The Persistence of Parent-led Dental Healthcare Habits into Adulthood

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Abstract

This study investigates whether healthcare habits formed under parental influence during adolescence persist into adulthood. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), the analysis estimates the effect of receiving dental examinations in adolescence on the receipt of dental exams in adulthood. The study addresses concerns about omitted variable bias using rich controls and flexible estimation strategies. Results show a strong and persistent effect of adolescent dental exam on adult dental exam behavior.

1 Introduction

Understanding the intergenerational transmission of health status has been a central question in health economics. Prior research has presented evidence on the intergenerational transmission of health outcomes such as weight, height, and BMI (Coneus and Spiess, 2012; Thompson, 2014). These studies show that socioeconomic factors exacerbate the inheritance of health and demonstrate that disparities in early-life environments contribute to the perpetuation of health inequalities across generations. Although previous research has documented

how childhood environments influence health outcomes, it remains unclear whether intergenerational health transmission also occurs through the formation of persistent healthcare habits shaped by parents.

During childhood and adolescence, individuals' healthcare decisions are largely shaped by their parents. These early experiences may affect not only immediate health outcomes but also the development of long-term healthcare habits. This paper focuses on the behavioral channel of intergenerational transmission, extending prior work that has emphasized genetic or socioeconomic factors. It tests the hypothesis that parental decisions during adolescence contribute to the formation of persistent healthcare routines. To examine this, the study estimates the effect of receiving dental examinations in adolescence on the likelihood of obtaining dental exams in adulthood.

Dental examinations in adolescence are used in this study as a proxy for parental influence on preventive healthcare behavior. Because adolescents are not financially independent, healthcare decisions at this stage—especially for non-urgent services—are typically made by parents. Dental exams are well-suited for this purpose because they are preventive, non-urgent, and less influenced by underlying health conditions, reducing concerns about confounding. This behavioral measure allows the study to capture variation in parental attitudes toward preventive care.

While adolescent dental exams proxy parental attitude, the empirical analysis isolates this behavioral effect by conditioning on a rich set of socioeconomic controls. The study uses data from the National Longitudinal Study of Adolescent to Adult Health (Add Health). Detailed information on socioeconomic conditions in both adolescence and adulthood helps mitigate concerns about omitted variable bias. The primary analysis is based on OLS regression models that control extensively for observed characteristics. This study adopts a selection-on-observables identification strategy, building on the framework proposed by Oster (2019). The analysis assesses whether the estimated relationship between adolescent and adult healthcare behavior remains stable as additional observed controls are introduced. This

approach supports the interpretation that the observed association is not entirely driven by unobserved confounding. To assess robustness, the study also implements propensity score matching to reduce reliance on functional form assumptions and LASSO-based variable selection to address model selection in a high-dimensional setting.

The findings show that individuals who received dental exams during adolescence are significantly more likely to do so again in adulthood. This relationship remains robust after adjusting for a comprehensive set of adolescent and adult characteristics. Specifically, adolescent dental exams are associated with a 5.7 percentage point increase in the probability of receiving an exam in Wave IV (ages 24–32), and a 3.4 percentage point increase in Wave V (ages 33–43). Although the effect size declines with age, the association remains statistically significant and substantively meaningful. This attenuation is expected given the two-decade gap between early exposure and adult behavior. Considering that 63 percent of the estimation sample received dental exams in Wave V, a 3.4 percentage point increase represents a notable and persistent association with early-life preventive care that extends beyond early adulthood into mid-adulthood.

This study makes several contributions to the literature. First, it extends existing work on the intergenerational transmission of health by focusing on behavioral pathways. While prior studies have emphasized genetic traits, neighborhood conditions, and maternal disadvantage during the prenatal period (Currie and Moretti, 2007; Aizer and Currie, 2014), the role of health habit formation has received less attention. Because poor healthcare habits contribute to adverse long-term outcomes, identifying how parents shape these behaviors is essential for understanding the persistence of health inequality. This study provides evidence consistent with the idea that health habit formation is one behavioral mechanism through which intergenerational transmission occurs.

Second, this study contributes to the literature on health habit formation by providing evidence on longer-run behavioral persistence. Recent studies have shown that well-designed interventions, such as incentives or monitoring, can lead to durable behavioral changes.

For example, Hussam et al. (2022) documents that handwashing behavior persisted up to 13 months after the end of an incentive-based intervention. Similarly, Jones et al. (2024) finds that financial incentives for health screening increased uptake for at least two years. While these studies provide valuable evidence of habit formation, their time horizons remain relatively short. By contrast, this study uses longitudinal data that track individuals from adolescence through adulthood, allowing for an assessment of whether health behaviors formed under parental influence persist over a much longer period. This complements the experimental literature by extending the analysis of habit formation in adolescence to adult behavior choice.

Third, this study focuses on preventive and non-addictive health behavior. Much of the existing literature on intergenerational health habits has examined behaviors such as smoking and alcohol use, where it is difficult to disentangle habit formation from addiction, passive exposure, or shared genetic traits. For example, Schmidt and Tauchmann (2011) presents a positive association between parental and adult drinking behavior, and Loureiro et al. (2010) estimates a causal effect of parental smoking using instrumental variables. Brown and van der Pol (2014) further emphasizes that both shared genetics and shared environments contribute to the persistence of smoking. While these studies demonstrate intergenerational correlations in health behavior, they face challenges in isolating the role of parental attitude. In contrast, dental examinations are preventive, non-addictive, and unlikely to be driven by inherited traits. The present analysis provides a cleaner setting for examining how parental behavior shapes long-term health habits.

Finally, this study highlights parental influence as a distinct mechanism in shaping long-term engagement with the healthcare system. Although recent research has begun to examine social spillovers in healthcare consumption, including the influence of peers and household members, the specific role of parents in forming early healthcare habits has received limited attention (Hodor, 2021). This study addresses that gap by examining whether preventive care behavior encouraged by parents during adolescence predicts continued healthcare en-

gagement in adulthood.

Promoting sustained engagement with healthcare remains a central policy concern. Although many interventions aim to foster lifelong health habits, their success has often been limited, partly due to an incomplete understanding of how such behaviors are formed and maintained. This study shows that healthcare behavior is not shaped solely by current incentives or adult circumstances but is also influenced by parental decisions during adolescence. A clearer understanding of these behavioral pathways can inform more effective policy strategies to improve long-term healthcare engagement.

2 Data

The data set used in this paper is the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative panel that follows a cohort of U.S. adolescents in grades 7–12 during the 1994–1995 school year into adulthood (through 2016–2018). Add Health provides extensive information on individual healthcare behavior and outcomes, socioeconomic conditions, healthcare access, and family background, making it well-suited for studying the long-term effects of early-life healthcare behavior.

