Adjustment, sibling problems and coping strategies of brothers and sisters of children with autistic spectrum disorder

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Abstract

Background Siblings of children with autistic spectrum disorder (ASD) express more problem behaviours and experience more difficulties in their relationships than do children in families where all children are developing typically. We know little about what contributes to these difficulties.

Method Mothers of a child with ASD completed the Child Behavior Checklist (Achenbach, 1991) with respect to a non-disabled sibling. Siblings responded to a questionnaire tapping their knowledge about their brother or sister’s disorder. They reported on problems they had experienced with their brother or sister with ASD and on the coping strategies they had used in response to these events. Problems were classified into 1 of 5 problem types.

Results Aggressive behaviour was the most commonly reported interaction problem and anger was the usual response. Siblings did not generally choose blaming (either self or other) as a coping strategy when facing difficulties with their brother or sister with ASD. Neither coping strategies nor knowledge of ASD were associated with adjustment. Forty percent of non-disabled siblings had scores on the Child Behavior Checklist that placed them in the borderline or clinical range.

Conclusions The current study indicated that siblings of children with ASD are at increased risk of developing internalising behaviour problems. The contributing factors to this outcome are unknown at this point. It is important for research to focus on dynamic variables in the search for these contributors, as they are open to change.

Keywords: Sibling, autism, autistic spectrum disorder, Asperger syndrome, coping, adjustment, relationship

Introduction

Interactions with one’s siblings provide opportunities for experiencing and expressing many emotions, as well as for the practice, and perhaps mastery, of skills such as self-control, sharing, listening, conflict resolution, and fair play (Gibbs, 1993). Sibling relationships extend into adulthood but their character is generally established in the early years. It is likely that the quality of the relationship contributes to the overall psychological adjustment of children. Given the importance of experiences within the sibling subsystem, it is essential that we increase our understanding of the impact on children of possible disturbances within this subsystem.

While it has been established that the siblings of children with autistic spectrum disorder (ASD) experience more difficulties in their relationships than do children in families where all children are developing typically (Bägenholm & Gillberg, 1991), investigation of the day-to-day difficulties experienced by siblings of children with ASD and of how they cope with these stressors has been a relatively
deleterious outcomes (e.g., Fisman et al., 1996; Gold, 1993; Hastings, 2003; Smalley, McCracken, & Tanguay, 1995; Verté, Roeyers, & Buysse, 2003) while others have found no effects (e.g., see Kaminsky & Dewey, 2002; Mates, 1990). Based on analyses of effect sizes from three studies that reported poor outcomes for siblings (i.e., Fisman, Wolf, Ellison, & Freeman, 2000; Gold, 1993; Rodrigue, Geffken, & Morgan, 1993), Yirimiya, Shaked and Erel (2001) concluded that the overall effect of having a sibling with autism on children’s level of behavioural and emotional problems was of low magnitude and non-significant. Furthermore, Kaminsky and Dewey (2002) reported no significant differences in levels of internalising and externalising behaviour problems between siblings of children with autism, Down syndrome, or typical development. Overall, the three groups of siblings were well adjusted, with scores within the normal range.

While a wealth of literature has been devoted to family coping and adaptation to a child with a disability (e.g., Donovan, 1988; McCubbin & Patterson, 1983; Wikler, 1986), this conceptual approach has only rarely been extended to explore the ways children adjust to the difficult aspects of having a sibling with a disability. As Gamble and her colleagues have suggested, understanding the coping processes used by children who have a sibling with a disability may help to explain the observed variability in siblings’ psychological adjustment (Gamble & McHale, 1989; Gamble & Woulbroun, 1993).

