Did the Medicaid-Eligibility Expansions Increase the Reporting of Children's Health Problems? Evidence from the SIPP

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Abstract: Beginning around 1990, disability rates of children, as reported by their parents, began to increase. At the same time, a major expansion of Medicaid eligibility to children outside of the welfare population was taking place. Data from multiple panels of the Survey of Income and Program Participation are used to estimate the influence of the expansion policy on parental reporting of children's activity limitations and the presence of specific conditions. There is little evidence that the expansions affected reporting for the targeted group of low-income children (those who would previously have been Medicaid-ineligible). However, the expansions appear to have positive and robust effects on the likelihood that certain limitations and conditions are reported for AFDC-receiving children. Given that welfare-receiving children have had access to free medical care since 1975, these findings present a puzzle. The remainder of the paper discusses a variety of explanations for these findings.

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I. Introduction

The federally-led series of Medicaid eligibility coverage expansions to children outside the welfare system has constituted the major advance in welfare coverage of children in recent times. Between 1990 and 1994, 4 million children whose families were not already entitled to Medicaid through a cash welfare program, and who were not already participating through special state disability programs, came into the Medicaid system.[1] A dramatic rise in children's disability, coinciding with the onset of the expansions, intriguingly suggests a connection between this policy and disability reporting. An estimated 1.5 million more children reported a disability in 1994 than in 1990 (Kaye, et al., 1996). If just 20% of the children who came onto Medicaid due to the expansions had a disability that was either discovered or confirmed to parents by a medical professional, this would account for more than one-half of the growth in disability reports.[2]

Making the leap to demonstrating that the eligibility expansions actually improved the health of the child population, however, has proven difficult. There is some evidence that Medicaid expansions for pregnant women lowered infant mortality (Currie and Gruber, 1996), but this finding would seem to apply to only a narrow segment of the Medicaid expansion program's intended population. Prior knowledge from the literature suggests there are both reasons to be hopeful and reasons to be skeptical of finding an effect of the expansions on either intrinsic or reported health.

The broader literature on health insurance coverage has not been able to establish a strong causal connection between increased medical service utilization and better health.[3] Therefore, it is entirely plausible that even "effective" Medicaid expansions--i.e., those increasing medical service utilization--did not improve intrinsic health. The literature on the take-up of Medicaid among its targeted population also raises doubts. If an important segment of those taking up Medicaid coverage are simply families exchanging public for private coverage (the "crowd out" phenomenon), and if Medicaid and private practitioners have similar motives in treating children, then there will not even be a policy effect on *reported* health, let alone intrinsic health.

However, there are some reasons to believe that there could be an impact on reported health, at least. The goal of this paper is fairly modest, as it addresses reports of activity limitations and specific conditions, and not intrinsic health. The narrower concern here is whether doctors identify health problems that parents or other responsible adults such as educators cannot. This is clearly a step that is intermediate to demonstrating that intrinsic child health was improved by the Medicaid expansions (the next step would show the diagnoses led to better interventions, and the final step would show that these interventions led to better functioning). While Cutler and Gruber (1996) found large crowd-out effects of the expansions,

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[1] Author's computations from state reports to the Health Care Financing Administration, US Department of Health and Human Services (Form 2082), as edited by The Urban Institute.

[2] By no means are the Medicaid expansions the only candidate policy for explaining increased disability reporting. The timing of the increase in disability rates also coincides with important changes in various other public policies around 1990. These include changes in the Supplemental Security Income (SSI) program affecting the treatment of child applicants, the passage of the Americans with Disabilities Act (ADA), and the phase-in of provisions in the Individuals with Disabilities Education Act (IDEA).

[3] Gruber (1997) notes that "a number of studies suggest that much of the acute care received by children is inappropriate and may have little health benefit."

more recently, Hamm and Shore-Shepard (1999) and Card and Shore-Shepard (2001) have presented compelling evidence that the extent of crowd-out of private insurance may be overstated in early studies. Finally, although take-up rates in the Medicaid-only program have been fairly low, they were evidently sufficiently important to significantly increase medical service utilization among newly eligible children (Currie and Gruber, 1996). Therefore, it is promising to look at variables that should be closely tied to utilization, such as diagnoses.

This paper considers how the Medicaid expansions affected diagnoses of children's disabilities (or "limitations") and specific conditions. When the population of low-income children who were the target population for the expansions --those largely without access to cash welfare--are analyzed, the pattern of empirical findings does not support a causal effect of Medicaid-expansion policies on limitations and conditions reporting. A control-treatment approach is proposed to account for potential spurious correlations that may bias against finding significant effects. The control group consists of AFDC-covered children. These children have ready access to Medicaid throughout the period of interest, and their access to medical professionals should be unaffected by the expansion policy.[4] In particular, all of these children can visit doctors and receive medical services, regardless of characteristics such as birth month. The results from a preliminary analysis of the "control" group, however, are quite surprising: in a number of important instances, diagnoses of limitations and conditions in the AFDC-covered group apparently *increase* in response to the Medicaid-eligibility expansions. The remainder of the paper suggests and, when possible, empirically analyzes various explanations for these findings.

The next section describes the growth in both Medicaid eligibility and limitations reporting over the 1990s, using data from multiple panels of the Survey of Income and Program Participation. Section III describes the data and variable construction in more detail. Section IV presents the basic findings on the effects of Medicaid eligibility expansions on limitations and conditions reporting for children in different types of families. The next section further investigates various hypotheses about the findings for AFDC children. Conclusions and directions for further work are presented in section VI.

II. Growth in Medicaid Eligibility and Child Disability Rates

Growth in Medicaid Eligibility

The Medicaid program was begun in 1975 to provide free health insurance to low-income families on welfare and families left indigent by out-of-pocket medical costs. Nursing home and end-of-life care for the elderly has comprised a disproportionate share of Medicaid costs, while the costs associated with the children of welfare families have historically been more modest. Beginning around 1990, in the face of a perceived crisis in health insurance affordability among the working poor, the federal government began expanding Medicaid coverage to children outside the welfare system. The first expansions extended coverage to pregnant women and infants in families with incomes below the federal poverty line and to those few two-parent families poor enough to qualify for AFDC but ineligible due to other stipulations (e.g., restrictions on the recent work activity of heads). Soon, coverage was expanded to older children and to children in families farther up the income scale. By 1993 (the last year of data used in this study), all children born after September 1983 in families with incomes of up to

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[4] Although their mothers may respond to changes in Medicaid policy by leaving the AFDC program. This issue is addressed below.

133% of the federal poverty line were federally eligible for Medicaid. The federal government also encouraged states to expand coverage to older children and to children in higher-income households by providing matching funds.

