

# Developmental Trends of First Cigarette Smoking Experience of Children: The Bogalusa Heart Study

JANET G. BAUGH, MPH, SAUNDRA MACD. HUNTER, PHD,  
LARRY S. WEBBER, PHD, AND GERALD S. BERENSON, MD

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**Abstract:** During one school year a health habits survey investigated cigarette smoking behavior in a total biracial population of children, ages 8 to 17 years old. Information was collected concerning each child's first smoking experience. Over 60 per cent of the children reported they were given their first cigarettes. Half of those starting before age 12 smoked their first cigarettes with a family member or an older friend. The smoking habit appears to have become established by age 14, with a two-year gap between initiation and maintenance. (*Am J Public Health* 1982; 72:1161-1164.)

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## Introduction

Experimentation with cigarettes at increasingly earlier ages has created concern for programs to deter the onset of smoking behavior in young children.<sup>1-15</sup> Although epidemiologic studies have explored the influence of peer pressure, family models, and other factors on the onset and prevalence of cigarette smoking in children, few studies<sup>3-9</sup> have considered differences between Blacks and Whites. An investigation of cigarette smoking in a biracial community was designed and implemented with standardized procedures to ensure collection of valid, reliable data within a theoretic psychosocial framework.<sup>16-23</sup> This report describes the first smoking experience, which might provide insight to prevention.

## Materials and Methods

From September 1976 to June 1977, 3,014 children, ages 8 to 17 years old, were given a Health Habits Questionnaire as part of a comprehensive examination for cardiovascular risk factor variables. The questionnaire consisted of 26 items

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Address reprint requests to Gerald S. Berenson, MD, Department of Medicine, Specialized Center of Research-Arteriosclerosis, Louisiana State University Medical Center, 1542 Tulane Avenue, New Orleans, LA 70112-2822. Ms. Baugh is with that same department; Dr. Hunter is with the Department of Family Medicine, and Dr. Webber is with the Department of Biometry. This paper, submitted to the *Journal* December 21, 1981, was revised and accepted for publication March 9, 1982.

concerned with tobacco usage, factors related to initiation and maintenance, environmental influences, and attitudes and beliefs regarding cigarette smoking.<sup>17-19</sup> Concerning initiation and maintenance, the children were asked age at first cigarette, source of first cigarette, with whom the first cigarette was smoked, and age child began to smoke at least one cigarette a week (if applicable).

Cigarette smoking behavior\* will be identified here according to the following behavioral characteristics:

- *Nonsmoker:* A child who never experimented with cigarettes;
- *Quitter:* A child who has at one time smoked at least one cigarette a week or experimented with fewer than one, but no longer smokes;
- *Current Smoker:* A child who is currently smoking cigarettes.

Several weeks after the initial examination, 570 children were readministered a parallel form of the questionnaire. To the question "How old were you when you smoked your first cigarette?", some 525 (92.1 per cent) gave a consistent response; 84.3 per cent reported the same age ( $\pm$  one year) at first cigarette and 85.2 per cent of current smokers gave a consistent response to the question concerning age at which they began smoking regularly. This consistency was noted for children of all ages.

## Results

### Onset of Cigarette Smoking

Of the 2,880 children who answered the questionnaire, 1,506 (52.3 per cent) reported having tried cigarette smoking. Some 1,410 reported the age at which the initial experience occurred (Table 1). The accumulated incidence curves in Figure 1 demonstrate smoking behavior for five age cohorts by race and sex. At any age, the height of a particular curve represents the proportion of the total population of an age cohort (including all children who have never smoked) who reported having smoked their first cigarettes.

Boys in each age cohort tried cigarettes at an earlier age than girls, White children earlier than Black children. There

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\*Children also reported use of other tobacco sources. Of 1,410 children also reporting cigarette smoking, 25.8 per cent White boys and 2.3 per cent Black boys reported chewing tobacco. Cigar smoking was reported by 11.0 per cent White boys, 4.4 per cent White girls, 8.3 per cent Black boys, and 6.8 per cent Black girls. White boys also reported 4.6 per cent smoked pipes and 9.3 per cent used snuff.