Gamble and McHale (1989) investigated psychological wellbeing in siblings of children with a variety of disabilities in comparison to siblings of typically developing children. They examined stressful events, cognitive appraisals of those events, and the coping strategies used by the children. Children were asked to rate the frequency with which they experienced seven stressor events with respect to their sibling, and to appraise each event by reporting the level of affect experienced in response to that event. Coping strategies were identified by asking the children to nominate the frequency with which they used 16 different coping strategies when they became angry with their sibling. These strategies were collapsed into four general categories: environment-directed cognition, self-directed cognition, environment-directed behaviour, and self-directed behaviour. Gamble and McHale identified a trend for siblings of children with a disability (and girls in general) to report using “other-directed cognitions” (e.g., blaming another person) more frequently to cope with stressful sibling situations. This form of coping was subsequently linked to poorer adjustment, with siblings of children with a disability found to be the most poorly adjusted in the sample. Alternatively, “self-directed cognitions” (e.g., calm down) were negatively associated with depression and anxiety levels.

Multidagnostic groups may not be very informative about the experience of siblings of children with a specific disorder such as ASD (Cuskelly, 1999). The only study to date that has looked specifically at sibling coping with respect to difficulties with their brother or sister with ASD was carried out by Roeyers and Mycke (1995). This study was a partial duplication of Gamble and McHale’s (1989) study, but compared siblings of children with autism, intellectual disability, and typical development. Stressor events and coping strategies were measured using the same procedure as Gamble and McHale. Consistent with Gamble and McHale’s report, Roeyers and Mycke found that siblings of children with autism more frequently used “other-directed cognitions” to cope with stressful sibling incidents.

Another dynamic factor that may be important in determining the impact on children of living with a brother or sister with ASD is their knowledge and understanding of ASD. Howlin (1988) noted that the extent and openness of parental communication about ASD appeared to be a major factor in sibling adjustment, and hypothesised that sibling understanding of ASD was the critical mechanism. However, this conclusion reflected clinical observation rather than an empirical finding. Lobato and Kao (2002) reported an intervention study that found increased knowledge and improved adjustment in siblings of children with a disability post intervention. Although these results are promising, no comparison group was included and associations between knowledge and adjustment were not reported.

As mentioned above, Gamble and McHale (1989) found that “other-directed” cognitions were the least effective coping strategy for dealing with stressors originating from the sibling relationship. Use of this coping strategy by brothers and sisters of children with a disability may be more frequent in children who have a poor understanding of their sibling’s condition. Only one study investigating the relationship between siblings’ knowledge of ASD and the quality of the sibling relationship was identified. Roeyers and Mycke (1995) found that siblings with greater knowledge of ASD had a more positive relationship with their sibling. To date no research has investigated the relationship between siblings’ knowledge about ASD and their adjustment.
Three research questions guided this study: (1) What stressors are commonly experienced by the siblings of children with ASD? (2) What coping strategies do children use to deal with these situations? (3) What associations exist between children’s adjustment and the coping strategies they use and their knowledge about their sibling’s disorder?

**Method**

**Participants**

Participants were 25 typically developing children and adolescents who had a sibling with ASD, and their mothers. All children were from two-parent families. The children who participated in the study are referred to as “participating siblings”, and the children with ASD as “reference siblings”. The average age of participating siblings was 10.64 years (SD=2.33), with a range from 8–15 years. Nineteen of the participating siblings were male. Fourteen of the children were younger than their reference sibling. The average age of the reference siblings was 11.16 years (SD=2.79), with a range from 6–16 years. Nineteen were diagnosed with Asperger syndrome and six with autism. Twenty (80%) of the reference siblings were male. This is consistent with the male to female ratio of autistic spectrum disorders reported in the literature (e.g., American Psychiatric Association, 1994). There were two children in 60% of the families, 24% had three children, and 16% had four or more children. All mothers and children were English speakers.

**Measures**

**Gilliam Autism Rating Scale (GARS).** The Gilliam Autism Rating Scale (Gilliam, 1995) provided information on the severity of disability for the reference siblings. The instrument has a mean of 100 (SD=15). The overall mean level of severity of ASD was a standard score of 86.32 (SD=14.18), indicative of an average level of severity. When diagnostic groups were examined separately, children with autism were rated somewhat higher than children with Asperger syndrome (M=90.33 and 85.05 respectively). This difference in severity was not statistically significant.

