comparability between the two groups regarding sample size, a random subsample of 30 participants was selected from the initial clinical group.

The sample was collected from Portuguese high schools after the study's procedures were approved by the ethics committee of the host institution and consent

* Socioeconomic status (low, e.g., laborers in manufacturing; medium, e.g., sales workers, high, e.g., health professionals) was assessed based on Simões' classification (1994).

from executive boards of the schools was granted. Further written and informed consent was requested from the guardian or legal representative of students under the age of 18 years old. All potential participants were informed about the goals and procedures of the research and the confidentiality and anonymity of their responses was guaranteed. Students were asked to voluntarily participate in the study and their informed assent was requested.

Schools were asked to screen all 10th and 11th graders with the Portuguese version of the Social Anxiety Scale for Adolescents (SAS-A; Cunha et al., 2004). Adolescents scoring more than one standard deviation above or below the mean found for a large normative Portuguese sample on the SAS-A (Cunha et al., 2004) were invited for an individual interview, resorting to the Portuguese Version of the MINI-KID (Mini-International Neuropsychiatric Interview for Children and Adolescents; Sheehan, et al., 2010; Portuguese Authorized version by Rijo et al., 2016). Specific inclusion and exclusion criteria for integration in the clinical and non-clinical groups were assessed during that interview. Inclusion criteria were being aged between 15 and 18 years old and having a primary diagnosis of generalized Social Anxiety Disorder (for inclusion in the clinical group) or having no clinical mental health diagnosis (for inclusion in the non-clinical group). The exclusion criteria were having indication of educational specific needs or psychotic symptoms, and/or currently attending psychological counseling services. Adolescents included in the study were requested to fill in a set of self-report questionnaires assessing the variables under study (cf. measures). The research protocol was sent to the adolescents to be answered online, using the LimeSurvey platform.

An initial pool of 1,495 adolescents were screened. Of these, 1108 were eligible for individual diagnostic assessment, of which 388 were referred to the clinical group and 720 were referred to the non-clinical group. One of nine masters in psychology with specific training on the application of the Mini-KID (Sheehan, et al., 2010; Portuguese Authorized version by Rijo et al., 2016) conducted interviews with 209 and 58 of the adolescents eligible for the clinical and the non-clinical group, respectively. Regarding the clinical group, 140 adolescents met all inclusion criteria and 92 were available to continue their participation in the research project; of these, a subsample of 30 participants was randomly selected to be considered in the present work. In what concerns the non-clinical group, 29 adolescents met all inclusion criteria of which 23 accepted to continue their participation in the research project and were included in the current work.

Measures

Instruments for sample recruitment

Social Anxiety Scale for Adolescents (SAS-A; La Greca, & Lopez, 1998; Portuguese version by Cunha et al., 2004). The SAS-A is a self-report questionnaire comprised of 22 items (e.g., "I worry that others don't like me") that assess adolescents' social anxiety experiences in social situations. Each item is answered

on a 5-point Likert-scale according to how much the item "is true for you" (ranging from 1 = 'not at all' to 5 = 'all the time'). Higher scores on the SAS-A reflect higher levels of social anxiety. Besides the total score, the scale comprises three other subscales. In the current work only the total score was considered for selecting participants who scored one standard deviation above or below the mean, who were then called for an individual clinical interview.

Mini-International Neuropsychiatric Interview for Children and Adolescents (Mini-KID; Sheehan et al., 2010; Portuguese version by Rijo et al., 2016). The Mini-KID is a structured diagnostic interview for the assessment of DSM-V diagnoses that are most common in children and adolescents. This interview is a downward extension of the adult version of the interview, that has been validated against other diagnostic interviews (i.e., Structured Clinical Interview for DSM-III-R and the World Health Organization designed Composite Internal Diagnostic Interview; Sheehan et al., 2010). The Mini-KID presents screening questions answered in a yes/no format for the evaluation of specific diagnostic criteria for each clinical diagnosis. In its original version, interrater reliability was excellent across diagnoses except for dysthymia (Sheehan et al., 2010). The Portuguese version of the Mini-KID resulted from a careful translation and backtranslation process and has been previously used as a method for the assessment of clinical diagnoses (Rijo et al., 2016). Clinicians that applied the Mini-KID to assess adolescents for integration in the clinical and non-clinical groups received specific training, including role-play exercises, and went through an initial observation phase of experienced evaluators applying the interview before conducting interviews themselves.

