Review Article

Social Anxiety Disorder in Autism Spectrum Disorder: Principles and Challenges of Clinical Assessment

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Abstract

The present article aims to highlight the issues and challenges in assessing Social Anxiety Disorder (SAD) in the Autism Spectrum Disorder (ASD) population by reviewing clinical assessment guidelines, and studies assessing social anxiety in this population. As no tool has been developed to assess specifically for SAD in this population, reliance is usually placed on those designed for use with the typically developing population. Due in part to overlapping symptomology of these two disorders, such an approach has varying results. SAD is gaining recognition as a problem commonly experienced by those with ASD. While there is debate as to whether this can be considered a distinct, co-morbid condition, assessment of SAD in this population presents a number of challenges. These highlight the importance of caution when assessing for SAD in ASD, and the need for more research to guide such assessment.

Keywords: Autism spectrum disorder; Social anxiety; Comorbid; Assessment

Abbreviations

DSM: The Diagnostic and Statistical Manual of Mental Disorders; ASD: Autism Spectrum Disorder; SAD: Social Anxiety Disorder; NICE: National Institute for Health and Care Excellence; SAS-A: Social Anxiety Scale for Adolescents: SPAI-C: Social Phobia and Anxiety Inventory for Children; SPIN: Social Phobia Inventory; LSAS-CA: Liebowitz Social Anxiety Scale for Children and Adolescents; ACI-PL: Autism Comorbidity Interview-Present and Lifetime Version; MASC-C: Multidimensional Anxiety Scale for Children; ADIS-C/P: Anxiety Disorders Interview Schedule for DSM-IV—Child and Parent; SCAS: Spence Children's Anxiety Scale; SWQ: Social Worries Questionnaires; CASI: Child and Adolescent Symptom Inventory; SASC-R: Social Anxiety Scale for Children –Revised; CBCL: Child Behavior Checklist; CAPA: Child and Adolescent Psychiatric Assessment; AQ: Autism Quotient; ADHD: Attention Deficit/Hyperactivity Disorder; PARS; Paediatric Anxiety Rating Scale; ADOS: Autism Diagnostic Observation System; SCARED-71: Screen for Child Anxiety-Related Emotional Disorder-71

Introduction

The experience of social anxiety at a clinically significant level is gaining recognition as a common experience by those on the autism spectrum. In the previous edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM), fear and avoidance of social situations were considered part of Pervasive Developmental Disorder, meaning that such anxiety experienced by individuals with an Autism Spectrum Disorder (ASD) could not be attributed to Social Anxiety Disorder (SAD) [1]. With the advent of the DSM-5, the diagnosis of comorbid of SAD with ASD has become more accepted, and therefore only recently has the experience of SAD by those on the spectrum received significant attention from clinicians and researchers. However, due to factors such as overlapping symptomology many clinicians remain reluctant to diagnose SAD as a comorbid disorder among those with ASD [2]. This is likely why the formal assessment of SAD in the ASD population has remained mostly unexplored, and as a result the best approach to such assessment is debated [3]. Lack of information and guidelines for assessing individuals with ASD for SAD can delay timely, reliable, and valid assessment and diagnosis, as well as the subsequent management and treatment options offered to individuals.

It is important that assessment and diagnosis be as accurate as possible, reducing the chances of false positives and negatives, while also taking into account the effects of assessment and its outcome on the individual in question. It is therefore urgent to collate existing studies on SAD in the ASD population, and develop evidence based guidelines for this clinical target. This paper will describe the current status of assessment of SAD, review how social anxiety has previously been assessed in the ASD population, and then provide a discussion on the issue of overlapping symptomology in SAD and ASD, and finally, an overview of social anxiety measures previously employed used for assessment of ASD populations.

