Brief Report: Adolescents’ Attitudes Toward Epilepsy: Further Validation of the Child Attitude Toward Illness Scale (CATIS)

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Objective: To examine adolescents’ attitudes toward having epilepsy using the Child Attitude Toward Illness Scale (CATIS) and to provide further psychometric validation of the scale in this population.

Methods: Participants were 197 adolescents aged 11 to 17 years who completed the CATIS at two points and two external validation scales. Test-retest and internal consistency reliability and construct validity were computed. Analysis of variance was used to examine differences in attitudes according to gender, age, and epilepsy severity.

Results: Girls, older adolescents, and those with more severe epilepsy had more negative attitudes toward having epilepsy than boys, younger adolescents, and those with moderate or mild epilepsy, respectively. Psychometric analyses yielded excellent internal consistency reliability and good test-retest reliability. The CATIS was moderately correlated with self-esteem and mastery, supporting its construct validity.

Conclusions: The CATIS is a useful and psychometrically sound tool to assess adolescents’ attitudes toward having chronic illness.

Key words: adolescents; epilepsy; attitudes; CATIS; psychosocial.

Adjustment to one’s illness during childhood sets the stage for later adjustment in adulthood (Patterson, 1988). Adolescence is a particularly significant developmental period for those with a chronic health condition. Successful negotiation of the physical, cognitive, social, and emotional changes taking place as a result of puberty and maturation may be more challenging against a background of illness (Strax, 1991). For example, the formation and consolidation of personal identity and sense of self are critical tasks in adolescence. Feelings about one’s illness may be intimately related to feelings about oneself (Austin & Huberty, 1993). Therefore, adolescents’ attitudes toward their illness can influence their adjustment to their condition as well as their ability to meet some of the challenges of adolescence. Negative attitudes toward having a chronic condition have also been related to increased depression, increased behavioral problems, and decreased academic achievement in children with either epilepsy or asthma (Austin & Huberty, 1993; Austin, Huberty, Huster, & Dunn, 1998).

The Child Attitude Toward Illness Scale (CATIS)
was developed to measure children’s unfavorable or favorable feelings about having a chronic illness (Austin & Huberty, 1993). The CATIS is a brief 13-item, self-report instrument designed to be completed independently by children as young as 8 years of age and is geared toward a third grade reading level. Of the 13 items, 4 have a 5-point response format of bipolar adjectives, and 9 items ask the children to rate how often they have feelings that reflect positive or negative evaluations about having their chronic condition. The scale was developed to allow for the insertion of the specific medical condition into most items. Table I presents the CATIS in its entirety.

Tests of the construct validity of the CATIS also yielded good results. Confirmatory factor analysis indicated one unitary construct underlying the CATIS, with lambda values ranging from .33 to .84 for 10 of 13 scale items (Austin & Huberty, 1993). Relationships between the CATIS and relevant psychosocial variables have also been significant in the expected directions, further suggesting construct validity. For example, 8- to 12-year-old children’s attitudes were negatively correlated with depression, according to both mother’s \( r = -.23, p < .01 \) and father’s \( r = -.32, p < .01 \) ratings on the Child Behavior Checklist (CBCL). Children’s attitudes were negatively correlated with parents’ reports of behav-
ior problems on the CBCL ($r = -.22, p < .01$ with mother’s rating; $r = -.43, p < .01$ with father’s rating). Similarly, children’s positive attitudes toward illness were correlated with their self-reported total score on the Piers-Harris Children’s Self-Concept Scale ($r = .48, p < .01$) (Austin & Huberty, 1993), with the Happiness and Satisfaction subscale ($r = .45, p < .01$), and negatively correlated with the Anxiety subscale ($r = -.54, p < .01$) (Austin, Smith, Risinger, & McNelis, 1994). A low but significant negative correlation was found between the attitudes of children with epilepsy and the frequency of their illness episodes ($r = -.19, p < .05$), suggesting that having more frequent seizures is related to less positive attitudes about the illness (Austin & Huberty, 1993). Although seizure frequency was related to attitudes, neither seizure type nor seizure severity was examined in the two development samples.