**Child Behavior Checklist (CBCL).** The “Behavior Problem Scale” of the Child Behavior Checklist (Achenbach, 1991) gathers information on children’s problem behaviours. Items contribute to two broad-band scales, “Internalizing” (referring to problems such as depression and anxiety), and “Externalizing” (reflecting outwardly directed problem behaviours such as aggression). Raw scores are converted to T scores. While the instrument is not intended to be a stand-alone diagnostic tool, it can contribute to diagnostic decisions (Achenbach). Children who have a T score of 64 or above on these scales are considered to be in the clinical range, while those with a T score of between 60 and 63 are considered to be in the borderline range. Further assessment is warranted when T scores above 60 are obtained. Australian data have shown the structure of the CBCL to be appropriate for Australian children (Heubeck, 2000), with some studies showing a higher level of problem behaviour in Australian children than American children (Hensley, 1988; Sawyer et al., 2001), and others showing no difference (Bond, Nolan, Adler, & Robertson, 1994).

**Knowledge of Autism/Asperger Syndrome (KAAS).** Two questionnaires of 21 items were constructed by the authors of this study to assess children’s knowledge of their sibling’s disorder (i.e., autism or Asperger syndrome). Two questionnaires were considered necessary because in Australia, autism and Asperger syndrome are more commonly used as diagnostic labels than ASD. Children are asked to rate statements about their sibling’s disorder as either true or false. Items are based on definitions and criteria provided in the Diagnostic and Statistical Manual of Mental Disorders – 4th Edition (American Psychiatric Association, 1994), and cover aspects of the disorders such as course, prevalence, aetiology, cognitive ability, and associated features. Higher scores indicate greater knowledge of the disorder. As far as possible, parallel items were constructed for each measure. Three experts in the field of ASD contributed to the construction of the questionnaires to ensure that the items were clearly expressed and correctly scored. Cronbach Alpha was used to test internal consistency for each measure. Due to poor reliability estimates, 3 items were removed from the original questionnaire on Asperger syndrome, with the parallel items removed from the autism questionnaire. Alpha for the remaining questions on the Asperger syndrome questionnaire was .67. Alpha could not be calculated for the autism questionnaire due to low subject numbers. The final measures contained 18 items with a maximum score of 18. Questionnaires are available from the second author on request.

**Kidcope.** The Kidcope (Spirito, Stark, & Williams, 1988) is a brief paper-and-pencil self-report measure...
of children and adolescents’ use of coping strategies. It assesses 10 common cognitive and behavioural coping strategies, namely distraction, social withdrawal, wishful thinking, self-criticism, blaming others, problem solving, emotional regulation, cognitive restructuring, social support, and resignation. Two versions have been developed, one for children 7–12 years (15 items) and one for children 13–18 years (10 items) (Rodrique, Geffken, & Streisand, 2000). Children are asked to recall a recent problem (i.e., occurred in the past month) and are then asked how much (a) sadness (b) nervousness, and (c) anger it produced. Responses are on a 5-point scale anchored by “not at all” and “very much”. Children are then asked to indicate whether they used any of the 10 coping strategies with respect to the identified stressor. For every coping strategy children indicate they used, they are asked to rate on a 3-point scale (0 = “not at all” to 2 = “a lot”) how much the strategy helped (efficacy). Moderate test-retest reliability estimates (r = 0.41–0.83) have been reported over short time periods ranging from 3–7 days (Spirito et al., 1988). Concurrent validity has been displayed by moderate to high correlations of the Kidcope with other common coping measures (Spirito et al., 1988). The measure has been used to understand coping strategies used by children facing a number of difficulties including their own disability or illness (e.g., Edgar & Skinner, 2003; Garralda & Rangel, 2004).