Data collection measures

All participants completed a **socio-demographic questionnaire** assessing age, gender, school year and parents' profession. This information was used solely for sample characterization.

Social Anxiety and Avoidance Scale for Adolescents (SAASA; original version by Cunha et al., 2008). The SAASA is a self-report questionnaire comprised of 30 items in its adapted version that was particularly tailored for older adolescents (Vagos et al, 2013); that version was the one used in the current work. The SAASA seeks to assess the degree of anxiety and frequency of avoidance in social situations representative of the most frequent social fears in adolescents. It features two subscales, namely, Anxiety and Avoidance. In the current work, only the anxiety subscale was used. Its items (e.g., "Going to a party given by a colleague") are answered on a five-point Likert scale (ranging from 1 = 'none' to 5 = 'very much'). Each subscale is comprised of six factors: interaction with the opposite sex, assertive interaction, observation by others, interaction in new social situations, performance in social situations, and eating and drinking in public. The SAASA has presented good internal consistency values, with Cronbach's alpha values over .87 for the total score and subscales for the original version (Cunha et al., 2008), and over .70 for its 30-item version (Vagos et al., 2013). The SAASA has also shown good test-retest

reliability, convergent and divergent validities, capacity to discriminate adolescents with SAD from adolescents with other anxiety disorders and from adolescents without psychopathology (Cunha et al., 2008), and sensitivity to treatment results (Salvador, 2009). In the present study, only the total score for the anxiety subscale was used and it attained an excellent internal consistency with a Cronbach's alpha value of .97.

Social Thoughts and Beliefs Scale (STABS; Turner et al., 2003; Portuguese version for adolescents by Vagos et al., 2010). The STABS is a self-report instrument that consists of 21 items rated using a 5-point Likert scale (ranging from 1 = 'not at all characteristic of me' to 5 = 'always characteristic of me'). It assesses the degree to which a particular thought or belief is typical of the respondents' thinking when anticipating or participating in social situations. In its original version for adults, a two-factor solution fitted the data, referring to Social Comparison and to Social Ineptness, which presented excellent internal consistencies with Cronbach's alpha values of .95 and .93, respectively. The total score also achieved an excellent internal consistency, with a Cronbach's alpha of .96 (Turner et al., 2003). The STABS also presented a highly reliable temporal stability and a high degree of accuracy to discriminate between individuals with SAD, with other anxiety disorders and those with no psychopathology (Turner et al., 2003). The Portuguese version for adolescents also achieved a two-factor structure that nonetheless referred to different constructs. They were Discomfort in Social Interaction (e.g., "When I am in a social situation, I appear clumsy to other people") and Discomfort in Public Performance (e.g., "My mind is very likely to go blank when I am talking in a social situation"), with Cronbach's alpha values of .93 and .91 respectively, and a value of .82 for the total score (Vagos et al., 2010). In the present study, only the total score of the STABS was used. It presented an excellent internal consistency with a Cronbach's alpha value of .97.

Self-focused Attention Scale (SFA; Bögels et al., 1996; Portuguese version for adolescents by Fontinho & Salvador, 2012). The SFA is a self-report questionnaire that comprises 11 items answered on a 5-point Likert scale (from 0 = 'nothing' to 4 = 'totally') to assess the focus of attention in social situations. Items are distributed across two factors: focus of attention in one's behavior (SFA-behavior; e.g., "In the presence of other people I'm constantly focusing on whether I'm sufficiently socially skilled") and focus of attention in one's physiological arousal (SFA-arousal; e.g., "In the presence of other people I'm constantly focusing on whether I blush, tremble, or sweat"). In its original version (Bögels et al., 1996), the SFA achieved acceptable to good internal consistencies with Cronbach's alpha values of .88 for the total score, .86 for SFA-arousal, and .78 for SFA-behavior. The Portuguese version for adolescents revealed good test-retest reliability and convergent validity in relation to measures of social anxiety and self-focused attention. It showed good to excellent internal consistencies, with Cronbach's alpha values of .91 for the total score, .86 for SFA-arousal, and .88 for SFA-behavior (Fontinho & Salvador, 2012). In the present study, only the total measure of the SFA

was used and it presented with a Cronbach's alpha value of .95 denoting excellent internal consistency.

