

## Social Anxiety in Adolescents: A Narrative Review

Tiffany Field<sup>1,2\*</sup>

<sup>1</sup>University of Miami/Miller School of Medicine, Miami, Florida, United States

<sup>2</sup>Fielding Graduate University, Santa Barbara, California, United States

\*Corresponding author: Field T, University of Miami/Miller School of Medicine, Miami, Florida, 2889 McFarlane Rd. Miami, Fl. 33133, United States, Tel: 305-975-5029; E-mail: [tfield@med.miami.edu](mailto:tfield@med.miami.edu)

Received: November 03, 2020; Accepted: November 11, 2020; Published: November 19, 2020

### Abstract

This narrative review is based on a literature search on PsycINFO and PubMed that involved entering the terms social anxiety and adolescents for papers published during the last two years. Following exclusion criteria, 53 papers could be classified as studies on social anxiety in adolescents including research on the prevalence, effects/comorbidities, risk factors and interventions for social anxiety. The prevalence of social anxiety in adolescents ranged from 2%-29%. The effects of social anxiety included emotion regulation problems, gaming, internet addiction, poor academic performance, and depression. The predictor or risk variables included female gender, inhibition, shyness, negative self-image, other anxiety and behavior disorders, excessive cell phone use, dysfunctional parenting, stressful peer interactions, loneliness, cyberbullying, excessive alcohol use, chronic medical conditions, sleep disturbances and elevated heart rate and cortisol. Physiological markers have included elevated skin conductance, heart rate, cortisol, and oxytocin. Intervention studies have focused on family functioning, memory training, cognitive behavior therapy and the use of CBD oil. Like other literature on adolescent problems, this research is limited by primarily deriving from self-report and by the need for more longitudinal studies that might inform whether the data being reported are effects of or risk factors for adolescent social anxiety as well as the need for more prevention/intervention research.

**Keywords:** *Social Anxiety; Adolescents*

### 1. Introduction

This narrative review is based on a literature search on PsycINFO and PubMed that involved entering the terms social anxiety and adolescents for papers published during 2017-2020. Inclusion criteria included peer-reviewed empirical studies and review papers. The exclusion criteria included case reports and non-English papers. The papers could be classified as studies on the prevalence, effects/comorbidities, risk factors, and interventions for social anxiety in adolescents. The prevalence of social anxiety in adolescents ranged from 2%-29%. The effects of social anxiety included emotion regulation problems, gaming,

**Citation:** Field T. Social Anxiety in Adolescents: A Narrative Review. *J Anxiety Depress.* 2020;3(2):127.

internet addiction, poor academic performance, and depression. The predictor or risk variables included female gender, other anxiety and behavior disorders, excessive cell phone use, stressful peer interactions, cyberbullying, excessive alcohol use, chronic medical conditions, and sleep disturbances. Physiological markers included elevated skin conductance, heart rate, cortisol, and oxytocin. Intervention studies focused on family functioning, memory training, cognitive behavior therapy and the use of CBD oil. Like other literature on adolescent problems, this research is limited by primarily deriving from self-report and by the need for more longitudinal data that might inform whether the data being reported were effects of or risk factors for adolescent social anxiety as well as the need for more prevention/intervention research. This review is accordingly divided into sections on prevalence, effects, risk factors, interventions, and methodological limitations.

## 2. Prevalence of Social Anxiety in Adolescents

A nationwide survey in Iran (N=29,878) yielded a prevalence of 2% of adolescents having social anxiety [1] (see TABLE 1 for list of prevalence data and first authors). The odds were significantly higher among older adolescents and those with a paternal history of psychiatric hospitalization and anxiety and depression in their mothers. The adolescents with social anxiety also had other anxiety and behavioral disorders. In a much smaller community-based cross-sectional study in India (N=729), adolescents were given the Screen for Child Anxiety Related Emotional Disorders (SCARED) which yielded a prevalence of 23% [2]. The prevalence was greater in girls (28%) than in boys (18%). Social anxiety was the most common form of anxiety and not only female gender but also lower - middle socioeconomic status and a stressful event within the last year were associated with social anxiety disorder. Similarly, the prevalence of social anxiety was 29% in a sample of 919 fourth-to-sixth graders in China [3]. And, in this sample, the prevalence was also greater in females and greater in 6<sup>th</sup> than 4<sup>th</sup> graders.

TABLE 1. Prevalence of social anxiety and first author.