Procedure
The study was approved by the ethics committee of the School of Education, University of Queensland. Participants were recruited from local parent support associations. In families where there was more than one sibling willing to participate, a child was randomly selected. Participating families were visited in their home by the first author. Both mothers and children provided written consent before data were collected. Mothers initially provided demographic information, then completed the GARS and the CBCL in that order. Subsequently, the first author administered the Kidcope and the KAAS to the participating sibling. These questionnaires were administered in a semi-structured interview format. This allowed younger children who had difficulty understanding some items to ask questions for further clarification. A series of standardised prompts and examples were used in such cases.

In a change from the usual procedure for administration of the Kidcope, children in this study were asked to provide three (rather than one) examples of a problem they had experienced with their sibling. This modification was adopted as we wished to ascertain whether the initial problem identified by the participating siblings in response to the prompt was sufficiently representative of their concerns about their brother or sister’s interactions with them. It seemed probable that there would be a range of problem types experienced within each dyad. We were also interested to know whether similar coping strategies were chosen, irrespective of the problem type. Coping strategies and efficacy information were collected about each of the three problems in turn. Prior to statistical analyses of the data, information gathered from the Kidcope on the types of sibling-related problems identified by the participants was sorted into specific categories. The categorisation system was developed from the data and was designed to reflect the underlying problem types. The authors initially developed operational definitions for 12 main problem types. These were then collapsed into 5 categories: Aggressive Behaviours (i.e., physical aggression, verbal aggression, destruction of property, disruption); Social Difficulties (i.e., invasion of privacy, lack of social reciprocity, lack of sharing); Syndrome-specific Behaviours (i.e., communication impairments, unusual behaviours, inability to cope with change; lack of understanding of agency); Concern for Sibling (i.e., worry about outcomes for brother/sister); and Other (problems which could not be categorised into one of the original 12 categories). In cases where problem descriptions could be categorised as both Aggressive Behaviours and another category, privilege was given to Aggressive Behaviours. This decision was based on the view that aggression, disruption and destructive behaviours would have a greater impact on the sibling relationship than other behaviours. Table 1 presents the operational definitions for each category.

The problem descriptions provided by the participating siblings were first categorised by the authors independently of each other. Discrepancies were discussed and some definitions were clarified. The authors subsequently reached 100% agreement. Two other experts in the field of ASD subsequently coded the problem descriptions using the classification system presented in Table 1. Inter-rater reliability was 82.6%, an acceptable level.

Results
Prior to addressing the research questions, descriptive data about the participating siblings’ adjustment and knowledge of ASD is presented.
Psychological adjustment

The mean level of T scores for Internalising and Externalising problem behaviours on the Child Behavior Checklist (CBCL) for the participating siblings was 55.68 (SD=11.88) and 48.04 (SD=10.48) respectively. Scores were normally distributed and mean scores were well within the non-clinical range. Due to the small sample size, sex comparisons were not undertaken. Using paired t-tests, a significant difference was found between the level of Internalising and Externalising problem behaviours in the sample: \( t (24)=3.56, \ p<.01 \). Eight siblings (7 males) were identified to be within the clinical range on Internalising problems, and two (1 male) were within the borderline range. Three children were in the clinical range on the Externalising scale and two were in the borderline range. These five children were all males who were also in the clinical range on the Internalising scale. Forty percent of the participants were therefore identified as experiencing adjustment problems of sufficient severity to be of concern.

Knowledge of disorder

On average, participating siblings scored moderately well on the questions of the KAAS, indicating a reasonable understanding of their sibling’s condition.