**TABLE 1—Current Smoking Behavior of Children by Race, Sex, and Age Group, Bogalusa Heart Study, 1976–77**

Age Group	White Boys						White Girls					
	Nonsmoker		Quitter		Smoker		Nonsmoker		Quitter		Smoker	
	N	%	N	%	N	%	N	%	N	%	N	%
8–9	119	73.9	33	20.5	9	5.6	160	89.4	17	9.5	2	1.1
10–11	104	50.0	88	42.3	16	7.7	123	71.9	44	25.7	4	2.3
12–13	74	37.4	104	52.5	20	10.1	83	46.6	73	41.0	22	12.4
14–15	51	24.9	84	41.0	70	34.1	76	35.7	86	40.4	51	23.9
16–17	29	16.0	87	48.1	65	35.9	32	20.0	58	36.3	70	43.8

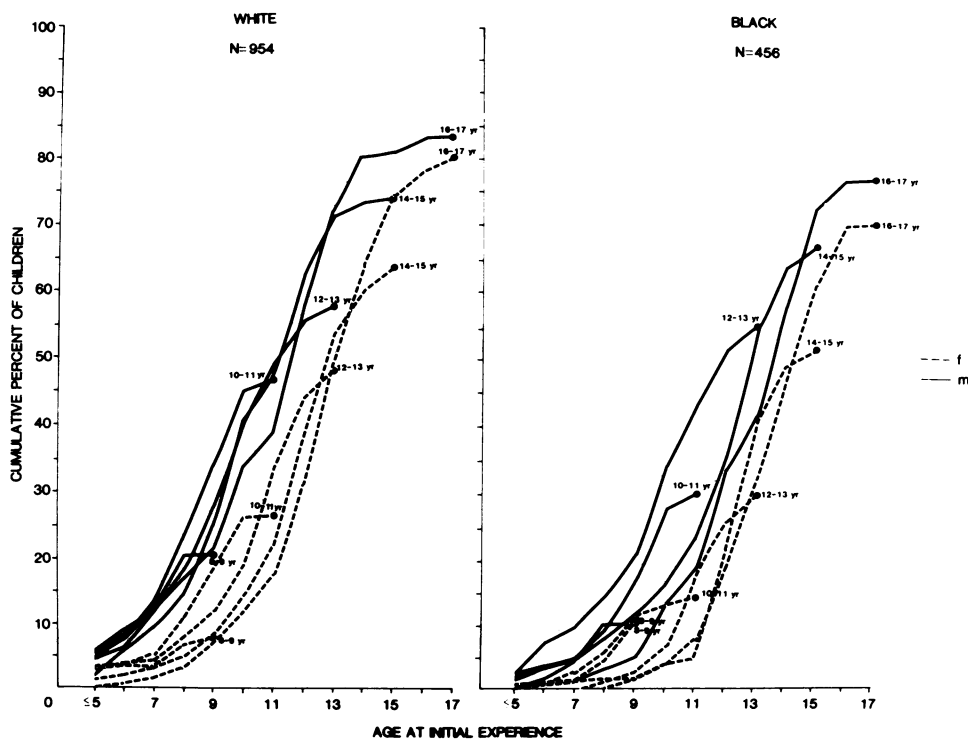
  

Age Group	Black Boys						Black Girls					
	Nonsmoker		Quitter		Smoker		Nonsmoker		Quitter		Smoker	
	N	%	N	%	N	%	N	%	N	%	N	%
8–9	55	83.3	9	13.6	2	3.0	57	78.1	11	15.1	5	6.8
10–11	69	64.5	34	31.8	4	3.7	88	83.8	15	14.3	2	1.9
12–13	45	36.6	67	54.5	11	8.9	66	66.0	25	25.0	9	9.0
14–15	40	30.5	65	49.6	26	19.8	53	46.1	45	39.1	17	14.8
16–17	17	17.9	47	49.5	31	32.6	33	29.7	49	44.1	29	26.1

is a trend toward trying cigarettes at increasingly earlier ages for each age cohort. Black boys and White girls showed a greater per cent smoking younger than Black girls and White boys respectively.