<u>Prevalence</u>	<u>First author</u>
Iran- 2%	Mohammadi
India- 28% girls 18% boys	Madasu

The lower prevalence in the sample from Iran versus those of India and China may relate to cultural differences, differences in the sample sizes, differences in the measures used or simply differences in the age range with the lower prevalence being noted in Iran where children as young as six were being assessed (as opposed to 10-year-olds being the youngest children assessed in the India and China samples). These data suggest that even though social anxiety typically emerges by adolescence, it can also occur very early in childhood [4].

## 3. Effects/Comorbidities of Social Anxiety in Adolescents

Surprisingly, few studies could be found on the effects/comorbidities of social anxiety in adolescents (see TABLE 2 for list of effects and first authors). These included emotion regulation problems, gaming, internet addiction, poor academic performance, and depression which may be related effects but were studied in separate samples. Emotion regulation difficulties has been the focus of at least two studies [5,6], although emotion regulation may be an underlying mechanism for all the social anxiety

effects including gaming, internet addiction, inferior academic performance, and depression. In all the cross-sectional social anxiety studies, the selection of variables as effects or predictors would appear to be arbitrary as they could be bi-directional or comorbid or both.

**TABLE 2. Effects of social anxiety and first authors.**

<u>Effects</u>	<u>First authors</u>
Online gaming addiction	Karaca
Inferior academic performance	Vilaplana-Perez

In a study from Istanbul, social anxiety based on the Social Anxiety Scale for Children (SASC) was a risk factor for online game addiction in middle school students (N= 1174) [7]. Based on the Computer Game Addiction Scale for Children, 6% were addictive users and 44% were problematic users. Other risk factors besides social anxiety in this sample were having a mother who is employed, having parents with higher education levels and spending time on the computer. Internet addiction has been related to social anxiety (N=1103), although as in most of these cross-sectional studies, internet addiction and social anxiety may be bi-directional or simply correlated [8]. In a longitudinal paradigm, a laboratory stressor was used to induce social anxiety which was then said to contribute to earlier alcohol use based on discrete-time survival analysis [9]. Unfortunately, this sample was limited to female adolescents (N=104).

Given the above addictions, it is not surprising that academic performance would be negatively affected. In a study from Sweden, social anxiety disorder was a notable risk factor for inferior academic performance [10]. In this large population-based birth cohort study (N=2,238,837), individuals diagnosed with social anxiety disorder were less likely to pass their courses during their last year of education, finish secondary education, obtain a university degree or finish postgraduate education independent of psychiatric comorbidities. However, these were treatment-seeking individuals who had impaired academic performance throughout their development.

Depression has been noted to relate to social anxiety in at least two studies. In a study on Brazilian adolescents (N=1296), anxiety and depression were noted to be synergistically related [11]. In another more complex cross-lagged path analysis model on 501 fourteen-year-old adolescents, social anxiety at time one was predictive of depression, but not the reverse [12]. Social anxiety at time 2 was a mediator for social anxiety at time 1 and depression at time 2. And depression at time 2 was a link between social anxiety at time 1 and depression at time 3.

#### **4. Risk Factors for Social Anxiety in Adolescents**

Several risk factors have been noted in the recent literature on social anxiety in adolescents including personality variables, relationships, addictive behaviors, physical conditions, and physiological markers (see TABLE 3 for list of risk factors and first authors). The personality risk factors include inhibition, shyness, and negative self-image; the relationship predictors include stressful parent and peer interactions and loneliness; the addictive behaviors include cyber- bullying, excessive cell phone and excessive alcohol use; the physical problems include chronic medical conditions and sleep disturbances; and the physiological markers include elevated skin conductance, heart rate, cortisol, and oxytocin.

**TABLE 3. Potential risk factors and first authors.**

<u>Risk factors</u>	<u>First authors</u>
Excessive phone use	Sahu
Stressful interactions	Henry
Cyberbullying	Martinez-Monteaer
Excessive alcohol use	Vilarosa-Hurlocker
Chronic medical conditions	Cobham
Sleep disturbances	Zhang

**4.1 Personality risk factors**

The personality risk factors for adolescent social anxiety appeared in separate studies on emotional intelligence, inhibition, shyness, and negative self-image. In a large sample study (N=505), emotional intelligence was negatively related to social anxiety [13], although emotional intelligence was arbitrarily selected as a risk factor when social anxiety could have also been limiting emotional intelligence. In a longitudinal study, inhibition at preschool age predicted social anxiety in adolescents (N=268) [14]. In a similar longitudinal study, shyness in childhood predicted social anxiety in adolescents (N=229) [15]. This effect was moderated by gender with females experiencing greater social anxiety. In a laboratory study that involved conversations between two adolescents, negative self-image contributed to social anxiety as rated by both the self and partner in the conversation [16]. This relationship was mediated by avoidant behaviors. Fear of negative evaluation has also been related to social anxiety (N=96) [17], which could explain why avoidant behaviors was a mediator of social anxiety in the previous study. Negative self-image would appear to be a significant personality trait, as it has not changed even when socially anxious adolescents show good performance, for example, in a protocol that assessed speech performance [18].