<table>
<thead>
<tr>
<th>Primary categorisation</th>
<th>Problem type</th>
<th>Operational definition</th>
</tr>
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<tbody>
<tr>
<td>Aggressive Behaviours</td>
<td>Physical aggression</td>
<td>Any behaviour directed towards another resulting in physical harm or pain (e.g., pushing, hitting, kicking, punching, etc.)</td>
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<tr>
<td></td>
<td>Verbal aggression</td>
<td>Verbal aggressive statements directed towards another person (e.g., shouting, swearing, teasing)</td>
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<tr>
<td></td>
<td>Destruction of property</td>
<td>Any physical act resulting in the damage or destruction of property</td>
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<td></td>
<td>Disruption</td>
<td>Annoying and provoking behaviours directed towards the sibling or others (e.g., deliberately turning off the TV to spite the sibling; interrupting the sibling when talking, etc.)</td>
</tr>
<tr>
<td>Social Difficulties</td>
<td>Invasion of privacy</td>
<td>Failure to respect the needs of others for private space and time (e.g., going into sibling’s room without permission)</td>
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<tr>
<td></td>
<td>Lack of social reciprocity</td>
<td>Impairment in social interactions whereby one child does not reciprocate in a social manner (e.g., child doesn’t get involved in simple social play or games; prefers solitary activities; rejects invitations to engage with others; doesn’t understand game rules)</td>
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<tr>
<td></td>
<td>Lack of sharing</td>
<td>Difficulties in understanding the need to apportion time with property items (e.g., television)</td>
</tr>
<tr>
<td>Syndrome-specific Behaviours</td>
<td>Communication impairments</td>
<td>Qualitative impairments in communication skills and language use (e.g., phrase repetition, unusual pitch, humming, etc.). Also includes failure to understand another person’s language or communication directed towards them.</td>
</tr>
<tr>
<td></td>
<td>Unusual behaviours</td>
<td>Odd behaviours that are seen as inherent to the child with ASD and are inappropriate given the child’s chronological age.</td>
</tr>
<tr>
<td></td>
<td>Inability to cope with change</td>
<td>Any inappropriate behaviours occurring in response to a disruption of ritualised routines (e.g., shouting, physical aggression, etc.)</td>
</tr>
<tr>
<td></td>
<td>Lack of understanding of agency</td>
<td>Child blames sibling for something outside the sibling’s control (e.g., tuckshop not open)</td>
</tr>
<tr>
<td>Concern for Sibling</td>
<td>Concern for sibling</td>
<td>General concerns or worries that something negative may happen to their sibling (e.g., that they will be teased by other children, etc.)</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Any problems that do not fall into the above categories.</td>
</tr>
</tbody>
</table>
Children correctly answered an average of 66% of the questions on the knowledge questionnaire. KAAS scores were not significantly correlated with age of the participating sibling.

Consistency of problem type and affect

We initially examined children’s descriptions of problem interactions to ascertain whether similar problem types were reported across the three responses. Nine children (36%) gave a response that fell within the same category for all three incidents, nine gave two responses that were of the same type, and seven (28%) gave answers that reflected three different categories. Of the initial responses, 52% described an incident that was categorised as aggressive, 20% were categorised as social problems, 16% as syndrome-specific, 4% as concern for the sibling, and 8% were unable to be classified. When all 75 responses were classified, these proportions remained much the same: 53% were categorised as aggressive, 16% as social difficulties, 20% as syndrome-specific, 5% as concern for the sibling, and 5% as “other”.

Correlations of reports of emotional responses were undertaken using \( p < .01 \) to guard against Type 1 error. The purpose of the initial analyses was related to the validity of the emotional response aspect of the Kidcope. If the information from this element is to be useful, then children need to be able to discriminate between the different emotional states. High correlations between nervousness, anger and sadness experienced in response to an incident would suggest that the instrument was failing in this regard. None of the associations between children’s reports of their emotional response to the problem they described reached significance, suggesting that children were in fact discriminating between the various emotions.

