Wake M, Gerner B**. Parent and Teacher Developmental Concerns at School Entry: What Happens to Academic Outcomes Two Years Later?** Centre for Community Child Health, Royal Children's Hospital, Melbourne, Australia. Submitted to the Ambulatory Pediatric Association Annual Meeting, May, 2002

Background: Parents' developmental concerns predict some developmental and behavioral problems concurrently, but little is known about their later outcomes.
Objective: To study long-term academic, language and health status outcomes for children about whom developmental concerns are expressed at school entry
Design/Methods: *Design*: Prospective case-control study. *Setting:* Primary schools in Melbourne, Australia. *Base population:* 1500 school entry children who participated in a cross-sectional study of hearing acuity in 1997. *Cases:* 173 children randomly selected from those with significant parental developmental concerns at school entry. *Controls:* 129 children without such concerns. Predictors (1997). Parents completed the Parents' Evaluation of Developmental Status (PEDS); teachers also completed five PEDS items Outcomes (1999): the PEDS and the Child Health Questionnaire (parents); the Comprehensive Inventory of Basic Skills-Revised (CIBS-R) and the Renfrew Action Picture Test (children). Odds ratios (ORs) were calculated for low scores, defined as more than 1.0 SD below the man.
Results: Case parents continued to report many more significant concerns on the PEDS than control parents (65% vs 26%), OR 2.6, 95% CI 1.8 - 3.6). Mean language/academic scores were slightly lower for case than control children. Of individual PEDS domains, parent self-help and school skills concerns at school entry had higher odds of predicting low Renfrew and CIBS-R scores. Teacher concerns about school skills strongly predicted low academic scores (see Table of ORs). Parent and teacher language concerns were poor predictors of later Renfrew and CIBS-R scores. Social-emotional concerns at school entry increased the likelihood of poor scores across psychosocial domains of the CHQ.

Source/Type of Concern	Renfrew Information	Renfrew Grammar	CIBS-R Spelling	CIBS-R Reading	CIBS-R Math
Parent/ self-help	2.8*	2.8*	2.8*	3.0*	1.3
Parent/School	2.1	2.1	6.6**	3.0*	2.9*
Teacher/School	1.1	1.3	3.7*	4.7**	4.0**

*p < .01
** p < .001

Conclusions: Most parents who report developmental concerns at school entry continue to report concerns two years later. While language concerns are poorly predictive of language or academic outcomes, early teacher and parent concerns about school skills are strongly associated with poorer academic outcomes two years later.

Wake M, Gerner B, Gallagher S. Does parents' evaluation of developmental status at school entry predict language, achievement, and quality of life 2 years later? Ambul Pediatr. 2005 May-Jun;5(3):143-9.

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OBJECTIVE: We studied the accuracy of the Parents' Evaluation of Developmental Status (PEDS) at school entry in predicting academic, language, and health-related quality of life (HRQoL) outcomes 2 years later. DESIGN/METHOD: Prospective population study in elementary schools in Melbourne, Australia. Base Population. A total of 1591 school entry children who participated in a separate cross-sectional study. Cases. One hundred seventy-three children randomly selected from those with significant parental developmental concerns. Controls. One hundred twenty-nine children without significant parental development concerns. Predictors (1997). Parents completed all 10 PEDS items; teachers completed 5 PEDS items. Outcomes (1999). The PEDS and the Child Health Questionnaire (parents) and the Comprehensive Inventory of Basic Skills-Revised and the Renfrew Action Picture Test of language (children). Odds ratios (ORs) were calculated for low outcome scores, defined as >1.0 standard deviation below the mean or <16th centile. RESULTS: At outcome, case parents reported more "significant" concerns on the PEDS than did control parents (65% vs 26%, OR 5.3), but mean language and academic scores were only slightly lower for case children. Parent-reported self-help and school skills concerns predicted low language (ORs 2.1-2.8) and academic (ORs 1.3-6.6) scores. Teacher concerns about early school skills predicted low academic scores (ORs 3.7-4.7). However, sensitivity and specificity values were modest. Baseline developmental concerns predicted poor scores on a number of domains of HRQoL 2 years later. CONCLUSIONS: Although individual developmental concerns at school entry variably predict later academic and language scores, sensitivity and specificity values would not support use of the PEDS as a stand-alone screen to detect later problems.

