

# A Study of Disruptive Behavior Disorders in Puerto Rican Youth: II. Baseline Prevalence, Comorbidity, and Correlates in Two Sites

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## ABSTRACT

**Objective:** This is the second of two associated articles. The prevalence, correlates, and comorbidities of disruptive behavior disorders (DBDs) in two populations are reported. **Method:** Probability community samples of Puerto Rican boys and girls ages 5–13 years in San Juan, and the south Bronx in New York City are included ( $n = 2,491$ ). The Diagnostic Interview Schedule for Children-IV and measures of correlates were employed to look at the association between DBDs and potential correlates, taking comorbidity into account. Data presented in this report were collected primarily between 2002 and 2003 but spanned a 3-year period from August 2000 to August 2003. **Results:** There were no significant age or site differences among males in rates of DBDs, but rates among females increased with age in the south Bronx and decreased with age in Puerto Rico. The salient comorbidity of DBDs was with attention-deficit/hyperactivity disorder. Multiple regression showed lack of parental warmth and approval, poor peer relationships, and parental report of aggressive behavior during the toddler years to be the most significant correlates of DBDs in this population. **Conclusions:** Cultural factors, such as level of acculturation, were not associated with DBDs. The results suggest that clinical and preventive efforts need to emphasize interpersonal factors such as parent–child relationships and peer interactions. *J. Am. Acad. Child Adolesc. Psychiatry*, 2006;45(9):1042–1053. **Key Words:** epidemiology, disruptive behavior disorders, cross-cultural, comorbidity.

This report provides the baseline results of a longitudinal study designed to evaluate the development of

disruptive behavior disorders (DBDs) and antisocial behaviors among Puerto Rican children. The study assesses representative samples of children of Puerto Rican background in two contexts with high concentrations of Puerto Ricans: the south Bronx in New York City and the San Juan Standard Metropolitan Areas (SMAs) in Puerto Rico. The data include *DSM-IV* (American Psychiatric Association, 1994) diagnostic criteria for several child diagnoses, including conduct disorder (CD) and oppositional defiant disorder (ODD), here grouped as DBDs. The prevalence, comorbidities, and correlates of DBDs among Puerto Rican youth in the two settings is estimated. The authors hypothesized that children of similar ethnic background would have higher rates of antisocial behavior in the setting to which their families migrated than in the native setting from which their families originated. Such differences may relate to specific cultural and environmental factors and comorbidities whose association with DBDs differ between the two contexts. Differences in

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frequencies and patterns of associations may, in turn, reflect important etiological mechanisms of DBDs with a cultural or environmental basis that need to be clarified.

The observation that rates of DBDs and antisocial behavior among children and adolescents are lower in Puerto Rico than elsewhere prompted the study. Previous surveys revealed a low prevalence of CD among children living in Puerto Rico (1.8%–2.6%; Bird et al., 1988; Canino et al., 2004), whereas recent studies of child and adolescent populations in the U.S. mainland report prevalences around 6% to 8% (Angold et al., 2002; Loeber et al., 2000). These findings among youth in Puerto Rico run counter to reported high rates of crime on the island. The present study was designed to test the hypothesis that in Puerto Rico there may be a later age at onset of these conditions and that there may be familial, cultural, and environmental factors that protect children and adolescents in that context.

## METHOD

The study background, design, and methodology are discussed in the preceding article (Bird et al., 2006). To summarize, approximately 1,125 boys and girls ages 5 to 13 years at each of two sites (the south Bronx in New York City and the SMAs in San Juan and Caguas, Puerto Rico) were recruited. Both samples were multistage probability samples of the target populations, each weighted to represent the populations of Puerto Rican children in the south Bronx and the SMAs. Weighted analyses adjust for differences in the probability of selection, correct standard errors (SEs) for correlations induced by cluster sampling, and match the sample in age/gender distribution to the 2000 census. SUDAAN software (release 8; Research Triangle Institute, 2001) was employed to conduct the weighted analysis and to adjust SEs for intra class correlations induced by multistage sampling with two levels of nesting (Bird et al., 2006).

Eighty-nine percent of adult informants were biological mothers; the remainder were grandmothers (4.5%), adoptive or step mothers (2.8%), and biological fathers (1.8%). Others (1.9%) were adult siblings, aunts, or foster mothers.

