What Do Retrospective Subjective Reports of Childhood Health Capture? Evidence from the WLS and the PSID[1]

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INTRODUCTION

Population researchers interested in understanding the determinants of health at older ages have increasingly turned their attention towards the life course. There has been a growing focus and acknowledgement that to truly understand health outcomes in later life including their socioeconomic and ethnoracial heterogeneity requires a more comprehensive understanding of how health unfolds over the life course (Kuh & Ben-Shlomo 1997). An important aspect of this line of inquiry is the greater attention paid to childhood health and socioeconomic conditions. For example, emergent work demonstrates the importance of various childhood health insults and that disadvantaged socioeconomic environment can have strong and lasting impacts on health well into mid-life and beyond (Haas 2008; Gilman, Kawachi, Fitzmaurice, & Buka 2002; Davey Smith, Hart, Blane, Gillis, & Hawthorne 1997).

An important constraint on this work, especially in the US context, is the dearth of large nationally representative cohort studies connecting the earliest years of life to later portions of the life course. The 1979 National Longitudinal Survey of Youth (NLSY) cohort contain almost no information on childhood health and are still relatively young to study the health of aging populations. Even the most comprehensive large scale cohort studies—the 1946 and 1958 National British birth cohorts—cover populations that are only now beginning to age into the period of life when major health conditions become most prominent. This lack of data makes answering some of the most pressing questions about early life influences on adult health very difficult.

One approach that several of the major data collections have taken is to use retrospective questionnaires about childhood health and social conditions. Among the

large scale longitudinal studies that have begun to collect such information are the Health and Retirement Study (HRS), the Wisconsin Longitudinal Study (WLS), and the Panel Study of Income Dynamics (PSID). The WLS and PSID have long played a crucial role in social science research especially when it comes to understanding the social dynamics of socioeconomic attainment, poverty, and family formation. Now that their primary samples are growing older these surveys are evolving and have great potential to be major sources of data on health and aging. For the decade and a half of its existence the HRS has proven to be an invaluable source of information on later life health. If the kinds of retrospective assessments that these surveys are now collecting prove to be valid and reliable sources of information on childhood health and social conditions, then population health researchers will add rich sources of data to their toolbox. However, very few studies have systematically investigated the quality of these retrospective reports. This study attempts to fill this gap by investigating retrospective childhood health reports in the WLS and the PSID.

BACKGROUND

Despite their growing presence in large scale health surveys and their use in empirical analyses, few studies have systematically examined the quality of retrospective reports of childhood health. A pair of studies has examined differential reporting of childhood health symptoms among hypochondriacal and non-hypochondriacal patients (Barsky et al. 1994; Noyes et al. 2002). However, drawing conclusions about the general population from these studies is problematic.

Krall and colleagues (1988) validated retrospective self reports of childhood communicable diseases, accidents, hospitalizations, and surgeries. In the first year of life

subjects were examined by a pediatrician every 3 months. Examinations and parental interviews were then performed twice a year between age 1 and age 10 and once a year until age 18. Retrospective childhood health questionnaires were administered at age 30, 40, and 50. With the exception of German measles, illnesses were recalled with a very high level of accuracy averaging 85% at age 50. Accidents and surgeries were recalled correctly 75% and 89% of the time at age 50, respectively. Reliability did not change much between age 30, 40, and 50, nor was recall accuracy correlated with education (Krall et al. 1988).

Few studies have attempted analyze the quality of retrospective reports of overall subjective childhood health in large nationally representative samples. This measure asks respondents to "*consider your health while you were growing up, from birth to age 16. Would you say that your health during that time was excellent, very good, good, fair, or poor?*" Haas (2007) presents the most comprehensive treatment of this measure. Using data from the PSID and the HRS he shows that the retrospective measure of overall childhood health is reliably reported over time (polychoric correlation =0.6; Goodman-Kruskal gamma=0.6), especially when the measure was dichotomized into a good/very good/excellent vs. fair/poor comparison (tetrachoric correlation=0.7; Goodman-Kruskal gamma=0.9) (Haas 2007). Quality of measurement did not vary substantially by gender or age. However, those with higher levels of education were somewhat more consistent reporters of childhood health (Haas 2007). There is also no evidence that retrospective reports are subject to anchoring, by which current health status contaminates reports of health in childhood. Retrospective reports are also correlated with birth weight in the PSID (Haas 2007).