Figure 1 illustrates the pattern of age-eligibility expansions using the SIPP panels assembled for this study (the sample covers the years 1986-1993, excluding 1988). Each line plots the percent of children of a particular age who are age-eligible for Medicaid in a given year. Since the expansion policy was not yet underway, age-eligibility policies for 1986 and 1987 are horizontal lines at zero. Once the expansions began, eligibility advanced extremely rapidly for younger age groups. Particularly as federal coverage mandates increased, in a matter of one to two years, certain age groups of children went from the absence of coverage to complete coverage. States also took advantage of their discretion in providing additional coverage to older children.[5]

Learning limitations are of particular interest; as shown next, they have driven the growth in overall limitation rates observed in the 1990s. Therefore, it may be important to consider policies that affected preschool and school-age children. School-age children make dramatic coverage gains over the sample period, particularly between 1991 and 1993. All children through age 9 are age-eligible by 1993 as well as many 10-year-olds. While potential Medicaid coverage drops precipitously with age, around 20% of children in the 14-17-year-old age range are age-eligible for Medicaid by 1993, due to state policies.[6]

Card and Shore-Shepard (2001), undertaking a careful analysis of the 1991 and 1993 federal expansions, demonstrate that not all expansions were equally effective in promoting Medicaid enrollment. In particular, they find that the expansion of coverage to poor children born after September 1993 led to significant take-up, while the expansion to a higher income level (133% of the poverty line) produced very modest gains. Varying publicity, administrative implementation, and heterogeneity among the differential groups targeted are some possible explanations for these findings. For these same reasons, the effectiveness of state expansion initiatives might also differ considerably.

Growth in Children's Reported Limitations

A widely accepted concept of disability is based on the level of functioning in activity areas in which society expects the individual to be engaged (for a detailed presentation of the contemporary notion of disability, see Naagi, 1979). For adults, the standard expected activity is the ability to engage in gainful employment. Obviously, expectations of children increase in sophistication with age. For older children, the primary expected activity is attending school. For a 6-month-old, eye contact and smiling might be socially expected activities.

The Centers for Disease Control uses the National Health Interview Survey to track disability in the population, defined at the most general level as "any limitation in activity resulting from a chronic condition." The percentage of children under 18 in this category grew from 4.9% of all children in 1990 to 6.0% in 1994 (Federal Interagency Forum, 2001). While nearly every age and socioeconomic category experienced growth, it was particularly

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[5] Even ignoring state regulations, positive coverage rates below 100% would be present in these defined age groups, because the federal expansions were phased in according to birth month.

[6] California's expansions, which extended age-eligibility through age 18 in families with incomes up to 200% of the poverty line, dominate. Considering both age and income-eligibility, more than one-half of the eligible child sample members in 1993 aged 13 or older reside in California.

pronounced within certain demographic groups and for certain types of activities. Increased diagnoses of mental disorders, mental retardation, and learning disabilities played a major role in these changes, and learning-related activities were most affected.

Children of school age (ages 5-17), for whom learning problems are most evident, experienced higher growth. Within the school-age group, the boys' rate rose from 6.9% to 9.0%, poor children's from 7.9% to 11.0%, and black children's from 6.7% to 8.9% (Federal Interagency Forum, 2001). Kubik (1999) documents that rates among low-income (defined as family income below $11,000--a bit below the nominal poverty line for a one-parent-one-child household in 1993), female-headed households grew from 9.0% to 12.9% between 1990 and 1994.

Figure 2 illustrates the overall pattern of limitations for children in poor families, using data from the SIPPs. The age range is restricted to 6-17 in order to minimize the impact of changing child age universes before and after the 1990 survey. The top line presents the broadest "disability" measure, using information on all activities (see McNeil ,1993, for instructions for computing this measure in the SIPP). The middle line displays the series for limitations in the ability to do "regular schoolwork," while the bottom line displays mobility limitations (these variables are described in detail in the next section).

Consistent with the findings from other data sources, the overall trend in limitations over the sample period is driven by limitations related to mental activities. Prior to 1989, both the learning and mobility series appear trendless. There is an increase of 2.1%-points in learning limitations between 1989 and 1990, which may be due to a type of seam bias (the disability survey was revamped between these years, although the schoolwork limitation question itself was unchanged, and the mobility limitation variable does not display any obvious discontinuity). An upward trend in schoolwork limitation is evident post-1989, when the survey is virtually identical from year to year, while the mobility limitation series is flat.

The schoolwork limitation rate among children in families below the poverty line is contrasted with that of children with family income more than 3 times above it in Figure 3. If policy changes beginning circa 1990 aimed at low-income families played an important role in the rise of disability reporting, one might expect to see differences between these groups. Through 1989, the schoolwork limitation rate for poor children rises, while the rate for better-off children is basically flat. Both groups experience substantial growth between 1990 and 1991. However, the rate for higher-income children is basically flat or declining after 1991, while the rate for children in poor families continues rising from 1991 to 1993.

Figure 4 contrasts the limitation reports of children in poor one and two-parent households. Most children in poor one-parent families maintained ready access to the Medicaid program through AFDC, while most children in poor two-parent families were not covered prior to the expansions.[7] Prior to 1990, rates in the female-headed group rise steadily, while the rate for two-parent households trends downward. Again, the interpretation of the jump in rates from 1989 to 1990 is difficult, but between 1990 and 1991, the group of children in poor female-headed families experiences huge growth in rates (of nearly 2%-points) and little growth thereafter. The overall limitation rate for poor children in two-parent families actually falls between 1990 and 1991 but grows by more than a percentage point between 1991 and 1993.

[7] Of course, exceptions to this assumption are the medically needy and those few families meeting most requirements for AFDC eligibility.

These patterns appear consistent with the disability reporting rates of poor one and two-parent families being influenced by different factors over the period.

III. Data and Variables

The basic data on the characteristics of children and their families are from the Census Bureau's Survey of Income and Program Participation (SIPP). First fielded in 1984, the SIPP is intended to collect more detailed and higher-frequency information, particularly on public program use, than is practical to collect using the CPS's. SIPP families are interviewed every four months (each four-month period is called a "wave"), and families are followed for two to three years, depending on the panel. A useful feature of the SIPP is that the panels overlap in time. For example, the wave 6 interview of the 1992 panel and the wave 3 interview of the 1993 panel are in the field during the same weeks of 1993. For purposes of computing nationally representative statistics, close-by panels are often pooled by the Census Bureau to increase sample size, and close-by panels are pooled for 1993 in the empirical work below.

A core set of questions is repeated every wave, with additional sets of questions appearing in occasional topical modules. In addition to information on family income needed to assess Medicaid eligibility, the exact birth date is given for each child. This is a particularly useful aspect of the SIPP, since Medicaid age-eligibility was phased in using seemingly arbitrary birth date cutoffs, implying that eligibility status can differ for children born only days apart. In addition, there is a wealth of family background information, including family structure, parental education, and parental health self-assessments.