Safety Behaviors in Social Situations Scale for Adolescents (SBSSS-A; Silva & Salvador, 2010). The SBSSS-A is a self-report questionnaire comprised of 20 items (e.g., "You look at the ground while you walk") rated on a 4-point Likert scale (from 1 = 'Never' to 4 = 'Almost Always'). It assesses the frequency of practicing safety-seeking behaviors in social situations. The adult version was able to discriminate individuals with generalized SAD from individuals with non-generalized SAD, with other anxiety disorders and without psychopathology (Pinto-Gouveia et al., 2000). When applied to adolescents, the scale revealed a unifactorial structure, good internal consistency and temporal stability, and a moderate convergent validity (Silva & Salvador, 2010). Additionally, the SBSSS-A has been shown to be sensitivity to treatment results (Salvador, 2009). In the current study, the SBSSS-A achieved an excellent internal consistency with a Cronbach's alpha value of .94.

Data analysis

Statistical analyses were conducted using IBM SPSS Statistic 22 (Statistical Package for the Social Sciences version 22; IBM Corp.). Concerning our preliminary analyses intending to investigate group mean-level differences in variables relevant to the Clark and Wells (1995) model (i.e., negative social thoughts and beliefs, self-focused attention, safety-seeking behaviors), and social anxiety, Mann Whitney U tests were conducted. To convert the *z*-score into an effect size estimate, *r*, the following equation was used: $r = z/\sqrt{N}$ (Rosenthal, 1991). Non-parametric tests were used given that Mardias' multivariate test of normality conducted on computed measures of all study variables revealed non-compliance with multivariate normality (Mardias' skewness z = 32.44, $p < .05$; Mardias' Kurtosis z = 0.57; $p = .57$). To achieve the present study main aim (i.e., better understand (dis)similarity of pathways linking Clark and Wells maintenance variables to social anxiety, across groups of adolescents presenting normative versus pathological levels of social anxiety) we opted for moderation analysis. Moderation analysis focuses on understanding the conditions under which the relationship between two variables is stronger or weaker (i.e., the "when" or "for whom"; Hayes, 2018). So, moderation analyses align with our goal of knowing for whom (i.e., the diagnostic group considering SAD versus Healthy Controls) would the relationship between Clark and Wells maintenance variables and social anxiety be applicable. Thus, three separate simple moderation models ("model 1") were estimated using SPSS version of the PROCESS Macro (Hayes, 2018). Each moderation model had one of the Clark and Wells proposed maintenance factors (i.e., (1) negative social thoughts and beliefs, (2) self-focused attention, and (3) safety-seeking behaviors) as the independent

variable; all models had social anxiety as the dependent variable, and group (clinical versus non-clinical) as the moderator. We used the following formula to convert r^2 values into the Cohen f^2 effect size: $f2 = r2/1 - r2$.

Results

Mean-level comparisons across the clinical and non-clinical groups

Means, standard deviations, medians, and mean ranks for all measures by group are presented in Table 1. Significant differences between the clinical and the non-clinical groups were found for all measures. Specifically, the clinical group scored significantly higher in all study variables in comparison with the non-clinical group (cf. Table 1).