Table 1 summarizes the key analytical variables drawn from each Add Health wave used in this study. The primary independent variable, adolescent dental exam, is constructed from Waves I and II. The main outcome variables, adulthood dental exams, are taken from Waves IV and V. This study incorporates data from the Parents (1995) Survey, administered in Wave I to the parent or guardian residing with the adolescent. The preferred parent survey respondent was the biological mother; however, in her absence, other caregivers, such as stepmothers, grandmothers, or fathers, were also eligible. Table 2 displays the distribution of respondent relationships. In alignment with the survey guidance, 88.3 percent of the parent respondents were biological mothers. I restrict the analytic sample to 4,724 adolescents with reports from female relatives. The female relatives include biological mothers, stepmothers,

grandmothers, and other female relatives, highlighted in bold in Table 2. Throughout the analysis, the female guardians who reported the parent survey are referred to simply as "mother".

Table 1: Add Health Structure

Wave	Survey Year	Age Range	Key Variables
Wave I	1994–1995	Grades 7–12	Dental exam; demographic, household, and parental characteristics
Wave II	1996	Grades 8–12	Dental exam
Wave IV	2008–2009	Age 24–32	Dental exam; individual and household characteristics
Wave V	2016–2018	Age 33–43	Dental exam; individual and household characteristics

The restriction of the sample to respondents for whom a mother figure answers the parent survey questions is motivated by the way in which parent information is collected in the Add Health. The respondent to the parent survey answers detailed questions about their own characteristics and household characteristics at the time of the survey. Less detailed and reliable information about other parental figures, both residential and non-residential, can be obtained from adolescents' own reports in the main survey. This sample restriction allows the more detailed parent survey responses to be interpreted as maternal characteristics and less detailed paternal characteristics to be filled in from the adolescents' reports.

Respondents were asked in each wave whether they had received a dental exam from a dentist or hygienist within the past year. I construct a binary treatment indicator, adolescent dental exam, based on dental exam responses from Waves I and II. Adolescents who reported receiving a dental exam in both Wave I and Wave II are classified as the treated group. If the adolescent answered the dental exam question in only one of these two waves, they are classified as treated if they received an exam in that wave. Table 3 shows the joint distribution of responses across the two waves. 2,885 of the 4,724 adolescents in cells highlighted in bold are coded as treated with adolescent dental exams. While the number of respondents who did not respond is very low in Wave I, approximately 22 percent of respondents did not answer

Table 2: Reported Relationship to Adolescent in Parents (1995) Survey

Parent Survey Respondent's Relationship with Adolescent	Count	Percent (%)
Biological mother	**5,033**	**88.33**
Step mother	**114**	**2.00**
Adoptive mother	**75**	**1.32**
Foster mother	**22**	**0.39**
Grandmother	**107**	**1.88**
Aunt	**49**	**0.86**
Other female relative	**25**	**0.44**
Other female non-relative	19	0.33
Biological father	233	4.09
Step father	7	0.12
Adoptive father	8	0.14
Grandfather	1	0.02
Uncle	1	0.02
Other male relative	2	0.04
Other male non-relative	2	0.04
Observations	5,698	100.00
With Mother/Female Relative	**4,724**	**95.21**

Notes. The analytic sample includes respondents whose reported caregiver was a female caregiver highlighted in bold.

the dental exam question in Wave II. As a robustness check, I construct an alternative treatment variable based only on Wave I.

Table 3: Wave I and Wave II Adolescent Dental exams

	Dental Exam in Wave II			
Dental Exam in Wave I	No	Yes	Missing	Total
No	696	414	356	1,466
	(47.48%)	(28.24%)	(24.28%)	
	65.11%	15.92%	33.78%	31.03%
Yes	365	**2,183**	**698**	3,246
	(11.24%)	**(67.25%)**	**(21.50%)**	
	34.14%	**83.93%**	**66.22%**	68.71%
Missing	8	**4**	0	12
	(66.67%)	**(33.33%)**	(0.00%)	
	0.75%	**0.15%**	0.00%	0.25%
Total	1,069	2,601	1,054	4,724
	(22.63%)	(55.06%)	(22.31%)	

Notes. Bolded cells represent respondents who reported a dental exam in all waves where they provided a valid response. These individuals are classified as treated with adolescent dental exams.

The primary outcome of interest is whether the adult respondent received a dental exam within the past year, which is measured separately in Wave IV (ages 24–32) and Wave V (ages 33-43). Of the 4,724 respondents in the sample, 4,325 answered the dental exam questions in Wave IV, and 3,553 answered the question in Wave V. Table 4 reports descriptive statistics from Waves IV and V for these two samples. Sample means are reported separately for respondents treated with adolescent dental exams and those who were not. The top row reports that 61.1 percent of respondents receiving adolescent dental exams report an adult dental exam in Wave IV, but only 48.7 percent of those not treated in adolescence report an adult dental exam. Between Waves IV and V, the overall prevalence of dental exams increases, coinciding with a rise in insurance coverage.

Table 4: Summary Statistics of Adulthood Characteristics by Adolescent Dental Exam

Variables	Wave IV (Age 24–32) Adolescent Dental Exam		Wave V (Age 33–43) Adolescent Dental Exam	
	Yes	No	Yes	No
Adulthood Dental Exam	0.611***	0.487	0.673***	0.559
Education Level				
Less than High School	0.049***	0.122	0.029***	0.071
High School / GED	0.122***	0.226	0.116***	0.211
Some Post-secondary	0.417*	0.444	0.361***	0.442
College / University	0.248***	0.128	0.245***	0.151
Beyond College / University	0.165***	0.079	0.248***	0.125
Unknown	0.000	0.001	0.001	0.000
Insurance Type				
No Insurance	0.184***	0.243	0.065***	0.122
By Work	0.532***	0.467	0.525***	0.476
By Union	0.011	0.008	0.010	0.016
By School	0.018**	0.009	–	–
By Parent's Plan	0.008	0.011	–	–
By Partner's Plan	0.121	0.106	0.194***	0.143
Duty Military	0.015	0.015	0.003	0.003
Private Plan	0.045***	0.025	0.038**	0.023
Medicaid	0.057***	0.100	0.074***	0.123
Indian Health Service	0.001***	0.006	0.002	0.004
Marketplace Plan	–	–	0.033*	0.023
Medicare	–	–	0.023	0.027
Veterans Affairs	–	–	0.008	0.008
Military Health Plan	–	–	0.015	0.015
Unknown Type	0.008	0.009	0.011*	0.018
Personal Earnings				