Assessment of social anxiety in the typically developing population

The National Institute for Health and Care Excellence (NICE) provide evidence based guidelines for assessment and treatment of various conditions, including the assessment of SAD. When a child or young person is assessed for SAD, NICE guidelines advise that he/she should be seen alone by the clinician, and when possible, information should also be obtained from a parent/caregiver [4]. Social anxiety symptoms and problems secondary to the disorder should then be assessed in detail: for example avoidance behaviours, the individual's view of themselves, family and friends' support, and medication. The guidelines also recommend that formal tools be used in this assessment process [4]. While these guidelines do not specify which tools are most appropriate, Tulbure, Szentagotai, Dobrean, and David's [5] review of rating scales for children and adolescents

for social anxiety, which used evidence based assessment criteria, suggested the following five scales as among the best available: the Social Phobia and Anxiety Inventory for Children (SPAI-C) [6], the Social Anxiety Scale for Adolescents (SAS-A) [7], the Social Phobia Inventory (SPIN) [8], and the Liebowitz Social Anxiety Scale for Children and Adolescents (LSAS-CA) [9].

Assessment of social anxiety in the autism spectrum disorder population

Currently, there are no NICE or equivalent guidelines available for assessment of social anxiety in the ASD population. There are no tools designed specifically for such assessment, and no diagnostic tool has gained consensus as a gold standard measure; consequently, there is debate about the best approach to such assessment [3]. Due to the overlapping symptomology of social anxiety and ASD (see below), and the potential for diagnostic overshadowing (symptoms of social anxiety being attributed to ASD, rather than SAD), assessing social anxiety in this population can be challenging [10].

Lack of consensus with regard to how to best assess for secondary disorders in the ASD population is not uncommon. Comorbidity in ASD is a relatively new area of interest; as a result, there is a significant need for more investigation on to how to go about assessing for additional mental health issues in this population [10]. One tool which has been developed for this purpose is the Autism Comorbidity Interview- Present and Lifetime Version (ACI-PL) [11]. The ACI-PL is a semi-structured interview designed to assess for a range of psychiatric disorders in the ASD population. While based on DSM-IV criteria [1], it allows positive identification of all disorders, despite the DSM-IV excluding various comorbid diagnoses. The ACI-PL describes how each disorder tends to present in the ASD population specifically, with screening questions designed to coincide with traits frequently noted by caregivers of those with ASD who experience the relevant disorder [11].

The ACI-PL aims to disentangle symptoms of ASD from those of the potential comorbid disorder by assessing if they differ from the child's baseline functioning, and are not better explained by the core features of ASD. For example, for social phobia it specifies that the avoidance and fear which is characteristic of SAD needs to result from the social aspects of a situation, and cannot be due to other factors commonly found to be difficult for those with ASD, like sensory stimuli such as noise [11]. Using the ACI-PL to assess for SAD, Leyfer, et al. [11] found that only 7% of the ASD sample met criteria for SAD; this is a much lower rate than found by other studies(17-57%) using tools developed for the general population [12-16].

While development of the ACI-PL is a significant step forward in recognizing and identifying additional difficulties this population may face, it has been argued to be an inefficient tool due to its time-consuming nature, and requiring highly trained individuals to administer it [17]. A more practical tool for initial screening for comorbid disorders, such as social anxiety, is important to help detect those at risk; those identified could then receive more thorough assessment, and if necessary benefit from additional support or treatment.

In summary, while much evidence-based information is available

Table 1: Assessment tools used for assessment of social anxiety in the ASD population.