The CATIS has been used only once with adolescents in a larger study on quality of life in epilepsy and asthma (Austin, Huster, Dunn, & Risinger, 1996). The coefficient alpha was .86. However, no validity data were reported. In addition, almost half of the epilepsy sample and one fifth of the asthma sample had inactive conditions (i.e., no symptoms and no medication). The failure to explore variation in illness severity within the subgroup of those with active epilepsy suggests that the validity of the CATIS was not adequately tested in this study (Joan K. Austin, 1999, personal communication).

Therefore, we know little about attitudes toward illness among adolescents. The purpose of this report was to examine adolescents’ attitudes toward their epilepsy and to validate the CATIS in a large sample of adolescents who were being actively treated for epilepsy. Previous studies (Austin & Huberty, 1993; Austin et al., 1994) have demonstrated positive relationships between children’s feelings about themselves and their attitudes toward their illness. We hypothesized that CATIS scores would be similarly positively correlated with self-esteem in adolescents. Furthermore, the importance of a sense of control over and the ability to cope with one’s epilepsy has been related to positive perceptions of quality of life in adults (Amir, Roziner, Knoll, & Neufeld, 1999). We hypothesized that positive attitudes toward one’s epilepsy would be related to a sense of mastery over the illness. We also examined the relationships between adolescents’ attitudes toward having epilepsy and their gender, age, and illness severity. Based on the findings of Austin et al. (1996), we hypothesized that girls and adolescents with more severe epilepsy would have more negative attitudes toward their epilepsy than boys and adolescents with less severe epilepsy. If adolescents with more severe epilepsy had more negative attitudes toward having epilepsy, then results would also support validity.

**Method**

### Sample Characteristics

The sample consisted of 197 adolescents with epilepsy from 23 clinical sites across the United States and Canada who participated in a larger study on quality of life in adolescents with epilepsy (Cramer et al., 1999).

Eligibility criteria included English-speaking status, age 11 to 17 years, active epilepsy within the previous 2 years, diagnosis of epilepsy for at least 1 year, ability to read at the fifth grade level, and the company of a parent or guardian for the first visit. Adolescents diagnosed with either primary generalized (absence, myoclonic, tonic-clonic seizures) or partial epilepsy (simple partial, complex partial, secondarily generalized tonic-clonic seizures) were included.

Potential participants were excluded for any of the following reasons: other medical or psychiatric illness requiring current treatment, on any medication with central nervous system side effects other than antiepileptic drugs, brain surgery in the past year, or a significant change in treatment regimen within 4 weeks prior to participation. Table II shows the demographic and seizure-related characteristics of the sample.

### Procedure

The protocol and consent forms were approved by the institutional review board at each individual study site. At each site, a research coordinator was assigned to recruit participants, administer informed consent, describe the study, interview the adolescent and parent, and instruct the participants on how to complete the self-administered questionnaires. Detailed recruitment and questionnaire administration procedures and other staff guidelines were provided to each research coordinator to encourage standardization across sites. Participants were offered compensation for their time. Further
description of the procedures entailed in conducting the larger quality-of-life study can be found elsewhere (Cramer et al., 1999).

Adolescents completed the CATIS at two time points. Time 2 data were collected 2 to 4 weeks after Time 1. Adolescents also completed two external validation scales measuring mastery and self-esteem to assess construct validity. Demographic information was obtained by parent and adolescent interview. Seizure characteristics were determined through a combination of chart review, physician account, and self-report by the parent and the adolescent.

Measures

Attitude Toward Illness. The CATIS was used to reflect attitudes toward having epilepsy and is described in the preceding section. A mean item attitude score was calculated. Eight items (nos. 1, 2, 4, 5, 7, 9, 11, and 13) were recoded such that higher scores reflected more positive attitudes and lower scores reflected more negative attitudes. Mean item scores range from a low of 1 to a high of 5.

