

Are Social and Communication Difficulties a Risk Factor for the Development of Social Anxiety?



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Objective: Social anxiety (SA) is a common condition associated with social and communication (SC) difficulties in typically developing young people, as well as those with autism spectrum disorder (ASD). Whether SC difficulties place children at risk for developing SA is unclear. Using a longitudinal design, the present study aimed to disentangle the relationship between SA symptoms and SC difficulties using a population-based sample of 9,491 children from the Avon Longitudinal Study of Parents and Children (ALSPAC).

Method: Parent-reported data on SC difficulties and SA symptoms were collected at ages 7, 10, and 13 years. A cross-lagged panel model was used to investigate the longitudinal stability and directional relationship between latent SC difficulties and SA constructs over time.

Results: More SC difficulties were associated with greater SA symptoms at all ages. Earlier SC difficulties predicted a

small but significant amount of variance in later SA symptoms. The reverse relationship from SA to SC difficulties was not observed. The relationship from SC difficulties to SA was strongest from age 7 to 10 years. No sex differences were observed.

Conclusion: The evidence suggests that SC difficulties may be an important risk factor for the development of SA. These findings suggest the potential usefulness of incorporating social skills training alongside effective interventions to prevent or alleviate symptoms of SA in childhood.

Key words: ALSPAC, social anxiety, social and communication difficulties, autism spectrum disorders, longitudinal

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Social anxiety (SA) disorder is characterized by an intense fear of social situations, which is often accompanied by the fear of being scrutinized by others.¹ SA is often experienced during several social situations, including interacting with others, eating in public, or giving speeches. Anxiety-related fears are commonly driven by negative self-perceptions and a fear of being ridiculed by others, which can lead to increased social withdrawal and avoidance.² SA is the third most common psychiatric disorder, with epidemiological research showing prevalence rates between 3% to 4% in childhood and 9% in adolescence.^{3,4} The onset of SA is usually between late childhood and adolescence⁵; however, SA disorder can manifest in children at 7 or 8 years of age.⁶

SA is a dimensional trait that is continuously distributed throughout the general population. Subthreshold symptoms of SA are associated with adverse outcomes and an increased risk of developing SA disorder and additional comorbid disorders.⁷ Given the burden that subthreshold SA can have on an individual's well-being, it is important that research investigates potential risk factors underpinning dimensionally measured SA traits in the general population.

SA and Social Communication Difficulties in Childhood Etiological models of SA in childhood have implicated the role of several development risk factors, including behavioral inhibition, parent-child interactions, and peer relationships.⁸ In addition, social and communication (SC) difficulties, including problems in social behaviors, social cognition, and reciprocal social communication, are common among children with SA and have also been proposed as a risk factor. SC ability is a continuously distributed trait that extends throughout the general population,⁹ with those who experience severe difficulties often receiving a diagnosis of autism spectrum disorder (ASD), a neurodevelopmental condition characterized by SC difficulties and restricted interests and repetitive behaviors. SA co-occurs highly in children with ASD (4.5–9.5 years) and high subthreshold ASD traits (10–15 years),^{10,11} suggesting that those with greater SC difficulties may have a heightened risk of developing SA disorder. However, the developmental relationship between SC difficulties and SA is unclear. The present study aims to address whether an individual's position on the continuum of SC traits influences their risk of later developing SA.

Cross-sectional research has supported the association between SC difficulties and SA. For example, typically developing children with SA disorder exhibited lower self and peer ratings of social competence during both laboratory and school-based social interaction tasks, compared to peers without anxiety.^{4,12} Furthermore, using parent-report questionnaires, research has found that SC difficulties are higher among children with SA disorder compared to those



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with other anxiety disorders,¹³ suggesting a specific relationship between SC difficulties and SA. Although SC difficulties may not be universal in SA,¹⁴ the evidence suggests that for a significant subgroup in the general population, SC difficulties may underlie the development of SA.¹⁵

Intervention studies in children have informed our understanding of the relationship between SC difficulties and SA. Research has shown that children (age 8–12 years) with SA disorder who completed a Social Effectiveness Therapy (SET) program to enhance social skills and peer relationships showed increases in social skills and decreases in SA at posttreatment and after 6 months, compared to the control participants in a nonspecific intervention.¹⁶ It is evident that a relationship between SA and SC difficulties exists and that social skills training effectively reduces SA; however, we do not fully understand whether SC difficulties contribute to the development of SA. This research is important for identifying early warning signs on the developmental trajectory of SA.

