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Prenatal alcohol exposure, adaptive function, and entry into adult roles in a prospective study of young adults

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ABSTRACT

Introduction: Although many studies have demonstrated effects of prenatal alcohol exposure (PAE) on physical, cognitive, and behavioral development in children, few have focused on the long term effects on adults. In this study, data are presented on adaptive function and entry into adult roles in a community sample of young adults with PAE. The expectation was that prenatally exposed adults would show lower adaptive functioning and more difficulty with entry into adult roles than the non-exposed control group and that these effects would be related to the severity of PAE effects.

Method: The predominantly African-American, low income sample included adults with a wide range of prenatal exposure (n = 123) as well as control groups for socioeconomic (SES) (n = 59) and disability (n = 54) status. The mothers of the alcohol-exposed and SES-control group participants were recruited before birth and offspring have been followed up periodically. The disability control group was recruited in adolescence. The adults were interviewed about adaptive function in day-to-day life and adult role entry. Collateral adults who were well-acquainted with each participant were interviewed concerning adaptive function.

Results: Results showed that adults who were dysmorphic and/or cognitively affected by PAE had difficulty with adaptive function and entry into adult roles. Males showing cognitive effects with no physical effects were the most severely affected. Results for exposed adults not showing physical or cognitive effects were similar to or more positive than those of the control group for most outcomes.

Conclusion: PAE has long-term effects on adaptive outcomes in early adulthood. Additional research should focus on possible interventions at this transition and on factors contributing to the adjustment of the exposed, but unaffected participants.

1. Introduction

Exposure to alcohol prenatally has documented long-term effects on physical, cognitive, and behavioral aspects of development (e.g., Riley et al., 2011; Streissguth et al., 2004; Mattson et al., 2011). Fetal alcohol syndrome (FAS), the most severe result of prenatal alcohol exposure (PAE), was first defined in the early 1970s (Jones and Smith, 1973). Diagnostic criteria include a characteristic pattern of dysmorphic facial features, deficiency in physical growth, and effects on the central nervous system that frequently present as deficits in neurocognitive functioning (e.g., Bertrand et al., 2005; Riley et al., 2011). In the past forty years, less severe and more limited effects of PAE have been identified and the umbrella term, fetal alcohol spectrum disorders (FASDs), is now used to describe the full range of outcomes related to alcohol use during pregnancy. According to the National Task Force on Fetal Alcohol Syndrome and Fetal Alcohol Effects (Olson et al., 2009), FASDs are among the most common developmental disabilities. Prevalence for FAS has been estimated at .5–2 cases per 1000 in the United States; for the full spectrum of FASD effects, prevalence is often estimated to be as high as 1 per 100 (May and Gossage, 2001). More recently, estimates based on a study of a Midwestern community sample in the U.S. were higher at 2.4–4.8% for the full spectrum of FASDs (May et al., 2014).

Although research on effects of PAE on physical, cognitive and behavioral aspects of development in children is extensive (e.g., Coles, 2006; Jones et al., 2010; Kodituwakku, 2007; Mattson et al., 2011; Riley et al., 2011), little research is available on adults. With the exception of work by Day et al. (2013) on behavior problems in young adults, the transition from adolescence to adulthood, a critical period affecting future adjustment, has received little attention in the literature on effects of FASDs. While this transition is a challenging developmental period for many young people, Osgood et al. (2005) have emphasized that it is especially difficult for those who are vulnerable due to disabilities. These young adults are likely to have limitations on their skills and abilities, which decrease opportunities to obtain employment, to complete

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educational programs, or to become independent in other ways. Although some may have been eligible for special services as children, these supports are no longer available.

Osgood et al. (2005) structured the challenges of this period into two categories: 1) entering adult roles in work, educational, and family spheres of life; and 2) managing adult life, including avoidance of problem behaviors. Young adults with FASDs are particularly vulnerable due to cognitive and behavioral deficits that make it difficult to meet expectations for adult adaptive function and for work or educational achievement. In addition, young adults with FASDs are thought to be vulnerable to involvement in problem behavior, including substance use, legal difficulties, and mental health problems (e.g. Streissguth et al., 1996, 2004; Fast et al., 1999; Famy et al., 1998), although not all studies have been consistent on involvement with legal problems (e.g., Rangmar et al., 2015; Lynch et al., 2003). The analyses in the present paper focus on prenatal alcohol exposure and the development of adaptive competence during the transition to adulthood with 1) general adaptive skills and 2) entry into adult roles in work, educational, and family settings as outcome variables.

1.1. Adaptive function in adulthood

While several studies suggest that adaptive function, or ability to deal with tasks of everyday life, is affected in childhood, there are few studies of adults (e.g., Streissguth et al., 1996). Several researchers suggest that deficits in adaptive functioning *increase* with age during childhood, particularly in the realm of socialization (e.g., Crocker et al., 2009; Whaley et al., 2001).