Special surveys on the health of family members, including special questions put to parents about their own children, are usually administered twice during the panel, at one-year intervals. The topical module on health has evolved over time, with the most significant changes occurring in the 1990 and 1996 panels. In 1990, the survey was revamped in response to the passage of the Americans with Disabilities Act. Some children's questions were affected by the changes, particularly questions about the activity limitations of children older than 14.[8] The other major shift in survey design occurred in 1996, when the children's information underwent a major restructuring to emphasize ADLs, making it more similar to the adult portion of the health survey. Of all the SIPP panels, 1990 through 1993 have the most stable health survey format. Because of the timing of the Medicaid expansions and because of the changing nature of the health information collected, the analysis below is restricted to the 1990 through 1993 panels. This period covers the key era of Medicaid policy changes. Consequently, in this section, variables constructed from the 1990-1993 surveys are described.

All analyses presented use samples in which each child constitutes an observation. A child is defined as a SIPP member who is under 22 years of age and who matches to a mother (i.e., a female household member has a person number corresponding to the parent number given for the child).[9] In pre-1996 panels, only one adult is identified as a parent, and it is nearly always

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[8] As is evident from the figures presented in the previous section, even the question on schoolwork limitations, which was carried into the 1990 survey intact, experienced a suspiciously large increase in the rate of positive responses from 1989 to 1990. Powers (2001) demonstrates that changes in survey context (in particular, question ordering) can affect responses to limitations questions, even when the limitation question itself does not change.

[9] Due to obvious discontinuities in the disability responses for children older than 17, the analysis samples are restricted to children under 18. The greatest discontinuity occurs for the

the mother. Information on fathers in two-parent households is found by matching the mother's spouse number to the father's person number.

The dependent variables analyzed include activity limitations and specific medical conditions. There are three basic limitation questions available in the SIPP. First, parents of children 0-5 are asked whether "Because of a physical, learning or mental health condition, does [the child have] any limitations at all in the usual kind of activities done by most children their age?" Second, parents of children ages 6-21 are asked whether "because of a physical, learning, or mental health condition, ... any of [your] children have limitations in their ability to do regular school work?" Mobility limitations can be assessed for children age 3 and older. Parents of 3-14-year-olds are asked if their child has "a long lasting condition that limits their ability to walk, run or use stairs?" Information on specific ADLs for older sample members is used to extend this question to cover children older than 14. The effect of the Medicaid expansions on the reporting of mobility limitations can be analyzed using this constructed variable. A child with any of these three types of limitations is characterized as having "any limitation" for purposes of the empirical analysis.

Reports of specific health conditions are also analyzed. These are asthma, autism, blindness or vision problems, cancer, cerebral palsy, deafness or serious trouble hearing, diabetes, drug or alcohol problem or disorder, epilepsy or seizure disorder, hay fever or other respiratory allergies, head or spinal cord injury, heart trouble, impairment or deformity of back, side, foot, or leg, impairment or deformity of finger, hand, or arm, learning disability, mental or emotional problem or disorder, mental retardation, missing legs, feet, toes, arms, hands, or fingers, paralysis of any kind, speech problems, tonsillitis or repeated ear infections, and other. Conditions questions are only put to parents who identify their children as having any of the activity limitations previously discussed. Thus the responses are indicators of "serious" conditions.[10] There is no requirement that the condition be physician-diagnosed.

IV. Basic Findings: Medicaid-Eligibility Expansions and Health Measures

This section presents basic findings from linear probability models of health measures as explained by Medicaid-eligibility variables and other factors. Before presenting the findings, some additional comments about the samples are in order. First, infants ("age=0") are excluded from all samples. While the "usual activity" limitations question presumably applies to infants, parents probably have a very hard time assessing activity limitations for infants in all but the most obvious cases. Second, when examining the group primarily targeted by the Medicaid-eligibility expansions, children in low-income two-parent families, children in families with earnings less than 60% of the federal poverty line are dropped in order to exclude two-parent families who do participate in AFDC or who could qualify for Medicaid under the AFDC-financial-eligibility criteria (families with incomes more than two-and-one-half their respective

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schoolwork limitation question. Presumably because some learning-limited children who live with their parents are no longer attending school at older ages, there is a marked fall-off in schoolwork limitation reporting around age 17.

[10] Note that the SIPP survey structure does not coincide with a broad concept of "disability" as functional limitation. It is possible for a child to have a condition (even a severe one) that does not rise to the level of a disabling condition because of mitigating factors (e.g., parental resources, technological interventions). An alternative approach would be to treat the conditions as censored variables.

poverty lines are also excluded). Third, it is important to note potential problems with the policy variables, which are based not only on the child's age, but on income-eligibility guidelines. As Gruber (1997) discusses in detail, including income standards in the policy variable definitions is problematic because income is measured with error and because it can be manipulated by the family in response to Medicaid policy incentives. Since Currie and Gruber (1996) find that instrumenting strengthens their results on Medicaid take-up, suggesting measurement error is the greater of the two problems, the preliminary results presented here are probably conservative estimates.

The empirical strategy is to examine limitations, and conditions for two groups: "targeted" children and AFDC children. First, however, a "baseline" analysis of Medicaid take-up is provided for potential "Medicaid-only" recipients, to help guide the selection of specifications and aid in interpretation of the findings. As revealed by the take-up analysis, the effects of policy are quite heterogeneous across panels. Therefore samples for three years, 1990, 1991, and 1993, are analyzed separately.

Findings For the Group of "Targeted" Children

The empirical analysis begins by estimating the Medicaid-only participation of children. If take-up is insignificant, then clearly an impact of Medicaid on health reports is doubtful. In fact, previous studies (Currie and Gruber, 1996, e.g.) have found significant effects of expansions on take-up, so these estimates also constitute a basic check of the validity of the data and approach. As emphasized by Card and Shore-Sheppard (2001), Medicaid policy contains arbitrary age-eligibility cutoffs that are exogenous with respect to the child.[11] Working backwards from the most recent survey year (1993), the main policy variable is defined as the effect of having family income below the poverty line (the lowest Medicaid income cutoff) on children born after September of 1983.[12] Following Card and Shore-Shepard (2001), who demonstrate that the effectiveness of different components of the eligibility standard in 1993 varied greatly, the extension of the income limit to 133% for children under 6 years of age is treated as a separate policy variable.[13] For the 1991 sample, the policy variables are the same (although the fixed birth date cutoff implies a younger group of children in the "treatment" group). In 1991 there is the additional consideration that the policy covering children older than 5 at the 100% level was only introduced in July, so sample observations post-dating June are dropped.[14] Policy in 1990 is also based on an arbitrary age cutoff, with only children born after March 1985 eligible for Medicaid at the 133% level.[15]

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[11] While Card and Shore-Shepard (2001) stress the cutoff at September 1983, certainly arbitrary cutoffs based on any age--in particular, age 6--will leave similar children just months apart in age with different coverage statuses.

[12] The effect of low income on children born before October 1983 serves as a control.