In the ASD literature, cross-sectional studies have shown that social skill deficits and greater physiological arousal contributed toward elevated SA symptoms in adolescents with ASD.¹⁷ Contradictory research in children with ASD revealed that higher levels of SA predicted lower responsible and assertive social skills.¹⁸ Inconclusive findings regarding the directional relationship between SA and SC difficulties have led researchers to postulate a bidirectional relationship in ASD. It is suggested that SC difficulties may hinder social experiences, contributing to increased SA and social withdrawal, which subsequently impedes an individual's SC ability.¹⁹ However, this relationship remains to be explored.

Research using population-based samples has supported the relationship between SA symptoms and SC difficulties. Population-based research allows the use of large samples to examine associations across the trait distribution. These findings can inform research in clinical populations. Using a population-based twin sample of children with ASD and their affected and unaffected cotwins, Hallett *et al.*¹¹ found that increased SC difficulties and higher IQ were associated with greater parent-reported SA, supporting clinical findings. To date, no longitudinal work using a population-based sample has specifically assessed whether SC difficulties are a risk factor for SA, or whether SA reduces an individual's SC ability.

We aim to examine the directional relationship between parent-reported SA symptoms and SC difficulties in a population-based sample of children at ages 7, 10, and 13 years. Sex differences will also be explored. Furthermore, the relationship between SA and SC difficulties will be examined while controlling for generalized anxiety, to test whether SC difficulties are related to SA-specific symptoms, compared to generalised anxiety. Based on previous research, we predict a directional and specific relationship between SC difficulties and SA, with early SC difficulties contributing to later SA symptoms.

METHOD

Sample

All participants were from the Avon Longitudinal Study of Parents and Children (ALSPAC) cohort, a population-based sample of children born in Bristol between 1991 and 1992. A total of 14,541 children were recruited into the original cohort, with 14,062 live births and 13,988 alive at 12 months.²⁰ (The study website contains details of all of the data available through a fully searchable data dictionary at <http://www.bris.ac.uk/alspac/researchers/data-access/data-dictionary/>.) Ethical approval for this study was obtained from the ALSPAC Law and Ethics Committee and local research ethics committees. A total of 9,597 children had available data to test the study hypotheses at ages 7 (*n* = 8,148), 10 (*n* = 7,723), and 13 (*n* = 7,008) years. Following ALSPAC's exclusion criteria for prorated scores, only children with 50% or more complete data on all measures of interest at all ages were included in the present study. Based on these exclusion criteria, 248 children (3%), 204 children (2.6%), and 226 children (3.2%) were excluded at ages 7, 10, and 13 years, respectively. Merging the three samples at ages 7 (*n* = 7,900), 10 (*n* = 7,519), and 13 (*n* = 6,782) years, the final sample included 9,491 children (4,654 female) with data at one, two, or three time points. This final sample was used in all further analyses (Table 1). Compared to the original ALSPAC cohort not included in the current analyses, young people in our final sample were more likely to have a mother who was a homeowner (odds ratio [OR] = 2.94, 95% CI = 2.72, 3.19) and had completed higher education (OR = 2.33, 95% CI = 2.13, 2.55).

Measures

Socioeconomic Status. Socioeconomic status (SES) was captured using parental maternal education. Previous research in ALSPAC has reported that maternal education is a valid indicator of SES.²¹ At 32 weeks of gestation, mothers reported their current highest level of educational achievement from six possible responses: "none," "CSE" (basic UK qualification), "vocational," "O-level" (a prerequisite to

TABLE 1 Demographic Information for the Sample at 7, 10, and 13 Years of Age

Demographics	Age 7 (<i>n</i> = 7,900)	Age 10 (<i>n</i> = 7,519)	Age 13 (<i>n</i> = 6,782)
Female %	49	50	50
Parental HE% (age 18+)	42	43	44
Owned/mortgaged home %	82	83	84
Ethnicity, white %	96	96	96
Full scale IQ, mean (SD) (Range: 45–151) ^a	105.30 (16.32)	105.24 (16.39)	105.70 (16.31)
Verbal IQ	108.14 (16.68)	108.08 (16.69)	108.51 (16.63)
Performance IQ	100.57 (16.94)	100.59 (17.03)	100.98 (16.93)

Note: IQ age 7 (*n* = 5,829), 10 (*n* = 5,761), and 13 (*n* = 5,307) years. HE = higher education; SD = standard deviation.
^aFull range of scores at all ages.

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