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Anxiety Levels in Students with Autism Spectrum Disorder Making the Transition from Primary to Secondary School

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Abstract: The anxiety levels of students with autism spectrum disorder (ASD) over the period of transition from primary to secondary school are investigated. A repeated measures design and an adapted version of a self-report measure, the Spence Children's Anxiety Scale (SCAS), are used to compare the anxiety levels of eight students before and after the transfer. Analysis at the individual level of the sub-scale scores using the adapted SCAS against the standardised norms in two studies involving community samples reveals a mixed picture. These findings suggest that individual differences are a significant feature. Limitations of the research and possible avenues for future research are considered. Implications for supporting students with ASD in schools are outlined.

Having Autism Spectrum Disorder (ASD) is considered to be a lifelong developmental disability which has a pervasive impact on how an individual makes sense of the world and interacts with other people. The term *Autism Spectrum Disorder* is used in this paper to embrace a range of diagnostic labels including classical autism, atypical autism and Asperger's Syndrome. Wing and Gould, in their 1979 Camberwell (London) study into the prevalence of autism in children with special needs, identified children who did not fit with previous conceptualizations of autism as described originally by Kanner in 1943 (Kanner, 1943; Wing & Gould, 1979). They proposed a broader spectrum of conditions, hence *autism spectrum*, and coined the term *triad of impairments* to refer to impairments in social interaction, communication and imagination (Wing, 1993). The term *triad of impairments* is now generally recognized by clinicians and researchers and forms the basis for the two major diagnostic systems for ASD in current use, namely the International Classification of Diseases 10th edition (ICD-10) (WHO, 1993) and the Diagnostic and Statistical Manual 4th edition (DSM-IV; American Psychiatric Association, 2000).

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Enhanced anxiety levels in individuals with ASD are a recognized clinical feature that may result from a range of factors such as an individual's difficulty in dealing with social situations due to social interaction and communication impairments; problems coping with changes in the environment and hence the need for routine; and responses to sensory experiences (Attwood, 1998; Howlin, 1998). A perceived link between an individual's difficulty in coping with change and insistence on maintenance of routines and levels of anxiety has been of interest to writers and researchers in this field for many years. In his original study in 1943, Kanner suggested that the core features of 'early infantile autism,' including routines, were anxiety driven (Kanner, 1943). More recently, Kuusikko et al. (2008) suggested that stereotyped routines and rituals are a way of easing anxiety symptoms; Gillott, Furniss, and Walter (2001) proposed that changes in routine can result in raised anxiety levels and that ritualistic behaviours are a coping mechanism for such heightened emotional states. However, questions have been raised by some researchers as to whether such behavioural features can be considered to be *true* symptoms of anxiety or simply expressions of pervasive developmental disorder (PDD)

symptoms (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). This appears to be a question of differential diagnosis. Whether this has implications in terms of the interventions employed to support children and young people in school and in the community is unclear.

Within the past 10 years there have been a few empirical investigations into the anxiety levels of children and young people with ASD. These studies can be differentiated into those which have employed measures to compare the anxiety levels of individuals with ASD with community samples (Kim et al., 2000; Kuusikko et al., 2008) and those which have employed cross-sectional designs to compare matched groups (Gillott et al., 2001; Green, Gilchrist, Burton, & Cox, 2000). Overall, these studies provide evidence of raised anxiety levels in children and young people with ASD.

Kim et al. (2000) report on the prevalence and correlates of anxiety and mood problems amongst 9 to 14 year old children with Asperger Syndrome (AS) and high functioning autism (HFA). Employing a modified version of the Ontario-Child Health Study Revised (OCHS-R) questionnaire completed by parents, AS and HFA children were found to have a greater rate of anxiety and depression problems compared with the standardized community sample. One of the acknowledged limitations of this study was the difficulty in differentiating between *true* symptoms of anxiety and depression, as reported by parents, and those of pervasive developmental disorder (PDD). Kuusikko et al. (2008) address this limitation through employing revised measures which excluded items which overlapped with criteria associated with HFA and AS symptoms. They examined social anxiety symptoms in children and adolescents with AS and HFA using children's self-report measures of social phobia and anxiety (Social Phobia and Anxiety Inventory for Children) and social anxiety (Social Anxiety Scale for Children Revised). Parental ratings of the children's observed internalizing symptoms were measured using the Child Behavior Checklist. The children and adolescents scored higher on all measures compared with a community based control sample.

