Comparison of the Adaptive Functioning of Children Prenatally Exposed to Alcohol to a Nonexposed Clinical Sample

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Background: Several studies show impairments in the social and adaptive behaviors of children prenatally exposed to alcohol. However, there remains limited consensus on whether the alcohol exposure directly affects social functioning or whether its effect is mediated by deficits in IQ. In addition, no studies have investigated whether deficits in social functioning are significantly more pronounced in children prenatally exposed to alcohol than in children referred to psychiatric treatment who were not prenatally exposed. We explored the effect of alcohol exposure on social and adaptive functioning and explored whether or not social and adaptive functioning are significantly more impaired in children prenatally exposed to alcohol than in a clinical sample of children.

Methods: A sample of 33 alcohol-exposed children was compared with a sample of 33 clinic-referred nonexposed children. The groups were compared on measures of communication, daily living skills, and socialization. The groups were matched on sex, age, IQ, and outpatient or inpatient status.

Results: Analyses revealed that the prenatally alcohol-exposed children did not differ significantly from the nonexposed children in any of the domains of adaptive functioning. However, with age, exposed children showed a more rapid decline in socialization standard scores compared with the nonexposed clinical sample.

Conclusions: Young children who were exposed to alcohol prenatally show deficits in all domains of adaptive functioning. Although these deficits do not seem to differ from those exhibited by young children with psychiatric problems but no prenatal exposure, deficits in socialization behavior of prenatally exposed children may become more significant with age.

Key Words: Prenatal Alcohol Exposure, Fetal Alcohol Syndrome, Vineland, Adaptive Behavior.

Consumption of alcohol during pregnancy has been shown to have deleterious effects on fetal and child development in multiple domains. Both animal and human studies have revealed hyperactivity, problems with response inhibition, attention deficits, poor habituation, poor coordination, and poor state regulation to be associated with alcohol use during pregnancy (Mattson and Riley, 1998; Riley, 1990). Many of these deficits have been demonstrated in the offspring of women who drank light to moderate amounts during pregnancy (Mattson and Riley, 1998; Riley, 1990). Many of these deficits have been demonstrated in the offspring of women who drank light to moderate amounts during pregnancy, and these children do not necessarily meet criteria for a diagnosis of fetal alcohol syndrome (FAS; Brown et al., 1991; Coles et al., 1991; Goldschmidt et al., 1996; Jacobson et al., 1993; Larroque et al., 1995; Russell, 1991; Streissguth et al., 1993).

FAS, characterized by pre- and postnatal growth retardation, facial anomalies, and central nervous system dysfunction, is estimated to occur in 0.5 to 3 infants per 1000 live births. Deficits in children exposed to alcohol prenatally, but who do not meet criteria for the full syndrome, are estimated to occur in as many as 9.1 in 1000 live births. Thus, clarifying domains of relative strength and weakness in children exposed to alcohol prenatally has widespread implications for the identification and treatment of these children through their life span.

Results from a number of studies have demonstrated impairments in the social and adaptive behaviors of children prenatally exposed to alcohol. In studies of adolescents and adults with FAS, clear deficits in social skills and adaptive functioning have been documented (LaDue et al., 1992; Streissguth et al., 1991). On average, 13- to 33-year-olds with FAS displayed social skills at a 6-year-old level, and these deficits were present even in individuals whose IQ scores were in the average range. Thus, children exposed to alcohol prenatally show an array of deficits in social and adaptive functioning that persist throughout the life span.

In studies of children who were alcohol exposed, but did not meet criteria for a diagnosis of FAS, the significance of alcohol exposure on adaptive functioning is less clear. One study (Coles et al., 1991) concluded that prenatal alcohol...
exposure, in the absence of FAS and mental retardation, does not impair social and adaptive abilities. Thus, the presence of mental retardation was suggested as a primary factor contributing to impairments in adaptive functioning in children who were exposed to alcohol prenatally. To address this question, Thomas et al. (1998) conducted a study to compare children with FAS with children with similar deficits in verbal IQ. Results of this study showed that children with FAS were significantly more impaired in their interpersonal relationship skills than developmentally delayed children, suggesting that social deficits in children with FAS go beyond what can be explained by low IQ scores alone.

