THE EFFECTS OF PRENATAL ALCOHOL EXPOSURE ON LANGUAGE DEVELOPMENT IN PRESCHOOL AGED CHILDREN

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Introduction

Around the world, nearly one in 10 women drink alcohol during their pregnancy (Popova, Lange, Shiled, Burd, & Rehm, 2019). Several studies reported that prenatal alcohol exposure can have an adverse effect on language development in preschool aged children. Some of the reported effects include delayed communication, gross motor, fine motor, cognitive, and social and emotional skills, yet the specific language impairments tends to remain inconclusive (Kalberg et. al., 2006). Here we report several studies that investigate the effects of prenatal alcohol exposure on language development in different domains in preschool children aged 3 to 5. The included studies used a variety of methods to investigate the effects of prenatal alcohol exposure on receptive and expressive language, speech, and fluency, as well as domains other than language. The results indicated that being exposed to alcohol prenatally can impact a child's language development. The timing, dosage, and severity of the alcohol exposure, as well as extraneous factors, play a role in the impact on communication.

Fetal Alcohol Spectrum Disorder

Prenatal alcohol exposure (PAE) is one of the most prevalent and preventable risk factors for somatic, behavioral, and neurological abnormalities in children and is the most common environmental cause of intellectual disability (Kuehn et. al., 2012). Approximately one in every 13 infants who were exposed to alcohol prenatally will be diagnosed with fetal alcohol spectrum disorder (FASD). This results in approximately 630,000 infants being born with FASD each year (Popova et al., 2019). A diagnosis of FASD is often very subtle, so to be diagnosed with FASD, one must meet a set of criteria which are allotted into four categories: facial features, growth retardation, structural or functional dysfunction of the central nervous system (CNS), and history of PAE (Dorrie et. al., 2014). History of prenatal alcohol exposure is any drinking pattern during pregnancy confirmed or unconfirmed medically. Each child is assigned a 4-digit code, with each digit corresponding to the degree to which one of the four main features of the FASD criteria are fulfilled. There are four diagnosis under the umbrella of FASD: fetal alcohol syndrome (FAS), partial FAS (pFAS), statis encephalopathy (alcohol exposed), and neurodevelopmental disorder (alcohol exposed). Fetal alcohol syndrome is a full syndrome in which features from all the diagnostic categories must be met.

Effects on Communication

Expressive and Receptive Language

O'Leary, Zubrick, Taylor, Dixon, and Bower (2002) suggests that language impairments is one of the key features of neurological damage in children with FASD. A study done by O'Leary et. al., discovered that children with the least delayed language were children with mothers who abstained from drinking during pregnancy, children with mothers who consumed overall low levels of alcohol during pregnancy, and children with mothers who drank moderate-to-heavy levels during the prepregnancy period and the first trimester of their pregnancy. The children with the greatest delayed language were those with mothers who had a binge pattern of drinking alcohol during the second and third trimesters, and children whose mothers drank moderate-to-heavy amounts during the third trimester. It also discovered that children who suffer from prenatal alcohol exposure in the third trimester are more likely to be at risk for other alcohol-related problems (O'Leary et. al., (2002).

The researchers, McGee, Bjorkquist, Riley, and Mattson (2009), conducted a study with two groups of children who were between the ages of 3 and 5: 25 children with heavy prenatal alcohol exposure, and 26 children who were typically developing. This study showed that when comparing the alcohol exposed group to the control group, the alcohol exposed group had significantly poorer language skills than the controls. However, the results showed that both groups had better receptive language skills than expressive language skills. The results showed that children with heavy prenatal alcohol exposure have significantly poorer receptive and expressive language skills than children without prenatal alcohol exposure. These results also concluded that all language develops normally in children with FASD, but it develops at a slower rate than expected based on the chronological age (McGee et al., 2009).

Speech

Prenatal alcohol exposure can have adverse effects on a child's speech development. However, the characteristics of the speech impairment in FASD have not yet been described in detail (Terband, Spruit, & Maasen, 2017). The speech impairment are a result of a combination of chronic brain syndrome, hearing, and oral motor deficits. Terband et. al., conducted a study to investigate the speech and motor characteristics of boys with FASD based on standardized speech production and perception, and oral motor assessments. The results showed that boys with FASD were less intelligible and made more consonant errors when compared to the TD children. When comparing between the speech tasks, both groups showed lower scores on the non-word repetition task. The group of boys with FASD also scored lower than the TD group on auditory discrimination, oral motor tasks, phonetic accuracy, and showed a different pattern of correlations between auditory discrimination and oral motor abilities (Terband et. al., 2017).

Fluency

Another aspect of language that can be affected by prenatal alcohol exposure is fluency. In a study done by Schonfeld, Mattson, Lang, Delis, and Riley (2002), the effects of heavy alcohol exposure on verbal and nonverbal fluency was examined. In this study, a total of 28 children from three groups were administered verbal and nonverbal fluency measures. The three groups were a non-exposed control group, children identified with heavy prenatal alcohol exposure, and children diagnosed with fetal alcohol syndrome. The results indicated that the alcohol exposed group performed at a lower level than the non-exposed children. All groups produced more verbal than nonverbal responses. For the set-shifting verbal tests, the alcohol exposed groups performed lower. In all the tests, the PAE and FAS group did not differ significantly. Overall, fluency deficits were revealed in children with PAE regardless of a diagnosis of FAS (Schonfeld et. al., (2002).

Intervention

The current diagnosis of FAS does not provide sufficient information to practitioners regarding the most effective and appropriate treatments (Paley & O'Connor, 2009). Instead, the specific deficits need to be identified in order for a clinician to know exactly what to do to remediate these deficits. There may be a lot of variability across the different domains of functioning for an individual. The individual may show severe deficits in some areas and strengths in others. As we know, children with PAE and FASD are at an increased risk for learning disabilities, so providing strategies and intervention is crucial (Paley & O'Connor, 2009). Teaching strategies such as implementing consistent and predictable routines (i.e., scheduling activities or tasks at the same time every day), providing numerous opportunities for behavioral rehearsal and practice (this is because children with FASD require more practice to acquire skills), making contingencies explicit, breaking down verbal instructions into smaller steps to address receptive language problems and executive functioning impairments, and using visual cues and aids to accompany verbal instruction can help the student excel in functional, everyday life (Paley & O'Connor, 2009).

Conclusion

It can be confirmed that prenatal alcohol exposure does cause a delay in communication development in preschool aged children. Most studies indicated that mothers who drink the heaviest during the second or third trimester will have the most effect on their child's communication development (O'Leary et al., 2002). The type and exact amount of alcohol that affects communication development the most has yet to be determined in research and studies examining these problems (O'Leary et al., 2002). However, in some of the studies examined, prenatal alcohol exposure during the stages of prepregnancy and during the first trimester caused minor or slight communication development delays or impairments. How much alcohol consumption it takes per trimester to cause the most damage is still undetermined. The exact communication deficits in children with prenatal alcohol exposure vary and there is future research needed to understand the exact communication deficits that are seen in children with PAE.

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