Table 1. Means, standard deviation, medians, and mean ranks for all scales

	Clinical group (n = 30)			Non-clinical group (n = 23)			U	*z*	*r*
	M (SD)	Mdn	M rank	M(SD)	Mdn	M rank			
Social anxiety									
Interaction with the opposite sex	13.33 (4.54)	13.50	36.83	6.17(2.19)	5.00	14.17	50.00***	-5.36	-0.74
Assertive interaction	19.80 (5.13)	19.50	37.20	9.78(3.50)	9.00	13.70	39.00***	-5.50	-0.76
Observation by others 6	21.77 (7.08)	22.50	36.70	9.91 (3.45)	9.00	14.35	54.00***	-5.24	-0.72
Interaction in new social situations	14.67 (3.73)	15.00	37.25	7.04 (2.27)	7.00	13.63	37.50***	-5.53	-0.76
Performance in social situations	14.73 (4.11)	14.50	36.92	6.87 (3.27)	6.00	14.07	47.50***	-5.35	-0.73
Eating and drinking in public	4.17 (1.53)	4.00	35.12	2.30 (0.56)	2.00	16.41	101.50***	-4.59	-0.63
Total Score	88.47 (20.34)	91.50	37.90	42.09 (11.42)	40.00	12.78	18.00***	-5.87	-0.81
Negative social thoughts and beliefs									
Discomfort in Public Performance	26.27 (5.82)	26.50	37.35	14.87 (3.44)	16.00	13.50	34.50***	-5.59	-0.77
Discomfort in Social Interaction	43.63 (8.27)	43.00	37.88	20.00 (6.69)	18.00	12.80	18.50***	-5.87	-0.81
Total Score	69.90 (13.60)	70.00	37.82	34.87 (8.32)	34.00	12.89	20.50***	-5.83	-0.80
Self-focused attention									
SFA-Arousal	12.97 (6.40)	14.00	34.98	4.39 (5.72)	3.00	16.59	105.50***	-4.31	-0.59
SFA-Behavior	12.87 (4.38)	14.00	36.45	5.00 (3.50)	5.00	14.67	61.50***	-5.10	-0.70
SFA Total Score	25.83 (9.55)	27.50	35.93	9.39 (8.57)	8.00	15.35	77.00***	-4.81	-0.66
Safety-seeeking behaviors	52.63 (10.81)	54.00	37.58	32.39 (5.27)	32.00	13.20	27.50***	-5.71	-0.78

Note. M= Mean, SD=Standard Deviation, Mdn=Median, M rank= Mean Rank. Social anxiety was measured using the Social Anxiety and Avoidance Scale for Adolescents. Negative social thoughts and beliefs were measures using the Social Thoughts and Beliefs Scale. Self-focused attention was measured using the Self-focused Attention Scale. Safety-seeking behaviors were measures using the Safety Behaviors in Social Situations Scale for Adolescents.

*** $p < .001$

Self-focused attention, negative social thoughts and beliefs, and safety-seeking behaviors as predictors of social anxiety across the clinical and non-clinical groups

All three models under consideration were statistically significant: $F_{(3.49)}$ = 78.20, $p < .001$, R^2=.83, Cohen f^2 = 4.78 when considering Self-focused Attention as the independent variable; $F_{(3.49)}$ = 63.58, $p < .001$, R^2=.80, , Cohen f^2 = 3.90 when taking Safety-seeking Behaviors as the independent variable, and $F_{(3.49)}$ = 82.00, $p < .001$, R^2=.83, Cohen f^2 = 5.02 when the Negative Social Thoughts and Beliefs was put as the independent variable. Also, the independent variables always had a statistically significant effect: higher levels of Self-focused Attention, Safety-seeking Behaviors and Negative Social Thoughts and Beliefs significantly predicted higher levels of Social Anxiety. Alternatively, the effect of the group as the moderator was not statistically significant in any of the models (Cf. Table 2), indicating that the path linking each of the maintenance variables under scrutiny to social anxiety is similar for individuals within the clinical and the non-clinical groups.

Table 2. Linear models of predictors of social anxiety and conditional effects of the focal predictor

	β	*SE*	*t*	95% CI	
				Lower	Upper
Model 1					
Constant	104.96	6.82	15.39***	91.26	118.66
Self-focused Attention	2.25	0.57	3.97***	1.11	3.39
Group	-27.53	4.76	-5.79***	-37.09	-17.97
Self-focused Attention x Group	-0.71	0.39	-1.82	-1.49	0.07
Model 2					
Constant	104.66	9.29	11.27***	85.99	123.33
Safety-seeking Behaviors	2.02	0.71	2.84**	0.59	3.44
Group	-27.75	7.50	-3.70**	-42.82	-12.69
Safety-seeking Behaviors x Group	-0.70	0.59	-1.19	-1.88	0.48
Model 3					
Constant	82.06	9.39	8.74***	63.19	100.94
Negative Social Thoughts and Beliefs	1.13	0.45	2.50*	0.22	2.03
Group	-9.89	7.41	-1.34	-24.78	5.00
Negative Social Thoughts and Beliefs x Group	-0.05	0.35	-0.15	-0.76	0.65

Note. Social Anxiety was assessed with the SAASA-Anxiety Total Score; Self-focused Attention was assessed with the SFA Total Score; Safety-seeking Behaviors was assessed with the SBSSS-A; Negative Social Thoughts and Beliefs was assessed with the STABS Total Score. *p<.05; **p<.01; ***p<.001.