The studies by Coles et al. (1991) and Thomas et al. (1998) examined adaptive functioning by using the Vineyard Adaptive Behavior Scales (VABS), a scale administered to caregivers who rate the child in the domains of Communication, Socialization, and Daily Living Skills. Other studies that used the Child Behavior Checklist (CBCL; Achenbach, 1978), Teacher Rating Form (Edelbrock and Achenbach, 1984), or both have identified similar social and adaptive functioning problems in alcohol-exposed children. Steinhausen and Spohr (1998) administered the CBCL to caregivers and the Teacher Rating Form to teachers of children with FAS and found that social relationship problems characterized the children’s profiles on both checklists. Similarly, Carmichael Olson et al. (1998) showed clear deficits in CBCL social competence scores in a sample of children with FAS, compared with an IQ comparison subgroup and a cohort comparison group. The FAS group also showed deficits in adaptive behavior on the VABS compared with the comparison samples, with performance relatively worse in the Socialization Domain. Thus, social deficits in children prenatally exposed to alcohol have been demonstrated across multiple studies, and with multiple methods.

A question that remains is whether the social deficits in children prenatally exposed to alcohol are more profound than those displayed by other clinical samples of children. A large body of literature highlights the deficits in adaptive functioning in children with a wide array of clinical disorders, including attention-deficit/hyperactivity disorder, conduct disorder, language disorders, and depression (Manikam et al., 1995; Paul et al., 1991; Powell and Germani, 1993; Speltz et al., 1999; Stein et al., 1995; Vig and Jedrysek, 1995). In addition, many of the studies showing social deficits in children exposed to alcohol prenatally are uncontrolled clinical studies of a small population of children with FAS. Those studies not showing strong associations between prenatal alcohol exposure and social behavior (e.g., Coles et al., 1991) most often are longitudinal prospective studies that did not select a clinical sample. Thus, the goal of this study was to expand on earlier work by comparing the adaptive functioning of a sample of alcohol-exposed children to a clinical sample of children with no prenatal alcohol exposure.

It was hypothesized that children exposed to alcohol prenatally, whether or not they met criteria for a diagnosis of FAS, would show significant deficits in adaptive functioning. The second question addressed by this research was whether the adaptive functioning of children exposed to alcohol prenatally is significantly different from the adaptive functioning of a clinical sample of nonexposed children, controlling for intelligence. The question is particularly important for the development of a behavioral phenotype for FAS and alcohol-related neurodevelopmental deficits (ARND). If, in fact, children exposed to alcohol prenatally show significant deficits in their adaptive functioning, compared with a clinical sample of children, then these deficits may be considered a behavioral hallmark of prenatal alcohol exposure. However, if children exposed to alcohol prenatally show similar deficits in adaptive functioning to a clinical sample of children, then the diagnostic relevance of adaptive functioning behaviors for FAS or prenatal exposure becomes less clear.

**METHODS**

**Participants**

Sixty-six children participated in the study. Thirty-three alcohol-exposed children were referred to the University of California–Los Angeles (UCLA) Fetal Alcohol Syndrome and Related Disorders Clinic or the HUB Clinic at the King/Drew Medical Center. Eight of these children (four with FAS, four with prenatal exposure) were referred to the FAS clinic from the UCLA child psychiatry inpatient ward of the Neuropsychiatric Institute. To be eligible to be in the study, children had to have documented prenatal alcohol exposure, either by maternal report, birth record review, or official documentation in a Department of Child and Family Services file. When relevant, the child’s caseworker was contacted directly by the FAS clinic staff to further clarify the records regarding prenatal alcohol exposure. All of the children had histories of heavy prenatal alcohol exposure, but specifics about the amount of alcohol consumed during pregnancy were not available. Children ranged in age from 20 months to 10.5 years. Nine children met criteria for a diagnosis of FAS. Twenty-two (67%) of the prenatally exposed children also met criteria for one psychiatric diagnosis. Diagnoses were comparable to those described below for the clinical sample. Thirteen children were living with their biological parents, 9 with adoptive parents, 10 with foster parents (6 of these children were in the process of adoption), and 1 in residential treatment. Twenty-two children had been in one home since birth, and the remaining 11 children had been in multiple home placements.

