

## Heterogeneity in the Effect of Food Insecurity on Grade Repetition

Erik Schmidt

Cornell University

Correspondence: eps23@cornell.edu

### Theoretical Focus

Family background is observed to have a consistent and large effect on children's academic performance and retention in primary school. Relative deprivation is implicitly included in analyses of factors affecting children's advancement and performance in primary school, however material deprivation is less frequently assessed as a factor that affects educational outcomes. Material deprivation, in the form of food insecurity, is studied with some frequency. The outcomes examined in association with food insecurity are typically limited to behavioral evaluations and test scores (see Dunifon and Kowaleski-Jones, 2003; **Alaimo, Olson and Frongillo, 2001; for examples**).

While the behaviors and capacities associated with these measures are surely consequential for learning, it can be argued that the mark of lower test scores or the reputation as an unruly student may not be as consequential in later educational experience as the mark of in-grade retention. Indeed, in-grade retention is observed to correspond to lower test scores in later years of schooling (**Reynolds, 1992**), as well as performance below the level of non-retained counterparts (**Jimmerson, 2001**), increased likelihood of high school dropout (**Roderick, 1994**), lower odds of enrollment at post-secondary institutions (**Fin and Davis, 2003**), and lower earnings later in life (**Eide and Showalter, 2001**).

As parental education and family income have been observed to be associated with lower levels of academic performance, so too grade repetition is associated with low parental education and family income (**Byrd & Weitzman, 1994; McCoy and Reynolds, 1999**). Deprivation, relative and material, is often assumed to correspond with some regularity to measures of family background and the experience of deprivation, as part of the experience of lower income and status, taken to affect outcomes. This correspondence, however, may not be as strict as is assumed.

The Survey of Income and Program Participation (SIPP) has been used to examine the relationship between material deprivation and income measures. This body of research has found only a moderate association to exist between measures of material deprivation and (**Bauman, 1999; Beverly, 1999, 2000; Boushey, et al., 2001; Federman, et al., 1996; Meyer & Jencks, 1989; Jencks & Torrey, 1998; Mayer, 1997; Mayer & Jencks, 1993, Mirowsky & Ross, 1999; Perry, 2002; Rector et al., 1999**). Bauman (2003) observes the incidence of material deprivation, as measured by the SIPP to be reported across much of the lower half of the income distribution. Given the correspondence of food insufficiency to what might be expected of the experience of poverty, it may be expected that the experience of food insecurity, or of the processes that underlie that experience, can have negative effects for children. Accordingly, the focus of this project is to assess the effect of food insecurity, in conjunction with income and other factors, on the likelihood of within-grade retention for primary students

### Data and Research Methods

The study will use the 1996 and 2004 panels of the SIPP, taking advantage of the rotating topical modules contained therein which have detailed information on the experience of food

insecurity, its severity, and its duration. The data from the topical modules is combined with data from the core survey, repeated each wave, to better illustrate the dynamics underlying the experience of food insecurity.

Logistic regression will be used to assess the effect of food insecurity on the likelihood of a student being retained in-grade in subsequent school years. Building on the findings, to gain further insight into the dynamics that underlie potential heterogeneity in the effect of food insecurity on grade retention I will employ the weighted regression technique developed by Morgan and Todd (2008) that accounts for possible non-random assignment and heterogeneity in the treatment effect.

Preliminary analysis indicates that food insecurity exerts a rather weak effect on the likelihood of grade repetition generally, but that the effect is highly attenuated by background. Children from households that exhibit many protective traits (i.e. relatively higher income) are more likely to be retained following the experience of food insecurity than are children from households that exhibit less protective traits.