The graphical representations of the relationship between the predictors (i.e., Self-focused Attention, Safety-seeking Behaviors and Negative Social Thoughts and

beliefs) and Social Anxiety across groups (i.e., clinical versus non-clinical) are presented in Figure 1.

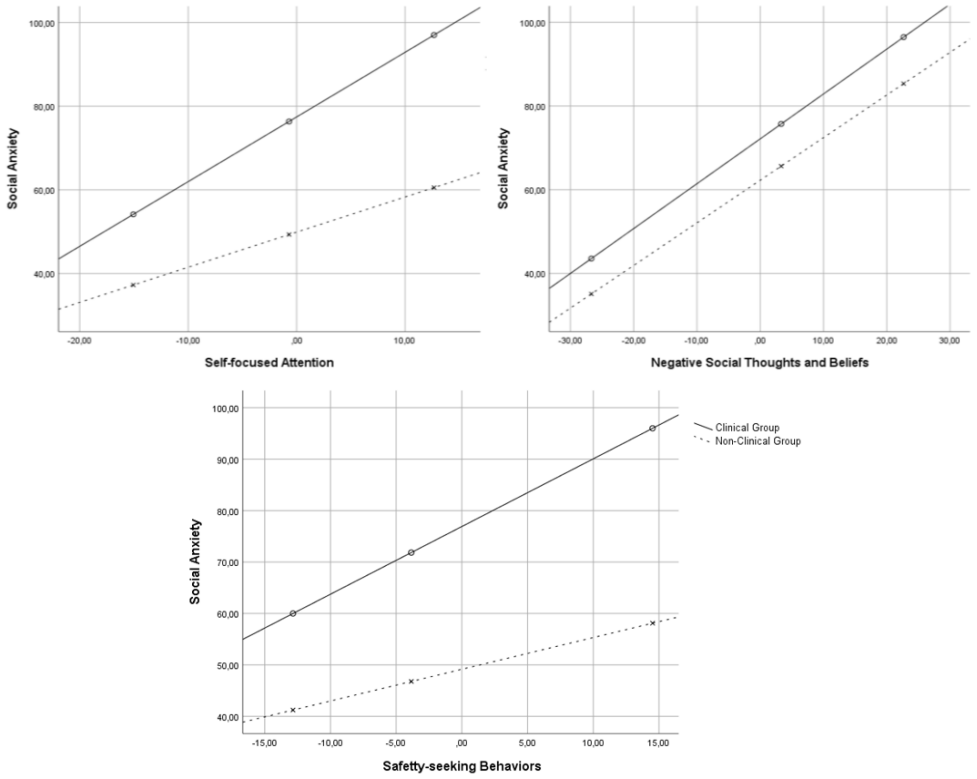

Figure 1. Graphical depiction of moderation models

Note. Social Anxiety was assessed with the SAASA-Anxiety Total Score; Self-focused Attention was assessed with the SFA Total Score; Safety-seeking Behaviors was assessed with the SBSSS-A; Negative Social Thoughts and Beliefs was assessed with the STABS Total Score.

Discussion

Social anxiety, concerning the discomfort felt in a variety of social events, may present differently based on the pervasiveness and/or intensity of symptoms. Nevertheless, research tends to focus on its more impacting form (i.e., SAD), neglecting the importance of understanding mental health difficulties along the spectrum in which social anxiety presents in individuals (Skocic et al., 2015). As such, comprehending the processes that are associated with the presentation of social anxiety in normative and clinical samples of adolescence seem to be critical research concerns, which may come to be applied to tailor intervention efforts. Such

comprehending has not been wholly undertaken before. Thus, the current work aimed to study the applicability of the of the Clark and Wells' (1995) model of social anxiety to adolescents, by investigating the (in)variance of the paths proposed by that model to sustain social anxiety, when comparing adolescents with SAD and mentally healthy adolescents.