Gillott et al. (2001) compared the anxiety levels of three matched groups of children (aged 8 to 14 years) (although it should be noted that they were not matched for IQ): normally developing, high functioning autism (HFA), and specific language impairments. Employing two self–report measures of anxiety (Spence Children's Anxiety Scale (SCAS); Social Worries Questionnaires (SWQ)), the children with HFA obtained higher mean total scores and scores in four of the six subscales compared with the comparison groups. Green et al. (2000) compared the psychosocial functioning of a group of adolescent boys with AS with a matched group of males with a diagnosis of conduct disorder (CD). However, unlike Gillott et al. they did not include a control group of normally developing adolescents. Subject and informant interview measures were employed to assess social and psychiatric functioning. The researchers found that the AS group had poorer social functioning and more severe difficulties in interpersonal functioning than the CD group. In terms of psychiatric functioning, the AS group, in the subject interview measure, displayed significantly greater levels of anxiety related symptoms.

It is generally recognized that individuals with ASD experience more difficulties coping with routine changes than individuals in the general population. This has been attributed to impairment in imagination resulting in ritualistic behaviour and insistence on routines (Wing, 1992; Wing, 1993). The conceptualization of transitions being of a micro-nature (e.g. moving between activities) or a macro-nature (e.g. moving between schools) (Attwood, 1998) is helpful to our understanding of children's difficulties with transitions in an educational context and the role played by anxiety during this process. Although there will be individual differences in levels of response to change, it appears reasonable to propose that changes of a macro-nature are likely to lead to higher levels of anxiety.

It is generally accepted that students with ASD require additional support to help them cope with the day to day changes within classroom and school environments. Typical approaches include the use of visual supports (e.g. visual timetables, visual cues, photographs); calming activities; support with personal organisation of belongings and materials; and appointing a classroom buddy (Larkey, 2005). Furthermore, it has been pro-

posed that transitions of a macro-nature, such as moving between one school and another should carefully be managed through such strategies as additional visits to the new school, transition planning meetings, and information for students and parents (Attwood, 1998; Carter, Clark, Cushing, & Kennedy, 2005; Ennis & Manns, 2004). Heightened levels of anxiety which such changes may engender will have a variable impact on a student's psychological response and social functioning. Knowledge of an individual's experience and response will inform the strategies adopted by parents and professionals.

For students in the general population, there is evidence that following transfer to secondary school, levels of anxiety and stress are a short-term feature during the first months (Graham & Hill, 2003; Tobbell, 2003). Furthermore, there appears to be some evidence that these levels decrease for the majority of students during their first year at secondary school. Lohaus, Ev Elben, Ball, and Klein-Hessling (2004) attribute this decrease to the relaxing effects of the summer vacation.

In contrast, there appear to be no published studies exploring the anxiety levels of students with ASD during this transition. The present study aims to inform our understanding of factors impacting the anxiety levels in children with ASD. It is acknowledged that the findings should be considered preliminary in nature given the small sample size and the reliance on a self-report measure. However, it is argued that the findings will provide the basis for future research and have relevance for educational practices.

Research Questions

1. How do the self-reported anxiety levels of a sample of students with ASD compare with those of the standardised sample prior to the transfer to secondary school?
2. How do the self-reported anxiety levels of a sample of students with ASD compare with those of the standardised sample following the transfer to secondary school?
3. How do the self-reported anxiety levels of a sample of students with ASD prior to the transfer to secondary school compare with those of the same students following transfer?

It was predicted, based on previous studies, that students with ASD would have higher levels of anxiety compared with the general student population. Furthermore, if students with ASD follow a similar pattern to the general student population (Lohaus et al., 2004), it was predicted that they would experience heightened feelings of anxiety prior to the move and a reduction in anxiety levels following the transfer.

Method

Participants and Setting

Setting. This study took place in a large, inner city in Scotland which in 2007 had an estimated population of 581,940 (General Register Office for Scotland, 2008). The city faces challenges due to the levels of deprivation within its locality, with 49% of the 5% most deprived areas (data zones) and 31% of the 15% most deprived areas in Scotland (Scottish Government, 2009).

