Experimentation with Smokeless Tobacco and Cigarettes by Children and Adolescents: Relationship to Beliefs, Peer Use, and Parental Use

RITA YOPP COHEN, PHD, JOAN SATTLER, MS, MICHAEL R.J. FELIX, BA, AND KELLY D. BROWNELL, PHD

Abstract: Experimentation with both cigarettes and smokeless tobacco by children in grades 3–12 in a school district in Pennsylvania was related to peer experimentation, parental use, and personal beliefs about the harm of the product for both males and females. Experimentation with both products had begun as early as the third grade and increased with age, with a major increase in experimentation during junior high school. Nearly half the males in grades 7–12 did not believe smokeless tobacco was harmful. (*Am J Public Health* 1987; 77:1454–1456.)

Introduction

The percentage of adolescents who smoke has not declined in recent years[1]; at the same time, regional surveys suggest that the use of smokeless tobacco is increasing.[2–6] The variables found to be related to the adoption of smoking by adolescents include use by family and peers, early experimentation, and belief that cigarettes are not harmful.[7,8] Since there is much temporal and regional variability across studies, it is difficult to determine whether the same variables which affect smoking also affect the use of smokeless tobacco. The information is important for planning preventive interventions for smokeless tobacco, since programs which are successful for smoking prevention may not be successful for smokeless tobacco if the variables which affect use of the two products differ.

Method

Ninety-three per cent of all students in grades 3 through 12 of the Williamsport, Pennsylvania Consolidated School System completed a survey of experimentation, parental and peer use, and beliefs about the harm of cigarettes and smokeless tobacco. Sample sizes for males (total N = 2,185) and females (total N = 2,168) in each grade were approximately equal.

Results

Analyses of cigarette items utilized students' experimentation with cigarettes (yes/no) as the dependent variable and smokeless tobacco items utilized experimentation with smokeless tobacco (yes/no) as the dependent variable. The independent variables included grade and gender, as well as the additional item of either belief in harm, parental use, or peer use.

There was a substantial increase in experimentation with grade level for both cigarettes and smokeless tobacco (Table 1). For cigarettes, experimentation continued to increase until grade 10 for both males and females; for smokeless tobacco, experimentation continued until grade nine for males, and increased temporarily for females in junior high school and then decreased.

TABLE 1—Percentage Who Have Tried Cigarettes and Smokeless Tobacco, by Grade and Gender

	Cigarettes		Smokeless Tobacco	
Grade	Male	Female	Male	Female
	%	%	%	%
3 (211,201)	12	10	22	7
4 (210,211)	19	10	35	7
5 (223,254)	19	11	37	7
6 (203,202)	29	22	40	8
7 (198,208)	38	39	50	11
8 (252,214)	53	57	56	27
9 (270,256)	58	60	67	26
10 (264,227)	69	75	70	19
11 (200,223)	68	77	68	10
12 (154,172)	79	74	69	18

NOTE: Numbers in parentheses indicate N = (Male, Female)

There was also an overall effect for gender for smokeless tobacco, with boys experimenting substantially more often than girls at all ages. For cigarettes, boys experimented more frequently than girls in the early grades whereas girls experimented more frequently than boys in the later grades.

Belief in the harm of each product was assessed (Table 2). A high percentage at all ages believe cigarettes to be harmful, whereas the percentage who believed smokeless tobacco to be harmful declined with age.

For both products, belief in the harm affected experimentation, with those students who believed that a product was not harmful more likely to have experimented (Table 3).

There was also an effect for friends' use for both products, with all three levels of friends' use differing in the expected direction. For cigarettes, students who reported that some or almost all of their friends had tried cigarettes were more likly to have tried themselves. The effect is particularly strong in grades 5 through 8. For smokeless tobacco, males who reported that almost all of their friends used smokeless products were most likely to use it themselves. For females, there was an increase in experimentation

TABLE 2—Percentage Who Believe that Cigarettes and Smokeless Tobacco are Harmful, by Grade and Gender

	Cigarettes		Smokeless Tobacco	
Grade	Male	Female	Male	Female
	%	%	%	%
3	97	96	91	97
4	96	97	83	89
5	95	96	79	93
6	95	97	78	87
7	95	94	55	81
8	94	92	61	82
9	83	93	51	69
10	91	92	52	68
11	86	93	46	61
12	86	90	45	69

From the Department of Psychiatry, University of Pennsylvania School of Medicine, and County Health Improvement Program. Address reprint requests to Rita Yopp Cohen, PhD, Obesity Research Group, Department of Psychiatry, University of Pennsylvania School of Medicine, 133 S 36th Street, Suite 507, Philadelphia, PA 19104. This paper, submitted to the Journal March 5, 1987, was revised and accepted for publication May 28, 1987.