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Variables	Wave 4 (Age 24–32) Adolescent Dental Exam		Wave 5 (Age 33–43) Adolescent Dental Exam	
	Yes	No	Yes	No
Less than $5,000	0.106***	0.134	0.098*	0.117
$5,000–$9,999	0.046***	0.071	0.038	0.045
$10,000–$14,999	0.056**	0.075	0.031***	0.049
$15,000–$19,999	0.050**	0.069	0.031**	0.045
$20,000–$24,999	0.076	0.088	0.047*	0.060
$25,000–$29,999	0.088	0.097	0.051	0.059
$30,000–$39,999	0.171	0.167	0.094***	0.126
$40,000–$49,999	0.131***	0.105	0.114**	0.138
$50,000–$74,999	0.156***	0.087	0.200	0.185
$75,000–$99,999	0.042***	0.022	0.113***	0.082
$100,000–$149,999	0.020**	0.011	0.101***	0.052
$150,000–$199,999	0.015***	0.005	0.066***	0.024
$200,000 or more	0.042***	0.069	0.016	0.017
Household Income				
Less than $5,000	0.019***	0.036	0.126	0.143
$5,000–$9,999	0.018***	0.032	0.017	0.018
$10,000–$14,999	0.026***	0.045	0.008***	0.024
$15,000–$19,999	0.024***	0.044	0.010**	0.020
$20,000–$24,999	0.039***	0.057	0.017	0.025
$25,000–$29,999	0.047**	0.062	0.023	0.032
$30,000–$39,999	0.090**	0.111	0.041***	0.070
$40,000–$49,999	0.115	0.108	0.048***	0.080
$50,000–$74,999	0.234*	0.212	0.137*	0.158
$75,000–$99,999	0.152***	0.119	0.145	0.131
$100,000–$149,999	0.119***	0.055	0.182***	0.134
$150,000–$199,999	0.057***	0.033	0.184***	0.072
$200,000 or more	0.061***	0.087	0.063***	0.093

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Variables	Wave 4 (Age 24–32) Adolescent Dental Exam		Wave 5 (Age 33–43) Adolescent Dental Exam	
	Yes	No	Yes	No
Observations	2626	1699	2256	1297

Notes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Means are reported. Asterisks on the means for the "Yes" group indicate the p-value from a t-test of differences between treated and control groups. Standard deviations are reported in parentheses for continuous variables. Observations restricted to individuals whose Parents (1995) survey was answered by a mother figure and who responded to the adult dental exam question. Wave IV covers age 24–32 (N = 4,325), Wave V covers age 33–43 (N = 3,553).

To account for adult socioeconomic factors that may confound the relationship between adolescent dental exam and adulthood dental care behavior, this study includes a set of control variables measured in each respective wave. These include educational attainment, source of health insurance, household income, and personal earnings. In both adult survey waves, respondents treated with adolescent dental exams tend to have higher income and education levels and are less likely to be uninsured. Household incomes and personal earnings are reported as categorical variables in the Add Health. The exception is Wave IV personal earnings, which is reported as a continuous variable, but which I recode to match the categories of Wave V personal earnings. To avoid loss of sample, missing values of all variables other than dental exams are coded as a separate category rather than dropped.

Table 5 reports the summary statistics of Wave I characteristics for the Wave IV sample used in the first two columns of Table 4, again separated by adolescent dental exam status. The variables are divided into four categories: demographic, Wave I household, Wave I maternal, and Wave I paternal characteristics. This section defines the variables in each category, explains where the information is from.

Demographic characteristics include gender and race. These are based on adolescent self-reports. The racial composition differs between the two groups. Among those who received an adolescent dental exam, 71.1 percent are White. In contrast, 55.9 percent of those who

did not receive an adolescent dental exam are White. This suggests that access to preventive dental care during adolescence may be unequally distributed across racial groups.

Wave I household characteristics are reported by the mother. These variables include household income, the number of siblings in the household, the adolescent's health insurance coverage, and whether the family experienced difficulty accessing medical care. One exception is the local area of the household, which is based on observations recorded by the interviewer during the home visit. Insurance coverage is categorized into three groups: fully insured over the past 12 months, partially insured, and not insured. Adolescents in the treated group are more likely to come from higher-income households, to have continuous insurance coverage, and to live in families that report fewer barriers to accessing medical care.

Wave I Maternal characteristics are also based on the mothers' own responses. These include the mother's education, employment status, ability to pay bills, whether she receives public assistance, her marital status, and whether she smokes. Treated adolescents are more likely to have mothers with higher education levels. Their mothers are also less likely to smoke.

Wave I Paternal characteristics are reported by the adolescent. These include the father's education, occupation type, whether they have a paid job, and smoking behavior. The data first refer to resident fathers, defined as father figures living in the same household, regardless of biological relation. If the adolescent reports that no father figure lives in the household, information about the non-resident biological father is used instead. Adolescents in the treated group are more likely to report that their fathers have higher education and have paid jobs. Their fathers are also less likely to smoke.

Table 5: Summary Statistics by Adolescent Dental Exam

Variables	Adolescent Dental Exam	
	Yes	No
Demographic Characteristics:		
Female	0.556*	0.526
Age at Wave I	15.273***	15.433
	(1.715)	(1.775)
Race		
White	0.711***	0.559
Black	0.179***	0.295
Native American	0.026***	0.046
Asian	0.032	0.025
Others	0.050***	0.070
Unknown	0.001*	0.004
Wave I Household Characteristics:		
Household Income	$55702**	$36693
	(57995)	(40117)
Less than $5,000	0.019	0.022
$5,000–$9,999	0.026***	0.074
$10,000–$14,999	0.038***	0.081
$15,000–$19,999	0.035***	0.072
$20,000–$24,999	0.055***	0.094
$25,000–$29,999	0.045***	0.065
$30,000–$39,999	0.118	0.131
$40,000–$49,999	0.117	0.115
$50,000–$74,999	0.246***	0.142
$75,000–$99,999	0.094***	0.041
$100,000–$149,999	0.051***	0.019
$150,000–$199,999	0.032***	0.005

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Variables	Adolescent Dental Exam	
	Yes	No
$200,000 or more	0.125	0.139
Number of Siblings	1.312	1.469
	(1.091)	(1.255)
0	0.215	0.225
1	0.430***	0.356
2	0.240	0.252
3 or more	0.114***	0.168
Insurance Coverage		
Always	0.883***	0.717
With Discontinuity	0.054***	0.086
None	0.059***	0.187
Unknown	0.004**	0.011
Hardship in Medical Access		
Very Easy	0.714***	0.530
Somewhat Easy	0.178***	0.251
Somewhat Hard	0.056***	0.111
Very Hard	0.035***	0.093
Unknown	0.016	0.015
Local Area		
Rural	0.290	0.286
Suburban	0.398***	0.325
Urban/Commercial	0.299***	0.377
Other	0.007	0.006
Unknown	0.007	0.005
Wave I Maternal Characteristics:		
Education Level		
Less than High School	0.104***	0.197
High School/GED	0.286*	0.314

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Variables	Adolescent Dental Exam	
	Yes	No
Some Post-secondary	0.288	0.292
College/University	0.165***	0.118
Beyond College/University	0.138***	0.059
Unknown	0.018	0.020
Full-time Employed		
No	0.403	0.423
Yes	0.571	0.546
Unknown	0.026	0.031
Difficulty Paying Bills		
No	0.131***	0.218
Yes	0.831***	0.742
Unknown	0.039	0.040
Public Assistance		
No	0.922***	0.862
Yes	0.059***	0.116
Unknown	0.019	0.022
Marital Status		
Single	0.042***	0.081
Married	0.758***	0.644
Widowed	0.026**	0.036
Divorced	0.123***	0.158
Separated	0.036***	0.065
Unknown	0.016	0.015
Smoking		
No	0.743***	0.637
Yes	0.241***	0.347
Unknown	0.016	0.015
Wave I Paternal Characteristics:		