Participants. For the wider investigation, of which this study formed a part, a sample of students was purposively selected. The population comprised all students with a diagnosis of ASD in their final year at mainstream primary schools in the south side of the city who could transfer to mainstream secondary schools in the authority. The sampling frame was drawn up using the knowledge of educational psychologists (EPs) employed by the local authority serving this geographical area. A potential drawback of this method was its reliance on full and accurate returns. Other sources of information, such as speech and language therapy records, provided a cross-checking mechanism improving the reliability of this method. The inclusion criteria were that the students should have a diagnosis of ASD; be in their final year of education in a mainstream primary school; and that transfer to a mainstream secondary school was anticipated.

Nine male students participated in the wider study, all of whom had a diagnosis of Asperger Syndrome (considered to fall within the parameters of ASD). The absence of females in the sample is not surprising. In terms of gender balance, prevalence levels (male to female) range from 4.7: 1 to 10.3: 1

TABLE 1

Details of participants

Student No.	*Age at Start of study*	*Diagnosis*	*Primary School Placement*	*Secondary School Placement*
1	11 years 8 months	Asperger syndrome	Mainstream primary	Secondary communication support unit
2	11 years 3 months	Asperger syndrome	Mainstream primary	Secondary communication support unit
3	12 years 2 months	Asperger syndrome	Mainstream primary	Mainstream secondary
4	11 years 6 months	Asperger syndrome	Mainstream primary	Mainstream secondary
5	11 years 10 months	Asperger syndrome Tourette syndrome	Mainstream primary	Mainstream secondary
6	12 years 4 months	Asperger syndrome	Mainstream primary	Mainstream secondary
7	12 years 1 month	Asperger syndrome	Mainstream primary	Mainstream secondary
8	11 years 5 months	Asperger syndrome	Mainstream primary	Secondary communication support unit

(Howlin, 1998). In addition, one student had a diagnosis of Tourette syndrome. Participants' ages at commencement of the study ranged from 11 years 3 months to 12 years 4 months (M = 11 years 8.9 months; SD = 4.6 months). There was minimal attrition over the period of the investigation reflecting the levels of engagement. Due to parental disengagement after completion of the six-week transition programme, data at two time points were not available for one of the participating students. Data for the other eight students are reported here. Details of participants by gender, age at commencement of the study, diagnosis and school provision are provided in Table 1.

Measure

An adapted version of the Spence Children's Anxiety Scale (SCAS; Spence, 1997) was employed. The original version comprises six sub-scales, namely, *panic attack and agoraphobia* (PAA), *separation anxiety* (SA), *physical injury fears* (PI), *social phobia* (SP), *obsessive compulsive* (OC) and *generalized anxiety disorder/overanxious disorder* (GAD) based on six of the DSM-IV categories of anxiety disorders (Yule, 1997). It has 45 items comprising 38 anxiety items, six filler items and one open-ended item. The filler and open-ended items are not scored. There is a 4-point scale response set (*never, sometimes, often,* and *always*) for each item, scored 0 to 3.

Using a large community sample of Australian children aged 8 to 12 years, Spence (1998) reports high internal reliability for the SCAS with a co-efficient alpha of 0.92 and a Guttman split-half reliability of 0.90. Internal consistency of the sub-scales ranged from 0.60 to 0.82. Test-retest reliability on a sub-sample for the total score over a six month time period was 0.60 and for the sub-scales 0.45 to 0.57. Convergent and discriminant validity were assessed using a range of other measures. A Pearson product-moment correlation of 0.71 was found between SCAS total scores and the Revised Children's Manifest Anxiety Scale (RCMAS) total scores and a range of 0.50 to 0.61 between the SCAS sub-scales and RCMAS total scores. In contrast, there was no supporting evidence for convergent validity using a parent reported measure, namely the internalizing sub-scale of the Child Behaviour Checklist (CBCL). The SCAS has been found to have discriminatory properties between two groups of clinically diagnosed children (*social phobia* and *co-morbid social-separation anxiety*) and a non-clinical control group.