Study	Assessment Tool	Sample	
		n with ASD	Age range (years)
Bellini [12]	SSRS	41	18-Dec
	MASC		
Bellini [18]	SAS-A	41	18-Dec
	MASC		
Renno& Wood [20]	MASC-C	88	11-Jul
	ADIS-C/P		
Ung et al. [22]	ADIS-C/P	108	15-Jul
Gillott et al. [23]	SCAS	15	12-Aug
	SWQ		
Farrugia& Hudson [24]	SCAS	63	16-Dec
May et al. [25]	SCAS	64	12-Jul
Russell&Sofronoff [26]	SCAS	65	13-Oct
	SWQ		
Simonoff et al. [14]	CAPA	112	14-Oct
Sukhodolsky et al. [30]	CASI	171	17-May
Kuusikko et al. [13]	SPAI-C	54	15-Aug
	SASC-R		
	CBCL		

MASC: Multidimensional Anxiety Scale for Children; BASC: Behaviour Assessment System for Children; ADIS-C/P: Anxiety Disorders Interview Schedule for DSM-IV—Child and Parent; SCAS: Spence Children's Anxiety Scale; SWQ: Social Worries Questionnaires; CAPA: The Child and Adolescent Psychiatric Assessment, CASI: Child and Adolescent Symptom Inventory; SASC-R: Social Anxiety Scale for Children –Revised; CBCL: Child Behavior Checklist.

to guide assessment of SAD in the general population, as is the case with most psychiatric disorders considered secondary to ASD, little is available for assessing social anxiety in the ASD population [10,14]. Although the ACI-PL was created to help overcome this issue it has received criticism and has failed to gain recognition as a sound screening and assessment tool. Development of a more efficient measure or increased knowledge about which existing tools are most appropriate is required.

Previous assessment of social anxiety in ASD

While the ACI-PL assesses for numerous disorders comorbid to ASD, currently there is no measure designed to assess specifically for SAD in this population. As shown in Table 1, previous studies investigating social anxiety in the ASD population have used a wide variety of questionnaires and interviews including: the SAS-A [7,18], the Multidimensional Anxiety Scale for Children (MASC-C) [18-20],the Anxiety Disorders Interview Schedule for DSM-IV—Child and Parent (ADIS-C/P) [20-22], the Spence Children's Anxiety Scale (SCAS) [23-27], the Social Worries Questionnaires (SWQ) [23,26,28], the Child and Adolescent Symptom Inventory (CASI) [29,30], the SPAI-C [3,31], the Social Anxiety Scale for Children -Revised (SASC-R) [13,32], the Child Behavior Checklist (CBCL) [13,33], and the Child and Adolescent Psychiatric Assessment (CAPA) [14,34].

As none of these assessment tools were designed to be used with

the ASD population specifically, some of the studies used adjusted scales; removing items that they considered at risk of unintentionally tap ASD symptoms rather than those of social anxiety. For example, when assessing for the presence of social phobia, Kuusikko, et al. [13] removed items from the SPAI-C which (a) were judged to overlap with ASD diagnostic criteria, (b) also feature on ASD assessment measures, and (c) were commonly noted in clinical presentations of ASD. Items selected for removal assessed behavioural avoidance, and those which could be experienced due to lack of social skills, rather than fear. The items which were retained assessed only cognitive and emotional aspects of social anxiety, and responses to social situations [13].

The applicability of these assessment instruments to the ASD population has scarcely been researched [35]. Due to such adjustments to the assessment tools, administration and scoring cannot be considered standardized. Furthermore, as the tools have not been used in the population for which they were intended, psychometric properties cannot be assumed to be maintained [36]. One article which reviewed studies that investigated the presence of anxiety disorders among children and adolescents with ASD found that the assessment method used moderated outcomes: higher prevalence rates of social anxiety were found when questionnaires were used than when interviews were. It was unclear which of these methods resulted in more accurate estimates [16]. This finding demonstrates the potential for inaccurate assessment of SAD within ASD, and suggests that tools designed for the typically developing population may be inappropriate to use with the ASD population, as only 3 of the 31 studies reviewed used instruments designed specifically for this population [16].

In order to allow identification of individuals with ASD for whom SAD is an issue, and more precise research into how SAD develops and affects these individuals, an accurate assessment tool is needed. Whether existing tools can be considered appropriate, whether they require adjustments, or whether the development of a new measure is required currently remains unclear.