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Variables	Adolescent Dental Exam	
	Yes	No
Education Level		
Less than High School	0.099***	0.197
High School/GED	0.303***	0.353
Some Post-secondary	0.166***	0.134
College/University grad	0.222***	0.131
Beyond college/University	0.133***	0.050
No Dad	0.055***	0.103
Unknown	0.022**	0.032
Occupation		
None	0.019***	0.036
Professional 1	0.064***	0.019
Professional 2	0.050***	0.033
Manager	0.112***	0.042
Technical Specialist	0.058***	0.030
Office Worker	0.017	0.013
Sales Worker	0.037*	0.026
Services Worker	0.007*	0.013
Craftsperson	0.026	0.028
Construction Worker	0.058	0.069
Mechanic	0.068	0.068
Factory Worker	0.077	0.077
Transportation Driver	0.026	0.035
Military	0.024	0.024
Farm or Fishery	0.014	0.014
Other	0.098	0.099
No Dad	0.239***	0.368
Unknown	0.003	0.006
Paid Job	0.725***	0.575

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Variables	Adolescent Dental Exam	
	Yes	No
Smoking		
No	0.474***	0.408
Yes	0.520***	0.589
Unknown	0.006	0.004
Observations	2626	1699

Notes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Means are reported. Asterisks on the means for the "Yes" group indicate the p-value from a t-test of differences between treated and control groups. Standard deviations are reported in parentheses for continuous variables. The sample is restricted to 4,325 individuals whose Parents (1995) survey was answered by a mother figure and with Wave IV outcomes.

3 Empirical Strategy

To estimate the intergenerational transmission of healthcare behavior, this study estimates the effect of receiving dental exams during adolescence on dental exams in adulthood.

The baseline estimations, estimated separately for Waves IV and V, are specified as:

$$D_i^{adult} = \alpha + \beta D_i^{adol} + \gamma X_i^{adol} + \delta X_i^{adult} + \psi_b + \varepsilon_i \tag{1}$$

In this equation, D_i^{adult} is an indicator for whether individual i received a dental exam within the past year. The variable D_i^{adol} is an indicator equal to one if the respondent was treated with adolescent dental exams in Waves I and II. The vector X_i^{adol} includes the demographic, household, and parental characteristics measured during adolescence, listed in Table 5. As detailed in Table 5, the adolescent controls are organized into four categories: demographic, Wave I household, Wave I maternal, and Wave I paternal characteristics. Age and age squared are included to account for non-linear life-cycle effects. In addition, interaction

terms between Wave I household income and race, Wave I household income and adolescent insurance coverage, and Wave I household income and maternal education are included. The vector X_i^{adult} contains the concurrent adult characteristics listed in Table 4. Birth year fixed effects, ψ_b, are included to control for cohort-level influences.

This study also estimates treatment effects using Propensity Score Matching (PSM) to approximate causal inference while allowing for greater flexibility in functional form than linear regression models. The average treatment effect on the treated (ATT) is estimated as:

$$(2) \qquad \tau^{PSM} = E_{P(X)|D^{adol}=1}\left[E[Y(1)|D^{adol}=1, P(X)] - E[Y(0)|D^{adol}=0, P(X)]\right]$$

In this expression, τ^{PSM} represents the average treatment effect on the treated (ATT) and the average treatment effect on the untreated (ATU) for individuals who received dental exams during adolescence. The treatment indicator D^{adol} denotes adolescent dental exam status, and Y is the potential outcome in adulthood. The covariate vector X includes the same set of adolescent and adult characteristics as X^{adol} and X^{adult} used in the baseline regression model. Birth year fixed effects are included to control for cohort-level differences.

The identification assumption is that conditional on these observed characteristics, potential outcomes are independent of treatment status. This study benefits from a rich set of baseline covariates measured during adolescence, including Wave I demographic, household, and detailed parental characteristics, which improves the plausibility of the selection-on-observables assumption. This strategy reduces reliance on functional form assumptions and improves comparability by restricting estimation to regions of common support. Balance diagnostics and overlap checks are used to assess the quality of matching and the plausibility of the identifying assumptions.

4 Results

4.1 Main analysis

Table 6 reports the estimated effect of adolescent dental exam on adulthood dental exam behavior separately for Waves IV and V surveys. Column 1 includes only birth year fixed effects, demographics, and adulthood characteristics. In the second column, Wave I household and maternal characteristics are added, and finally, paternal characteristics are added in the third column. In all specifications, an adolescent dental exam is positively and significantly associated with the likelihood of receiving a dental exam in adulthood. [1]

In Panel 1, which analyzes the Wave IV dental exam, the estimated effect is approximately 5.7 to 6.0 percentage points, depending on the control set. With the most comprehensive control set, individuals treated with adolescent dental exams are 5.7 percentage points more likely to receive dental exams in early adulthood. The inclusion of paternal characteristics slightly reduces the magnitude. Still, the association remains highly robust and statistically significant.

In Panel 2, for the Wave V dental exam, the magnitude of the effect declines to approximately 3 percentage points but remains statistically significant across all specifications. This attenuation is consistent with the possibility that behavioral persistence weakens with age and increasing independence from adolescent conditions. As the average of dental exam receiving is 63 percent, the 3.4 percentage points increase corresponds to a relative increase of approximately 5.4 percent. While modest in size, the result suggests a lasting association between early preventive behavior and later-life healthcare engagement.

The major challenge in this analysis is the potential for omitted variable bias arising from unobserved confounding. Leveraging a rich set of control variables, this study shows that

[1] Interaction terms are included in columns 2 and 3 of Table 6 to control for heterogeneity in adolescent conditions. The included interactions are between household income and race, household income and adolescent insurance, and household income and maternal education. When excluding the household income-race and household income–insurance interactions, the estimated coefficient on adolescent dental exams becomes smaller. This suggests that richly controlling for subgroups in adolescent socioeconomic status helps isolate the treatment effect.

Table 6: Effect of Adolescent Dental Exam on Adult Dental Exam

	Adulthood Dental Exam		
	(1)	(2)	(3)
Panel 1. Outcome = Dental Exam at Wave IV (Age 24–32)			
Adolescent Dental Exam	0.060***	0.060***	0.057***
	(0.016)	(0.016)	(0.017)
Birth Year FE	Yes	Yes	Yes
Demographic Characteristics	Yes	Yes	Yes
Wave IV Characteristics	Yes	Yes	Yes
Wave I Household Characteristics		Yes	Yes
Wave I Maternal Characteristics		Yes	Yes
Wave I Paternal Characteristics			Yes
Mean of Outcome	0.562	0.562	0.562
R^2	0.120	0.164	0.169
Observations	4325	4325	4325
Panel 2. Outcome = Dental Exam at Wave V (Age 33–43)			
Adolescent Dental Exam	0.030*	0.033*	0.034*
	(0.017)	(0.018)	(0.018)
Birth Year FE	Yes	Yes	Yes
Demographic Characteristics	Yes	Yes	Yes
Wave V Characteristics	Yes	Yes	Yes
Wave I Household Characteristics		Yes	Yes
Wave I Maternal Characteristics		Yes	Yes
Wave I Paternal Characteristics			Yes
Mean of Outcome	0.632	0.632	0.632
R^2	0.162	0.204	0.209
Observations	3553	3553	3553

Notes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors are reported in parentheses. All estimates are based on equation (1). The control sets labeled Demographic, Wave I Household, Wave I Maternal, and Wave I Paternal Characteristics include the variables listed in the corresponding panels of Table 5. For Wave IV and Wave V Characteristics, the models control for adulthood characteristics listed in Table 4, specific to each survey wave.

the estimated coefficients remain relatively stable as additional control sets are gradually included in the baseline models. While Oster (2019) argues that coefficient stability alone does not guarantee the absence of omitted variable bias, examining changes in R-squared values provides further insight into the robustness of the findings.