The present study used an adapted version of the SCAS incorporating the 4 sub-scales (PAA, SA, PI, and OC) which were found to discriminate the HFA children from the other two matched groups in the Gillott et al. (2001) study. The final version comprised 26 items,

there being no filler items or an open-ended item. The 4-point scale response set (*never, sometimes, often,* and *always*) was retained. Cronbach alpha coefficients in the current study, with the Spence, Barrett, and Turner (2003) figures in brackets, were: PAA .72 (.80); SA .53 (.71); PI .75 (.60); and OC .66 (.75). Cronbach alpha values are sensitive to the number of items in the scale and it is not uncommon to get figures as low as .5 for short scales with less than 10 items (Pallant, 2007). In that context, it is argued that the reduction from 45 to 26 items could account for the lower levels in three of the sub-scales and that the obtained figures are acceptable.

Procedure

In terms of ethical considerations, the first author was bound by the British Psychological Society and affiliated university codes of practice for research on human participants. All participants were advised of the voluntary nature of participation and informed consent was sought through written and verbal means. Paper data was stored in a locked filing cabinet and electronic data was stored and retrieved through a password protected computer. Issues of confidentiality and anonymity in reports of the research were communicated to all participants.

The adapted SCAS was administered at two time points, namely, immediately prior to the move to secondary school, and approximately 6 months following the transfer. Questionnaires were sent to the students' parents in May with a cover letter providing informed consent. Parents were advised to allow their child to complete the questionnaire as far as possible independently, although they could provide assistance for clarification purposes. Despite this guidance, it is acknowledged there was no control of the actual administration and parents could have inadvertently influenced their children's responses impacting on the reliability of the data.

Questionnaires were completed over the period from early June to mid July prior to the students starting secondary school in late August. Five questionnaires were returned by parents using the postal service and home visits were arranged for the remaining four students. Questionnaires were completed in the first author's presence and clarification provided if required. For one student, an attempted home visit and follow-up written communication proved unsuccessful and it was decided to exclude this participant from this element of the research.

An identical version of the questionnaire was utilised at the follow-up point. The first author visited the students at their homes during the period late February to early April of their first year in secondary school. Written instructions on the questionnaire were supplemented, where necessary, by verbal explanation. If required, reading assistance was provided.

Data Analysis

For each of the 26 items in the SCAS (amended), respondents were asked to tick one of four possible responses. Responses were allocated a score ranging from 0 to 3. For the purposes of analysis, it has been assumed that the measurement scale furnished ordinal data. The quantitative data was subjected to descriptive and inferential analyses using SPSS. The Wilcoxon Signed Rank (WSR) test was employed to compare the scores on each of the 26 items at time points 1 and 2.

SCAS sub-scale scores for the respondents were compared to those of the standardization sample (Spence et al., 2003). Respondents' ages at each time point were calculated with figures rounded down to the nearest whole number. At time point one, five students were aged 11 years and three students aged 12 years. At time point two, six students were 12 years and two students aged 13 years. There is evidence that self-reported anxiety levels decrease with age (Spence, 1997). To address this, norms from a study involving a sample of thirteen and fourteen year old adolescents from Brisbane, Australia (Spence et al.) were used for the two students who were aged thirteen at time point two. Spence et al. note that combined norms for thirteen and fourteen year olds were lower than those for 12 year olds (Spence, cited in Spence et al.) providing further evidence of "a continued decrease in self-reported anxiety scores with increasing age" (p. 621).

TABLE 2

Descriptive Statistics of the Panic Attack and Agoraphobia Sub-scale

Item	*n*[a]	*M Time point 1*	*SD*[b] Time point 1	*M Time point 2*	*SD*[b] Time point 2	*Effect Size*
I suddenly feel as if I can't breath when there is no reason for this	8	.13	.354	.25	.463	.339
I suddenly start to tremble or shake when there is no reason for this	8	.38	.518	.25	.463	.251
I feel scared if I have to travel in the car or in a bus or train	8	.25	.463	.25	.463	0
I am afraid of being in crowded places	8	.38	.744	.38	.518	0
All of a sudden I feel really scared for no reason at all	8	.38	.518	0	.000	.734
I suddenly become dizzy or faint when there is no reason for this	8	.13	.354	0	.000	.367
My heart suddenly starts to beat too quickly for no reason	8	.25	.463	.38	.518	.281
I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	8	.38	.518	.38	.518	0
I am afraid of being in small closed places	8	.63	.744	.50	.535	.175