A closer examination of children in the 16–17 year-old age cohort who had ever tried smoking cigarettes and their current smoking status is given in Figure 2. By age 17, 36 per cent of the White boys reported currently smoking, but

almost 84 per cent reported having tried cigarettes. Smoking experimentation occurs early among White boys in this age cohort, but few actually continue the habit. A lower per cent of the 16–17 year-old White girls started smoking at an early age; however, those who did, continued to smoke. Black children showed less current smoking and later initial experimentation than White children. For all children in this age cohort, the smoking habit appears to have become estab-



**FIGURE 1—Accumulative Incidence of First Smoking Experience of Children (8–17 years) by Race, Sex, Current Age Group, and Age at Initial Experience, Bogalusa Heart Study, 1976–77**

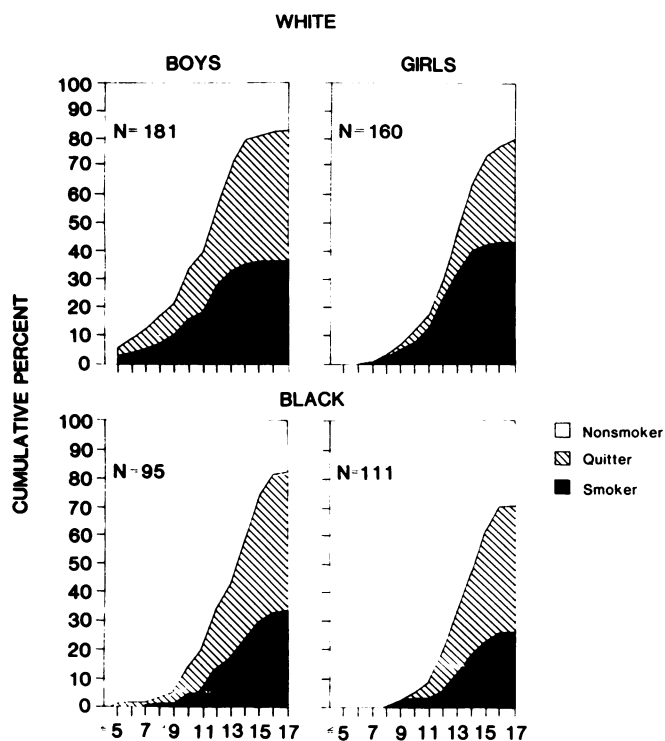


FIGURE 2—Accumulative Incidence of First Cigarette Experience and Current Smoking Status of 16-17 Year-Old Children by Race, Sex, and Age at Initial Experience, Bogalusa Heart Study, 1976-77

lished by age 14. Among White boys and Black children, one-half of experimental smokers quit if they tried smoking before age 12, whereas White girls continued to smoke.

“How did you get your first cigarette?” was answered by 1,319 children. There are no significant sex or race differences in the source of first cigarettes. At all ages most children (55-67 per cent) reported they were given their first cigarettes.

Figure 3 demonstrates the replies of 1,380 children to the question “With whom did you smoke your first cigarette?” For White children and Black boys, the initial experience occurred with peers increasingly as the age at initial experience increases, with a corresponding decrease in smoking the first cigarette with family members or older friends. A greater per cent of Black than White children reported having smoked the first cigarette alone (30 per cent vs 22 per cent).

Among children who reported finding butts, half of those younger than 12 years smoked their first cigarettes alone, while 18 per cent smoked them with family members. Of those children experimenting at age 12 or older, 71 per cent who found butts smoked them alone. Almost half of all children who bought their first cigarettes reported that they smoked them with friends of the same age. Another third smoked the purchased cigarettes alone. Among those children given first cigarettes before age 12, 36 per cent smoked them with a friend of the same age, 25 per cent with an older friend, and 25 per cent with a family member. Children

