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Helping Teachers Decide: An Early Behavior Checklist predicts Peabody Picture Vocabulary Test scores over and above age or classroom

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Language acquisition is irrepressible, spontaneous, and often joyful. Among preschoolers reading and writing are particularly critical components for later school success. Teachers must design learning activities to address the developmental needs of their students. Often preschool teachers have difficulty deciding if a student has primarily a cognitive developmental delay or a more behavioral one. Sometimes the developmental delay causes some disruptive behaviors. The purpose of this study is to help teachers with a behavior checklist that predicts Peabody Picture Vocabulary Test (PPVT, 1997) scores and is quick and reliable. An Early Behavior Checklist is empirically-derived from preschool observation. Two trained researchers create behavior items by watching 2, 3,4, and 5 year old classrooms listen to stories and practice writing and coloring in small groups among the 5 year old class. A reliable tool for predicting standardized test scores is proposed, and thus pinpointing cognitive development or mental age is introduced here called the the EBC or Early Behavior Checklist. A Color Read Test (CRT) is also part of a predictive model for early testing performance. The CRT involves evaluating the coloring, writing, and reading behaviors of pre-kindergartners who are 5 years old on a behavior checklist format. Children work through ABC books. The letter A (and in that book everything starts with an A) is printed on a small book along with a half dozen pages to color and read along with the teacher in small groups of 4 or 5. The EBC and CRT are both scored on an Achenbach scale to improve reliability.

The main research question is the extent to which an EBC, CRT, and PPVT profile make accurate and unique, but reliable predictions about early literacy skill. The main purpose of this study it to identify early literacy skill measured by mental age in the PPVT and separating it from early disruptive behaviors that may or may not help that goal. Some children show disruptive behavior and can't learn effectively because of it. Teachers often need a quick shorthand way to decide whether to instruct with cognitive cues or disciplinary action. The long-term goal of this research is to create a checklist to make this easier for preschool teachers. Mental age delay as shown by low PPVT scores requires a different strategy from disruptive behaviors that prevent focused attention and distract other children.

Examples of disruptive classroom behaviors among children with developmental delays often include attention problems, lack of self-control, difficulty interacting with others, defiance, or aggressiveness. Therefore, when teachers observe students who exhibit these types of disruptive behaviors, they need to decide which instructional strategies to implement in order to address the problem and the needs of each student. There are several recommendations to reduce problem behaviors and promote achievement for all students: a seating placement close to the front of the class, consistent and predictable routines, an individual schedule or behavior chart that provides the student with visual cues, an assigned buddy or mentor to encourage and assist the student as needed, and providing opportunities for students to make their own choices (Nagro, Fraser, & Hooks, 2018).

A model of the best predictors of a gold standard measure of early cognitive skill in verbal knowledge is the Peabody Picture Vocabulary Test or PPVT (Dunn, 2018). The PPVT has been standardized for over 30 years with revised editions appearing every decade or so. The PPVT is unique in that it can assess verbal intelligence even in the most emotionally and physically-disabled young children. The PPVT correlates well with the Stanford-Binet Vocabulary Subtest ranging between .68 and .76 (Dunn, 2018).n Early Behavior Checklist can be created for teachers and parents to use to get a quick decision about relatively cognitive or emotional behavior issues on the spot.

Cognitive issues are about language and affect mental age and emotional issues are more psychological. And while the two domains overlap considerably, it is very useful for those in care of a young child that may be difficult to reach to know that cognitive ability is intact. A child with this profile would have high PPVT but low Early Behavior Checklist scores. This child might be misdiagnosed with developmental delay but really be experiencing impulse control or uncontrollable disruptive actions for unknown psychological reasons. Using scarce school resources to tackle one or the other domain first is the long-term goal of this research. Children with limited home resources are especially in need of good diagnostic and instructional practices in the preschool environment.

Participant Characteristics and Economic Insecurity

Most children in this preschool population are African-American and Caribbean-American. Most are of Haitian descent, a few from Jamaica, and many second or third generation South Floridians. Many live at the poverty line. The site is a Christian childcare center ministry, offering sliding scale tuition fees to low-income and homeless families in the greater Fort Lauderdale, Florida area. Median home value in the neighborhood is 119,300. And the median income is 30,738. The people living in ZIP code 33311 are primarily black or African American. The number of people in their late 20s to early 40s is extremely large, while the number of middle-aged adults is large. There are also an extremely large number of single parents and an extremely small number of families. The percentage of children under 18 living in the 33311 ZIP code is large compared to other areas of the country. All these economic pressures lead to food and home insecurity among most of these children. However, the preschool is a very nurturing and warm place with teachers who provide constancy in an otherwise often chaotic life. Teachers focus on order and instruction. Students are well-prepared for kindergarten. Despite good preparation, teachers need quick on the spot resources to determine whether performance in primarily cognitive developmental delay or disruptive behaviors for whom discipline is the best choice.