[13] There are of course alternative ways to parameterize federal policy. The overall findings of the paper are robust with respect to these alternatives.

[14] An alternative is to include "pre-post July" as an additional control variable. However, with this construction, it is not possible to analyze school limitations, since the resulting policy variables would all depend on whether a child is younger than 6. Results from this alternative specification are quite similar to the results presented below for the other dependent variables.

[15] Analogous to the case in 1991, the "control" is the income effect on children born prior to this date.

Additional variables are included in all the specifications, to control for other factors influencing disability. These are child characteristics (age, sex, and number of siblings), maternal and (for two-parent families) paternal characteristics (race, age at child's birth, educational attainment, and self-assessed health status), and other characteristics (the state unemployment rate and whether the household is located in a metropolitan area). State policies that might be correlated with children's health reporting, in particular the maximum AFDC benefit for a family of three and the maximum SSI benefit available to a child are included, following Kubik (1999). In addition, a set of state dummy variables is always included to control for other unspecified state-specific differences in intrinsic health of the child population, public health systems, and other public policies affecting health reporting.

The findings in Table 1 indicate that the impact of the eligibility variables on the take-up rates of Medicaid-only is typically positive.[16] Estimated effects grow larger with each sample year. The different facets of the expansion have different effects as well. For instance, the largest effect of the 1991 policy is that of the 100% coverage level, while the higher income-eligibility level of 133% for younger children has an incremental effect on take-up that is much smaller (this basically replicates the results of Card and Shore-Shepard, 2001). The pattern is similar in the 1991 sample year (in fact, there is no significant effect of allowing higher-income, younger children to enroll). The estimated impact of the early (1990) federal expansions is modest. Since increased detection of health problems should come about through increased utilization, the 1993 and 1991 samples are expected to produce the largest policy effects, if there are any to be found. While it would also be desirable to analyze medical service utilization in response to the expansions, these variables are only defined for sample members older than 14 in the SIPP, who usually lie outside the age group of children targeted by Medicaid expansions in the sample years (with the exception of some state efforts).

Table 2 presents the basic results on limitations and conditions for children in "targeted" households. The schoolwork limitation variable, undefined for children under 6, can be estimated for the 1991 and 1993 samples. There are only two statistically significant estimates of the effect on limitations in the 1993 sample. It is a *negative* effect on limitations of usual activities of young children (there is a large but imprecisely estimated positive coefficient for schoolwork limitations in the 1990 sample). There are few significant effects on conditions for the 1993 sample, where Medicaid take-up was the strongest, and the only positive effects are on cerebral palsy and drug or alcohol-related problems. The other significant results for 1993 are small estimated negative effects on deafness and one impairment/deformity category. There are more frequent significant findings in the earlier panels. Again, however, many of these are negative in sign. Some exceptions include fairly large increases in reports of asthma and mental retardation in the 1990 sample.

In light of the strong results on take-up of Medicaid in response to policy, the results for health reporting for the targeted group, particularly those for the 1993 sample, are discouraging for the hypothesis that the expansion policy is a cause of rising disability rates in the 1990s. Of course, there is always the possibility that other factors not accounted for in the empirical approach obscure the effects of policy on health reporting. An obvious issue is that limitations and health conditions do not emerge randomly over childhood. Limitations such as difficulty

[16] "Medicaid-only" is defined for the child if they do not reside in an AFDC-receiving household but report Medicaid enrollment. More detailed information on the reasons for Medicaid enrollment are not provided in the SIPP.

with schoolwork will not be evident until the child has spent some time in school. Hearing problems may not become evident until the child lags behind peers in expected language development. Since the Medicaid expansions target younger children, and younger children may tend to have fewer diagnoses for these reasons, there may be a tendency to understate the impact of expansions on health reports. However, this seems unlikely, given the specifications include a full complement of age and income dummy variables. Medicaid policy may also be endogenous with respect to child health. If successive cohorts of children are growing healthier, then it is cheap to expand Medicaid, and again this may obscure Medicaid's impact on the detection of health conditions. (When considering state-eligibility expansions, this may also be a problem, as states with healthier children may expand eligibility the fastest.)

Findings for the Control Group of AFDC Children

One potential approach to further refining the estimates is to include in the analysis another control group of children who are believed not to be affected by the Medicaid expansions, letting their age-income-eligibility patterns serve as a baseline to which the effects on targeted children can be contrasted. Children in AFDC families are proposed as a candidate control group. These children also reside in low-income families, but they have continuous access to the Medicaid program through welfare. If the estimates for the targeted group produced so far are understated, one expects to see a tendency towards negative correlations of Medicaid policy with health of AFDC children health when the specifications are run for samples of AFDC children.

Table 3 presents the findings for this group. The pattern of findings is quite surprising. First, the overall pattern of significant findings follows that expected in the *target group*; significant effects are concentrated in the more recent samples, when Medicaid policy appears more effective with regard to take-up by the target population (there are no significant coefficient estimates for the 1990 sample, 3 for the 1991 sample, and 7 for the 1993 sample).

For the 1993 sample of AFDC-receiving children, Medicaid-eligibility expansions appear to increase the overall rate of limitations by 7.2%, apparently through an increase in schoolwork limitations. While the 7.6%-point increase in the incidence of schoolwork limitations is only marginally statistically significant, the plausibility of this result is greatly strengthened by significantly higher incidences of cerebral palsy, learning disabilities, and mental retardation. There is also a significant, negative effect of Medicaid policy on the paralysis category in the 1993 sample. While there are some positive results for the 1991 sample, they are much less compelling, since they are associated with an expansion variable (to higher income children) that was largely ineffective. There is a single significant result for the 1990 sample (for missing extremities). Again, this seems less compelling, given the small influence of Medicaid eligibility expansions at that time.

These results for AFDC children suggest that using them for a control group will generate findings even more contrary to those hypothesized.[17] Therefore, the weight of the evidence presented is that the Medicaid-eligibility expansions had little influence on disability reporting *in the targeted group* of children. A further puzzle emerges as to why the expansions have reasonably strong, positive correlations with limitations and conditions reporting in the group of AFDC-receiving children. These findings seem unlikely to simply result from spurious

[17] Indeed this is the case when the two sample are combined. The findings are not presented due to space considerations.

correlations of poor children's characteristics with Medicaid policy. The qualitative results are quite internally consistent for this group (in contrast with the nature of the results for the targeted group). An increase in limitations is driven by mental activities, supported by greater detection of mental retardation, learning disabilities, and cerebral palsy. Further, these patterns only emerge as the Medicaid-expansion program grows in importance. If they merely reflected a sea-change in children's health timed (purposefully or not) to the Medicaid expansions (and further, differing across narrow income bands), one would expect some positive findings for the same variables in the earlier samples. The next section discusses other possible explanations for these results.