A matched clinical sample of 33 nonexposed children was selected by using a chart review of children evaluated in the child psychiatry outpatient clinic, the infant and preschool psychological evaluation clinic, and the child inpatient ward at the UCLA Neuropsychiatric Institute. As part of the admission process to these programs, all caretakers are queried regarding prenatal alcohol and other drug exposure of the child. In addition, birth records and, when relevant, Department of Child and Family Services files were reviewed for prenatal exposure. Only those children with confirmed nonexposure were used in matching. Nonexposed children were matched to the alcohol-exposed children on the basis of age, sex, IQ, and inpatient/outpatient status. Children ranged in age from 22 months to 11 years.

Inclusion in the clinical sample was not restricted to any particular disorder; however, children with autism, Asperger’s syndrome, or other pervasive developmental disorders were not included in the sample. The most common disorders in the outpatient sample included receptive and
expressive language disorders, adjustment disorders, mental retardation, and attention-deficit/hyperactivity disorder. Disorders of the inpatients included bipolar disorder, major depressive disorder, intermittent explosive disorder, and posttraumatic stress disorder. Fourteen children (42%) met criteria for more than one psychiatric diagnosis; thus, comorbidity of disorders was common. Twenty-nine children were living with their biological parents, two with their adoptive parents, one with their foster parents, and one in residential treatment. Thirty children had been in one home since birth, and the remaining three children had been in multiple home placements.

Procedures

Prenatal alcohol exposure was documented for the exposed group of children before scheduling their appointment. Similarly, documentation of no prenatal exposure was made before enrolling children in the clinical sample into the study. The 25 outpatient children in each sample were seen during two visits with a primary caregiver. The eight inpatient children in each sample were seen over one to two visits during their inpatient stay. Caregivers for all children were interviewed in person, at which time an extensive family history was taken and the VABS were administered. All children in the alcohol-exposed group seen at UCLA were assessed for FAS by John Graham, MD, a pediatric geneticist and dysmorphologist with expertise in FAS. All children in the alcohol-exposed group seen at King/Drew Medical Center were assessed for FAS by Richard Findlay, MD, a pediatrician trained in FAS assessment by Kenneth Jones, MD. Intelligence testing was carried out with each child by an experienced examiner while the caregiver was interviewed in a separate room.

Measures

FAS/ARND Diagnosis. Strict criteria set forth in the Diagnostic Guide for Fetal Alcohol Syndrome (FAS) and Related Conditions Manual (Astley and Clarren, 1999) were used for diagnosing the children. This system uses a four-digit diagnostic code reflecting the magnitude of expression of four key diagnostic features of FAS: (1) growth deficiency; (2) the FAS facial phenotype, including short palpebral fissures, flat philtrum, and thin upper lip; (3) brain dysfunction; and (4) gestational alcohol exposure. The magnitude of expression of each feature is ranked independently on a four-point Likert scale, with 1 reflecting complete absence of FAS features and 4 reflecting the full manifestation of the features.

Adaptive Behavior. The VABS (Sparrow et al., 1984) were administered to a caregiver of all participants. For the two children in residential treatment (one prenatally exposed, one nonexposed), a counselor or primary nurse who knew the child well was administered the VABS. The items on the VABS fall into one of three subdomains: (1) Communication, (2) Daily Living Skills, and (3) Socialization. Caregivers of children under the age of 6 years were also queried about motor skills, but this subdomain was not included in analyses because many of the children in the sample were older than 6 years. A standard score was obtained for each subdomain (mean = 100, SD = 15), and an Adaptive Behavior Composite score across all three subdomains was also calculated.

Intelligence. Assessment of intelligence was conducted in a quiet room in the Child Psychiatry Departments at the UCLA or the King/Drew Medical Center. Depending on the age of the child, the Wechsler Intelligence Scale for Children (WISC-III; Wechsler, 1991) or the Wechsler Preschool and Primary Scale of Intelligence—Revised (WPPSI-R; Wechsler, 1989) was administered to 58 children in the sample. Eight children in the sample were under the age of 4 years and were administered the Bayley Scales of Infant Development (Bayley, 1993). The Bayley provides a developmental quotient that cannot be equated with IQ scores obtained by the WISC-III and WPPSI-R. Thus, the eight individual children were matched on Bayley developmental quotient scores, and these children’s IQ data were analyzed separately.