Prevalence rates, comorbidities, and correlates of DBDs in the two contexts are presented. The reliability of child informants younger than age 10 years is questionable (Breton et al., 1995; Edelbrock et al., 1985; Fallon and Schwab-Stone, 1994; Jensen et al., 1999; Schwab-Stone et al., 1994); consequently, the Diagnostic Interview Schedule for Children-IV (DISC-IV) was not administered to younger children. Prevalences of disorders are reported based on the parent interview alone to enable comparisons across age groups of 5 to 13 years.

The following DISC-IV diagnostic schedules were administered: the DBDs (conduct disorder [CD] and oppositional defiant disorder [ODD]), attention-deficit/hyperactivity disorder [ADHD]), depressive disorders (major depression or dysthymia), and anxiety disorders (separation anxiety, panic, and generalized anxiety disorders, social phobia, and posttraumatic stress disorder). A diagnosis was positive if full symptom criteria and one impairment criterion were met on the parent informant DISC-IV. We relaxed the *DSM-IV* criterion for ODD not to be diagnosed in the presence of CD so that both

disorders could be counted as present in the same subject. Overall rates of DBDs, however, include the number of subjects meeting criteria for either CD or ODD or both. Demographic characteristics, prevalence rates of the four diagnostic groups, and the correlates of DBDs are compared across the two sites. Rates are compared using a  $\chi^2$  statistic; means are compared using a *t* statistic. Two sets of logistic regression models were estimated to study variation in the rates of DBDs and other common psychiatric disorders. First, rates of DBDs, ADHD, depression, and anxiety were compared as site, gender, and age varied. The interactions among site, age, and gender were included in the model to see whether the relationships of these primary demographic characteristics and disorder differed between the two sites. Second, the overlap among DBDs, ADHD, depression, and anxiety was examined. Rates of DBDs in the combined sample were compared because ADHD, depression, and anxiety varied.

A wide variety of parent- and child-reported correlates are listed in the preceding article (Bird et al., 2006), providing information as to their source and their psychometric properties. The strength of the relationship or an effect size between a correlate and DBDs is described in this article using Cohen's standardized difference between means (Cohen's *d*) for continuous correlates (Cohen, 1988) and the odds ratio for categorical correlates. The use of Cohen's *d* permits comparison of the strength of association among correlates with different units of measurement. For example, closeness to parent and monitoring by parent are measured using different scales; Cohen's *d* permits determination of which correlate has the stronger relationship with DBDs. An effect size (Cohen's *d*) of  $\geq 0.80$  is considered large, 0.50 is considered medium, and 0.20 is considered small (Cohen, 1988). The odds ratio is used to measure the strength of the relationship between DBDs and categorical variables. Comparison between Cohen's *d* and an odds ratio may be made with simplifying assumptions. We assumed an underlying bivariate normal distribution with cutoffs to define binary categorical variates selected at the mean. Under these assumptions, Cohen's *d* is related to the Pearson correlation (*r*) by  $d = 2r/(1 - r^2)^{1/2}$  (Cohen, 1988); the odds ratio may then be calculated for the underlying Pearson correlation.

Multiple logistic regression was used to identify correlates with independent effects on DBDs. Inclusion in the stepwise multiple logistic regression was based on arbitrary thresholds chosen for Cohen's *d*. The upper threshold was defined at 0.35 and the lower threshold was defined at 0.25 ( $\geq 0.35$  implying substantial meaning approximating a medium effect size; between 0.25 and 0.35 lower but still meaningful). The upper threshold was chosen to be midway between Cohen's small and medium effect sizes; the lower threshold was chosen to be large enough to be substantially meaningful. After selecting thresholds for Cohen's *d* (0.35 and 0.25), comparable thresholds for the odds ratio were calculated (2.0 and 1.65) using the method described above.

Many correlates exceeded the criterion at the lower threshold. We used hierarchical logistic regression models to estimate the independent effect of a correlate statistically controlling for the effects of other correlates included in the regression models. A stepwise inclusion-exclusion rule was used to identify a regression model with a small number of predictors. Unadjusted effect sizes were based on the bivariate association between the correlate and DBDs. Adjusted odds ratios were calculated based on the regression model estimated at each step. The adjusted odds ratio (AOR) is the independent effect of the correlate statistically controlling for all other correlates in the regression model. The stepwise procedure was employed by entering or removing variables in six steps: (1) demographics, regardless of effect size, including age, gender, site, maternal education, and single-parent household and any statistically significant interactions among

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