The second set of analyses was undertaken to ascertain whether children responded to the same problem types with the same levels of emotion across different incidents. Eighteen children identified an incident that was categorised as of the same type on at least two occasions. Correlations between levels of nervousness were high and significant (\( \rho = .61, \ p < .01 \)); for reports of sadness they were moderate but failed to reach significance (\( \rho = .49 \)); and for the experience of anger they did not reach significance (\( \rho = .32 \)). A similar analysis was conducted for incidents that were classified as aggressive, however only 11 children provided two incidents of an aggressive interaction with their sibling. Level of sadness was highly correlated following an incident of aggression (\( \rho = .87, \ p < .001 \)), but ratings of nervousness (\( \rho = .49 \)) and anger (\( \rho = .40 \)), while moderate, did not reach significance. No other type of problem was reported at a high enough rate to allow this analysis to be attempted.

Coping strategies

We were interested to know if there was a coping strategy that was typically used following a problem interaction of a specific type. Twenty-one children (84%) reported an aggressive incident at least once. For the following analysis, we took the first occasion on which each child reported such an incident and examined his/her response. All children reported using at least three coping strategies in response to an aggressive incident, with one child reporting using all ten. The median number of strategies reported was six.

The most common coping strategies used in response to aggression were emotional regulation and wishful thinking, both reported by 91% of the children. These were followed by social withdrawal (86%), distraction (81%), problem solving (71%), social support (62%), resignation (57%), cognitive restructuring (48%), blaming others (24%), and self-criticism (10%).

For each coping strategy used, children were asked to rate how efficacious they found the strategy in dealing with the problem. For this analysis, scores were collapsed into two categories, “not efficacious” (scores of 0), and “efficacious” (scores of 1 or 2). The proportion of children who used a strategy and who considered it to be helpful were as follows: emotional regulation (84%), wishful thinking (84%), social withdrawal (89%), distraction (90%), problem solving (93%), social support (92%), resignation (58%), cognitive restructuring (100%), blaming others (60%), and self-criticism (50%).

The Friedman rank test indicated significant differences between the strength of the emotions felt by the participating siblings after an incident of aggression: \( \chi^2(2) = 12.99, \ p < .01 \). Follow-up Wilcoxon tests showed that anger was a significantly stronger response than either sadness or nervousness (\( Z = -2.76 \) and \(-2.84 \) respectively, both \( p < .01 \)). There was no significant difference between sadness and nervousness. The mean for anger following an incident of aggression was 3.57 (\( SD = 1.21 \)). The mean for sadness was 2.24 (\( SD = 1.34 \)) and for nervousness it was 1.90 (\( SD = 1.18 \)).

Due to our interest in incidents classified as syndrome-specific, we repeated the above analyses for those occasions when such a behaviour was reported. As the number of these incidents was small \((n = 15)\) and only 12 children reported such an
Scores and again there was no significant difference. The most commonly used coping strategy for syndrome-specific incidents was wishful thinking (92%), followed by emotional regulation (83%), and distraction (83%). Social withdrawal and problem solving were used by 75% of the children, followed by resignation (67%), cognitive restructuring (58%), social support (50%), self-criticism (17%), and blaming others (8%). The proportion of children who used a strategy and who considered it helpful were as follows: wishful thinking (73%), emotional regulation (100%), distraction (100%), social withdrawal (89%), problem solving (100%), resignation (75%), cognitive restructuring (100%), social support (100%), self-criticism (50%), and blaming others (100%). There was no difference between the strength of emotions children reported feeling after such a problem interaction (Anger: $M=3.58$, $SD=1.31$; Sadness: $M=2.33$, $SD=1.44$; Nervousness: $M=2.17$, $SD=1.64$).