Table 1. Demographic and IQ Data for the Prenatal Alcohol-Exposed and-Nonexposed Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Alcohol exposed (n = 33)</th>
<th>Nonexposed (n = 33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yr)</td>
<td>6.15 (2.38)</td>
<td>6.15 (2.30)</td>
</tr>
<tr>
<td>Sex, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20 (60.6)</td>
<td>27 (81.8)</td>
</tr>
<tr>
<td>Female</td>
<td>13 (39.4)</td>
<td>6 (18.2)</td>
</tr>
<tr>
<td>Full Scale IQ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WVPSI/WISC (n = 29)</td>
<td>83.5 (13.1)</td>
<td>83.3 (15.2)</td>
</tr>
<tr>
<td>Bayley (n = 4; age in months)</td>
<td>19.5 (5.7)</td>
<td>20.5 (4.3)</td>
</tr>
<tr>
<td>Home placement, n (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of children with &gt;1 home placement since birth</td>
<td>11 (33.3)</td>
<td>3 (9.1)*</td>
</tr>
</tbody>
</table>

Data are presented as mean (SD) unless otherwise noted. *p < 0.05.

Table 2. Summary of Standard Scores on Vineland Adaptive Behavior Scales for Prenatal Alcohol-Exposed and -Nonexposed Groups

<table>
<thead>
<tr>
<th>Vineland Adaptive Behavior Scales</th>
<th>Alcohol exposed (n = 33)</th>
<th>Nonexposed (n = 33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>77.61 (17.04)</td>
<td>75.09 (20.70)</td>
</tr>
<tr>
<td>Daily Living Skills</td>
<td>73.12 (20.18)</td>
<td>78.21 (24.03)</td>
</tr>
<tr>
<td>Socialization</td>
<td>74.94 (15.11)</td>
<td>77.94 (14.04)</td>
</tr>
<tr>
<td>Composite</td>
<td>70.85 (17.17)</td>
<td>73.06 (18.98)</td>
</tr>
</tbody>
</table>

Data are presented as mean (SD). Hotellings’s T²(3,64) = 4.43; p = 0.24.

RESULTS

Matching Data

The groups were compared regarding age, sex, inpatient status, and Full Scale IQ (Table 1). Results revealed no statistically significant differences on age, inpatient status, Full Scale IQ, or Bayley Developmental Age equivalents. Although there was a higher percentage of males in the nonexposed sample than the alcohol-exposed sample, the difference was not statistically significant (Fisher’s exact test, p > 0.10). Thus, any differences in adaptive functioning are not attributable to differences in age, sex, inpatient status, or IQ. The groups did differ significantly, however, in home placement. Children in the alcohol-exposed sample were more likely to have been in multiple home placements compared with children in the nonexposed sample (Fisher’s exact test, p < 0.05).

Adaptive Behavior of Prenatally Exposed Children

As expected, children exposed to alcohol prenatally exhibited significant deficits in adaptive functioning across all domains (Table 2). The VABS is normed such that standard scores express in SD units the extent to which the individual’s score exceeds or falls below the mean scores of persons of the same age on whom the instrument was standardized (Sparrow et al., 1984). VABS scores have a mean of 100 and an SD of 15; thus, the mean Adaptive Behavior Composite score of children prenatally exposed to alcohol (70.85) was 2 SD below the mean. Overall, 45.5% of the alcohol-exposed sample scored below 70 on the VABS composite score, 33.3% scored between 70 and
and 21.2% scored between 85 and 115. No child scored higher than 115 (the highest score was 104). According to VABS norms on the Adaptive Behavior Composite score, only 2.5% of children should score below 70, 14.2% between 70 and 84, 66.7% between 85 and 115, 14.2% between 115 and 130, and 2.5% above 130. The distribution for the alcohol-exposed sample compared with the standardization sample was found to be statistically different by using a $\chi^2$ goodness of fit test $\chi^2(1042.37, p < 0.001)$. Mean VABS subscale scores showed comparable deficits and distributions.

**IQ and Adaptive Behavior**

Given the past debate over whether IQ deficits, as opposed to prenatal alcohol exposure, are responsible for deficits in adaptive behavior, it was of interest to evaluate the relationship between the two. Groups were matched for IQ, and the mean IQ in both groups was just greater than 1 SD below the mean (Table 1). Correlations were run between IQ and adaptive behavior scores for the 58 children who were tested with the WISC-III or WPPSI-R and were low for both the prenatally exposed and nonexposed children. In the prenatally exposed group, IQ and Vineland Daily Living Skills showed a trend toward a significant correlation ($r = 0.30, p = 0.08$). IQ and Vineland Communication skills were significantly correlated for the nonexposed group ($r = 0.43, p < 0.05$). IQ and Vineland Socialization skills were uncorrelated for both groups.