In reports based on clinical samples (e.g., Streissguth et al., 1996; Spohr et al., 2007), high percentages of adults were living in dependent circumstances, either requiring care or supervision of daily life activities such as money management. Streissguth et al. (2004) reported scores on the Adaptive Behavior Composite of the Vineland Adaptive Behavior Scales (Sparrow et al., 1984) that were substantially lower than the population norms; the mean scores on adaptive scales were 1–1.5 standard deviations below mean IQ scores, suggesting an adaptive dysfunction beyond what would be expected due to an IQ deficit alone. Temple et al. (2011) compared adults with FASD to a contrast group of clinically-referred adults matched for IQ who were not prenatally exposed. Using the Adaptive Behavior Assessment System-II (ABAS-II) (Harrison and Oakland, 2003), they found that the FASD group scored significantly lower on the General Adaptive Composite score and the Conceptual subscore than the contrast group. The authors suggest that adults with FASD have difficulty beyond what might be predicted by IQ in applying problem-solving skills to situations in everyday experience. While studies of children suggest that social functioning is impaired by PAE, Temple et al. did not report such differences. It is possible that these will be more apparent in the community sample where adults are faced each day with social challenges.

1.2. Entry into adult roles

Prior studies based on clinical samples suggest that adults with FASDs have difficulty transitioning to adult work and life roles (e.g., Streissguth et al., 2004; Spohr and Steinhausen, 2008; Spohr et al., 2007; Freunscht and Feldmann, 2011). Streissguth et al. (1996, 2004) followed a clinic sample of adolescents and adults diagnosed with either FAS or Fetal Alcohol Effects (FAE). Those diagnosed with FAE were exposed to alcohol prenatally and met some of the diagnostic criteria for FAS. Based on informant interviews, about 60% had disrupted school experiences (dropped out, expelled, or suspended) and 79% of the adults in this sample had problems with employment. Both Spohr et al. (2007) and Freunscht and Feldmann (2011) also reported limited education and vocational achievement in their German clinical samples of adults with FAS or FAE. As all three studies are based on clinical samples, they include severely affected individuals on the FASD spectrum.

On the other hand, Rangmar et al. (2015) examined employment status in a sample of Swedish adults with FAS based on data from national registers available in that country. Although adults with FAS were more likely to be unemployed and receiving disability payments than the control group, a large percentage (49%) were employed. The authors did note that they were employed in disproportionately lower-paying positions.

In summary, there have been few studies of adults with FASDs and the existing literature is based heavily on clinical samples; unexposed control groups are seldom included for comparison. While FASD is defined as a spectrum disorder, most data for adults are based on those who are severely affected, leaving outcomes for less affected adults largely unknown.

The present study provides the opportunity to refine understanding of PAE by examining adult development in a prospective community sample. The sample age range is relatively narrow (age 19–27, mean age = 22.78), so developmentally appropriate adaptive issues can be examined. The sample includes exposed and unexposed participants as well as a range of prenatal alcohol effects. Please note that, as the sample is drawn from the community, it includes many exposed participants who have not been clinically referred. Exposed participants are grouped by level of impact of PAE on physical and cognitive development; the group names are labels for area of impact and do not imply clinical diagnosis. Exposed groups range from 1) severely affected (showing dysmorphic features (DYSM)) to 2) exposed with cognitive effects only (COG-AFF), to 3) exposed, but not cognitively or physically affected (COG-UNAFF). In addition, a Special Education contrast group (SPEC) recruited at adolescence is included to explore how FASD groups compare to a disability control group. Additional details on all groups are included in the Method section.

These hypotheses will be examined:

Hypothesis 1. a) Adults with PAE will show lower general adaptive functioning than adults in the unexposed Control group.

b) The severity of prenatal alcohol effects (DYSM > COG-AFF > COG-UNAFF) will be related to the severity of adaptive deficits experienced.

Hypothesis 2. a) Adults with PAE will show lower entry into adult work, education, and family roles than adults in the unexposed Control group.

b) The severity of prenatal alcohol effects (DYSM > COG-AFF > COG UNAFF) will be related to the level of adaptation to adult roles.

2. Method

2.1. Participants

The participants were 236 young adults enrolled in a prospective, longitudinal study of effects of PAE on adaptive and neurocognitive outcomes. The study and all procedures were approved by the Emory University Institutional Review Board. Recruitment of alcohol-exposed (n = 123) and unexposed (n = 59) participants took place between 1980 and 1986 at an urban hospital in Atlanta serving a population that was primarily African-American and of low socioeconomic status (SES) (Coles et al., 1985, 1987). Exposure status of children was defined based on maternal responses to a prenatal interview concerning alcohol use during pregnancy. Mothers who reported drinking were asked about the quantity and frequency of alcohol use during pregnancy; participants whose mothers reported consuming at least 1 oz of absolute alcohol (AA) per week (about two drinks) were included in the alcohol-exposed group: however, most mothers reported drinking much larger amounts of alcohol. Means for the exposed groups ranged from 7.95 to 13.33 oz of absolute alcohol per week (see Table 1). Participants whose mothers reported abstaining make up the unexposed control group. Mothers were asked about use of other substances (tobacco,