Letter to the Editor of Ambulatory Pediatrics

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To the editor:

Congratulations to Drs. Wake et al for addressing the challenging question of whether a screening test has the power to predict later developmental outcomes (Wake, Gerner & Gallagher. Does ‘Parents’ Evaluation of Developmental Status (PEDS)’ at School Entry Predict Language, Achievement and Quality of Life 2 Years Later. Ambulatory Pediatrics. 2005;5:143-149). I am the author of the screening measure used in the study, and have several concerns and suggestions the authors should be encouraged to address:

1. In the study, parents of five-year-olds were administered PEDS1 and their children’s academic and language outcomes viewed two years later. Fifty-four percent of the sample consisted of children whose parents held concerns associated with high rates of developmental disabilities.2 Why did the authors not track what happened in the time elapsed? Other than in-grade retention, the study does not account for such interventions as homework assistance, tutoring,

remedial programs, summer school, or even special education placement. Given the strong association between parents' discussion of concerns and children's receipt of interventions, it seems likely that many parents would have taken actions leading to improvements in their children's outcomes.3 If so, the long-term predictive power of PEDS would have been masked. It would have been particularly helpful had the authors had assessed performance on concurrent measures at age 5 and compared this to performance at age 7 in order to account for positive trajectories. In any case, failure to account for interventions during the two-year interval, is a serious limitation in the study and should be carefully addressed.

2. Why weren't the published quotients for the criterion-measure, the Comprehensive Inventory of Basic Skills (CIBS-R), deployed? Instead, the authors developed their own norms for the CIBS-R apparently on the study's subjects, a group that included a preponderance of parents with concerns and whose children were likely to have developmental problems. Generating quotients on this potentially delayed and small sample is likely to lead to inflated scores. This, in turn, is quite problematic for drawing viable conclusions about academic performance and its relationship to earlier results on PEDS.

3. Even if the quotients created for the CIBS-R are stable, valid, and truly reflect overall population tendencies, are they are a reasonable gold standard? PEDS' validation studies in the US used eligibility for special education as the criteria against which comparisons were made. Given that the CIBS-R alone is probably not sufficient for determining need for special education services, the terms co-positivity and co-negativity are more appropriate than sensitivity and specificity. 4 In any case, the authors did not present the raw data used to calculate sensitivity and specificity. Readers should be shown how these figures were generated.

4. In Australia, concerns about self-help skills appeared to be a predictor of outcome which is not a finding in US concurrent validation studies. This suggests the need for unique standardization and validation of PEDS for Australia. As such, would it not be reasonable to consider whether a different constellation of parental concerns are more useful with Australian families? A related suggestion is to consider whether secondary analyses of the actual thought-listings of parents would lead to a more optimal taxonomy. For example, under the category of concerns about school performance, comments such as, "he can't sound out words" may have long-term significance in identifying academic deficits, while statements such as "she's the class clown" may not.

5. Overall, the study reveals significant and strong odds ratios between certain parental concerns on PEDS and later performance on language, academic, and quality of life measures. There are no defined standards for predictive validity with screening tests and some researchers argue that prediction on the basis of a slender set of items strains the credulity of brief measures designed only to detect current status.5 That said, predictive validity studies, rare as they are (a Medline search using the terms "predictive validity" and "development" and "screening" revealed only 6 English-language articles across the last 10 years),6-11 are nonetheless valuable because they illustrate that screens measure enduring and meaningful dimensions of development. PEDS clearly does this as illustrated by the many positive results in this study. Among these is the finding,

using the most meaningful of the study's criterion measures, that 7 out of 9 children retained in grade by age 7, had parents with significantly predictive concerns at age 5.

I am happy to work with the authors on additional analyses of their data.

Sincerely,

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