**4.2 Parent and peer relationships and loneliness**

Most of the studies on risk factors for social anxiety and adolescents focused on parent and peer relationships. In a cross-lagged path analysis, boys’ social anxiety was predicted by parental overcontrol and girls’ social anxiety by paternal worry [19]. In a similar study on parenting effects, less nurturance by the father contributed to social anxiety in both male and female adolescents as well as more difficulty refusing illicit substances [20]. And paternal rejection at sixth grade has predicted social anxiety at seventh grade and loneliness at eighth grade in a sample of 687 adolescents [21]. Anxious rearing by the mother has been associated with social anxiety in adolescent girls (N=112) [22]. Presumably, maternal anxiety would have similar effects on boys, although boys, surprisingly, were not included in this study.

Several of the parenting effects studies have noted dysfunctional rearing by both parents. For example, hostility by both parents has been associated with socially anxious adolescents [23]. However, those effects were confounded as the adolescents’ social

anxiety was also associated with lack of teacher and peer support. This study was unique to this literature for its focus on not only parent report, but also teacher and peer variables.

Parents' emotional abuse, as might be expected, has been related to adolescents' social anxiety in a cross-sectional sample (N=550) [24]. When this sample was followed in a 3-wave longitudinal protocol, parents' emotional abuse led to social anxiety but was mediated by social looming (which was defined as biasing threat-related information received by the adolescents). Even seemingly less aversive experiences than emotional abuse by parents have led to social anxiety including inter-parental conflict. In a longitudinal sample of 768 families [25], inter-parental conflict predicted social anxiety in adolescents as well as some expected comorbid experiences including lack of peer support and loneliness.

Peer interaction problems and loneliness would be expected correlates if not predictors of social anxiety in adolescents. In a study that sampled both adolescents from the community (N=116) and from clinics (N=154), social anxiety symptoms were negatively correlated with peer acceptance [26]. Sexual harassment by peers has been related to not only social anxiety but also self-esteem, especially in females (N=1292) [27]. Given that socially anxious adolescents experience peer rejection, it's surprising that peers have rated high social anxiety adolescents positively [28]. In this study, peers nominated high social anxiety adolescents as leaders, cooperative, obedient, and good students. These peer ratings were better than the teacher ratings of the same socially anxious adolescents, suggesting the questionable reliability of these findings.

Increasingly complex data analyses have been used in this literature including mediation/moderation analysis, latent profile analysis and structural equations models. An example of this is a study on 115 adolescents in which peer stress was a risk factor for anxiety as well as for depression, but this effect was moderated by maternal depression [29]. Peer stress was associated with anxiety/depression symptoms but only when maternal depression symptoms were average or high. These data highlight the importance of assessing the highly interrelated family and peer variables in the same study.

Loneliness would be expected to follow from both the parental and peer rejection associated with social anxiety. In a meta-analysis of 102 studies, loneliness and social anxiety were reciprocally related [30]. The directionality of these effects could not be determined given that all the studies included in the meta-analysis were cross-sectional. Even latent profile analysis that is used to identify profiles of individuals based on numbers of characteristics cannot imply causality. In a latent profile analysis of adolescents (N=892), for example, clusters of high loneliness and social anxiety were predicted by family dysfunction and school-related stress suggesting multiple correlates [31]. Similarly, in a latent cluster analysis on the data from 1842 adolescents, four different profiles of school refusal behavior were related to social anxiety and family dysfunction [32]. But directionality of loneliness and social anxiety could not be determined from these data. They are simply correlating that statistically form a profile. Longitudinal studies would be needed to determine the directional effects of these variables.

### **4.3 Addictive behaviors**

The addictive behaviors noted in this literature on social anxiety in adolescents include mobile phone addiction, cyber-bullying, and excessive alcohol use. In a systematic review of literature on mobile phone addiction among children and adolescents, social anxiety was not only significantly related to phone addiction but also to feeling insecure, having impaired parent and school relationships, leisure boredom, hyperactivity, conduct problems and emotional problems [33]. Just as in any review of

the literature, the relative importance of risk factors is difficult to determine especially given that the studies reviewed are highly variable on many variables including the location of the study, the method of recruitment, and the measures used.