V. Effects of the Medicaid Expansions on AFDC Children

The previous literature finds consistent evidence that AFDC participation was influenced by the Medicaid expansions (e.g., Blank, 1989, Winkler, 1991, and Yelowitz, 1995). The value of Medicaid creates a strong discontinuity in the budget constraint facing an AFDC participant. At the point of losing AFDC eligibility, the family falls off a resource "cliff," losing the full value of Medicaid coverage. If a mother with high earning potential relative to AFDC, who values having her children insured, is now able to get Medicaid coverage for her children without participating in AFDC, she may leave cash welfare. This will alter the group of children in the "control" sample in ways that are correlated with Medicaid policy. If mothers of healthier children who are age-eligible for Medicaid-only have higher earning potentials, their children will disappear from the AFDC population as they leave the program. This is an obvious explanation for the positive results presented in Table 3 for schoolwork limitations and a number of the specific conditions.

To assess the extent of this problem, the specifications were re-estimated for the sample of all one-parent families (with income below two-and-one-half times the poverty line) and low-education, one-parent families. Using samples of families who are likely but not necessarily actual AFDC participants eliminates the problem of selection into the AFDC sample based on the Medicaid-expansion policy. Considering the entire sample of one-parent families (with annualized total income below two-and-one-half times the poverty level), the estimated magnitudes of the coefficients are smaller, but schoolwork limitations and mental retardation are still positively affected by the expansion policy (at 3.5%-points and 1.0%-points, respectively, both at the 94% level of confidence), while paralysis is still negatively influenced (by -.004% at confidence levels above 95%). Since the entire sample of one-parent low-to-moderate income families is used, it cannot be that selection into AFDC is entirely responsible for the results presented above, at least in the cases of several key variables.

Note also that if AFDC children in the Medicaid system really are treated differently as a result of the Medicaid-expansion program, then expansions of the samples to children outside of Medicaid may lead to insignificant findings, yet Medicaid-expansion policy may still "matter" for AFDC-receiving children. At this preliminary stage, it seems reasonable to at least entertain the possibility that the expansions, intended to benefit children outside welfare, may have unintentionally had a real impact on children in AFDC. The next section presents some hypotheses about what may have happened.

AFDC Children's Experiences with the Medicaid Program

When thinking about how children in AFDC could have been affected by Medicaid-eligibility expansions, an obvious possibility is that the delivery of services to children in the

Medicaid program improved with the large influx of Medicaid-expansion children into the system. This might have happened because AFDC children were socially stigmatized, and became less stigmatized, at least within the Medicaid program, when a "deserving" group of children began to participate in Medicaid in large numbers. The Medicaid-only program may also have increased the efficiency of Medicaid services for children, by reaching some key threshold of numbers served. However, the straightforward implication of such arguments is that *all* AFDC children should have benefited from the expansion, not just those born before and after certain dates. Therefore a simple argument that Medicaid expansions improved health care for all the system's children cannot explain the findings for AFDC children.

Another candidate explanation that is quickly dismissed is that the effects reflect AFDC children's prior experiences with the Medicaid-expansion program. Currie and Gruber (1996) estimate that the Medicaid expansions for pregnant women and infants substantially reduced infant mortality among the targeted group. Many of these low and very-low-birthweight babies doubtless have experienced ongoing health problems and developmental delays. Low-earning young mothers, now shouldering the additional burden of caring for an unhealthy child, would likely come onto AFDC. However, the timing of the infant policy appears incongruent with the results of Table 3. The infant program began in 1989 at a 100% income-eligibility level and expanded to 133% in 1990. Therefore, the children affected by the federal infant and pregnant women's programs were born after July of 1989. This group of children is clearly too young to influence the schoolwork limitation variable (which is restricted to children born before 1987 for the 1993 sample).

The final set of possible explanations has to do with what happens inside the office of a Medicaid-participating doctor. One possibility is that doctors prefer to treat AFDC children as if they were Medicaid-expansion children, because they can offer better treatment options to Medicaid-only than AFDC-Medicaid children. On the face of it, this scenario is unlikely, because AFDC children are actually entitled to *more* services than Medicaid-only children. Presumably reimbursement rates for Medicaid children are also the same, so this is not an obvious explanation for differential treatment of AFDC children based on their age either.

Finally, it may be that people working in a doctor's office have limited information about their Medicaid-covered patients, or any of their child patients. When a child arrives at the office of a Medicaid provider, it may not be possible (or simply not worth the office's bother) to identify the child further as Medicaid-expansion or Medicaid-AFDC eligible. If doctors treat children from the expansion program more aggressively (for reasons presently unknown), and if AFDC children are in worse average health than the population targeted for expansion, doctors are likely to find more problems in the group of younger AFDC recipients. A similar result will hold if it is assumed that the children who frequent the office of a Medicaid-participating doctor are largely otherwise uninsured. It is therefore on the whole less financially risky to provide more, and more costly, services to children who are most likely to be Medicaid age-eligible.

VI. Conclusions

Beginning in the early 1990s, children's reported health-induced limitations began to rise. Data from different sources all suggest that mental-activity-related limitations drove aggregate growth. Poor children experienced particularly large increases in reported health problems. The period of rapid growth in limitations of the early 1990s coincides with a major expansion of Medicaid coverage to children outside the cash welfare system, based on their age and family financial resources. An analysis of the health-induced activity limitations and health conditions

reporting of children produced mixed results. First, children in low-income, two-parent families were arguably the major group targeted by the expansions, since their access to Medicaid was otherwise extremely limited. The empirical analysis does not produce convincing evidence of an effect of the expansions on parental reports of health problems in this group, despite the fact that this group took up Medicaid in response.

With further work and more detailed information on the type of Medicaid rules a participating child qualified under, it might be possible to determine why there is no effect of the expansion program on reported health of children in two-parent households. First, it is possible that the crowd-out of private insurance is a more important phenomenon for this relatively better-off group. If the alternative to Medicaid participation is privately-paid medical care, rather than no medical care, then the shift into Medicaid would produce little new knowledge about a child's health. It is also possible that children in two-parent families with serious health conditions are already enrolled in the medically needy programs, or special state programs for the disabled. If this is the case, children enrolling in the Medicaid-expansion program may be quite healthy as a group.

The group of AFDC-receiving children was proposed as a potential "control" group. Since these children have access to Medicaid via the AFDC program, their patterns of health limitations and conditions reports should be unrelated to the rules of the Medicaid-expansion program. In particular, all of these children should be visiting doctors and receiving medical services, regardless of other characteristics (e.g., exact month of birth) that are only relevant for Medicaid policy. Surprisingly, the findings indicate that the Medicaid-eligibility expansions are associated with increased reporting of mental impairment-related limitations and specific conditions. An exception was paralysis, which was found to be significantly lower. While the findings are at a preliminary stage, a few possible explanations for them were discussed.