[a] number
[b] standard deviation

Results

Group SCAS Sub-scale Scores

Eight students completed the anxiety questionnaire at both time points. Group means and standard deviations for the sub-scale items are outlined (see Tables 2- 5). Within-subjects analyses at the group level for the four subscales indicated that few of the sub-scale items had reached statistical significance. Given the small sample size with the increased likelihood of type II errors, it was decided to calculate effect sizes using Cohen's *d* (Cohen, Manion, & Morrison, 2007). Clark-Carter (2004) states that it is possible to calculate an effect size for a within-subjects design which allows relative comparison with effect size in a between-subjects design. Cohen et al. provide guidance for interpretation of the statistic Cohen's *d* as follows: 0–0.20 = weak effect; 0.21–0.50 = modest effect; 0.51–1.00 = moderate effect; and >1.00 = strong effect.

There were changes in the predicted direction as reflected in a decrease in the scores for four of the nine items in the *Panic Attack and Agoraphobia (PAA)* sub-scale. Of these four items, there was a moderate effect size for time for one item (*All of a sudden I feel really scared for no reason at all; d* = 0.734) and a modest effect size for two items (*I suddenly start to tremble or shake when there is no reason for this; d* = 0.251); *I suddenly became dizzy or faint when there is no reason for this; d* = 0.367). However, it should be noted that in two items the scores

TABLE 3

Descriptive Statistics of the Separation Anxiety Sub-scale

Item	*n*[a]	*M Time point 1*	*SD*[b] *Time point 1*	*M Time point 2*	*SD*[b] Time point 2	*Effect Size*
I would feel afraid of being on my own at home	8	1.00	.926	.63	.518	.405
I worry about being away from my parents	8	1.25	.707	.75	.463	.707
I worry that something awful will happen to someone in my family	8	1.38	.744	1.50	.756	.161
I feel scared if I sleep on my own	7	.14	.378	.14	.378	0
I have trouble going to school in the mornings because I feel nervous or afraid	8	.38	.744	.50	1.069	.161
I would feel scared if I had to stay away from home overnight	8	.50	.756	.38	.518	.159

[a] number
[b] standard deviation

increased. There was a decrease in three of the six items in the *Separation Anxiety (SA)* sub-scale with a moderate effect size in one item (*I worry about being away from my parents;* $d = 0.707$)) and a modest effect size in another (*I would feel afraid of being on my own at home;* $d = 0.405$). There was a decrease in two of the six items in the *Obsessive-compulsive (OC)* sub-scale each showing a modest effect size (*I can't seem to get bad or silly thoughts out of my head*; $d = 0.383$); *I have to think of special thoughts (like numbers or words) to stop bad things from happening*; $d = 0.259$). However, in three items the scores increased. Finally, there was an increase in the score for one of the five items in the *Physical Injury Fears (PI)* sub-scale although this had a weak effect size. In contrast, the scores in three items increased at time point two, two showing a modest effect size and one a strong effect size.

Individual SCAS Sub-Scale Scores

Given the apparent variability in the direction of change using group aggregated scores in the four sub-scales, it was decided to conduct an analysis at the individual level. The total sub-scale scores for each of the four sub-scales were calculated at both time points. It was decided to use normative means of the community sample for comparative purposes such that it would be possible to determine whether an individual had a significantly higher or lower score than the norm. Given the age of the respondents over the period of the study, it was necessary to use the standardized norms from two studies, the original study (Spence, 1997) and one involving older children (Spence et al., 2003). For the purposes of this study, a score of more than one standard deviation from the standardised mean was defined as *substantial* (see Table 6).

TABLE 4

Descriptive Statistics of the Obsessive Compulsive Sub-scale

Item	*n*[a]	*M Time Point 1*	*SD*[b] *Time Point 1*	*M Time Point 2*	*SD*[b] *Time Point 2*	*Effect Size*
I have to keep checking that I have done things right	8	1.25	.707	1.50	.926	.354
I can't seem to get bad or silly thoughts out of my head	8	1.13	.991	.75	.707	.383
I have to think of special thoughts	8	.25	.463	.13	.354	.259
I have to do same things over and over again	8	1.13	1.246	1.00	.756	.104
I get bothered by bad or silly thoughts or pictures in my mind	7	.29	.488	.75	.707	.943
I have to do some things in just the right way to stop bad things happening	9	.25	.707	.57	.787	.453