Factors associated with adjustment

To investigate whether either the number of strategies used or children’s perceptions of coping efficacy were related to the adjustment measures, correlational analyses were undertaken. The number of strategies used was determined by identifying all the strategies a child reported using over the three incidents. For example, a child may not have used blame in response to the first reported problem but may have used it for the second. No strategy was counted more than once, therefore the total could range from 0–10. The minimum number of strategies reported by participating siblings was 4, and the maximum was 10. A mean efficacy score for each participating sibling was generated by totalling the efficacy score for each of the three reported incidents and dividing by 3. There was no significant correlation between Internalising and Externalising scores and either the number of strategies (Internalising $\rho=-.10$; Externalising $\rho=-.01$) or the mean efficacy score (Internalising $\rho=-.06$; Externalising $\rho=.01$).

Participating siblings were divided into two groups based on their CBCL scores. The 10 whose score placed them in the borderline or clinical range were identified as the “clinical” group, and the remaining 15 as the “non-clinical” group. Using Mann-Whitney $U$, the two groups were compared on the number of strategies used and on their mean efficacy scores. No significant difference was found.

This group comparison was repeated for KAAS scores and again there was no significant difference found between the two groups. In addition, when knowledge scores were correlated with Internalising and Externalising scores, relationships were non-significant (Internalising $\rho=.13$; Externalising $\rho=.23$).

Discussion

A substantially larger proportion of siblings of children with ASD in this study had scores on the CBCL that placed them in the at-risk or clinical range than would be expected. Six percent of the normative sample are in these categories (Achenbach, 1991), and 13% have been found to fall into these categories in a large-scale national study (Sawyer et al., 2001). Although the mean levels of internalising and externalising behaviour scores were well within the normal range for the participating sibling group, 40% of the siblings were reported by their mother to have significant adjustment problems, predominantly internalising difficulties. The current findings are consistent with Gold (1993), who noted clinical levels of depression in adolescent siblings of children with autism, and with Fisman and colleagues (1996, 2000), who identified significantly higher levels of internalising and externalising behaviour problems in siblings of children with Pervasive Developmental Disorder over a 3-year period. Smalley et al. (1995) also found an increased rate of major depressive disorders among siblings of individuals with autism, and suggested that the familial link of autism and depressive disorders could be due to shared genetic underpinnings. With the knowledge that the incidence of autism increases markedly in first-degree relatives (e.g., Piven et al., 1990), it is possible that male siblings are at an increased genetic vulnerability for developing adjustment difficulties. It is important to keep in mind, however, that the sample included in the study reported here was small, included only English-speakers, and may therefore be unrepresentative. The fact that the sample was comprised of volunteers may also contribute to bias, with parents who were concerned about the participating sibling’s adjustment being more likely to agree to take part in the study.

Aggression was identified as the most common type of stressor within the sibling interaction, with 84% of participating siblings reporting it as a concern. Furthermore, 52% of participating siblings reported aggressive behaviours as a problem on the first occasion when they were asked to identify a problem they were having with their sibling. This is consistent with Bägenholm and Gillberg (1991), who found that a disproportionate number of siblings of children with autism reported problems...
with their sibling disturbing them and breaking their property. However, due to the lack of a comparative sample of siblings of typically developing children, it is unclear whether the predominance of aggressive problems in the dyad is specific to families with a child with ASD. Aggressive behaviour may well reflect typical sibling relationships and interactions. Further examination with an appropriate comparison group is required to determine whether it is particularly characteristic of sibling interactions in families with a child with ASD. Not surprisingly, anger was found to be the strongest emotional reaction to aggressive behaviours. The fact that two-thirds of the group provided more than one type of problem when given the opportunity points to a limitation of the Kidcope in identifying the range of problems experienced by the group.

Choice of coping strategies did not appear to be problem specific. Participating siblings' reported use of coping strategies was very similar across aggressive and syndrome-specific incidents. Emotional regulation and wishful thinking were the most common strategies for both types of problem. The least common coping strategies were blaming others (24% and 8% respectively) and self-criticism (10% and 17% respectively). The finding that emotional regulation was the most frequently used strategy in response to aggression is interesting, as anger was the strongest emotional response to aggressive behaviours. It is possible that siblings of children with ASD are aware of the level of anger that aggressive behaviours produce in them and choose to cope with the situation by actively controlling their emotions. The equally high level of wishful thinking suggests that siblings of children with ASD have a strong desire for things to be different.

