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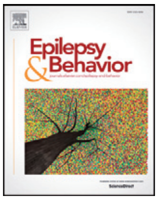

Social functioning in pediatric epilepsy reported by parents and teachers: Contributions of medically related variables, verbal skills, and parental anxiety

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ABSTRACT

Children with epilepsy are at increased risk for deficits in social functioning, though the underlying causes are not well-understood. We examined multiple seizure-related, demographic, and cognitive variables in a group of 93 pediatric patients with intractable seizures who were at risk for social skills deficits and social problems at home and in the classroom. Verbal intelligence and parental anxiety about epilepsy were found to be the two primary predictors of social functioning in children with epilepsy as reported by parents and teachers. Though other social variables and secondarily generalized seizures were significantly correlated with certain aspects of parent-reported social functioning, the impact of these variables appeared to be mediated through verbal intelligence and/or parental anxiety about epilepsy. These findings emphasize the importance of family characteristics on social functioning in children with epilepsy and also suggest that parental anxiety about their child's epilepsy may be a specific risk factor for this population. The findings from this study suggest that the factors associated with social functioning in children with epilepsy are similar regardless of whether social functioning is assessed by the parent or the classroom teacher.

1. Introduction

Children with epilepsy are known to be at risk for behavioral and social problems, as compared with both the general population and children with other medical conditions [1–3]. In addition to more general behavioral and mood disturbance, young people with epilepsy are likely to have poorer social competence than those never diagnosed with epilepsy [1,3] and poorer social skills than their siblings [4]. Here, the term social competence reflects a child's capacity to integrate behavioral, cognitive, and affective skills to adapt flexibly to diverse social contexts and demands, [5] and social skills are defined as specific behaviors, both verbal and nonverbal, that result in positive social interactions and effective interpersonal communication [6]. Social problems reflect a deficiency in these skills leading to difficulties interacting with others according to social conventions [6] and are a lifelong concern for this population. Camfield and Camfield [7] reported that adults with lifelong epilepsy were less likely than adults with other chronic medical conditions to be employed, be married, live independently, or have social relationships. Despite the apparent importance of social skills, this has been an understudied aspect of childhood epilepsy [8].

The roots of general behavioral difficulties in individuals with epilepsy have been shown to be multietiologic as are, presumably, the causes of specific social problems. Seizure-related variables, family stressors and resources, and comorbid cognitive and linguistic deficits all have been shown to play a role in behavioral functioning [9]. Even though seizure-related variables would be expected to be a clear marker for difficulties in social functioning, studies of medically related variables and social functioning have not revealed strong relationships. For example, though Freilinger et al. [10] found increased social problems in children with symptomatic epilepsy syndromes, an earlier age of onset, and AEM (antiepileptic medication) polytherapy, these variables only explained a small amount of the variance in social functioning. A recent review of studies of social competence in children with epilepsy [11] concluded that, although etiology, seizure frequency, and seizure type are the variables most commonly associated with social competence, the findings have not been consistent. When relationships have been found, they have not accounted for much variance in behavior.

Austin and Caplan [9] argued that the failure to find strong relationships is due to methodological issues, but the weak relationships may reflect the fact that environmental variables are more influential. When seizure-related variables are investigated along with family factors, the

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latter category of variables emerges as a stronger predictor of behavioral functioning generally [12]. A number of family characteristics – such as maternal anxiety, family stress, socioeconomic status, lack of adaptive resources (such as family cohesion), and poor coping responses (e.g., more negative parent–child interactions and psychological control) – have all been identified as risk factors for behavioral dysfunction in children with epilepsy [9,13–15]. These relationships are unsurprising since these family factors have been identified as risk factors for behavior problems in the general population [16–18], and there is no reason to think that they would be any less impactful for children with seizure disorders.

In addition to family factors that influence the behavioral development of children in the general population, children with epilepsy may be affected by family factors that are specific to this medical condition. The diagnosis of epilepsy and the experience of seizures are anxiety-provoking for parents and that heightened anxiety may have a deleterious effect on the child's life and, consequently, his or her development. For example, quality of life has been shown to be negatively impacted by both parental perceptions of stigma toward their child's epilepsy and parental fears and concerns about epilepsy [19]. Parents who are more controlling and indulgent in their parenting style have been found to impose increased social restrictions on their child with epilepsy [20], and that parenting style may be the result of increased anxiety about their child's epilepsy [21]. Parental anxiety could, therefore, potentially exacerbate social problems in children by limiting their social opportunities.