While previous studies have investigated many of the important measurement properties of retrospective subjective reports of childhood health, such as their reliability, much less is known about what this measure is actually capturing. In other words what specific childhood health conditions are captured by this measure? Data from the 1996 Experimental Module of the HRS provide a glimpse. In addition to the overall measure of childhood health, respondents were also asked whether or not they had, because of a health condition, either 1) missed one month of school or more, 2) were restricted from participating in sports for three or more weeks, or 3) had to remain in bed at home for one month or more. Those answering affirmatively were asked to report the specific health condition responsible.

Elo (1998) has demonstrated a high level of internal consistency between the overall subjective measure and reports of specific long-term health limitations in childhood, finding that while only 8% of those in excellent childhood health reported a long-term health condition in childhood, 20%, 23%, 61%, and 82% reported at least one for very good, good, fair, and poor, respectively. In terms of specific childhood conditions reported, the most prevalent were infectious diseases, representing half of all conditions reported (Blackwell et al. 2001). Analysis of the 1996 HRS experimental module found that compared to those who did not experience a limiting childhood health condition, those who experienced a non-infectious, infectious, or autoimmune condition were 4.0 ($p<.0001$), 5.0 ($p<.0001$), and 13.2 ($p<.0002$) times more likely to report having poor health in childhood (good, fair, or poor), respectively (see Haas 2008). Unfortunately, the experimental HRS module is only available for 733 respondents and does not permit a full analysis of the content subjective measures of childhood health.

The current study takes advantage of newly collected data from the WLS and the PSID to estimate the relationship between specific childhood health conditions and the overall subjective measure of childhood health.

METHODS

Data

Preliminary results are presented for the Wisconsin Longitudinal Study. For PAA we plan to also include data from the most recent wave of the PSID to be released by the end of the current year. The Wisconsin Longitudinal Study (WLS), has followed a random sample of 10,317 persons who graduated from a public, private or parochial high school in Wisconsin in 1957 (Sewell et al., 2004). In this initial wave, the WLS collected information on academic ability, socioeconomic background, attitudes toward higher education, educational and occupational aspirations, and a handful of contextual factors (Hauser, 2005). Subsequent waves in 1964, 1975, 1992-93 and 2003-05 collected data from WLS respondents (or their parents) on a wide range of issues that are essential to studies of the life course, including educational and occupational histories, indicators of socioeconomic status, military service, marital status, family characteristics, social participation, psychological well-being, health behaviors and health outcomes (Hauser, 2005; Sewell et al., 2004). Although the WLS is not nationally representative, its respondents resemble over two-thirds of Americans who are now entering retirement age in terms of academic achievement and ethnic background (Hauser 2005). The WLS has long been a central source of data on the processes of socioeconomic attainment. In the most recent follow up in 2003/2004 a battery of retrospective questions asked respondents about their health in childhood. The analytic sample consists of 6,700 men

and women responding to the most recent follow-up. Respondents were approximately 64-65 years of age at this interview.

Measures

Overall subjective measures of childhood health are based on the question *"how would you rate your health as a child?"* Response categories include excellent, very good, good, fair, and poor. We analyze this measure in both its original ordinal metric as well as dichotomized in the comparison between excellent/very good vs good/fair/poor. To examine specific childhood health conditions WLS respondents were asked whether they had ever experienced *childhood asthma, bronchitis, frequent ear infections, removal of tonsils or adenoids, whooping cough/pertussia, polio, diphtheria, hepatitis, pneumonia, meningitis, or mononucleosis* during childhood. We look at whether the respondent had each or any of the above conditions. Finally respondents were asked "*through age 16, did you ever miss school for 1 month or more, were you ever confined to bed or home for 1 month or more,* or *were your sports or physical activities ever restricted for 3 months or more because of a health condition?* We create a dichotomous indicator of whether the respondent experienced each of these and a fourth for whether they experienced any of the above.

RESULTS

Tables 1 and 2 present the distributions of reports of specific childhood health conditions by the retrospective subjective measure of overall childhood health status. Table 1 presents the distributions using the original ordinal metric while table 2 presents the distribution based on the dichotomized measure. In both instances, there are clear and statistically significant differences in the proportion of respondents having reported experiencing the specific condition by the overall assessment of their childhood health. In general the lower the assessment of their overall health that respondents provided the

more likely they were to have reported experiencing each specific condition. For example, approximately 2% and 4% of respondents reporting excellent or very good childhood health reported they had child hood asthma. However, among those who reported fair or poor health, 23% and 32% reported asthma, respectively. Those reported poor childhood health were three times more likely to report frequent ear infections and pneumonia, twice as likely to report whooping cough or mononucleosis, and were 18 times more likely to report bronchitis. For all conditions there is a monotonic increase in the proportion reporting the condition as respondents report worse overall childhood health.