The fact that blaming others was one of the least commonly endorsed coping strategies suggests that the participants in this study did not blame their sibling for their aggressive behaviours. This is in contrast to the findings reported by both Gamble and McHale (1989) and Roeyers and Mycke (1995). In both these studies, other-directed cognitions were the most frequently used strategy for coping when difficulties arose between siblings. However while the age range of the children in the study reported here was very similar to that of the children in the Gamble and McHale study, 14 of the 25 participants in this study were younger than their brother or sister with ASD, whereas all siblings in Gamble and McHale's study were older. It is possible that children who are older than their brother or sister with a disability might adopt a more blaming attitude than those who are younger, but it is difficult to see why this would be the case.

Differences in child-rearing practices between countries may contribute to these contrasting findings, however a more likely explanation lies in the different composition of the groups of children with a disability used in the two studies. Those in the Gamble and McHale study had a range of disabling conditions, including cerebral palsy and acquired brain injury, and all had an intellectual disability. All the children in the study reported here had a diagnosis that placed them on the autism spectrum, and thus they would have been a more homogeneous group. It is clear that parents had made some effort to assist the non-disabled child to understand the impact of the condition on their sibling's behaviour, as they had a good understanding of the condition(s). This understanding may have led children to consider some behaviour to be outside the control of their sibling. This may be less likely to occur for children with other disabilities. It is also possible that the respondents in this study were influenced by a desire to present themselves in a good light and therefore under-reported their use of blaming others as a coping strategy. This possibility could best be addressed by a study that triangulated reports from a number of family members.

Investigation of the association between the psychological adjustment of siblings of children with ASD and their knowledge of their brother or sister's disorder, as well as their perception of coping efficacy, found them to be unrelated. The lack of association between the variables may be due to the small sample size. It may also be that children who were in the borderline or clinical range on the CBCL found the coping strategies they used to be as helpful as did children with lower scores. It is also possible that other dynamic variables not assessed in the current study – for example, parenting style, parent distress, and family coping style and adaptation – may be more important in influencing adjustment in the siblings of children with ASD. Reliance on self-report measures could also have contributed to the study's outcomes. For a more in-depth assessment and understanding of children's coping styles and processes, an interview with the child is warranted (Spirito, 1996). A comprehensive interview may highlight differences in children's coping efficacy and more clearly identify strategies that are used by well-adjusted children.

**Directions for future research**

While the current study failed to find an association between coping efficacy and adjustment, it is believed that a paradigm shift away from focusing on status variables towards approaches aimed at identifying
Kidcope has some value in helping us to understand the view that the emotional response aspect of the nervousness and sadness when separate incidents consistency between children's reports of levels of nervousness, sadness and anger. There was some children were able to discriminate between the emotions described were uncorrelated, suggesting that children with ASD present with unique stressors in their sibling relationships.

Further research using the Kidcope, and focusing on its psychometric properties, would be most useful. The establishment of a valid tool for collecting data about children’s sibling experiences, coping strategies and emotional responses would be very helpful. In this study, children’s reports of emotion following each individual incident they described were uncorrelated, suggesting that children were able to discriminate between the emotions of nervousness, sadness and anger. There was some consistency between children’s reports of levels of nervousness and sadness when separate incidents were examined. These two findings together support the view that the emotional response aspect of the Kidcope has some value in helping us to understand children’s emotional experiences.

Conclusion
The current study indicated that siblings of children with ASD are at an increased risk of developing internalising behaviour problems. The contributing factors to this outcome are unknown and may include a genetic predisposition. It is important for future research to focus on dynamic variables in the search for these contributors since, by definition, they are open to change.

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