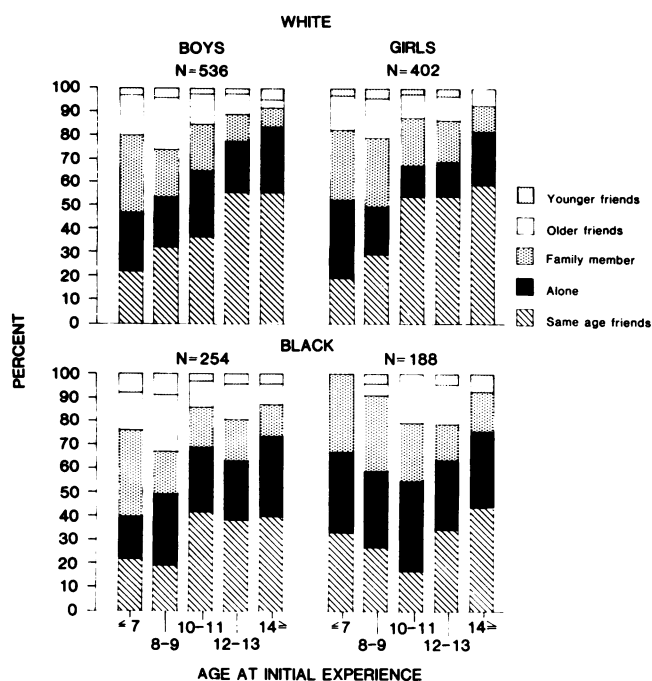


FIGURE 3—Persons Present during the First Cigarette Smoking Experience of Children by Race, Sex, and Age at Initial Experience, Bogalusa Heart Study, 1976-77

starting smoking at an older age reported that when they were given the first cigarettes, 56 per cent smoked them with a friend of the same age and 17 per cent with a family member. Children who took their first cigarettes reported smoking them alone or with a friend.

Of children reporting smoking at least one cigarette a week, 341 indicated the age at first cigarette and age when regular smoking began. There appears to be a two-year gap between age of initial smoking and the age at which a child reports smoking at least one cigarette a week (Table 2). This is consistent for all ages at initial experience.

## Discussion

To design more effective cigarette smoking intervention or prevention programs, more information is needed about developmental differences in smoking behavior. This study reports trial and adoption of cigarette smoking by race and sex within a developmental, transition-prone framework.<sup>20</sup> Intervention requires identification of characteristics such as age, race, and sex of children who, from a developmental perspective, wish to shed child or adolescent status and associate themselves with factors commonly linked with the adult life-style, such as cigarette smoking.

Cigarette smoking is only one health-related habit offered children in the “adult life-style package.” Children become transition-prone to perceived adult status at different ages based on cognitive,<sup>21</sup> ego,<sup>22</sup> social development,<sup>23</sup>

**TABLE 2—Mean Ages at First Cigarette Experience and Onset of Regular Smoking of 341 Current Smokers, by Age Group, Bogalusa Heart Study, 1976–77**

Age Group	n	Smoked First Cigarette $\bar{x} \pm S.D.$	Onset Regular Smoking $\bar{x} \pm S.D.$
8–9	4	5.3 $\pm$ 3.1	7.3 $\pm$ 2.2
10–11	14	7.6 $\pm$ 2.6	8.4 $\pm$ 2.3
12–13	37	8.8 $\pm$ 2.0	10.9 $\pm$ 1.5
14–15	127	10.4 $\pm$ 2.6	12.9 $\pm$ 1.6
16–17	159	11.7 $\pm$ 2.4	14.3 $\pm$ 1.6

and environmental pressures\*\* placed on them. There may also be a physiological genetic contribution to the adoption of health habits. Since younger children try their first cigarettes with family members, intervention programs should be directed toward families and their influence patterns on children. Finally, there is a reported two-year lag before consistent smoking occurs. This period offers an opportunity for prevention of habitual smoking.

\*\*Hunter S MacD, Webber LS, Wolf TM, *et al*: Perceived societal blockage, type A behavior pattern, blood pressure and heart rate variables in children: the Bogalusa Heart Study. Submitted for publication.

