

significantly correlated with FSIQ in ELBW preterm group.

Conclusions: There were fewer EF indexes significantly correlated with FSIQ in ELBW preterm children with normal early development than VLBW preterm children with normal early development, suggesting that even with an IQ higher than 85, lower the birthweight, especially lower than 1000g, higher the EF performance should be concerned. Therefore, in the clinical setting, it is very important to assess the EF independently. And birthweight may be a crucial factor in preterm children's prefrontal cortex maturity.

Categories: Prenatal/Perinatal Factors/Prematurity

Keyword 1: executive functions

Keyword 2: intelligence

Keyword 3: low birth weight

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10 Meta-Attention Predict the Cognitive and Emotional Executive Function at School-aged Children.—Longitudinal Study of Very Low Birth Weight Preterm Children with Normal Early Development.

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Objective: Previous studies had shown that very low birth weight (VLBW) preterm children with normal early development had poorer cognitive executive functions (CEFs) and emotional executive functions (EEFs) at preschool-aged. There were still about 73% of children with deficits of CEFs and 74% of them with deficits of EEFs at school-aged. (Ni et al., 2011; Chiang et al., 2019; Lee et al., 2022). Besides, former studies less discuss the core neuropsychological ability related to the EFs development. In this study, meta-attention was

chosen as the core ability. This study applied longitudinal design aimed to discuss the predictive power of meta-attention at preschool-aged on the CEFs and EEFs at school-aged for VLBW preterm and typically developing children.

Participants and Methods: The VLBW group was referred by Premature Baby Foundation of Taiwan. These children have been followed up with Bayley Scales of Infant Development (BSID) II or III administered at the age of 12 months and 24 months and Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R) at the age of 5-year-old. Children with visual impairment, auditory impairment, cerebral palsy developmental indices of BSID-II or III less than 70, or full-scale IQ of WPPSI-R less than 70 were excluded.

The typical group was recruited from the community and included 30 children whose development was typical. Both preterm and typically developing children completed the CEFs and EEFs test at 6 and 8.

Four types of CEFs including 33 indicators were assessed: Meta-attention including 18 indicators through Comprehensive Nonverbal Attention Test Battery (CNAT), working memory including 2 indicators through Digit Span Subtest of Wechsler Intelligence Scale for Children-IV (WISC-IV) and Knox's Cube Test (KCT), planning ability including 6 indicators through Tower of London (ToL), and cognitive flexibility including 7 indicators through Wisconsin Card Sorting Test (WCST).

Two types of EEFs including 5 indicators were assessed. We designed Emotional EF Ecological Assessment Battery for Children in Taiwan to assess EEFs, including 3 indicators of theory of mind and 2 indicators of emotion regulation. Data were analyzed with correlation analysis and independent sample t-test.

Results: Meta-attention at 6 among the VLBW group significantly correlated with 73.3% of CEFs and 80% of EEFs indicators at 8 and had significant predictive power on working memory, planning ability, cognitive flexibility, emotion regulation, and theory of mind. ($p < .05$)

When the significance level was 0.01, meta-attention still correlated with 33% of CEFs and 80% of EEFs indicators and can predict those CEFs and EEFs among the VLBW group.

Meta-attention at 6 among the typical group significantly correlated with 26.7% of CEFs and 80% of EEFs indicators at 8 and had significant predictive power on working memory, planning ability, emotion regulation, and theory of mind. ($p < .05$)

When the significance level was 0.01, meta-attention only correlated with 80% of EEFs indicators and can't predict any CEFs and EEFs among the typical group.

Conclusions: Meta-attention at 6 can predict CEFs and EEFs among VLBW preterm children at 8, while the effect didn't be found among typically developing children. Thus, meta-attention can be served as a clinical cut-point for VLBW preterm children to find the deficits and intervene early.

Categories: Prenatal/Perinatal

Factors/Prematurity

Keyword 1: attention

Keyword 2: executive functions

Keyword 3: child development (normal)

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11 Using the Chinese Version of Computerized Tower Test and Teacher-Filled BRIEF-2 to Assess the Executive Functions of Children With Autism Spectrum Disorder in Taiwan

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Objective: Many studies supported that children with autism spectrum disorder (ASD) have worse executive functions (EFs) when compared to typically developmental (TD) children in many domains, such as planning, flexibility, inhibition, and self-monitoring. The current study aims to use an adapted version of the computerized tower test to investigate the EFs of children with ASD. Furthermore, the researcher also assessed children's EFs-related behaviors in their schools using a teacher-filled behavior rating inventory of executive function, 2nd edition (BRIEF-2).

Participants and Methods: 61 Children aged 7 to 12 years old ($M = 9.23$) were included in the current study. 29 of them were in the ASD group, and 31 of them were in the TD group. All participants conducted an adapted computerized

tower test. All participants' teachers completed BRIEF-2 to investigate their EFs-related behaviors in their schools.

Results: The results indicated that there were no significant differences in the tower test between the ASD group and TD group in all indexes. Therefore, it implied that the current indexes might not be sensitive enough to distinguish whether a child has ASD or not. In addition, we further investigate the correlations between the tower test and the teacher-filled BRIEF-2. We found the different patterns in the two groups. In the ASD group, we found that the task-monitor index was positively correlated with total-number-of-rule-violations, total-complete-time, and total-rule-violations-per-item-ratio. The task-monitor index was negatively correlated with total-achievement-score, implying that poorer ability to monitor tasks leads to a longer completion time, more rule violations, and a lower total achievement score. Moreover, we also found a high correlation between the organization-of-materials in BRIEF-2 and total-complete-time in the tower test, suggesting the long problem-solving time in ASD groups is highly related to the disability of keeping working space ordered. In addition, we found that the shift index is positively correlated with total-complete-time and total-rule-violations-per-item-ratio. Hence, it indicates that those with poor flexibility in solving problems tend to need more time to complete tasks and violate more rules in ASD groups. In the TD group, we only found the correlation effects were significant between inhibition and self-monitor in the BRIEF-2 and the total-rule-violations-per-item-ratio in the tower test. It suggested that individuals with behavioral regulation problems, such as impulse control and monitoring problems are more likely to make rule violations. The result indicated that behavioral regulations play a more significant role in the TD group. In contrast, cognitive and emotional regulations are more critical in ASD children.

Conclusions: Our findings found no significant difference in the computerized tower test between children with and without ASD, suggesting that the current indexed might not be sensitive enough to differentiate children with or without ASD. However, the results of the correlation between the tower test and teacher-filled BRIEF-2 showed that different patterns might be the cause of the EF performances between the two groups, indicating that there might be a different domain of EFs the children used in the tower test between two groups.