At the end of Table 6, the R-squared values are reported for each wave. In both Waves IV and V, R-squared values increase across columns as additional controls are added. Notably, the change in the coefficient estimates between Columns 2 and 3 is subtle, suggesting that the inclusion of Wave I paternal characteristics has little additional influence on the estimated relationship. The increase in R-squared values is of a similar scale to the modest changes in the coefficients. This pattern suggests that the selection on unobserved factors may be similar to, or smaller than, the selection on observed characteristics included in the analysis. Consequently, the results are less likely to be driven entirely by omitted variable bias.

4.2 Propensity Score Matching

To assess robustness and reduce reliance on linear functional form assumptions, propensity score matching (PSM) is employed. The treatment group is defined as those who reported receiving a dental exam during adolescence. Propensity scores are estimated using a logit model, and due to perfect prediction, the sample size is smaller than in the main analysis.

Radius matching with replacement is used with a caliper of 0.001 to ensure high-quality matches while maintaining flexibility. Common support is enforced by dropping treated observations whose propensity scores fall outside the support range of the control group. For Wave IV, 34 treated observations are off-support, and for Wave V, 40 are excluded. These numbers reflect observations dropped solely because they fell outside the common support range defined by the maximum and minimum propensity scores of the control group. When the caliper restriction is further imposed (e.g., 0.001, 0.005), additional treated units may be unmatched due to a lack of sufficiently close controls, leading to further reductions in the matched sample sizes as reported in Table 7. Therefore, the total number of matched

Figure 1: Propensity Score Distribution for Wave 4

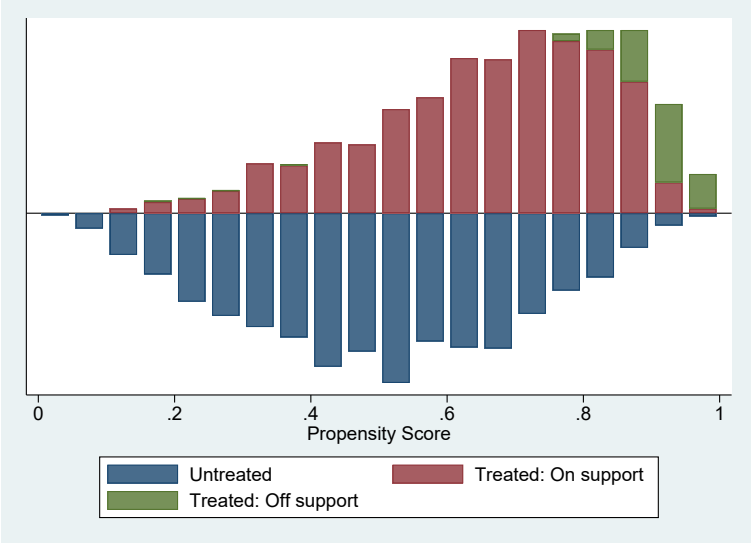
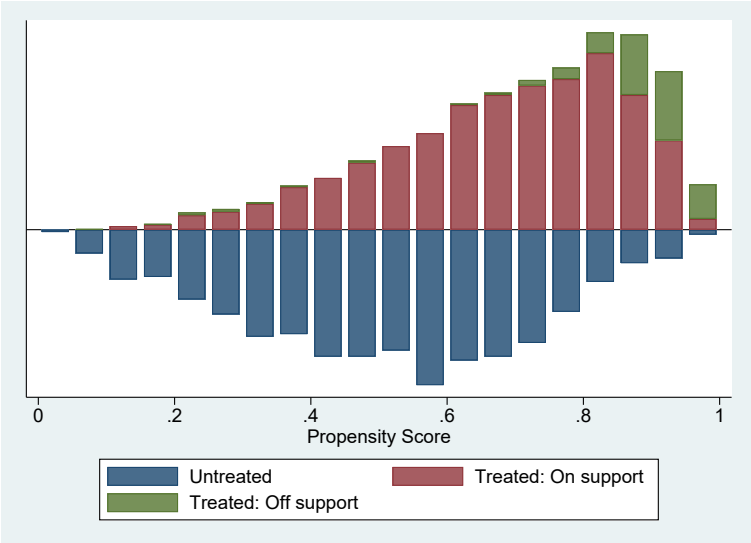


Figure 2: Propensity Score Distribution for Wave 5



Notes. The common support area for PSM with a radius of 0.001 and the full set of controls. 34 out of 4,269 and 40 out of 3,489 are off-support by dropping the treated based on the minimum and maximum of controls for Waves 4 and 5, respectively.

observations in each specification reflects both common support trimming and caliper-based exclusion. Figures 1 and 2 illustrate the distribution of propensity scores by treatment status. Substantial overlap between the treated and control distributions indicates that the common support condition is satisfied, supporting the credibility of the matching procedure.

This study examines the behavioral pathways underlying preventive healthcare habits, where both receiving and not receiving a dental examination during adolescence may influence long-term healthcare behaviors. This motivates consideration of both groups, as either receiving or not receiving early dental exams may lead to persistent habits. Beyond this contextual motivation, the econometric distinction between the average treatment effect on the treated (ATT) and on the untreated (ATU) is analytically meaningful. Unlike OLS, which assumes homogeneous treatment effects, PSM allows for heterogeneity across conditioning subpopulations. ATT estimates the effect among those who actually received adolescent dental exams, while ATU captures the effect among those who did not. Because these groups differ in observed characteristics, such as parental characteristics and access to medical care, the treatment may affect them differently. Estimating both ATT and ATU allows the analysis to capture these differences, rather than impose a uniform effect across all individuals.

Table 7 presents the ATT and ATU estimates under different control sets. The control sets in the top panel, labeled "Without Paternal Controls", match on all variables used in column 2 of Table 6, including the interactions between household income and race, household income and adolescent insurance, and household income and maternal education. The bottom panel, labeled "With Paternal Controls", adds paternal characteristics to this set, corresponding to column 3 of Table 6.

Post-matching balance diagnostics confirm that covariate imbalance is substantially reduced. Most covariates exhibit standardized biases below 10 percent. Appendix A reports the p-values from t-tests for covariate differences in the specifications in the panel with paternal controls in Table 7 for both Waves IV and V. In both cases, the p-values are statistically

insignificant, indicating that the treated and control groups are balanced after matching. These results support the quality of the match.