## REFERENCES

1. The Health Consequences of Smoking, 1975. DHEW Pub. No. (CDC) 76-8704. Washington, DC: Govt Printing Office, 1975.
2. Smoking and Health: Report of the Surgeon General. DHEW Pub. No. (PHS) 79-50066. Washington, DC: Govt Printing Office, 1979.
3. McKennell AC, Thomas RK: Adults' and adolescents' smoking habits and attitudes. Government Social Survey. London, HMSO, 1967.
4. McKennell AC: Implication for health education of social influences on smoking. *Am J Public Health* 1969; 59:1998–2004.
5. Hanley JA, Robinson JC: Cigarette smoking and the young: a national survey. *Can Med Assn J* 1976; 114:511–517.
6. Bewley BR, Bland JM, Harris R: Factors associated with the starting of cigarette smoking by primary school children. *Brit J Prev Soc Med* 1974; 28:37–44.
7. Bewley BR, Bland JM: Academic performance and social factors related to cigarette smoking by schoolchildren. *Brit J Prev Soc Med* 1977; 31:18–24.
8. Palmer AB: Some variables contributing to the onset of cigarette smoking among junior high school students. *Soc Sci Med* 1970; 4:359–366.
9. Teenage Smoking: National Patterns of Cigarette Smoking, Ages 12 through 18, in 1972 and 1974. DHEW Pub. No. (NIH) 76-931. Washington DC: Govt Printing Office, 1976.
10. Evans RI, Rozelle RM, Mittelmark MB, *et al*: Deterring the onset of smoking in children: Knowledge of immediate physiological effects and coping with peer pressure, media pressure, and parent modeling. *J Appl Soc Psych* 1978; 8:126–135.
11. McAlister AL, Perry C, Maccoby N: Adolescent smoking: onset and prevention. *Ped* 1979; 63:650–658.
12. Evans RI, Henderson AH, Hill PC, *et al*: Current psychological, social, and educational programs in control and prevention of smoking: a critical methodological review. *Ather Rev* 1979; 6:203–245.
13. Botvin GJ, Eng A, Williams CL: Preventing the onset of cigarette smoking through life skills training. *Prev Med* 1980; 9:135–143.
14. Gritz ER: Smoking: the prevention of onset. In: Jarvik ME, Cullen JW, Gritz ER, *et al*, (eds): *Research on Smoking Behavior*. NIDA Research Monograph 17, DHEW Pub. No. (ADM) 78–581. Washington DC: Govt Printing Office, 1977.
15. Leventhal H, Cleary PD: The smoking problem: a review of the research and theory in behavioral risk modification. *Psych Bull* 1980; 88:370–405.
16. Berenson GS, McMahan CA, Voors AW, *et al*: *Cardiovascular Risk Factors in Children—The Early Natural History of Atherosclerosis and Essential Hypertension*. New York: Oxford University Press, 1980.
17. Hunter S MacD, Webber LS, Berenson GS: Cigarette smoking and tobacco usage behavior in children and adolescents: the Bogalusa Heart Study. *Prev Med* 1980; 9:701–712.
18. Hunter S MacD, Baugh JG, Webber LS, *et al*: Social learning effects on trial and adoption of cigarette smoking in children: the Bogalusa Heart Study. *Prev Med* 1982; 11:29–42.
19. Webber LS, Hunter S MacD, Baugh JG, *et al*: The interaction of cigarette smoking, oral contraceptive use and cardiovascular risk factor variables in children: the Bogalusa Heart Study. *Am J Public Health* 1982; 72:266–274.
20. Jessor R, Jessor SL: Adolescent development and the onset of drinking. *J Studies on Alcohol* 1974; 36:27–51.
21. Kohlberg L: Stage and sequence: the cognitive-developmental approach to socialization. In: Goslin DA (ed): *Handbook of Socialization Theory and Research*. Chicago: Rand McNally College Publishing Co, 1973.
22. Loevinger I: The meaning and measurement of ego development. *American Psychologist* 1966; 21:195–217.
23. Bandura A, Walters RH: *Social learning and personality development*. New York: Holt, Rinehart and Winston, 1963.

## ACKNOWLEDGMENTS

The Bogalusa Heart Study is a joint effort of many people. A special thanks is given to Bettye Seal for her work as community coordinator, and to the children of Bogalusa and their parents without whose cooperation this study would not be possible.

This research was supported by funds from the National Heart, Lung, and Blood Institute of the United States Public Health Service, Specialized Center of Research-Arteriosclerosis (SCOR-A) HL15103.