erikson institute
graduate school in child development

Project Title:
Ounce Scale Validation Project

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Project Abstract:
Erikson Institute, working with seven Early Head Start programs in the greater Chicago area, investigated the reliability and validity of the Ounce Scale – a functional assessment of young children's development from birth through 42 months of age. The Ounce Scale is a performance assessment used in Early Head Start and other early intervention programs to monitor infant, toddler, and young preschoolers' development and to guide individualized instruction. It is comprised of three elements: Observational Records, Family Albums, and Developmental Profiles and Standards. The Observational Records provide a structured format for organizing direct observations of children's performance by teachers and caregivers. The Family Albums engage parents in documenting observations of their children's development and provide parents with a range of activities to promote their children's development. The Developmental Profiles and Standards allow staff to evaluate their observations of the children and determine whether the child is "Developing as Expected" or "Needs Development" in six areas of development, based on explicit performance standards.

The study combined both quantitative and qualitative techniques. In the quantitative study the overall design was that of a cross-sectional, concurrent validation. Ratings on the Developmental Profiles were compared to scores on the mental and motor Bayley Scales of Infant Development-II, the Preschool Language Scale-4, and the Ages and Stages Social-Emotional Questionnaire for approximately 30 children at each of eight age

levels (N=287). The sensitivity and specificity of the scale was assessed. The consequential utility of the scale for planning, instruction and facilitating understanding of individual children was evaluated by means of interviews with 21 teachers and seven supervisors at five centers.

Findings:
Overall, the Ounce Scale is both reliable (overall alpha = .65) and valid (moderate overall, but uneven by age group). The evidence shows that the Ounce has substantial accuracy (> 70%) in discriminating between children at risk and those not at risk, as defined by the standardized assessments. To summarize:

1. The internal reliability of the developmental profile was estimated using Cronbach's alpha. Given that the Ounce has different numbers of assessment items across ages, a general scale internal reliability was calculated using 11 items that are shared across the eight age groups, yielding a Cronbach's alpha of .65 (N = 265). When the data were stratified by age groups, the reliability ranged from a low of .19 to a high of .89, with the majority of the age groups showing reliabilities greater than .62. The age ranges of 8-, 12-, and 18-months showed relatively low reliabilities (.19 - .37). These findings demonstrate an overall moderate stability and consistency of the scale, with some variability across age.
2. The needs development (or at-risk) ratings of the Ounce developmental profile were correlated with the Bayley-II and PLS-4 criterion measures at a low to moderate level (range = .28 - .47). Stronger correlations were obtained with the social-emotional measure, the ASQ:SE. Correlations between the developmental profile and children's outcome scores were further examined among sub-samples based on children's ages and caregivers' demographic characteristics. The coefficients demonstrated varying levels of correlations between the Ounce and the comparison assessments. Overall, the developmental profile ratings showed stronger correlations with the comparison measures among older children (30-, 36-, and 42-month olds). In addition, the developmental profile ratings were also correlated well with ASQ:SE for the 4- and 24-month olds and with Bayley-II for the 8-month olds. Otherwise, correlations between the Ounce and the criterion measures were relatively weak, especially among younger children.
3. One-way ANOVAs indicate that higher performance on the three normative measures was strongly associated with caregivers' ratings of not at risk on any of the developmental profile items. The ANOVA suggests that the more seriously delayed the child, as rated by the developmental profile, the less competently he or she performed on the Bayley-II mental and motor assessments and PLS-4. F-tests indicate that the children's scores on the normative measures were significantly different across the three groups formed by the levels of developmental risk identified by the Ounce.
4. The Receiver Operating Characteristic Curve (ROC) analysis contributes additional support to the validity argument for the Ounce Scale. The data showed that EHS caregivers' developmental profile ratings have substantial accuracy in identifying children at risk on the criterion measures. More than 70% of all such predictions were accurate (areas under curve ranged from .73 - .76). The sensitivity and specificity coefficients demonstrate that the Ounce and criterion

measures were fairly consistent in identifying children who are not delayed (developing as expected), but relatively less consistent in identifying children who are delayed (needs development).

5. Hierarchical regression analyses, controlling for children's demographic characteristics of gender, age, and ethnicity were performed. The other variables were either confounded with child ethnicity or could not be distinguished among subsamples of the EHS children (e.g., IFSP, subsidy status), and therefore were excluded from the regression models. The regression coefficients demonstrate that after controlling for demographic variables, the Ounce was a significant predictor of children's outcome performance and made unique contributions to explaining the variance of all three criterion measures (as indicated by ΔR^2). The association between the Ounce and the ASQ:SE was especially strong.

6. The agreement between teachers' "Needs Development" ratings on the Ounce Scale and the other assessments are stronger for teachers who had the following characteristics:

> higher levels of education,
> more training in early childhood education,
> were relatively new to work with infants and toddlers, and
> had used the Ounce scale for a longer period of time.

Results from Teacher Interviews:
Teachers who were interviewed said the Ounce Scale strongly influenced their knowledge and understanding of child development and their ability to plan and set goals. Using the Ounce Scale influenced teachers' ability and confidence in assessing children, their communication with parents, and their relationships with other teachers and supervisors.

Most of the teachers interviewed said they liked using the Ounce Scale (80%), it was not difficult to use (86%), and they would recommend it to other programs (90%). These results are consistent with the findings from a teacher survey that was collected from 108 teachers at seven EHS centers in which 87% said they learned more about child development from using the Ounce Scale as compared to other instruments and 82% said they enjoyed using the Ounce Scale.

Sample:
N=287 children; 21 teachers, 7 supervisors

Measures:
Child
Ounce Scale
Bayley Scales of Infant Development-II
Preschool Language Scale-4
Ages and Stages: Social-Emotional Questionnaire (ASQ:SE)

Caregivers
 Teacher/Caregiver Interviews (N=21)