Table 7: Effect of Adolescent Dental Exam on Adult Dental Exam

Without Paternal Controls	ATT (S.E.)	Obs.	ATU (S.E.)	Obs.
Panel 1. Outcome = Dental Exam in Wave IV (Age 24–32)				
Unmatched	0.122 (0.015)	4269	0.122 (0.015)	4269
Matched (Radius, caliper = 0.001)	0.068 (0.021)	3877	0.054 (0.020)	3876
Panel 2. Outcome = Dental Exam in Wave V (Age 33–43)				
Unmatched	0.115 (0.017)	3489	0.115 (0.017)	3489
Matched (Radius, caliper = 0.001)	0.036 (0.024)	3089	0.029 (0.022)	3091
With Paternal Controls	ATT (S.E.)	Obs.	ATU (S.E.)	Obs.
Panel 1. Outcome = Dental Exam in Wave IV (Age 24–32)				
Unmatched	0.122 (0.015)	4269	0.122 (0.015)	4269
Matched (Radius, caliper = 0.001)	0.070 (0.022)	3814	0.059 (0.020)	3814
Panel 2. Outcome = Dental Exam in Wave V (Age 33–43)				
Unmatched	0.115 (0.017)	3489	0.115 (0.017)	3489
Matched (Radius, caliper = 0.001)	0.061 (0.025)	3037	0.027 (0.022)	3043

Notes: ATT is the Average Treatment Effect on the Treated, while ATU is the Average Treatment Effect on the Untreated. The control set for the panel without paternal controls matches the covariates used in column 2 of Table 6, while the panel with paternal controls corresponds to the covariates in column 3 of Table 6. Standard errors are reported in parentheses. The sample size is smaller than in the main analysis due to perfect prediction and collinearity in the logit estimation of the propensity score. Observations for matched is total number of matched samples.

For Wave IV outcomes, after matching, the ATT estimates range from 6.8 to 7.0 percentage points, consistent with the Table 6 OLS results. The corresponding ATU estimates are slightly smaller in magnitude. It suggests symmetric results for not receiving a dental exam in adolescence. For Wave V, the ATT remains statistically significant at 3.6 percentage points without paternal controls, aligning with the Table 6 OLS analysis coefficient of 0.034. The ATU estimates for Wave V are also approximately 3 percentage points, consistent with the Table 6 OLS results. The ATT in the panel with paternal controls is slightly higher, showing a 6.1 percentage point increase in adult dental examinations.

To assess the sensitivity of the results to the choice of caliper and common support definition, additional matching specifications are reported in Table 8. The control set used corresponds to the bottom panel of Table 7, which includes demographic, adult character-

istics, Wave I household, maternal, and paternal characteristics. Alternative calipers (0.005 and 0.01) and trimming of the sample to the 5th to 95th percentile of the propensity score distribution yield consistent ATT estimates, generally within 1 to 2 percentage points of the baseline results. Although some matching specifications show slightly larger standard errors or modest reductions in covariate balance, the overall quality of the match remains high, and the pattern of positive and statistically significant treatment effects remains intact. These results suggest that the main findings are robust to choices of matching algorithm and common support definition.

Table 8: Sensitivity Check with Various Matching Methods

	ATT (S.E.)	Obs.	ATU (S.E.)	Obs.
Panel 1. Outcome = Dental Exam in Wave IV (Age 24–32)				
Radius = 0.001	0.070 (0.022)	3814	0.059 (0.020)	3814
Radius = 0.001, Common Support = [5% - 95%]	0.069 (0.022)	3683	0.073 (0.020)	3663
Radius = 0.005	0.068 (0.022)	4205	0.043 (0.019)	4210
Radius = 0.005, Common Support = [5% - 95%]	0.080 (0.020)	3867	0.058 (0.019)	3868
Radius = 0.01	0.065 (0.021)	4216	0.046 (0.019)	4228
Radius = 0.01, Common Support = [5% - 95%]	0.080 (0.020)	3867	0.063 (0.019)	3884
Kernel = 0.001	0.069 (0.022)	3812	0.062 (0.020)	3812
Panel 2. Outcome = Dental Exam in Wave V (Age 33–43)				
Radius = 0.001	0.061 (0.025)	3037	0.027 (0.022)	3043
Radius = 0.001, Common Support = [5% - 95%]	0.060 (0.025)	2920	0.023 (0.023)	2909
Radius = 0.005	0.052 (0.025)	3413	0.036 (0.021)	3424
Radius = 0.005, Common Support = [5% - 95%]	0.085 (0.024)	3144	0.021 (0.021)	3173
Radius = 0.01	0.042 (0.024)	3423	0.038 (0.021)	3444
Radius = 0.01, Common Support = [5% - 95%]	0.079 (0.023)	3153	0.022 (0.021)	3173
Kernel = 0.001	0.063 (0.025)	3037	0.029 (0.023)	3037

Notes: ATT is the Average Treatment Effect on the Treated using Radius matching, while ATU is the Average Treatment Effect on the Untreated. The control set matches the covariates used in the bottom panel of Table 7. Standard errors are reported in parentheses. Common support is imposed by dropping treatment observations where the propensity score is higher than the maximum or lower than the minimum of the controls. For common support 5% to 95%, the sample was manually trimmed based on propensity score distribution, and the sample was matched with the initially estimated propensity score. Observations are the total number of matched samples.

4.3 Exact Matching with PSM

In the main OLS analysis, adulthood characteristics were found to significantly influence dental examination behavior in adulthood. As shown in Table 4, individuals who received an adolescent dental exam were more likely to attain higher education and less likely to be uninsured in adulthood. To address potential bias arising from matching individuals who differ substantially in education or insurance status, this section applies exact matching on adulthood education level and insurance type in addition to propensity score matching.

Under this approach, individuals are first grouped into strata defined by identical education level, insurance type, or both. Within each stratum, kernel matching is performed using the propensity score, imposing a caliper of 0.001 and ensuring common support by keeping treated individuals with propensity scores overlapping with controls[2]. In the exact matching procedure, the insurance variable is recoded into three categories: no insurance, Medicaid and Indian Health Service, and all other types.

Table 9 presents results from exact matching on education, insurance, and both combined. The estimated ATTs for Wave IV dental exams range from 6.2 to 7.5 percentage points, closely aligning with those reported in Table 7. For Wave V, the ATT estimates become slightly larger than the radius matching results in Table 7 when comparisons are restricted to individuals within the same education and insurance strata. Notably, the ATU for both Wave V is substantially higher than the corresponding estimates in Tables 7 and 8.

To assess whether these differences are driven by sample size, the Kernel matching analysis in Table 7 is re-estimated using the matched sample sizes from the exact matching on both education and insurance, 1,987 for Wave IV and 1,496 for Wave V. The resulting estimates indicate that part of the increase in ATU may be attributable to the smaller sample size. This suggests that the higher ATU under exact matching reflects not only more stringent comparisons among individuals with similar adulthood characteristics but also the

[2]Since `psmatch2`, which implements radius matching, does not support exact matching, `kmatch` is used instead. As `kmatch` does not support radius matching, kernel matching is conducted. The results without exact matching are reported in Table 8.