The current study investigated the relative effects of medical variables (age of onset, duration of epilepsy, seizure frequency, secondarily generalized seizures, abnormal MRI findings, and number of AEMs), socioeconomic factors (number of parents in the home, parental education, and financial status), and parental anxiety about epilepsy on social functioning. In addition, verbal IQ was also included in our predictive models to control for the impact of general verbal ability on social skills. Social skills were assessed by both parent and teacher reports to determine whether the findings generalize across observers and social settings. The inclusion of teacher reports mitigates the possible bias inherent in reliance on parent report alone. We hypothesized that parental anxiety would contribute more significantly to social problems in children with epilepsy than medical seizure variables and general environmental factors.

2. Methods

2.1. Participants

Study participants were 93 children and adolescents (ranging in age from 6 to 18 years) and their parents. Teacher reports were available for 52 study participants. Participants were recruited from a population of pediatric patients evaluated for epilepsy surgery at Texas Children's Hospital in Houston. Families were invited to participate in the study if the patient had a full-scale IQ > 70 and an accompanying parent who could speak and read English. Patients with progressive neurological disorders were excluded. The clinical and demographic characteristics of the participants are presented in Table 1.

2.2. Procedure

Social competence and parental anxiety about epilepsy were assessed as part of a clinical neuropsychological evaluation in children and adolescents who were being considered for surgery for intractable epilepsy. Participants were recruited in the preoperative period and enrolled after parental written informed consent, and when applicable, patient assent was received. The Institutional Review Board at Baylor College of Medicine approved the study.

Medical information was collected from medical records and parents. Ninety-seven families were invited to participate, and four declined. While their child completed a full neuropsychological evaluation, parents completed a questionnaire that provided demographic information and relevant seizure history. They also completed the Parental Anxiety about Epilepsy Questionnaire (PAE) and the Child Behavior Checklist (CBCL). Parents were provided a Student Behavior Survey (SBS), along with instructions for teachers on how to complete and return the form. Parents were asked to give the questionnaire to a teacher who knew their child well. Environmental variables, reported by parents, included number of parents in the home, parental level of education, and financial status, as indicated by qualifying for government-subsidized health insurance. Seizure-related variables, as obtained from the child's medical records and parent report, included age at onset, duration of illness, number of AEMs, presence of a focal lesion on MRI, and whether seizures secondarily generalized. Seizure frequency was estimated from parent report of the number of seizures in the past three months.

Table 1
Demographic and clinical characteristics.

Mean age (*SD*)	12.32 (2.95)
Sex	
Female	50.5%
Single parent household	30%
Mean years of parent education (*SD*)	14.52 (2.33)
<12 years	3%
High school	23%
Some college	27%
College degree	36%
Postgraduate education	11%
Public medical insurance	26%
Mean age at seizure onset in years (*SD*)	6.86 (4.02)
<12 months	7%
1–5 years	28%
>5 years	65%
Mean duration of disorder in years (*SD*)	5.39 (3.93)
<1 year	6%
1–5 years	54%
>5 years	40%
Seizure frequency in previous 3 months (range)	84.29 (0–1800)
0	13%
1–10	35%
>10	52%
Secondarily generalized seizures	53.8%
Mean number of anticonvulsants (*SD*)	1.83 (.73)
1	34%
2	50%
3	16%
MRI findings consistent with seizure focus	75.3%
Mean verbal IQ (*SD*)	95.07 (13.16)
Mean score for PAE scale (*SD*)	36.17 (12.49)

Note: PAE = Parent Anxiety about Epilepsy.

2.3. Instruments

2.3.1. Child Behavior Checklist (CBCL)

The CBCL is a widely used standardized form for parental ratings of 118 behavioral/emotional problems and adaptive characteristics from the Achenbach System of Empirically Based Assessment [22]. Given the focus of the current study, T-scores ($M = 50, SD = 10$) for the Social Problems subscale and the Social Competence subscale were examined. The Social Problems subscale includes items such as the following: acts too young for his/her age, clings to adults or too dependent, does not get along with other kids, gets teased a lot, not liked by other kids, and prefers being with young kids. The Social Competence scale is derived from the parent report of the child's social functioning and participation, i.e., number of organizations the child belongs to, the participation and skill in these organizations (rated as 'less than average', 'average', or 'more than average'), number of friends, frequency of contact with friends, behavior with others, and behavior alone. The CBCL has been found to be a valid measure of the assessment of