**Adaptive Behavior: Alcohol Exposed Versus Nonexposed**

A Hotelling’s $T^2$ comparing the alcohol-exposed group with the nonexposed group on three subdomains of the VABS (Communication, Daily Living Skills, and Socialization) was not significant [$T^2(3, 64) = 4.43, p = 0.24$]. Thus, a clinical sample of nonexposed children also showed significant deficits in their adaptive behavior that seemed comparable to those exhibited by children prenatally exposed to alcohol (Table 2). Both groups were functioning in the borderline range of adaptive functioning (1–2 SD below the mean). Hotelling’s $T^2$ tests comparing the adaptive behavior of the children with an FAS diagnosis ($n = 9$) with their nonexposed matches, and comparing the inpatient-exposed to the inpatient-nonexposed children ($n = 8$), also yielded no significant differences in adaptive behavior between groups.

**Table 3. Stepwise Multiple Regression Analyses of Predictors of VABS Socialization Scores**

<table>
<thead>
<tr>
<th>Variable entered</th>
<th>Multiple $R$</th>
<th>$R^2$</th>
<th>Change in $R^2$</th>
<th>$F$</th>
<th>Probability of $F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placement</td>
<td>0.071</td>
<td>0.005</td>
<td>0.005</td>
<td>0.31</td>
<td>0.58</td>
</tr>
<tr>
<td>Group</td>
<td>0.110</td>
<td>0.012</td>
<td>0.007</td>
<td>0.48</td>
<td>0.49</td>
</tr>
<tr>
<td>Age</td>
<td>0.434</td>
<td>0.188</td>
<td>0.176</td>
<td>13.41</td>
<td>0.0005</td>
</tr>
<tr>
<td>Group $\times$ age</td>
<td>0.532</td>
<td>0.283</td>
<td>0.038</td>
<td>3.22</td>
<td>0.078</td>
</tr>
<tr>
<td>Age $\times$ placement</td>
<td>0.550</td>
<td>0.302</td>
<td>0.019</td>
<td>1.61</td>
<td>0.209</td>
</tr>
<tr>
<td>Group $\times$ age $\times$ placement</td>
<td>0.561</td>
<td>0.315</td>
<td>0.013</td>
<td>1.06</td>
<td>0.307</td>
</tr>
</tbody>
</table>

**Home Placement, Age, and Adaptive Behavior: Alcohol Exposed Versus Nonexposed**

Three hierarchical multiple regressions were used to determine the effect of home placement (dichotomous: one placement versus more than one placement), group status (alcohol exposed versus nonexposed), and age on each of the VABS subscale scores (Communication, Daily Living, and Socialization). For each analysis, home placement was always entered first into the equation, followed by group and age status. All two- and three-way interactions were then entered last.

There were no significant home placement or group main effects for any of the VABS outcome measures (Table 3). Age was a significant predictor of all domains of adaptive behavior, with children from both groups showing declines in Socialization, Communication, and Daily Living Skills with age. These declines were most apparent in the socialization domain for the alcohol-exposed group, as evidenced by the significant group $\times$ age interaction on this variable after the effects of home placement had been partialled out (Table 3 and Fig. 1).

To further explore this interaction effect, regression analyses were computed that examined the association between age and socialization for the alcohol-exposed and the nonalcohol-exposed clinical groups separately while controlling for placement effects. The age effect was significant in the alcohol-exposed group ($\beta = -0.38, p < 0.0001$) but was not significant in the nonexposed clinical sample ($\beta = -0.10, p = 0.29$). This finding suggests that, with age,
children prenatally exposed to alcohol show a more significant decline in standard scores in the socialization domain compared with a nonexposed clinical cohort, and these differences cannot be accounted for by an increased number of placements. Thus, it seems that as the prenatally exposed children get older, they begin to show more marked difficulties in socialization compared with their nonexposed clinical peers.