Mastery: The Ilfeld Self-Efficacy Scale (ISE; Ilfeld, 1978). This established 7-item measure assesses perceived degree of mastery or control over various life situations. The scale has a 4-point Likert format ranging from 1 (strongly agree) to 4 (strongly disagree). Scores range from a low of 7 to a high of 28, with higher scores reflecting greater perceived mastery. Cronbach’s alpha is reported in the manual as .86. Construct validity has been demonstrated through correlations with depression ($r = -.30$) and self-esteem ($r = .48$; Seeman, 1991).

Self-Esteem. Self-esteem was measured using the 10-item Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965, 1979). The RSE is frequently used to assess feelings of self-acceptance and self-worth. It is scored using a 4-point Likert format resulting in a scale range of 10 to 40, with higher scores reflecting higher self-esteem. Reliability ($\alpha = .74$ and .77; McCarthy & Hoge, 1982) and construct validity correlations (e.g., $r = .65$ with confidence, $r = .72$ with the Lerner Self-Esteem Scale, $r = -.64$ with anxiety, and $r = -.54$ with depression) are well documented (Blascovich & Tomaka, 1991).

Epilepsy Severity. Severity was created as a composite measure of both seizure frequency and seizure type and was coded as no seizures in the past year, low severity, and high severity (see Cramer et al., 1999, for a complete description).

Data Analysis

Data were available at Time 1 for 189 adolescents and for 178 adolescents at Time 2. Matched pairs of data were available for the 166 adolescents who completed both visits.

Reliability was estimated in several ways. First, Cronbach’s alpha coefficient was used to estimate internal consistency reliability. Corrected item-total correlations and individual alpha coefficients were calculated for each item. For those adolescents who completed the CATIS at two points in time, test-retest reliability was estimated by computing the Pearson product-moment correlation as well as the intraclass correlation coefficient. External construct validity was evaluated by correlating the total CATIS score with the total scores on the mastery and self-esteem measures. Moderate correlations ($r = .40$ to .60) would indicate support for validity.

To determine whether CATIS scores differed according to gender, age, and illness severity, a one-way analysis of variance (ANOVA) was performed on each variable with CATIS score as the dependent measure.
**Results**

Mean item scores are presented in Table I. Means ranged from 2.36 for “how bad or good do you feel it is to have epilepsy” to 4.36 for “how often do you feel that your epilepsy is your fault.”

**Reliability**

Internal consistency reliability was determined for CATIS scores at Time 1 data collection. The coefficient alpha was .89. Corrected item-total correlations ranged from .31 to .78, with 11/13 items falling at or above .49. Alpha coefficients for the scale with each individual item deleted ranged from .87 to .89 (see Table I).

Test-retest reliability was computed from the matched pairs of total scale scores obtained at Time 1 and Time 2. Both the Pearson product-moment correlation and the intraclass correlation coefficients were .77. The difference between the paired overall item means from Time 1 (M = 3.45; SD = 0.82; range = 1.4–5.0) and Time 2 (M = 3.58; SD = 0.87; range = 1.4–5.0) was statistically significant, t(1, 165) = 3.54, p < .01.

**Validity**

Support for construct validity was found through associations with mastery and self-esteem. The CATIS and the ISE were moderately correlated (r = .63). In addition, the CATIS and the RSE were moderately correlated (r = .58).

**Relationship to Other Variables**

One-way ANOVA with gender as the independent variable revealed that adolescent girls had significantly more negative attitudes toward having epilepsy (M = 3.32, SD = 0.85) than did adolescent boys (M = 3.59, SD = 0.72), F(1, 187) = 5.56, p < .05.