Table 9: Estimated ATT Using Propensity-Score Kernel Matching with Exact Matching

Exact Matching on:	ATT (S.E.)	ATU (S.E.)	Obs.
Panel 1. Outcome = Dental Exam at Wave IV (Age 24–32)			
Adulthood Education Level	0.062 (0.024)	0.052 (0.023)	2679
Adulthood Insurance type	0.075 (0.023)	0.069 (0.021)	3237
Adulthood Education & Insurance type	0.070 (0.026)	0.077 (0.025)	1987
Kernel without Exact Matching	0.075 (0.028)	0.084 (0.025)	1982
Panel 2. Outcome = Dental Exam at Wave V (Age 33–43)			
Adulthood Education Level	0.060 (0.028)	0.072 (0.026)	1923
Adulthood Insurance type	0.068 (0.026)	0.044 (0.024)	2572
Adulthood Education & Insurance type	0.075 (0.031)	0.085 (0.029)	1496
Kernel without Exact Matching	0.070 (0.029)	0.062 (0.029)	1491

Notes: ATT is the Average Treatment Effect on the Treated, while ATU is the Average Treatment Effect on the Untreated. The control set corresponds to the covariates used in the bottom panel of Table 7. Standard errors are reported in parentheses. Kernel matching is implemented with a bandwidth of 0.001, and common support is enforced to ensure perfect overlap between treated and control observations. Reported observations reflect the total number of matched units and are symmetric for ATT and ATC. In the rows of "Kernel without exact matching", the samples are limited to the matched sample size of exact matching with both adulthood education and insurance.

influence of reduced sample size. Overall, the estimates fall within the range of the sensitivity checks reported in Table 8, except the Wave V ATU, which appears more sensitive to adult characteristics.

4.4 Lasso Model Selection

This study implements the least absolute shrinkage and selection operator (LASSO) for variable selection to address challenges posed by high-dimensional control sets. The specification in column 3 of Table 6 includes an extensive set of controls, leading to many possible models through different selections of variables and interaction terms. In previous analyses, interactions were included between household income and race, household income and adolescent insurance status, and household income and maternal education. These interactions were chosen based on theoretical considerations and joint significance tests.

The top panel of Table 10 reports results from post-double-selection LASSO (PDS-LASSO) regressions and propensity score matching (PSM) using the same set of controls

as in earlier analyses. Nonetheless, relying on a limited and potentially arbitrary choice of interaction terms may introduce bias. To address this concern, the bottom panel of Table 10 expands the analysis to include all possible interactions among control variables, with LASSO-based variable selection applied. Both regression and PSM analyses are conducted using the variables picked by the LASSO. For PSM, the radius matching algorithm is implemented with a caliper of 0.001 and the common support condition enforced, consistent with the approach described in Section 4.2.

Table 10: PDS-Lasso Selected Controls

	Adulthood Dental Exam at Wave IV		Adulthood Dental Exam at Wave V	
Panel 1. With Interactions in the Main Analysis	OLS	PSM ATT	OLS	PSM ATT
Adolescent Dental Exam	0.073***	0.075***	0.039**	0.045**
	(0.016)	(0.020)	(0.017)	(0.022)
Observations	4325	4104	3553	3280
Panel 2. All Possible Interactions				
Adolescent Dental Exam	0.077***	0.082***	0.040**	0.033 *
	(0.016)	(0.020)	(0.017)	(0.022)
Observations	4325	4166	3553	3337

Notes. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
The birth year fixed effect is partialled out. Observations for PSM are the total number of matched observations.

The PDS-LASSO regression produces results closely aligned with those from the main OLS analysis. The estimated effect of adolescent dental exams on adulthood dental exams ranges from a 7.3 to 7.7 percentage point increase in usage at Wave IV. The magnitude of the effect is slightly higher when variables are selected via LASSO from the initial control set, and even larger when LASSO selects variables from models including all possible interactions. A similar pattern is observed at Wave V.

The ATT estimates derived from PSM with the Lasso selected variables also exhibit a similar tendency compared to the PSM results based on the initial control sets. In particular, for Wave IV, the ATT estimates are very close to those reported in Table 7. While the results

for Wave V show some variation, they remain within the range of ATT estimates reported in the sensitivity analysis in Table 8.

A PSM Balancing Test

Table A1: Covariate Balance Diagnostics after Radius Matching

	p-values of t-test After Radius Matching			
	Wave IV		Wave V	
Variable	Unmatched	Matched	Unmatched	Matched
Female	0.049	0.738	0.153	0.721
Race: Black	0.000	0.188	0.000	0.952
Race: Native American	0.000	0.595	0.029	0.317
Race: Asian	0.119	0.037	0.785	0.642
Race: Others	0.002	0.862	0.000	0.509
Age	0.000	0.614	0.055	0.892
Age Squared	0.000	0.599	0.050	0.874
Household Income Level 2	0.000	0.298	0.000	0.430
Household Income Level 3	0.000	0.775	0.000	0.951
Household Income Level 4	0.000	0.427	0.000	0.354
Household Income Level 5	0.000	0.579	0.000	0.445
Household Income Level 6	0.012	0.562	0.012	0.163
Household Income Level 7	0.223	0.617	0.285	0.723
Household Income Level 8	0.875	0.703	0.857	0.223
Household Income Level 9	0.000	0.592	0.000	0.829
Household Income Level 10	0.000	0.779	0.000	0.331
Household Income Level 11	0.000	0.518	0.000	0.570
Household Income Level 12	0.000	0.175	0.000	0.088
Household Income Level 13	0.151	0.733	0.129	0.585
Number of Siblings: 2	0.000	0.077	0.000	0.415
Number of Siblings: 3	0.488	0.302	0.274	0.502
Number of Siblings: 4 or more	0.000	0.081	0.000	0.909
Insurance Coverage: With Discontinuity	0.000	0.995	0.000	0.581
Insurance Coverage: None	0.000	0.994	0.000	0.608