In another example of the complexity of the research in this area, latent class analysis was performed on cyber-bullying profiles and scores on the Social Anxiety Scale for Adolescents. Three profiles were revealed including high cyber-bullying, low cyber-bullying, and non-cyber-bullying. As might be expected, the adolescents with the high cyber-bullying profile (both bullying and being victims of bullying) had higher scores on social avoidance and distress in social situations with peers.

Another example of a latent class analysis or in this case called a latent profile analysis is a study on social anxiety and alcohol use in 674 students [34]. This analysis yielded two classes with low levels of social anxiety and nonproblematic drinking, three classes with moderate levels of social anxiety that differed on the amount of problematic drinking and one class with high levels of social anxiety and low problematic drinking. The risk profiles for emotional distress were the two classes of moderate levels of social anxiety and heavy problematic drinking or high levels of social anxiety and light problematic drinking.

#### **4.4 Physical conditions**

The reciprocal nature of these problems, i.e. that they could be effects or risk factors, or both is illustrated by a systematic review on chronic medical conditions and social anxiety [35]. This review suggested that chronic medical conditions are risk factors for developing anxiety disorders and, in turn, anxiety exacerbates their disease-related outcomes. The prevalence of anxiety disorder was greater for all of the chronic medical conditions (asthma, congenital heart disease, diabetes, epilepsy, inflammatory bowel disease, juvenile idiopathic arthritis and sickle-cell disease) as compared to the general population. However, there was only limited evidence that social anxiety was associated with adverse outcomes.

Social anxiety has also been related to depression and sleep disturbances, although again directionality cannot be determined because most of the studies on social anxiety are cross-sectional, not longitudinal. An exception is a longitudinal study on Chinese adolescents (N=17,946) in which the students were given sleep, depression, anxiety and stress scales and structural equations modeling was used [36]. Sleep difficulties at baseline led to maladaptive stress responses which resulted in increased social anxiety and depression symptoms. The authors cited methodological problems including self-report, not correcting for potentially confounding variables and the need to assess typically developing adolescents rather than adolescents from clinical samples. And, in one study showing a relationship between social anxiety and depression, waist circumference was a significant mediator, highlighting the importance of identifying physical correlates of social anxiety in adolescents [11].

#### **4.5 Physiological markers**

Physiological markers that have been associated with social anxiety include elevated skin conductance, heart rate, cortisol levels, and oxytocin. These data, of course, derive from laboratory protocols unlike most of the previously summarized data that were based on self-report, parent, peer, and/or teacher report.

In a skin conductance study, reactivity was associated with social anxiety which was also assessed by peers and by teachers (N=123), lending convergent validity to the physiological data [37]. Early deflections in event related potentials are typically

noted in individuals as they make errors in laboratory protocols as has been reported for adolescents with high social anxiety [38]. In this study, which was unfortunately limited to female adolescents (N=220), increases were noted in both social anxiety and early deflections in event related potentials during adolescence.

Stress, as measured by the cortisol response, has been reported for adolescents (N=196) who performed a public speaking task [39]. The cortisol response was noted to decrease from childhood to adolescence which is consistent with cortisol decreasing as stressors are prolonged. In another public speaking protocol (N=327), increased stress, cortisol and heart rate predicted social anxiety at a later time period [40]. Still another physiological marker is oxytocin (N=1359) which was related to social anxiety in an unsafe social situation [41].

## 5. Interventions

Several diverse intervention protocols have been tried with socially anxious adolescents including family functioning, memory training, cognitive behavior therapy (both individual and school-based) and the use of CBD oil (cannabidoil) (see TABLE 4 for list of interventions and first authors). In a cross-sectional study on Spanish adolescents (N=1386), anxiety, depression, suicidal behavior, family function and school climate were assessed via self-report questionnaires [42]. Adaptive family functioning and a positive school climate were associated with low levels of anxiety, depression, and suicidal behavior. Not surprisingly, depression mediated the effects, although the study highlighted the importance of family and school as protective factors as well as the effects of a natural intervention.

TABLE 4. **Interventions for social anxiety and first authors.**

<u>Intervention</u>	<u>First author</u>
Natural	Ruiz-Robledillo
Experimental/therapeutic	Zhau
Cognitive behavioral therapy	Hogstrom, Mowatt-Haugland
CBD oil	Massataka

Experimental and therapeutic interventions have also been tried. For example, a study on working memory training was designed to target social anxiety [43]. In this study, university students with social anxiety symptoms were assigned to a working memory training or inactive control treatment and pre-post treatment assessments were conducted on social anxiety, depression and working memory as well as event-related potentials that were elicited by angry faces. The results suggested that the working memory training reduced social anxiety symptoms.