Further work is needed to confirm whether there was a real "spillover" effect on AFDC children caused by the Medicaid expansions, including gathering more information about the treatment of AFDC children by the medical system generally. In the absence of a spillover effect, alternative explanations are that there is a highly complex age-income pattern of limitations and conditions for children in AFDC households, which just happens to coincide with the Medicaid-expansion eligibility rules; or that there is a positive association between maternal ability, the mother's valuation of insurance coverage, and her child's health.[18] The former explanation is unappealing, unless it can be further tied to the political economy of the Medicaid program, since such a coincidence of patterns seems quite extraordinary. The latter explanation might be examined more closely in future work by considering the choice to leave AFDC from the mother's perspective, with more careful consideration of her children's characteristics.

In further work, it would be of interest to incorporate the state expansion programs into the analysis. Since conditions and limitations are naturally quite age-dependent, it is important to examine the potential impact of expansions on older, as well as younger, children. The pattern of conditions and limitations that emerges could be different in an older group of children. As mentioned, some states expanded their programs to cover children through age 18. As time has passed and the Medicaid-expansion children have grown, it would also be of interest to examine the effects of the Medicaid rules in more recent samples, to assess the cumulative impact on

[18] In particular, mothers who have high ability and whose children have disproportionately fewer mental impairments must also have been highly sensitive to the Medicaid-AFDC tradeoff for this scenario to make sense.

diagnoses for children who have now been age-eligible for Medicaid for some time. With a data set that contained better information about treatment interventions than the SIPP, it would also be possible to make the links between diagnoses and interventions, and between interventions and outcomes, that are needed to assess the ultimate benefits of the Medicaid-expansion policy.

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Figure 1: Age-Eligibility for Medicaid, Federal and State Rules