[a] number
[b] standard deviation

Five out of eight respondents had *substantial* scores in one sub-scale at time point one and this reduced to four respondents at time point two. Looking at trends in the four sub-scales, one respondent had a substantial score at time point one in the PAA sub-scale. At time point two, this score had reduced to within one standard deviation of the mean. In the SA sub-scale, two respondents had substantial scores at time point one. Both figures were lower at time point two with only one remaining substantial. For the OC sub-scale, one respondent had a substantial score at time point

TABLE 5

Descriptive Statistics of the Physical Injury Fears Sub-scale

Item	*n*[a]	*M Time Point 1*	*SD*[b] *Time Point 1*	*M* Time Point 2	*SD*[b] *Time Point 2*	*Effect Size*
I am scared of the dark	8	.63	.916	.63	.744	0
I am scared of dogs	8	.13	.354	.50	.756	1.045
I am scared of going to the doctor or dentist	8	.50	.535	.63	.518	.243
I am scared of being in high places or lifts	7	1.14	.900	1.00	.756	.156
I am scared of insects or spiders	8	.63	.744	.87	.835	.323

[a] number
[b] standard deviation

TABLE 6

Descriptive Statistics of Individual Sub-scale Scores: SCAS

Respondent	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
PAA [a]score time point 1	2	6	6*	2	0	1	0	6
	3.70	**3.70**	**2.45**	**3.70**	**3.70**	**2.45**	**2.45**	**3.70**
	4.32	***4.32***	***3.17***	***4.32***	***4.32***	***3.17***	***3.17***	***4.32***
PAA score time point 2	1	3	5	3	1	2	0	4
	2.45	**2.45**	**1.95**	**2.45**	**2.45**	**1.95**	**2.45**	**2.45**
	3.17	***3.17***	***3.20***	***3.17***	***3.17***	***3.20***	***3.17***	***3.17***
SA [b] score time point 1	2	11 pro-rated*	4	3	3	8*	3	5
	3.78	**3.78**	**3.00**	**3.78**	**3.78**	**3.00**	**3.00**	**3.78**
	2.98	***2.98***	***2.55***	***2.98***	***2.98***	***2.55***	***2.55***	***2.98***
SA score time point 2	2	7 *	2	4	4	4 pro-rated	5	4
	3.00	**3.00**	**1.83**	**3.00**	**3.00**	**1.83**	**3.00**	**3.00**
	2.55	***2.55***	***2.29***	***2.55***	***2.55***	***2.29***	***2.55***	***2.55***
OC [c] score time point 1	2	7 pro-rated	5	2	3	2	4	10*
	5.90	**5.90**	**5.39**	**5.90**	**5.90**	**5.39**	**5.39**	**5.90**
	3.86	***3.86***	***4.02***	***3.86***	***3.86***	***4.02***	***4.02***	***3.86***
OC score time point 2	3	3	7 pro-rated*	3	7	3	7	5
	5.39	**5.39**	**3.22**	**5.39**	**5.39**	**3.22**	**5.39**	**5.39**
	4.02	***4.02***	***2.86***	***4.02***	***4.02***	***2.86***	***4.02***	***4.02***
PI[d] score time point 1	2	5 pro-rated	3	8*	3	1	1	1
	3.32	**3.32**	**2.94**	**3.32**	**3.32**	**2.94**	**2.94**	**3.32**
	2.65	***2.65***	***2.55***	***2.65***	***2.65***	***2.55***	***2.55***	***2.65***
PI score time point 2	4	5	5*	6*	6*	0	1	2
	2.94	**2.94**	**1.86**	**2.94**	**2.94**	**1.86**	**2.94**	**2.94**
	2.55	***2.55***	***2.22***	***2.55***	***2.55***	***2.22***	***2.55***	***2.55***

[a] panic attack and agoraphobia
[b] separation anxiety
[c] obsessive compulsive
[d] physical injury fears
[e] non-emboldened and non-italicized figures represent raw scores
[f] emboldened figures represent the means from other studies (Spence, 1997; Spence et al., 2003)
[g] emboldened and italicized figures represent the standard deviations from other studies (Spence, 1997; Spence et al., 2003)
[h] an asterisk indicates that the score is more than one standard deviation above the mean
[i] where there are missing data, figures have been pro-rated utilising available data

one but this ceased to be the case at time point two. However, another respondent's score increased at time point two reaching a substantial level. Finally, in the PI sub-scale, one respondent had a substantial score at time point one. In contrast, at time point two, three of the respondents had substantial scores.