Cognitive behavior therapy has been used both as an individual treatment and as a school-based intervention. In a study that referred to social anxiety in adolescents as a social anxiety disorder (N=25), attention bias was assessed as a function of cognitive behavior therapy [44]. The measures were latency to attend to photos of faces (vigilance) and latency to disengage from faces (avoidance) based on eye tracking. The adolescents with social anxiety disorder who disengaged faster from angry

faces had less social anxiety after cognitive behavior therapy. In the school based cognitive behavior therapy study, adolescents (N=313) were randomly assigned to brief (five sessions for a total of 5.5 hours) or standard CBT (10 sessions comprising 15 hours) or to a 10-week waitlist control group (5-8 adolescents per group) [45]. The adolescents' anxiety symptoms were reduced in both the brief and the standard CBT conditions.

The non-addictive primary component of cannabis (CBD oil) was given to Japanese adolescents with social anxiety disorder in a double-blind study [46]. One group received cannabis oil on a daily basis for 4 weeks and the other was a placebo group. The CBD group showed significantly decreased anxiety on both the Fear of Negative Evaluation Questionnaire and the Liebowitz Social Anxiety Scale. The results, however, were confounded by the adolescents not only having social anxiety disorder but also avoidant personality disorder.

## **6. Limitations and Future Directions**

Several limitations can be noted for this recent literature on social anxiety in adolescents. First, potential important effects or predictors of social anxiety have not been addressed including, for example, relationships with peers and sleep problems. Relationship problems, for example, breakup distress, which is the most frequent problem reported at university counseling centers, has not been addressed in this literature [47]. And, although gaming was studied as an effect of social anxiety, it was surprising that only one study could be found on internet addiction as a potential effect of social anxiety given its prevalence in adolescent cultures worldwide [48]. And internet interventions have not been investigated. More studies on somatic symptoms that accompany social anxiety in adolescents, for example, sleep disturbances would also be informative, especially since those might be responsive to interventions and, in turn, reduce social anxiety.

Another limitation is the focus on single variables even in large sample surveys. Although the samples have typically been large, the data sets were usually focused on only one variable, and that variable was typically arbitrarily selected as a predictor or an effect of social anxiety. Multivariate models could be used more often. Although some studies were based on structural equation modeling, moderating/mediating analyses, profile, or multiple regression analyses, many used logistic regressions to yield odds ratios. This was surprising given that continuous data like scores which are more reliable than dichotomous ratings were converted to determine odds ratios which was not necessary and yielded less reliable information. Assessing several measures and using multivariate analyses on continuous data might yield more information on predictors/profiles of social anxiety in adolescents.

Another problem is the frequent use of self-reports. The students may not report or may be "faking good" to avoid the stigma they might feel about social anxiety. However, in at least one study, social anxiety during observed interactions was significantly related to self-report data [49]. Peer and parent reports have been used less frequently. Surprisingly, parent reports were less reliable than peer reports in at least one study [50]. In addition, different social anxiety measures have been used including the SCARED [4], the Liebowitz Social Anxiety Scale [46], the Social Anxiety Scale for Children (SASC) [7], and the Social Anxiety Scale for Adolescents [51], making it difficult to conduct meta-analyses. The surveys/questionnaires are often short and simple to ensure student compliance.



Further, the direction of effects cannot be determined given that most of the studies are cross-sectional, not longitudinal. Risk factors for social anxiety could be considered effects of social anxiety. For example, social anxiety could lead to inferior academic performance as often as inferior academic performance could be a risk factor for social anxiety. Typically, the decision as to classifying the variable as an effect or a predictor is based on the researcher's interest and could be considered arbitrary. At least the effects and the predictors could be considered reciprocal or bi-directional given that they derive from cross-sectional data. The cross-sectional data limits any causality conclusions, highlighting the need for more longitudinal data on trajectories of social anxiety from childhood through adolescence [52,53].

Longitudinal multivariate studies are needed to identify predictors of adolescent depression. Parents, teachers, siblings, and peers could be given interviews/questionnaires as well as the adolescents who have been diagnosed as socially anxious in order to have data from multiple sources. Multivariate studies are needed that include multiple psychometrically sound instruments from multiple informants. Further, in most of the studies, the measures haven't been compared for different levels of social anxiety including the extreme diagnosis of social anxiety disorder.