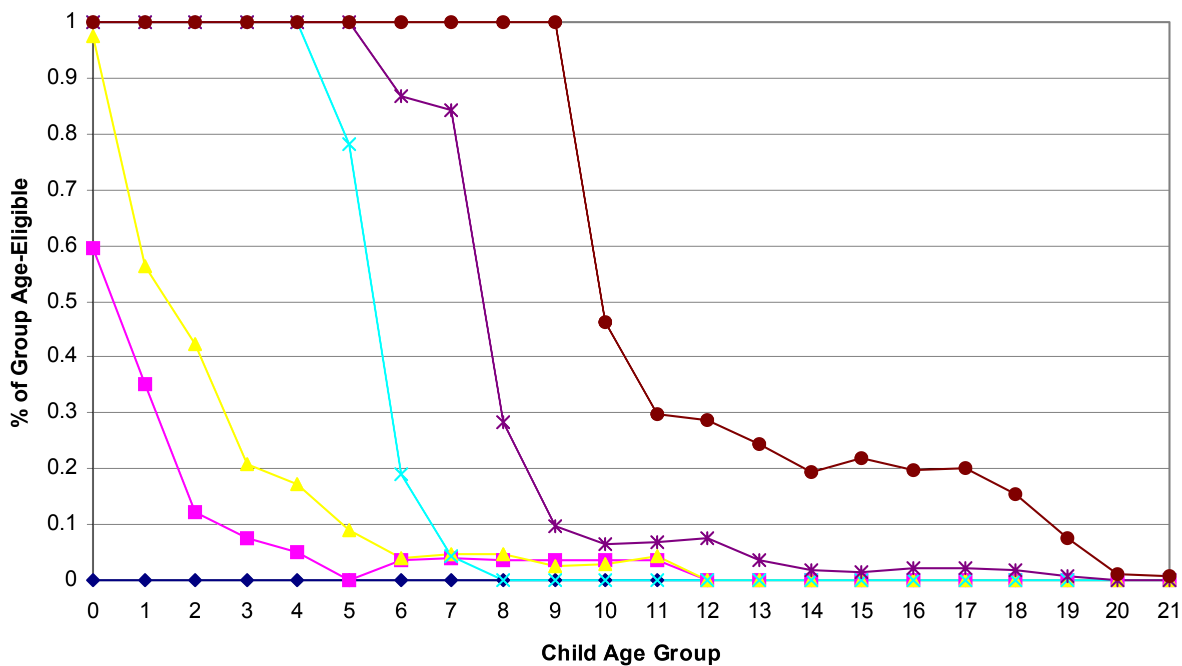

Figure 2: Activity Limitations of Children in Poor Families, 1986-1993

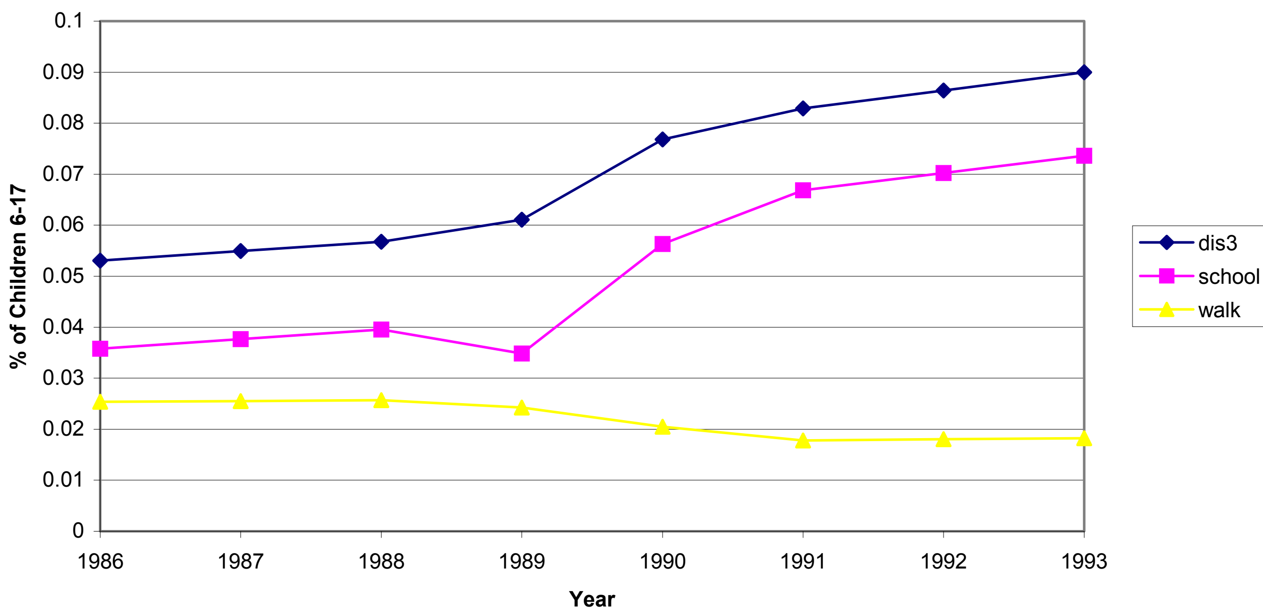

Figure 3: Learning/School Limitations, 1986-1993

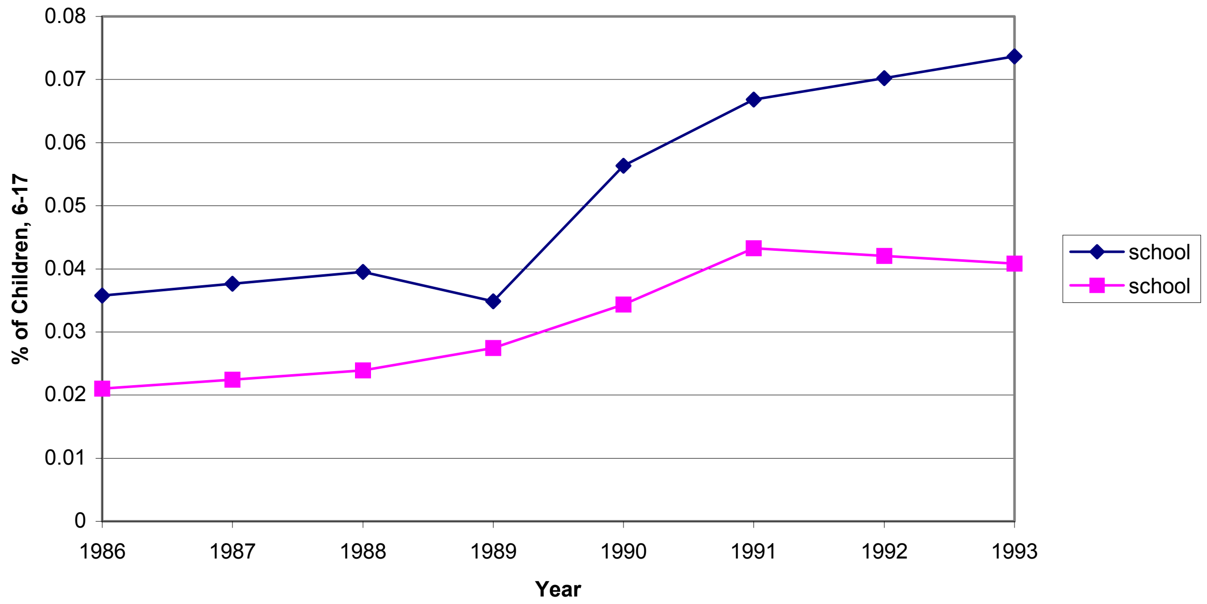

Figure 4: Learning Limitations, by Family Type

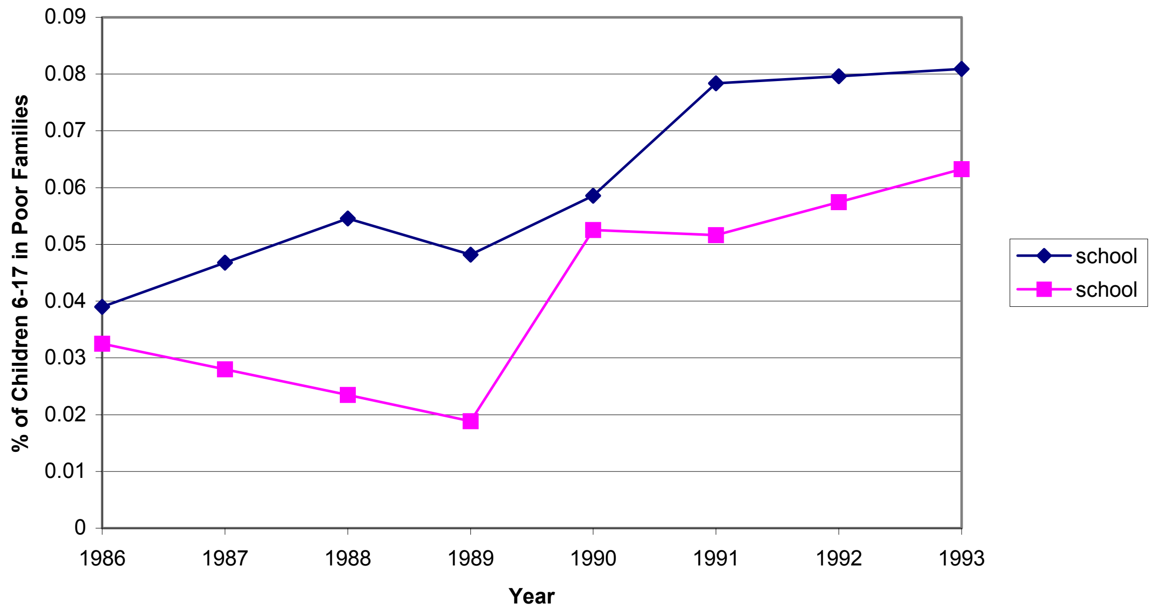

Table 1: Medicaid-Only Take-Up for Children in Low-Income, Two-Parent Families

	Sample Year		
	1990	1991	1993
Number of observations	3,195	1,631	5,793
Effect of 100% limit for children born after September 1983		0.121* (0.038)	0.217* (0.023)
Effect of 133% limit for children less than 6		0.004 (0.033)	0.081* (0.019)
Effect of 133% limit for children born after March 1985	0.088* (0.017)		

Notes: Sample of children 1-17 residing in two-parent families with earned income exceeding 60% of the federal poverty line and total income below two-and-one-half times the federal poverty line.

Table 2: Basic Results on Limitations and Conditions for Children in Low-Income Two-Parent Households

