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Review

A systematic review of challenging behaviors in children exposed prenatally to substances of abuse

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Abstract

A review of the existing literature on the occurrence of challenging behavior among children with prenatal drug exposure was conducted. While a large number of studies were identified that evaluated various outcomes of prenatal drug exposure, only 37 were found that directly evaluated challenging behaviors. Of the 37 studies, 23 focused on prenatal cocaine exposure, and 14 focused on prenatal alcohol exposure; most studies relied on broadband measures such as the CBCL for the assessment of challenging behavior. Among the 37 studies, a clear role for the postnatal environment on developing challenging behaviors was evident; however, prenatal alcohol exposure showed a much clearer independent effect upon challenging behaviors than was noted in the prenatal cocaine studies. Additionally, only 3 of the 37 studies addressed interventions for challenging behaviors, each of which showed an improvement in child behavior or parent–child interactions. As researchers have continued to show the importance of the postnatal environment, it is likely that interventions addressing specific environmental risk factors will be helpful to reduce or prevent challenging behaviors among this population.

Keywords: Challenging behavior; Prenatal exposure; Review; Treatment

Contents

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The effects of prenatal drug exposure on infant development have received much attention over the past 30 years. Because of the importance and emotional saliency of the topic there have been a number of studies and reviews on the impact of exposure to particular substances (e.g., Frank, Augustyn, Grant Knight, Pell, & Zuckerman, 2001; Jacobson & Jacobson, 2002) or general exposure (Hans, 2002).

Prenatal exposure to alcohol has been the most extensively studied. As such, exposure is now known to produce fetal alcohol syndrome, a specific pattern of malformations characterized by distinctive facial features, growth deficiencies, and organ malformation (Ornoy, 2002). Additionally, a range of specific deficits have been noted. Neurobehavioral deficits associated with prenatal alcohol exposure include inattention and impulsivity (Streissguth, Barr, & Martin, 1984), slower processing speed (Jacobson, Jacobson, Sokol, Martier, & Ager, 1993), memory deficits (Mattson, Riley, Gramling, Delis, & Jones, 1998), lower IQ scores (Mattson, Riley, Gramling, Delis, & Jones, 1997), and childhood-onset depression (O'Connor & Paley, 2006).

Heroin exposure to the developing fetus produces similar effects, including decreased growth and head size. Postnatal effects of heroin exposure include withdrawal symptoms, developmental delay, and hyperactivity (Barr & Jones, 1994; Moe, 2002).

Recent studies on prenatal exposure to cocaine also show a number of deficits. As with prenatal alcohol exposure, birth defects are common among infants prenatally exposed to cocaine, showing reduced birth weight, head circumference, and length (Chasnoff, Griffith, MacGregor, Dirkes, & Burns, 1989; Datta-Bhutada, Johnson, & Rosen, 1998). Neurobehavioral studies have found particular problems with arousal and regulation (Bard, Coles, Platzman, & Lynch, 2000), motor and state regulation (Delaney-Black et al., 1996), attention (Gaultney, Gingras, Martin, & DeBrule, 2005; Heffelfinger, Craft, White, & Shyken, 2002), and language development (Beeghly et al., 2006).

Early studies on prenatal exposure presented a rather bleak view for the future of exposed children, with predictions of behavioral epidemics among school-aged children. However, more recent studies indicate that, depending upon the substance, prenatal exposure alone is not sufficient to account for the poor outcomes of exposed children. Rather, negative child outcomes are best predicted by a model consisting of the interactions between biological effects from the exposure with aspects of the postnatal environment, such as socioeconomic status, caregiver mental health, and caregiver drug use (Brown, Bakeman, Coles, Platzman, & Lynch, 2004; Frank et al., 2001). Studies evaluating the role of the postnatal environment on developmental outcomes find a much smaller independent effect from prenatal cocaine exposure on child development (Frank et al., 2002; Hurt, Malmud, Betancourt, Brodsky, & Giannetta, 2001) or IQ scores (Frank et al., 2005). Predicting the outcome of prenatal exposure is a complicated process, requiring an understanding of a number of patient-specific variables. This is particularly the case regarding the development of challenging behaviors among children with prenatal exposure.