Behavioral and psychophysiological measures might be more informative than self-reports. An example is a study in which parent and child reports were combined with a laboratory observation in a multi-trait multi-method model [4]. In this study, the SCARED was given to both the parents and adolescents and the adolescents participated in laboratory tasks that are known to elicit social anxiety. In the presence of unfamiliar peers, they were given a speech task and a "get to know you" task. The adolescents' social anxiety reports (SCARED) were a better predictor of anxiety behaviors during the naturalistic conversation with unfamiliar peers while the parent report was a better predictor of anxiety behaviors in the structured speech task. As the authors concluded, the parent and the child report differentiated the naturalistic social anxiety behaviors. This research protocol could have included physiological measures, for example heart rate recordings that could have been converted to vagal activity to explore potential underlying mechanisms or at least physiological correlates of social anxiety behaviors. Unlike the recent literature on depression in adolescents, the recent literature on social anxiety in adolescents only included a few studies on physiological data.

Surprisingly, very few intervention studies have appeared in this recent literature. The importance of further intervention research is highlighted by the prevalence of social anxiety in adolescents. The school-based cognitive behavior therapy would seem to be the most cost effective and potentially preventive of those interventions that were tried. Peer support in the form of peer CBT groups and peer mentoring or simply pairing peers as in a buddy system would seemingly help reduce social anxiety in adolescents.

Despite these limitations, this recent literature has highlighted the importance of empirical research on adolescent social anxiety as well as interventions to prevent social anxiety especially given that adolescence is an important stage for social development. Future studies might include Internet-based interventions, peer-led interventions, and physical interventions (e.g. group exercise). And more mixed methods research that involves both quantitative and qualitative protocols might more accurately identify profiles of adolescents at risk for social anxiety.

## REFERENCES

1. Mohammadi MR, Salehi M, Khaleghi A, et al. Social anxiety disorder among children and adolescents: A nationwide survey of prevalence, socio-demographic characteristics, risk factors and co-morbidities. *J Affect Disord.* 2019;263:450-7.
2. Madasu S, Malhotra S, Kant S, et al. Anxiety disorders among adolescents in a rural area of Northern India using Screen for Child Anxiety-Related Emotional Disorders Tool: A community-based study. *Indian J Community Med.* 2019;44(4):317-21.
3. Lin SL, Wang D, Xian YJ, et al. Current status of social anxiety and depression among primary school students in Urumqi, China. *Zhongguo Dang Dai Er Ke Za Zhi.* 2018;20(8):670-4.
4. Bowers ME, Reider LB, Morales S, et al. Differences in parent and child report on the Screen for the Child Anxiety-Related Emotional Disorders (SCARED): Implications for investigations of social anxiety in adolescents. *J Abnorm Child Psychol.* 2020;48(4):561-71.
5. Keil V, Asbrand J, Tuschen-Caffier B, et al. Children with social anxiety and other anxiety disorders show similar deficits in habitual emotional regulation: Evidence for a transdiagnostic phenomenon. *Eur Child Adolesc Psychiatry.* 2017;26(7):749-57.
6. Singh R, Singh B, Mahato S, et al. Social support, emotion regulation and mindfulness: A linkage towards social anxiety among adolescents attending secondary schools in Birgunj, Nepal. *PLoS One.* 2020;15(4):e0230991.
7. Karaca S, Karakoc A, Gurkan OC, et al. Investigation of the online game addiction level, sociodemographic characteristics and social anxiety as risk factors for online game addiction in middle school students. *Community Ment Health J.* 2020;56(5):830-8.
8. Obeid S, Saade S, Haddad C, et al. Internet addiction among Lebanese adolescents: The role of self-esteem, anger, depression, anxiety, social anxiety, fear, impulsivity and aggression-A cross-sectional study. *J Nerv Ment Dis.* 2019;207(10):838-46.
9. Cloutier RM, Blumenthal H, Trim RS, et al. Real-time social stress response and subsequent alcohol use initiation among female adolescents. *Psychol Addict Behav.* 2019;33(3):254-65.
10. Vilaplana-Pérez A, Pérez-Vigil A, Sidorchuk A, et al. Much more than just shyness: The impact of social anxiety disorder on educational performance across the lifespan. *Psychol Med.* 2020;7:1-9.
11. Soares FC, Barros MVG, Bezerra J, et al. The synergistic relationship of social anxiety, depressive symptoms and waist circumference in adolescents: Mediation analysis. *J Affect Disord.* 2019;245:241-5.
12. Van Zalk N, Van Zalk M. Longitudinal links between adolescent social anxiety and depressive symptoms: Testing the mediational effects of cybervictimization. *Child Psychiatry Hum Dev.* 2019;50(2):186-97.
13. Cejudo J, Rodrigo-Ruiz D, Lopez-Delgado ML, et al. Emotional intelligence and its relationship with levels of social anxiety and stress in adolescents. *Int J Environ Res Public Health.* 2018;15(6):1073.
14. Buzzell GA, Troller-Renfree SV, Barker TV, et al. A neurobehavioral mechanism linking behaviorally inhibited temperament and later adolescent social anxiety. *J Am Acad Child Adolesc Psychiatry.* 2017;56(12):1097-1105.
15. Tsui TYL, Lahat A, Schmidt LA. Linking temperamental shyness and social anxiety in childhood adolescence: Moderating influences of sex and age. *Child Psychiatry Hum Dev.* 2017;48(5):778-85.
16. Leigh E, Chiu K, Clark DM. The effects of modifying mental imagery in adolescent social anxiety. *PLoS One.* 2020;15(4):e0230826.