	1990	1991		1993	
Limitations					
Any limitation (1-17)	n=3,195	n=1,631		n=5,793	
	-0.007	0.057	-0.007	-0.013	-0.021
	(0.015)	0.037	0.032	(0.017)	(.014)
Usual activities (1-5)		n=561		n=1891	
	NA	NA	0.018	NA	-0.012***
			0.030		(0.066)
Walk, run, stairs (3-17)	n=2,757	n=1,417		n=5081	
	0.004	0.010	0.010	0.008	0.004
	(0.012)	(0.021)	0.021	(0.011)	(0.010)
Schoolwork (6-17)		n=1,070		n=3,902	
	NA	0.083	NA	-0.028	NA
		(0.052)		(0.023)	
Conditions	n=3,195	n=1,631		n=5,793	
asthma	0.011**	-0.014	-0.016	-0.009	0.003
	(0.005)	(0.018)	(0.016)	(0.014)	(0.005)
autism	NA	-0.005	-0.016***	-0.006**	0.001
		(0.010)	(0.009)	(0.002)	(0.002)
blindness or vision problems	-0.004	0.009	0.009	0.001	0.002
	(0.004)	(0.013)	(0.011)	(0.003)	(0.003)
cancer	0.002	0.001	0.009*	0.001	-0.001
	(0.002)	(0.004)	(0.003)	(0.002)	(0.001)
cerebral palsy	0.007**	-0.002	-0.001	0.017*	0.000
	(0.004)	(0.007)	(0.007)	(0.006)	(0.005)
deafness or serious trouble hearing	-0.007***	0.015**	-0.004	0.001	-0.009**
	(0.004)	(0.008)	(0.007)	(0.004)	(0.004)
diabetes	0.001	NA	NA	NA	NA
	(0.001)				
drug or alcohol problem or disorder	0.001	-0.002	-0.003	0.000	-0.003**
	(0.003)	(0.004)	(0.003)	(0.002)	(0.001)
epilepsy or seizure disorder	-0.001	0.012	-0.007	-0.004	0.002
	(0.004)	(0.009)	(0.009)	(0.003)	(0.003)
hay fever or other respiratory allergies	0.003	0.007	-0.002	-0.003	-0.002
	(0.003)	(0.007)	(0.006)	(0.003)	(0.003)
head or spinal cord injury	-0.001	0.003	0.0001	-0.000	-0.002
	(0.001)	(0.004)	(0.003)	(0.002)	(0.001)
heart trouble	0.001	0.002	0.001	0.001	0.001
	(0.002)	(0.004)	(0.003)	(0.003)	(0.002)
impairment or deformity of back, side,	-0.004**	-0.002	-0.003	-0.010**	0.006

foot, or leg	(0.002)	(0.008)	(0.007)	(0.004)	(0.003)
impairment or deformity of finger, hand, or arm	-0.002 (0.003)	0.003 (0.007)	0.008 (0.006)	0.000 (0.002)	-0.003 (0.002)
learning disability	0.002 (0.012)	0.026 (0.029)	-0.009 (0.026)	-0.012 (0.014)	-0.004 (0.012)
mental or emotional problem or disorder	0.007 (0.006)	-0.003 (0.011)	-0.020** (0.009)	-0.001 (0.007)	-0.001 (0.006)
mental retardation	0.012** (0.006)	0.008 0.010	-0.002 (0.009)	0.005 (0.006)	0.003 (0.005)
missing legs, feet, toes, arms, hands, or fingers	0.001 (0.003)	-0.005 (0.009)	-0.014* (0.008)	-0.001 (0.003)	-0.000 (0.002)
paralysis of any kind	-0.001 (0.003)	0.001 (0.005)	-0.004 (0.005)	0.003 (0.003)	-0.002 (0.002)
speech problems	-0.011 (0.011)	0.010 (0.023)	-0.004 (0.020)	-0.013 (0.011)	-0.014 (0.010)
tonsillitis or repeated ear infections	-0.003 (0.003)	0.011 (0.009)	0.003 (0.008)	-0.002 (0.003)	-0.004 (0.003)
other	-0.011 (0.009)	-0.012 (0.016)	0.018 (0.014)	0.002 (0.011)	0.001 (0.009)

Notes: Sample of children 1-17 residing in two-parent families with earned income exceeding 60% of the federal poverty line and total income below two-and-one-half times the federal poverty line.

Table 3: Basic Results on Limitations and Conditions for Children in AFDC-Participating Households

	1990	1991		1993	
Limitations					
Any limitation (1-17)	n=1,270	n=559		n=2,413	
				0.072**	-0.032
				(0.032)	(0.042)
Usual activities (1-5)		n=208		n=931	
	NA	NA	-0.101**	-0.016	-0.026
			(0.059)	(0.016)	(0.022)
Walk, run, stairs (3-17)	n=1,040	n=469		n=2,413	
	0.033	-0.031	0.052	0.004	-0.010
	(0.038)	(0.051)	(0.080)	(0.018)	(0.028)
Schoolwork (6-17)		n=351		n=1,482	
	NA	0.005	NA	0.076***	NA
		(0.099)		(0.041)	
Conditions	n=1,270	n=559		n=2,413	
asthma	-0.002	0.026	0.039	0.008	0.007
	(0.016)	(0.037)	(0.049)	(0.010)	(0.014)
autism	NA	NA	NA	NA	NA
blindness or vision problems	0.003	NA	NA	-0.003	0.005
	(0.006)			(0.008)	(0.010)
cancer	NA	NA	NA	-0.000	-0.001
				(0.003)	(0.003)
cerebral palsy	0.001	-0.000	0.087*	0.021*	0.005
	(0.006)	(0.014)	(0.018)	(0.007)	(0.010)
deafness or serious trouble hearing	0.000	-0.001	0.002	-0.001	-0.001
	(0.010)	(0.012)	(0.017)	(0.006)	(0.008)
diabetes	NA	NA	NA	0.001	-0.000
				(0.004)	(0.004)
drug or alcohol problem or disorder	0.002	-0.002	-0.002	-0.002	-0.002
	(0.006)	(0.005)	(0.007)	(0.005)	(0.007)
epilepsy or seizure disorder	-0.001	-0.004	0.003	-0.007	-0.001
	(0.014)	(0.019)	(0.025)	(0.008)	(0.010)
hay fever or other respiratory allergies	0.001	NA	NA	-0.005	-0.002
	(0.015)			(0.006)	(0.008)
head or spinal cord injury	-0.002	NA	NA	0.006	-0.006
	(0.008)			(0.004)	(0.005)
heart trouble	0.001	NA	NA	0.001	0.001
	(0.008)			(0.004)	(0.005)
impairment or deformity of back, side,	-0.003	0.001	0.062	0.006	0.001

foot, or leg	(0.010)	(0.013)	(0.017)	(0.008)	(0.011)
impairment or deformity of finger, hand, or arm	0.003	0.017	0.079**	NA	NA
	(0.006)	(0.024)	(0.032)		
learning disability	-0.036	0.069	0.038	0.063**	-0.014
	(0.034)	(0.062)	(0.082)	(0.026)	(0.033)
mental or emotional problem or disorder	-0.016	-0.003	0.004	-0.008	-0.001
	(0.016)	(0.014)	(0.019)	(0.012)	(0.016)
mental retardation	-0.003	-0.020	-0.008	0.022**	0.024***
	(0.018)	(0.024)	(0.032)	(0.011)	(0.014)
missing legs, feet, toes, arms, hands, or fingers	0.029**	0.000	0.0041	-0.008	0.000
	(0.013)	(0.020)	(0.026)	(0.008)	(0.010)
paralysis of any kind	0.002	NA	NA	-0.012**	-0.011
	(0.012)			(0.005)	(0.007)
speech problems	-0.039	-0.027	-0.020	0.010	-0.006
	(0.025)	(0.040)	(0.055)	(0.016)	(0.021)
tonsillitis or repeated ear infections	0.001	NA	NA	0.001	0.001
	(0.006)			(0.004)	(0.005)
other	-0.010	-0.003	0.005	-0.003	0.005
	(0.019)	(0.015)	(0.019)	(0.015)	(0.019)