As a preliminary analysis, we found that adolescents with SAD scored significantly higher in social anxiety felt across a diversity of social events, in thinking themselves discomfortable in social events and in public performance, in self-focused attention directed at ones' behavior and at ones' own physiological arousal, and in practicing safety-seeking behaviors. These findings align with previous literature with adolescents (e.g., Fontinho & Salvador, 2012; Ranta et al.,2013) and with adults (e.g., for a review see Clark, 2001). As such, they not only validate the more impaired status of our clinical group, but also reinforce the relevance of the Clark and Wells' (1995) model for social anxiety in defining variables that allow for a clear distinction of SAD from healthy controls based on pervasiveness or intensity of symptomatology, also in adolescents (for a review see Leigh & Clark, 2018). Such distinction in the experience of adolescents with and without SAD is quantitively clear and sustained by robust evidence.

Moreover, these variables proposed by Clark and Wells (1995) to explain and sustain the experience of social anxiety were significant and relevant predictors of social anxiety when considering the complete sample, explaining between 80% and 83% of its variance. Findings concerning negative social thoughts and beliefs align with the pivotal role that has been attributed to cognitive variables – such as interpretation bias, dysfunctional cognitions, and negative expectations – in several cognitive models of social anxiety (e.g., Beck et al., 1985; Clark & Wells, 1995). Such role has been supported by research with adolescents (e.g., Chiu et al., 2021 Miers et al., 2013), including with clinical samples (e.g., Vogel et al., 2021). Our findings also indicate that being self-focused on ones' own behavior and physiological arousal may sustain feeling socially anxious. These findings concur with previous evidence that, similarly to the current work, revealed a significant effect of self-focused attention in explaining social anxiety though in younger community samples (Hodson et al., 2008). Alternatively, self-focused attention was found not to impact significantly on social anxiety by Fontinho and Salvador (2012) and by Schreider et al. (2012). The first considered a solely clinical sample and self-focused attention on ones' physical arousal only; the latter considered a solely non-clinical sample and attention focused inwardly. Because we considered a combined measure of self-focused attention, and a combined sample of clinical and non-clinical participants, the effect of this variable, as proposed by Clark and wells (1995) may have become apparent. Concomitantly, working to change the focus of attention alone seems beneficial to diminishing ones' social anxiety levels (Warnock-Parkes et al., 2017). Finally, concerning safety-seeking behaviors, our findings are in line with previous studies with clinical (e.g., Fontinho, & Salvador, 2012) and non-clinical (e.g., Schreiber et al., 2012; Leigh et al., 2021) samples of adolescents,

suggesting that adolescents who use safety-seeking behaviors more frequently tend to experience higher levels of social anxiety. Current results do not align, however, to those of Hodson and colleagues' (2008). We used an older sample and considered the independent effect of mainly avoidance safety-seeking behaviors, unlike Hodson et al. (2008), who considered both impression management (e.g., rehearsing what to say) and avoidance behaviors (e.g., avoiding eye contact). Though both types of safety-seeking behaviors may impact on social anxiety, it seems that Impression management behaviors, which are more frequent in older adolescents (Evens et al., 2021), hold for a more evident intrapersonal (Twaites & Freeston, 2005) and interpersonal negative impact (Evans et al., 2021). Such specific impact may be reflected in our findings.