The group × placement interaction showed a borderline significant association with VABS socialization scores \((p < 0.10)\). Further examination of this interaction showed that the mean socialization scores of prenatally exposed children remained stable regardless of placement status, whereas nonexposed children with multiple home placements \((n = 3)\) had a lower mean socialization score than nonexposed children with a single placement since birth \((n = 30)\). The one child who was living in a residential treatment home accounted for the low mean socialization score of the nonexposed children with multiple home placements. Thus, although the group × placement interaction trend suggests that the socialization behavior of children in the nonexposed group may be more negatively affected by multiple home placements, this effect was essentially carried by the socialization behavior of one child. It is more interesting to note that socialization behavior was consistent for the prenatally exposed group regardless of placement status.

**DISCUSSION**

It is clear from both this study and previous studies that the adaptive behavior of children exposed to alcohol prenatally is significantly compromised. Children prenatally exposed show deficits in communication, daily living skills, and socialization behavior, evidenced by low standardized scores on the VABS, and these deficits are not attributable to deficits in IQ. It is also clear from this study, however, that the adaptive functioning deficits exhibited by children prenatally exposed to alcohol are not unique to this group, but are also evidenced in a clinical sample of children who were not exposed to alcohol. Thus, although adaptive behavior deficits may be significant for prenatally exposed children, compared with normal control children, they do not seem to be a hallmark of prenatal alcohol exposure.

Further, although the sample size was small and conclusions should be drawn carefully, children with a diagnosis of FAS do not seem to differ significantly from children with ARND in their levels of adaptive functioning. These findings suggest that deficits in adaptive behavior are not specific to children with the most severe form of exposure. Given the lack of clear differences in adaptive functioning among children with FAS, ARND, and other clinical disorders, the diagnostic relevance of adaptive functioning behavior for young children with FAS or prenatal alcohol exposure is limited.

That said, deficits in adaptive behavior might become a more salient feature of prenatal alcohol exposure as children get older. The children in the current sample were young \((\text{mean age} = 6.3\ \text{years})\), and the finding that standard scores were lower at older ages suggests that deficits in socialization skills may become more debilitating for older prenatally exposed children. The finding that social deficits in the children with FAS increase with age has been shown by others \((\text{Thomas et al., 1998})\), and it has been suggested that the deficits for children with FAS represent an arrest of social development at the age of 6 years \((\text{Streissguth et al., 1991})\). Future cross-sectional studies are needed to investigate the adaptive behaviors of older children exposed to alcohol in utero so that the current findings may be examined further. In addition, longitudinal studies are needed to track adaptive behavior over time to measure rates of developmental decline.

Although the groups in this sample were well matched on IQ, age, sex, and inpatient status, the groups were not well matched on home placement. Significantly more children in the prenatally exposed group had experienced multiple home placements, compared with their nonexposed counterparts. Thus, one could argue that children who are moved through multiple home placements are likely to have experienced more negative caregiving environments, placing them at higher risk of experiencing deficits in adaptive behavior. Additionally, caregivers who have raised the child since birth may rate children higher than caregivers who have more recently gained custody of the child.

In this study, these arguments seem less credible given the lack of a significant main effect of home placement on adaptive behavior across groups. The borderline significant group × placement interaction \((p < 0.10)\) on socialization scores might suggest that multiple placements have a more significant effect on the socialization behaviors of a nonexposed clinical sample of children than on prenatally exposed children. As noted in “Results,” the prenatally exposed group showed consistent socialization scores regardless of home placement. The nonexposed children in multiple placements showed lower scores than the nonexposed children with a single home placement, but this effect was attributable to the very low socialization score of the one nonexposed child in residential treatment. The prenatally exposed child in residential treatment did not show a comparable deficit in socialization behaviors.

These findings suggest that although home placement status did not seem to have an effect on the socialization of prenatally exposed children in this sample, it is an important variable to consider. Residential treatment falls at the extreme in terms of negative home placements, and children in these settings are likely to show adaptive behavior deficits regardless of prenatal exposure. Unfortunately, measures of the home environment were not taken in the current study; thus, it is unclear how rearing variables may directly affect adaptive behavior skills in these samples of children. However, one study of the relationship between alcohol and drug use by female caregivers on factors that...
ADAPTIVE FUNCTIONING OF PRENATALLY EXPOSED CHILDREN