ASD and SAD: Overlapping symptomology in assessment

For assessment tools to be effective in identifying social anxiety in those with ASD they must show good discriminant validity (the ability to assess symptoms of one disorder without unintentionally tapping those of the other); therefore they should not include items which assess symptoms that are common to both disorders. It is unclear however, whether the behaviours/experiences targeted by such items are caused by the same underlying principle in both disorders; for example whether those with social anxiety experience symptoms due to fear, while those with ASD experience the same symptoms but as the result of a skills deficit. If assessment tools did include items tapping symptoms common to both ASD and SAD, then such items would need to be removed or rephrased to prevent unintentional higher scoring or high rates of false positives. Alternatively, a new SAD scale would need to be developed for the ASD population specifically. It is important to stress that items assessing symptoms that are present in both disorders should not simply be removed from the scale in question: assessing the given symptom could still be important, with the severity of the relevant anxiety symptom potentially providing insight. This would be consistent with the hypothesis that symptoms

of comorbid anxiety are similar to those of ASD, but more severe in nature [37].

This notwithstanding, the logic for removal of assessment items judged to be common to both disorders, as demonstrated by Kuusikko, et al. [13], is understandable given findings from investigations into the discriminant ability of assessment tools. Hartley and Sikora [37] administered a semi-structured interview based on the ASD criteria from the DSM-IV TR [1] to three groups of children: those with ASD, those with Attention Deficit Hyperactivity Disorder (ADHD), and those with anxiety disorders. While responses on items assessing communication deficits, and impairments in non-verbal social functioning were able to discriminate between the groups, it was found that items assessing symptoms related to repetitive/stereotyped behaviours in ASD were unable to discriminate between those with ASD, and those with anxiety disorders or ADHD [37]. This demonstrates how items designed to assess for a specific disorder such as ASD can unintentionally measure the symptoms of a separate disorder, due to similarities in their presentations, and further highlights that caution must be exercised when relying on such instruments in the assessment process.

Similarly, Cath, Ran, Smit, van Balkom, and Comijs [38] found that performance of children with SAD without ASD on the social skills section of an ASD assessment (the Autism Quotient [AQ]) was comparable to that of individuals with SAD and ASD. Conversely, individuals with pure SAD scored lower to those with SAD and ASD on items assessing deficits in communication and imagination [38]. These findings, taken in combination with those of the previous study, suggest that aspects of communication and social relatedness are useful for differential diagnosis between ASD and anxiety disorders, whereas repetitive/stereotyped behaviour symptoms, and social skill deficits may be common to both [37,38]. While ASD and SAD differ, they do have substantially overlapping symptomology. Such overlap can lead individuals with pure SAD to score highly on specific areas of ASD assessment. Whether the reverse is true, that is, whether individuals with ASD without SAD score highly on measures of social anxiety is unclear as there has been no systematic investigation into this.

Due to overlapping symptomology of ASD and SAD, assessment tools used for either disorder may unintentionally tap symptoms of the other. This is a significant risk, as has been demonstrated by children with SAD who do not experience ASD showing elevated scoring on ASD measures [37,38]. This highlights that caution is needed when assessing those with ASD for SAD, and when developing a tool to undertake such a task in order to ensure accurate assessment and diagnosis.

Use of anxiety measures with the ASD population

Several studies have investigated the use of measures of general anxiety within the ASD population [35,36,39]. White, et al. [36] sought to investigate the reliability and validity of anxiety measures, specifically the Multidimensional Anxiety Scale (MASC) [40] and the CASI, in the identification of children with ASD and comorbid anxiety disorders.