Taken together, findings from the current work validate the premises underlying the Clark and Wells' (1995) model of social anxiety to adolescent populations. Specifically, the predictive pathways linking negative social thoughts and beliefs, self-focused attention, and safety-seeking behaviors were held irrespective of adolescents presenting with or without SAD. So, even though the relevant cognitive and behavioral constructs proposed by Clark and Wells (1995) seem to be heightened in adolescents SAD, their explicative role for social anxiety does not seem distinctive of SAD in adolescence. In other words, differences on the experience of social anxiety between clinical and non-clinical adolescents seem to be quantitative rather than qualitative. These quantitative and qualitative experiences may interact to sustain social anxiety over time. Negative social experiences (e.g., bullying; Coelho et al., 2022) might heighten subjective social fears and related constructs, which are then reinforced and sustained cyclically as proposed by the Clark and Wells' (1995) model. As such, when initially high levels of social anxiety are present, they may remain stable, whereas initially moderate or low levels of social anxiety tend to decrease throughout adolescence (Miers et al., 2013). The interplay between contextual and psychological processes has been proposed as particularly useful to explain the maintenance of social anxiety in adolescence (Miers & Masia-Warner, 2023); based on our findings, we would suggest that contextual variables may potentiate quantitative differences in social anxiety and related-constructs, which then are sustained by psychological processes that are widespread but more pervasive because more frequently activated by a priori intense social fears.

Hence, addressing Clark and Wells (1995) proposed pathways to explain the maintenance social anxiety may be useful as a preventive and remedial approach to social anxiety in adolescence., particularly if one considers these processes may be more malleable than previously experienced negative contextual experiences. Concerning, Cognitive Therapy as a remedial approach to adolescent SAD, it has been recently shown to be effective (Ganho-Ávila et al., 2022; Leigh et al., 2021b; Leigh & Clark, 2022; Leigh & Clark, 2016). Nevertheless, if the same processes apply to sustaining social anxiety along its continuum, it might be helpful to consider cognitive strategies as preventive ones to be applied when social anxiety is at its

earlier and less generalized interference level. Specific one-session intervention strategies have been studied as effective in SAD adult samples, namely when changing safety-seeking behaviors or making the focus of attention more flexible (McManus et al., 2009; Warnock-Parkes et al., 2017). It might be useful to investigate the impact that those strategies may perhaps have in community and/or moderately socially anxious adolescents, particularly those who may exhibit intrapersonal vulnerability factors (e.g., behavioral inhibition; Spence & Rapee, 2016).

The current work holds for some limitations that should be taken into consideration. We relied on a cross-sectional design, so conclusions on the casual role of our predictive variables on social anxiety cannot be drawn. Our overall sample size can also be a limitation. Concerns apply to the generalizability of the findings, even if G*Power post hoc calculation considering our sample size (n = 53), effect sizes (see results section), two predictors for each dependent variability, and α error probability set at 0.05, place the power of our analyses at 1.00. Moreover, our sample size prevented us from exploring the complexity of the Clark and Wells' (1995) model for social anxiety (i.e., multiple interlinks between our predictive variables and social anxiety). We were also not able to examine whether negative social thoughts and beliefs, self-focused attention, and safety-seeking behaviors are specific to social anxiety compared to other mental health disorders. Investigating differences in the pathways linking Clark and Wells' (1995) proposed variables to social anxiety between adolescents with SAD and adolescents presenting other clinical conditions could add to existing research (e.g., Hodson et al., 2008; Schreiber et al., 2012) and help clarify their specificity to social anxiety in adolescents, further validating the applicability of the model. Moreover, not all Clark and Wells' (1995) proposed maintenance factors were considered in this study, namely pre- and post-event processing or the multitude of specific type of safety-seeking behaviors that may be characteristic of social anxiety in diverse age groups (Evans et al., 2021; Leigh & Clark, 2018). Future research should aim to replicate current findings with larger samples of adolescents, and more diverse concerning both clinical status and different age groups within this developmental phase, as well as consider simultaneously various variables proposed to sustain social anxiety, thus allowing for more robust theoretical conclusions and better tailored treatments.

Nonetheless, the present work supports the applicability of Clark and Wells (1995) model to explain social anxiety in adolescents along its continuum, further encouraging the use of Cognitive Therapy for adolescent social anxiety, both at preventive and remedial levels.

Social anxiety frequently goes unnoticed until its impact is unavoidable, which may happen when normative processes underlying social anxiety become too pervasive in ones' life. As such, and in alignment with the goal of promoting mental health outcomes for all in a preventive and early on perspective that is still not fully

achieved (O'Connor et al., 2017), our findings may be informative and supportive of interventions informed by a comprehensive understanding of social anxiety along its continuum, thus promoting healthy and adaptative developmental trajectories throughout adolescence.

Authors' note

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