Students who live in food and home insecurity may be experiencing language delays or lower skills due to their economic circumstances or developmental delays associated with both genes and environmental health factors (Flores, Schweck, & Hinton, 2016). Florida has a system in place to address the large numbers of preschoolers who live in relative poverty. VPK is a federally-subsidized, state-specific, preschool program that is especially enriching for low-income children. State prekindergarten programs have been shown to have an overall positive effect and improve kindergarten readiness and achievement outcomes among children from economically disadvantaged families (Farran & Lipsey, 2016). The present study presents a reliable and valid behavior checklist modelled on the Achenbach (1991). The short term goal is to validate a reliable early behavior checklist for ages 2, 3, 4, and 5 that helps predict cognitive delay versus disruptive behavior.

Methods

One checklist was pre-kindergarten specific and the other was for 2, 3, 4, and 5 year old preschoolers. Factor analysis provided for a structural analysis of the final EBC. Only those behavior items that predicted PPVT remained in the final EBC product from each original checklist. The EBC is designed to catch very early literacy behaviors in order that teachers better understand children who are developing in a unique way.

PPVT

The Peabody Picture Vocabulary Test (PPVT), often referred to as the gold standard test for receptive vocabulary, was first developed in 1959 by Dr. Lloyd Dunn, a professor at Peabody College in Tennessee (Pearson, 2018). The PPVT is a popular and reliable norm-referenced test widely used to assess the words that a child can understand when he or she hears them (Eigsti, 2017). It also serves as a screening test for verbal ability, although reading, writing, and expressive verbal language is not required during the assessment process. Therefore, the PPVT can be used with nonreaders and those without fluent verbal ability. Another benefit of the PPVT is the fact that it is a quick and easy test with minimal training requirements for the test administrator; it is untimed, but usually takes 10–15 minutes to administer. The PPVT is individually administered and provides one total standard score.

The PPVT is divided into sets, which consist of 12 items each. The basal set is established when a child responds correctly to at least 11 items in one set. A ceiling set is established when a child makes 8 or more errors in a set, which is considered to be his or her highest level of difficulty without missing all items within a set (Eigsti, 2017).

The child must choose one out of four pictures to match a word orally presented by the test administrator, and only one answer per item is correct. For example, when the test administrator presents a stimulus word such as "bus," the child selects the illustration depicting "bus" from the four pictures on the card by pointing to the picture. Castellino, Tooze, Flowers, and Parson (2011) contend that the PPVT-III has been shown to be strongly correlated with both oral and written language scales (r = 0.66 to 0.83).

Results and Discussion

The bivariate correlation between PPVT (vocab) and our new behavior checklist or EBC is r = .82, p < .05. The multivariate regression predicting PPVT is R = .89, p < .001. This model predicts then 79% of the variance in PPVT with **both** the new EBC checklist and importantly, class, still reliable predictors. The significant predictor variables are EBC checklist, t (2,16) = 3.04, p < .001 and Class (2, 3, 4, or 5 year old class), t (2,16) = 3.22, p < .001. The fact that our new checklist predicts PPVT over and above Class is amazing. This means that our new checklist predicts the PPVT even though class and therefore age are what the instrument is designed to assess.

A second checklist is still in development but is a good predictor of Tgroup (teacher-defined developmental group) and Color Read Test (CRT), r = .61 and .65, p < .05, respectively. The regression predicting PPVT is R = .58. so 34% of the variance in PPVT is predicted by second checklist, Tgroup, and CRT, second checklist, .56, Tgroup, .65, and PPVT, .58.

VPK or 5-year-old class only

The best regression model for predicting PPVT contains two reliable predictors, the Early Behavior Checklist (EBC) accounting for about 20% of unique variability and the Color Read test accounting for 40%. The R (4,19) for this model is .79, R square = .62, F (4, 19) = 6.27, p < .004.

All participants

The best regression model for predicting PPVT among all participants contains two reliable predictors, again, EBC at 20% and Class at 35%. Class is a unique predictor while chronological age in months and years is not because children are moved to classes based on age, but also on whether teachers believe they will perform better with children slightly younger or older then they are at present. The R square in that model is .57, F (3, 58) = 24.43, p < .001.

Fifty-seven percent of mental age on the PPVT is explained in 2, 3, 4, and 5-year-old preschoolers knowing just behaviors from our checklist and class.

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