17. Karp JN, Makol BA, Keeley LM, et al. Convergent, incremental, and criterion-related validity of multi-informant assessments of adolescents' fears of negative and positive evaluation. *Clin Psychol Psychother*. 2018;25(2):217-30.
18. Blöte AW, Miers AC, den Bos EV, et al. The role of performance quality in adolescents' self-evaluation and rumination after a speech: Is it contingent on social anxiety level? *Behav Cogn Psychother*. 2019;47(2):148-63.
19. Van Zalk N, Tillfors M, Trost K. Mothers' and fathers' worry over-control: One step closer to understanding early adolescent social anxiety. *Child Psychiatry Hum Dev*. 2018;49(6):917-27.
20. Weymouth BB, Fosco GM, Feinberg ME. Nurturant-involved parent and adolescent substance use: Examining and internalizing pathway through adolescent social anxiety symptoms and substance refusal efficacy. *Dev Psychopathol*. 2019;31(1):247-60.
21. Mak HW, Fosco GM, Feinberg ME. The role of family for youth friendships: Examining a social anxiety mechanism. *J Youth Adolesc*. 2018;47(2):306-20.
22. Bynion TM, Blumenthal H, Bilsky SA, et al. Dimensions of parenting among mothers and fathers in relation to social anxiety among female adolescents. *J Adolesc*. 2017;60:11-5.
23. Weymouth BB, Buehler C. Early adolescents' relationship with parents, teachers, and peers and increases in social anxiety symptoms. *J Fam Psychol*. 2018;32(4):496-506.
24. González-Díez Z, Orue I, Calvete E. The role of emotional maltreatment and looming cognitive style in the development of social anxiety symptoms in late adolescents. *Anxiety Stress Coping*. 2017;30(1):26-38.
25. Weymouth BB, Fosco GM, Mak HW, et al. Implications of interparental conflict for adolescents' peer relationships: A longitudinal pathway through threat appraisals and social anxiety symptoms. *Dev Psychol*. 2019;55(7):1509-22.
26. Early MC, Biggs BK, Makanui KP, et al. Specificity of peer difficulties to social anxiety in early adolescence: Categorical and dimensional analyses with clinical and community samples. *Anxiety Stress Coping*. 2017;30(6):647-60.
27. Apell S, Martthunen M, Fröjd S. Experiences of sexual harassment are associated with high self-esteem and social anxiety among adolescent girls. *Nord J Psychiatry*. 2019;73(6):365-71.
28. Delgado B, Ingles CJ, Aparisi D, et al. Social anxiety and sociometric nomination in Spanish students of compulsory secondary education. *Span J Psychol*. 2016;19:E41.
29. Henry LM, Steele EH, Watson KH, et al. Stress exposure and maternal depression as risk factors for symptoms of anxiety and depression in adolescents. *Child Psychiatry Hum Dev*. 2020;51(4):572-84.
30. Maes M, Nelemans SA, Danneel S, et al. Loneliness and social anxiety across childhood and adolescence: Multilevel meta-analyses of cross-sectional and longitudinal associations. *Dev Psychol*. 2019;55(7):1548-65.
31. Zhu X, Huebner ES, Tian L. A person-centered longitudinal analysis of adolescents' loneliness and social anxiety: Clusters, predictors and outcomes. *Sch Psychol*. 2019;34(5):576-89.
32. González C, Diaz-Herrero A, Sanmartin R, et al. Identifying risk profiles of school refusal behavior: Differences in social anxiety and family functioning among Spanish adolescents. *Int J Environ Res Public Health*. 2019;16(19):3731.
33. Sahu M, Gandhi S, Sharma MK. Mobile phone addiction among children and adolescents: A systematic review. *J Addict Nurs*. 2019;30(4):261-8.
34. Vilarosa-Hurlocker MC, Madson MB. A latent profile analysis of social anxiety and alcohol use among college students. *Addict Behav*. 2019;104:106284.

