Variability in preschool teachers’ interactions with children as a predictor of children’s development
Timothy W. Curby, Laura L. Brock, and Bridget K. Hamre

INTRODUCTION

- When researchers have multiple time points of data, mean scores are typically used because they yield a more-reliable estimate of the construct.
- Means in the quality of teachers’ interactions with children have been related to children’s development.
- Beyond the mean, variability in parent-child interactions has been found to be worse for children’s development than inconsistent interactions.
- However, the role of variability in teachers’ interactions with children’s development is less understood.

STUDY AIM

- The purpose of this study is to examine whether variability in the quality of teachers’ interactions with children (Emotional Support, Classroom Organization, Instructional Support) is systematically related to children’s development.

PARTICIPANTS & MEASURES

2439 pre-kindergarteners were observed in 694 state-funded classrooms in 11 states using the 2002 Multi-State Study of Pre-Kindergarten and the 2004 SWEEP Study.

Measures

- Pre-K teachers were observed using the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008) throughout a day. The quality of teachers’ interactions with children was coded along 9 dimensions on a 1-7 scale.
- Dimensions were aggregated into three domains: Emotional Support, Classroom Organization, and Instructional Support.

- As is typical, we computed the mean across all observations for each domain.
- Unique to this study, we computed the within-day SDs for each domain to also be used as predictors.

CHILD OUTCOMES

- Peabody Picture Vocabulary Test (PPVT-III; Dunn & Dunn, 1997)
- Receptive Vocabulary
- Oral & Written Language Scale (OWLS; Carrow-Woolfolk, 1995)
- Expressive language
- Woodcock Johnson III (Woodcock, McGrew, & Mather, 2001)
- Rhyming
- Applied Problems
- Letter Knowledge—Recognition of alphabet
- Teacher-Child Rating Scale (Hightower et al., 1986)
- Social Competence (Kindergarten Teacher)
- Problem Behaviors (Kindergarten Teacher)

RESULTS: Distribution of Variability

Emotional Support

Classroom Organization

Instructional Support

RESULTS: Variability Predicting Outcomes

Results of Hierarchical Linear Modeling Analyses

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CLASSTROOM IMPLICATIONS

- Preschoolers in an emotionally variable classroom environment had worse academic and behavioral outcomes, relative to children in more emotionally consistent classrooms.
- Variability in Emotional Support may be more salient than mean levels when predicting academic and social outcomes as evidenced by the fact that the mean level of Emotional Support was a non-significant predictor but variability in Emotional Support was a significant predictor.
- The present study would suggest that interventions that promote consistent emotionally supportive interactions would have benefits for students even if there were no effect on the mean level of emotional support.

MEASUREMENT IMPLICATIONS

- Variability can be an important predictor of child outcomes as variability has been shown to be in other fields.
  - Eizenman, Nesselroade, Featherman, & Rowe (1997) used variability in perceived control to predict mortality
  - Butler, Hokanson, & Flynn (1994) used variability in self-esteem to predict depression
  - Kernis, Grannemann, & Mathis (1991) used variability in self-esteem as a moderator of the relation between self-esteem and depression
- Despite error being confounded with variability, and variability being inherently less reliable than a mean (Estabrook, Grimm, & Bowles, 2006), Variability can still be used as a predictor if there are strong underlying associations.
- Notably, viewing variability as a characteristic of the teacher is at odds with classical measurement theory where deviations from the mean are thought of as error.
- The present study’s use of variability is more consistent with generalizability theory which divides up variance into different sources.

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