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	p-values of t-test After Radius Matching			
	Wave IV		Wave V	
Variable	Unmatched	Matched	Unmatched	Matched
Insurance Coverage: Unknown	0.032	0.866	0.057	0.328
Hardship in Medical Access: Somewhat Easy	0.000	0.872	0.000	0.076
Hardship in Medical Access: Somewhat Hard	0.000	0.945	0.000	0.159
Hardship in Medical Access: Very Hard	0.000	0.617	0.000	0.507
Hardship in Medical Access: Unknown	0.799	0.832	0.870	0.933
Local Area: Suburban	0.000	0.789	0.000	0.388
Local Area: Urban/Commercial	0.000	0.997	0.000	0.490
Local Area: Other	0.891	0.750	0.609	0.317
Local Area: Unknown	0.634	0.165	0.637	0.586
Difficulty Paying Bills: Yes	0.000	0.603	0.000	0.411
Difficulty Paying Bills: Unknown	0.974	0.997	0.681	0.514
Parental Education: Some College	0.042	0.782	0.055	0.841
Parental Education: Associate's Degree	0.671	0.658	0.307	0.704
Parental Education: Bachelor's Degree	0.000	0.491	0.000	0.617
Parental Education: Master's or Higher	0.000	0.165	0.000	0.575
Parental Education: Unknown	0.956	0.545	0.709	0.131
Parental Employment: Not Working	0.096	0.687	0.042	0.222
Parental Employment: Unknown	0.343	0.550	0.800	0.691
Public Assistance: Yes	0.000	0.243	0.000	0.428
Public Assistance: Unknown	0.384	0.655	0.417	0.477
Marital Status: Married	0.000	0.434	0.000	0.409
Marital Status: Widowed	0.038	0.771	0.094	0.065
Marital Status: Divorced	0.003	0.573	0.001	0.486
Marital Status: Separated	0.000	0.937	0.001	0.951
Marital Status: Unknown	0.709	0.543	0.786	0.131
Smoking: Yes	0.000	0.636	0.000	0.444
Smoking: Unknown	0.874	0.630	0.929	0.507
Current Personal Earnings Level 2	0.000	0.961	0.402	0.945

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	p-values of t-test After Radius Matching			
	Wave IV		Wave V	
Variable	Unmatched	Matched	Unmatched	Matched
Current Personal Earnings Level 3	0.014	0.600	0.007	0.745
Current Personal Earnings Level 4	0.014	0.666	0.020	0.314
Current Personal Earnings Level 5	0.237	0.264	0.075	0.882
Current Personal Earnings Level 6	0.293	0.403	0.245	0.315
Current Personal Earnings Level 7	0.731	0.964	0.007	0.537
Current Personal Earnings Level 8	0.006	0.052	0.060	0.991
Current Personal Earnings Level 9	0.000	0.218	0.362	0.512
Current Personal Earnings Level 10	0.001	0.342	0.005	0.567
Current Personal Earnings Level 11	0.010	0.895	0.000	0.719
Current Personal Earnings Level 12	0.003	0.514	0.000	0.001
Current Personal Earnings Level 13	0.000	0.742	0.530	0.277
Current Household Income Level 2	0.002	0.299	0.942	0.397
Current Household Income Level 3	0.001	0.949	0.000	0.716
Current Household Income Level 4	0.000	0.572	0.016	0.593
Current Household Income Level 5	0.008	0.987	0.091	0.326
Current Household Income Level 6	0.029	0.868	0.111	0.230
Current Household Income Level 7	0.049	0.501	0.000	0.703
Current Household Income Level 8	0.522	0.362	0.000	0.723
Current Household Income Level 9	0.107	0.492	0.100	0.091
Current Household Income Level 10	0.002	0.397	0.255	0.735
Current Household Income Level 11	0.000	0.463	0.000	0.163
Current Household Income Level 12	0.000	0.955	0.000	0.016
Current Household Income Level 13	0.001	0.404	0.001	0.150
Current Insurance Type Level 2	0.000	0.355	0.125	0.326
Current Insurance Type Level 3	0.273	0.931	0.000	0.143
Current Insurance Type Level 4	0.030	0.268	0.826	0.824
Current Insurance Type Level 5	0.129	0.422	0.016	0.232
Current Insurance Type Level 6	0.320	0.426	0.107	0.055

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	p-values of t-test After Radius Matching			
	Wave IV		Wave V	
Variable	Unmatched	Matched	Unmatched	Matched
Current Insurance Type Level 7	0.810	0.166	0.000	0.607
Current Insurance Type Level 8	0.002	0.427	0.431	0.823
Current Insurance Type Level 9	0.000	0.647	0.917	0.718
Current Insurance Type Level 10	0.005	0.672	0.923	0.031
Current Insurance Type Level 11	0.709	0.871	0.239	0.662
Current Insurance Type Level 12	0.000	0.473	0.087	0.949
Current Insurance Type Level 13	0.089	0.970	0.000	0.316
Current Education Level 2	0.000	0.473	0.000	0.533
Current Education Level 3	0.089	0.970	0.000	0.635
Current Education Level 4	0.000	0.477	0.000	0.923
Current Education Level 5	0.000	0.242	0.000	0.987
Father's Education Level 2	0.001	0.317	0.000	0.388
Father's Education Level 3	0.004	0.543	0.055	0.785
Father's Education Level 4	0.000	0.177	0.000	0.429
Father's Education Level 5	0.000	0.411	0.000	0.957
Father's Education Level 6	0.000	0.674	0.000	0.372
Father's Education Level 7	0.064	0.663	0.057	0.414
Father's Occupation Level 2	0.000	0.387	0.000	0.387
Father's Occupation Level 3	0.010	0.559	0.038	0.372
Father's Occupation Level 4	0.000	0.344	0.000	0.132
Father's Occupation Level 5	0.000	0.445	0.001	0.249
Father's Occupation Level 6	0.218	0.522	0.590	0.818
Father's Occupation Level 7	0.063	0.938	0.512	0.903
Father's Occupation Level 8	0.056	0.693	0.141	0.676
Father's Occupation Level 9	0.676	0.223	0.934	0.886
Father's Occupation Level 10	0.154	0.467	0.063	0.787
Father's Occupation Level 11	0.877	0.277	0.864	0.386
Father's Occupation Level 12	0.772	0.527	0.895	0.830

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	p-values of t-test After Radius Matching			
	Wave IV		Wave V	
Variable	Unmatched	Matched	Unmatched	Matched
Father's Occupation Level 13	0.135	0.445	0.095	0.445
Father's Occupation Level 14	0.882	0.749	0.559	0.057
Father's Occupation Level 15	0.894	0.543	0.991	0.493
Father's Occupation Level 16	0.839	0.943	0.434	0.555
Father's Occupation Level 17	0.000	0.545	0.000	0.572
Father's Occupation Level 18	0.228	0.583	0.119	0.433
Father Has Paid Job	0.000	0.349	0.000	0.355
Father Smokes: Yes	0.000	0.774	0.000	0.989
Father Smokes: Unknown	0.319	0.771	0.260	0.804
Birth Year: 1975	0.146	0.756	0.057	0.180
Birth Year: 1976	0.007	0.183	0.049	0.814
Birth Year: 1977	0.707	0.322	0.368	0.648
Birth Year: 1978	0.001	0.623	0.005	0.090
Birth Year: 1979	0.352	0.551	0.411	0.014
Birth Year: 1980	0.191	0.326	0.998	0.438
Birth Year: 1981	0.060	0.640	0.042	0.062
Birth Year: 1982	0.340	0.314	0.421	0.382
Birth Year: 1983	0.587	0.765	.	.

Notes. p-values are from t-tests comparing covariates between treated and control groups after radius matching. This table reports diagnostics for the Wave IV and Wave V samples, corresponding to models in Table 7. Interaction terms are excluded as all were insignificant.

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