Attitudes toward having epilepsy also differed significantly according to adolescent age, F(2, 186) = 5.81, p < .01. Student Newman Keuls (SNK) post-hoc analyses revealed that older adolescents, 16–17 years of age, had significantly lower scores on the CATIS (M = 3.19, SD = 0.77) than both adolescents ages 13–15 (M = 3.49, SD = 0.80) and adolescents ages 11–12 (M = 3.73, SD = 0.74). There was no difference in CATIS scores between the two younger groups.

Relationships with severity also provided support for validity. Scores on the CATIS differed according to illness severity, F(2, 186) = 11.43, p < .001. Student Newman Keuls post-hoc analyses revealed that adolescents with more severe epilepsy had significantly lower scores on the CATIS (M = 3.22, SD = 0.80) than adolescents with moderate (M = 3.60, SD = 0.79) or mild epilepsy (M = 3.87, SD = 0.58). The moderate and mild severity groups, however, did not differ from one another.

**Discussion**

In general, the current results in adolescents are consistent with those reported in the literature for children (Austin & Huberty, 1993; Austin et al., 1996). The finding that older adolescents had more negative attitudes toward their epilepsy than both younger groups suggests that this age group may be more vulnerable to the effects of having a stigmatizing disorder. It is possible that the developmental tasks of this stage are more demanding, as they require the more sophisticated cognitive processes involved in adult decision making. Furthermore, actions taken during this time may have more immediate and longer lasting implications for adulthood (Westbrook, 1995). If tasks of earlier stages are not satisfactorily achieved because of epilepsy-related issues, then the accumulation of both prior and current tasks may be overwhelming and contribute to the older adolescents’ less positive perceptions of their illness. In addition, older adolescents may have to put off greater independence because of their epilepsy, all the while observing their age peers continue in their development (Strax, 1991). A longitudinal study of the development of attitudes would permit the examination of the age at which attitudes become more negative as well as the psychosocial or medical risk factors for a change in attitudes.

The finding that adolescent girls had more negative attitudes toward their epilepsy may be related to the pervasive finding that girls in this age group have lower self-esteem than boys (Bagley, Bolitho, & Bertrand, 1997; Block & Robins, 1993; Hagborg, 1993). Sweeting (1995) further implicates the cultural importance of body image and adolescent girls’ general dissatisfaction with their changing bodies in lowering self-esteem. Considering that hallmarks of epilepsy include a lack of control and predictability over the body’s actions, adolescent girls with epilepsy may experience an additional assault on their sense of self.

Adolescents with the most severe epilepsy had
more negative attitudes toward their illness than both the moderate and mild severity groups, a finding consistent with prior research (Austin et al., 1996). It is not surprising that adolescents with the most frequent and debilitating seizures viewed their illness in a less positive light, given the unpredictable nature of epilepsy and the unusual behavioral manifestations of the most severe seizures themselves (GTCs). Severe seizures occurring frequently in the school setting during adolescence, when peer acceptance is important to the developing identity, may contribute to greater feelings of stigmatization and marginalization, which in turn may lead to having more negative attitudes toward one’s epilepsy.

The concept of reactivity may account for the finding that CATIS scores increased significantly from Time 1 to Time 2 (Isaac & Michael, 1995). When presented with the same questionnaire again, study participants may have reflected upon their earlier answers and sought to present themselves in a more favorable light on second administration. This increase in CATIS scores between administrations is consistent with the findings of Austin and Huberty (1993) in the initial study. However, the actual difference in mean scores in this study was less than 0.2 of a point. Whether this statistically significant difference is of clinical importance remains to be examined.

This study involved the largest sample of adolescents with epilepsy to date. Future studies of the CATIS using a cross-validation sample of adolescents with epilepsy could focus on the relationship between adolescents’ attitudes and self-reported psychosocial variables, including mood states such as anxiety and depression, outlook about the future, and locus of control. Also of interest is whether social support and family and peer relationships influence adolescents’ attitudes toward having epilepsy, and whether attitudes as measured by the CATIS are amenable to change through intervention programs. Further study will be needed to assess whether adolescents’ attitudes toward illness vary across diseases and according to illness demands and characteristics.

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