35. Cobham VE, Hickling A, Kimball H, et al. Systematic review: Anxiety in children and adolescents with chronic medical conditions. *J Am Acad Child Adolesc Psychiatry*. 2020;59(5):595-618.
36. Zhang WJ, Yan C, Shum D, et al. Responses to academic stress mediate the association between sleep difficulties and depressive/anxiety symptoms in Chinese adolescents. *J Affect Disord*. 2020;263:89-98.
37. Kaeppeler AK, Erath SA. Linking social anxiety with social competence in early adolescence: Physiological and coping moderators. *J Abnorm Child Psychol*. 2017;45(2):371-84.
38. Meyer A, Carlton C, Crisler S, et al. The development of the error-related negativity in large sample of adolescent females: Associations with anxiety symptoms. *Biol Psychol*. 2018;138:96-103.
39. van den Bos E, Tops M, Westenberg PM. Social anxiety and the cortisol response to social evaluation in children and adolescents. *Psychoneuroendocrinology*. 2017;78:159-67.
40. Nelemans SA, Hale WW III, Branje SJT, et al. The role of stress reactivity in the long-term persistence of adolescent social anxiety symptoms. *Biol Psychol*. 2017;125:91-104.
41. Olofsdotter S, Aslund C, Furmark T, et al. Differential susceptibility effects of oxytocin gene (OXT) polymorphisms and perceived parenting on social anxiety among adolescents. *Dev Psychopathol*. 2018;30(2):449-59.
42. Ruiz-Robledillo N, Ferrer-Cascales R, Albaladejo-Blazquez N, et al. Family and school contexts as predictors of suicidal behavior among adolescents: The role of depression and anxiety. *J Clin Med*. 2019;8(12):2066.
43. Zhao Z, Dang C, Maes JHR. Effects of working memory training on EEG, Cognitive performance, and self-report indices potentially relevant for social anxiety. *Biol Psychol*. 2020;150:107840.
44. Hogstrom J, Nordh M, Lindal ML, et al. Visual attention to emotional faces in adolescents with social anxiety disorder receiving cognitive behavioral therapy. *PLoS One*. 2019;14(11):e0225603.
45. Haugland BSM, Haaland AT, Baste V, et al. Effectiveness of brief and standard school-based cognitive-behavioral interventions for adolescents with anxiety: A randomized non-inferiority study. *J Am Acad Child Adolesc Psychiatry*. 2020;59(4):552-64.
46. Massataka N. Anxiolytic effects of repeated cannabidiol treatment in teenagers with social anxiety disorders. *Front Psychol*. 2019;10:2466.
47. Field T. Romantic breakup distress in university students: A narrative review. *Int J Psychol Res Rev*. 2020;3:30.
48. Field T. Internet Addiction in Adolescents: A Review. *J Addict Ther*. 2018;JATP-120.
49. Frederick JW, Parsons EM, Sarfan LD, et al. Examining the relation between adolescent social anxiety and positive affect regulation: Self-report vs. observation. *Child Psychiatry Hum Dev*. 2019;50:764-75.
50. Deros DE, Racz SJ, Lipton MF, et al. Multi-informant assessment of adolescents social anxiety: Adding clarity by leveraging reports from unfamiliar peer confederates. *Behav Ther*. 2018;49(1):84-98.
51. Delgado B, Garcia-Fernandez JM, Martinez-Monteaegudo MC, et al. Social anxiety scale for adolescents and school anxiety inventory: Psychometric properties in French adolescents. *Child Psychiatry Hum Dev*. 2019;50(1):13-26.
52. Ohannessian CM, Milan S, Vannucci A. Gender differences in anxiety trajectories from middle to late adolescence. *J Youth Adolesc*. 2017;46(4):826-39.
53. Ranoyen I, Lydersen S, Larose TL, et al. Developmental course of anxiety trajectories from middle to late adolescence. *J Youth Adolescence*. 2018;46:826-39.