[Table 1 here]

Similar differences are found in the distribution of functional/activity limiting illness. Respondents reporting poor overall childhood health were more the 10 times more likely to have either missed school for a month or more, confined to bed or home for a month or more, or to have had there sports or physical activities limited for 3 months or more due to a health condition before age 17. As with the specific health conditions, there is a monotonic increase in the proportion reporting each of these limitations as respondents report worse overall childhood health.

[Table 2 here]

Similar patterns are observed when the subjective measure of overall childhood health is dichotomized into a comparison between excellent/very good/good and fair/poor. For all

conditions those reporting fair/poor childhood health were substantially more likely to report experiencing the condition than those reporting excellent, very good, or good health.

Future Directions for PAA

For PAA we plan to conduct a more substantial multivariate analysis of these variables with special attention paid to looking at how the above distributions may very by gender, SES, and other covariates. We all also plan to replicate this analysis in the PSID which provides information on how these measures are related in a larger, nationally representative data set that is less constrained by age, race/ethnicity, and by socioeconomic status.

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Table 1. Proportion of Respondents Reporting Specific Childhood Health Conditions by Subjective Childhood Health Status, Wisconsin Longitudinal Study

	Subjective Childhood Health Status					
	Excellent	**Very Good**	**Good**	**Fair**	**Poor**	**(p-value)**
Childhood Conditions						
Asthma	2.1	3.9	12.1	23.3	32.0	*p <.0001*
Frequent Ear Infections	9.0	15.2	20.7	33.5	29.2	*p<.0001*
Tonsils/Adenoids Removed	47.5	51.2	55.9	69.3	74.1	*p<.0001*
Bronchitis	2.1	4.6	12.5	22.5	38.5	*p <.0001*
Whooping Caugh/ Pertussia	16.1	19.4	24.5	31.1	32.0	*p <.0001*
Polio	0.8	2.3	3.6	7.5	0.0	*p <.0001*
Diptheria	0.1	0.3	0.6	2.2	0.0	*p <.0001*
Hepatitis	1.1	1.7	2.6	3.3	4.2	*p <.01*
Pneumonia	9.1	15.2	21.6	32.3	37.0	*p <.0001*
Meningitis	0.4	0.4	1.1	0.0	12.0	*p <.001*
Mononucleosis	3.0	3.7	4.9	6.5	12.0	*p <.01*
Any Childhood Condition	63.5	71.6	80.0	90.6	89.3	*p <.0001*
Functional Impairment						
Missed School	3.6	6.9	17.0	43.0	55.2	*p <.0001*
Confined to Bed/Home	3.6	7.9	16.8	39.6	55.2	*p <.0001*
Activity Restrictions	2.9	5.5	15.5	38.4	62.1	*p <.0001*
Any Limitation	6.2	11.4	24.8	55.6	69.0	*p <.0001*

Table 2. Proportion of Respondents Reporting Specific Childhood Health Conditions by Subjective Poor Childhood Health Status, Wisconsin Longitudinal Study

	Subjective Childhood Health Status		
	Excellent/Very Good/Good	**Fair/Poor**	**(p-value)**
Childhood Conditions			
Asthma	4.1	24.3	*p <.0001*
Frequent Ear Infections	12.8	33.0	*p <.0001*
Tonsils/Adenoids Removed	50.0	69.9	*p <.0001*
Bronchitis	4.4	24.4	*p <.0001*
Whooping Caugh/ Pertussia	18.5	31.2	*p <.0001*
Polio	1.7	6.7	*p <.0001*
Diptheria	0.2	1.9	*p <.0001*
Hepatitis	1.5	3.4	*p <.05*
Pneumonia	13.0	32.0	*p <.0001*
Meningitis	0.5	1.4	n.s.
Mononucleosis	3.5	7.2	*p <.01*
Any Childhood Condition	68.7	90.5	*p <.0001*
Functional Impairment			
Missed School	6.7	44.4	*p <.0001*
Confined to Bed/Home	7.0	41.5	*p <.0001*
Activity Restrictions	5.6	41.3	*p <.0001*
Any Limitation	10.6	57.2	*p <.0001*