Discussion

Using the individual SCAS sub-scale scores, prior to the transfer to secondary school five of the eight students had substantial scores in one sub-scale of the adapted SCAS compared with standardised norms in a community sam-

ple. Previous studies have found higher levels of anxiety in children and adolescents with HFA and AS compared with those in community samples or a matched comparison group of normally developing children (Gillott et al., 2001; Kim et al., 2000; Kuusikko et al., 2008). Following the transfer, half of the students had substantial scores in at least one sub-scale compared with a community sample. These findings are in the same general direction as previous studies but conclusions should be tempered by the absence of consistency across all students in the sample and across all four sub-scales.

Two methods of analysis were employed to look at changes in anxiety levels over the transition period. The findings from the initial analysis, which focused on comparison of group mean scores for each of the 26 scale items, were not conclusive. The second analysis, which looked at individual scores across the four sub-scales, revealed some interesting trends. Between the two time points, there was evidence of a decrease in anxiety levels in two of the sub-scales (PAA, and SA); a mixed picture in the OC sub-scale with one individual evidencing a decrease and another individual an increase in levels; and an increase in the PI sub-scale (three individuals had substantial scores at time point two compared with one at time point one). It should be noted that a few researchers have expressed concerns about the internal consistency of the PI sub-scale (Muris, Merckelbach, Ollendick, King, & Bogie, 2002). However, the majority view of the research community is that the PI sub-scale should be retained as a measurement of an important dimension of anxiety in children and adolescents (Nauta, 2005; Spence et al., 2003). Overall, these findings provide quite a mixed picture across the four sub-scales. It appears that there are individual differences in anxiety levels as students transition to a new school. This finding could be attributed to the small sample failing to identify a general pattern.

One limitation of the methodology in this study was the reliance on one data source, a self-report questionnaire, which has not been standardized on a UK sample and has no established validity for children with autism (Gillott et al., 2003). Concerns have been raised by some researchers about the ability of children with ASD to complete self-report measures (Sofronoff, Attwood, & Hinton, 2005). However, countering those concerns, there is some evidence that children with ASD are able to "self- reflect using structured questionnaires" (Knott, Dunlop, & Mackay, 2006, p. 616) and that the "general skills of insight and emotional self-reporting increase with age in children and adolescents" (Kuusikko et al., 2008, p. 1707). Another limitation of the methodology was the researcher's acceptance of the children's diagnoses without reassessment.

This paper reports on what appears to be the first study which has explored anxiety levels in children with ASD as they make the transition from primary to secondary school. Further studies, involving larger samples, are indicated. Furthermore, longitudinal research designs which would enable tracking of anxiety levels over a longer time period and at various time points would provide greater insight into changes over time. Kuusikko et al. (2008), utilising two different self-report measures of social anxiety, found that "children with HFA/AS reported an increase in social anxiety as they grew older, whereas typically developing children reported a decrease in social and evaluative anxiety as they grew older" (p. 1706). It would be of interest to explore whether other forms of anxiety increase with time in children with ASD. In typically developing children, levels of anxiety decrease by age (Spence et al., 2003). Utilization of an equivalent parent questionnaire (SCAS-P; Nauta, Scholing, Rapee, Abbott, Spence, & Waters, 2004) would enable triangulation with student data. Finally, it would be valuable to further investigate factors which could explain the individual differences which were a feature of this study.

Notwithstanding the identified limitations and preliminary nature of this study, some implications for educational policy and practice are indicated. It is recommended that teachers and related professionals should take cognizance of individual variability in anxiety levels and responses to moving schools. As part of the assessment approach, they should consider using standardised measures, such as the SCAS, and employing a range of support strategies, such as induction days, orientation visits, familiarity with timetables, maps of the

school, meeting school staff and other pupils, and a buddy system. In addition, the use of relaxation techniques should be considered as part of an overall support package. The provision of support for parents and other family members is another area worth pursuing. Finally, referral to other professionals for the treatment of anxiety symptoms may be indicated as there is evidence that young people with HFA and AS respond to treatments such as cognitive psychotherapy (Kuusikko et al., 2008).

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