Thirty young people with ASD and a comorbid anxiety disorder, and their parents, were asked to complete ratings on the CASI and

MASC, and participated in a clinician-administered interview. While both parent- and child-rated versions of the two measures showed good internal consistency, parent and child reports were not significantly correlated with one another on either measure. The social anxiety scale on the MASC had one of the lowest correlations between sources (0.26) [36]. On the self-report MASC, only 23% of the participants with ASD and a comorbid anxiety disorder rated themselves at the clinically significant level, suggesting individuals were under-reporting their symptoms. The anxiety measures were found to be uncorrelated to measures of ASD and verbal IQ, suggesting the MASC and CASI show discriminant validity between anxiety and ASD symptoms [36]. It is unclear whether underreporting by these adolescents with ASD, and the lack of consistency seen between their reports and those by their parents and clinicians is due to unreliable self-report by this sample, or indicates that the MASC and CASI are unsuitable to use with this population [36].

In a similar study, Storch et al. [39] investigated the ability of the Paediatric Anxiety Rating Scale (PARS) [41] to assess anxiety in a sample of 72 children with ASD. The PARS is a clinician-rated tool used to assess for presence and severity of anxiety symptoms in children. Overall findings suggested that the PARS was psychometrically sound when used for this purpose, with good convergence demonstrated between the PARS and overall clinician- and parent-rated anxiety. While little correlation was found between the PARS and the communication and social scales of the Autism Diagnostic Observation System (ADOS), overall divergent validity was limited due to correlations found between the PARS and parent ratings of aggression and inattention, and overall externalising behaviours. The authors suggested this highlights the difficulty of specifically tapping anxiety symptoms in this population; however lack of correlation between the overall PARS and ADOS scores suggest that it is possible the two disorders' symptoms could be teased apart [39].

Van Steensel et al. [35] assessed the psychometric abilities of the Screen for Child Anxiety-Related Emotional Disorder-71 (SCARED-71) [42] when used with two groups of children: those with ASD and anxiety disorders, and those with pure anxiety disorders. The SCARED-71 gathers both parent- and child-ratings. On the child-rated SCARED-71, only four of the seven anxiety subscales were able to differentiate those with ASD and a comorbid anxiety disorder, from those with ASD without comorbid anxiety. Social phobia was one of these subscales, with analysis showing that all of the items within this scale could differentiate between these two groups [35]. The majority (80%) of children with ASD and a comorbid anxiety disorder provided self-reports indicative of clinical levels of anxiety, suggesting sound self-report ability by this population for anxiety assessment using the SCARED-71[35].

Overall, the authors concluded that the SCARED-71 showed good internal consistency and construct validity, with similar correlations between parent and child report found for both the ASD and non-ASD groups. Parent report had higher sensitivity in the ASD than non-ASD group, but specificity was lower. It was concluded that while established measures such as the SCARED-71 may be appropriate for use with the ASD population, adjustments to how these are used, such as using different cut off scores, could allow more accurate findings. For example, it was found that the social phobia cut off could be raised to increase the specificity without affecting the sensitivity [35].

Conclusion

Assessment and diagnosis of any disorder can have various significant and enduring effects, including allowing access to support; therefore it is important that the process and tools employed be as accurate and precise as possible [43]. While numerous tools and guidelines have been developed to aid in best assessment of SAD in the general population, these do not exist to guide those working with the ASD population. As a result, the methods used to assess individuals with ASD for SAD have been inconsistent and often relied upon the use of tools which were designed for the typically developing population. Findings from the studies outlined above which have used such an approach suggest that some of these measures may be more appropriate to use with ASD populations than others. However, it remains unclear as to whether unfavorable outcomes are due to the factors intrinsic to the assessments, characteristics of ASD (i.e. ability to provide self-report), or a combination of the two. Regardless of the reason, it is important that researchers and clinicians are aware that the psychometric properties of assessment tools, and their ability to accurately identify individuals who are experiencing difficulties such as SAD, are not necessarily maintained when used for a population or purpose which they were not intended. Additional steps must be taken when screening or assessing individuals with ASD for comorbid SAD, with more research needed to guide how to best go about this, and what specific tools are and are not appropriate to use for this purpose.

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