TABLE 3—Percentage of Cigarette and Smokeless Tobacco Users in Males and Females according to Belief in Harm, Friends' Use, and Parental Use

	Belief in Harm							
	Cigarettes				Smokeless Tobacco			
	Not Harmful		Harmful		Not Harmful		Harmful	
Grade	Male	Female	Male	Female	Male	Female	Male	Female
3	0	25	12	10	60	0	29	8
4	33	17	18	11	75	15	28	6
5	45	30	17	10	78	50	32	4
6	30	60	29	20	63	21	34	6
7	50	75	37	36	73	8	36	11
8	86	79	51	76	76	24	48	17
9	67	92	57	59	80	43	55	14
10	90	94	67	74	80	24	61	14
11	87	79	66	77	76	15	57	6
12	100	80	76	73	75	26	58	10

	Friends Use											
	Cigarettes						Smokeless Tobacco					
	None		Some		All		None		Some		All	
Grade	M	F	M	F	M	F	M	F	M	F	M	F
3	9	7	13	25	50	40	9	5	53	22	100	0
4	15	9	39	22	67	0	26	8	47	0	100	0
5	12	8	32	21	100	67	25	5	56	14	0	0
6	19	0	49	45	71	63	15	3	54	28	93	33
7	26	18	63	53	100	80	29	3	63	29	86	29
8	33	29	69	62	79	88	28	4	64	34	90	50
9	38	33	59	63	79	79	37	12	74	32	100	50
10	55	43	68	75	83	92	55	5	72	27	86	33
11	42	55	69	73	78	89	35	5	68	15	89	0
12	66	47	77	72	92	92	44	6	72	21	79	0

	Parents Use											
	Cigarettes						Smokeless Tobacco					
	0		1		2		0		1		2	
Grade	M	F	M	F	M	F	M	F	M	F	M	F
3	4	8	15	4	12	18	20	3	67	17	50	0
4	5	0	19	11	24	11	15	3	86	25	0	50
5	11	4	20	6	17	19	24	3	58	0	80	0
6	20	8	32	25	28	27	32	5	60	21	86	67
7	24	29	32	39	49	40	44	6	68	21	93	50
8	35	27	54	58	54	68	52	17	75	20	94	50
9	38	34	58	62	69	73	54	12	90	26	81	75
10	59	61	65	75	76	82	60	16	91	25	93	40
11	60	86	69	74	70	77	65	6	71	19	70	75
12	70	63	81	76	81	77	58	13	81	44	93	100

between those reporting that none versus some of their friends have used smokeless tobacco (Table 3).

There was also an effect for parental use for both products, with all three levels of parental use differing in the expected direction.

Discussion

While many of the factors which affect experimentation with cigarettes also affect experimentation with smokeless tobacco, there are some differences. Experimentation with both products increases with age; for males, the percentage who experiment with smokeless tobacco in the elementary grades is nearly twice as high as for cigarettes. The data suggest that future use of smokeless tobacco by males is likely to increase for two reasons:

- Since previous cigarette research has shown that those who experiment at an early age are more likely to become habitual users,[8] the high prevalence of male exper-

imentation in the early grades suggests that the number of habitual users will increase.

- Adult use of smokeless tobacco is increasing[9–11]; since those children with parents who use a product are more likely to use it themselves, the child's use of smokeless tobacco should increase. Adult smoking is decreasing. Thus, while adults are becoming more positive role models for not smoking, they are becoming more negative role models for smokeless tobacco.

A stronger informational campaign regarding smokeless tobacco might deter some children from use. While nearly 90 per cent of children at all ages believe that cigarettes are harmful (Table 2), nearly half of the males in grades 7 through 12 do not believe that smokeless tobacco is harmful. Females believe that smokeless tobacco is more harmful than do males at all ages; however, belief in the harm of smokeless tobacco also declines with age for females.

Prevention programs for both products could be conducted in two stages, with the initial intervention in elementary school. Currently, most smoking prevention programs are conducted in junior high school. Since previous research suggests that prevention programs are most effective for those who have never experimented with a product,[8] and many children experiment with the products at an early age, earlier intervention seems warranted. Programs in the early grades could stress the dangers of smokeless tobacco and cigarettes; a second intervention could be conducted just prior to junior high school, at the time when peer influence increases.

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AIDS Center in Houston to Close; Financial Losses Cited

The Institute for Immunological Disorders in Houston, Texas—believed to be the nation's only hospital dedicated exclusively to the care and treatment of AIDS (acquired immunodeficiency syndrome)—is phasing out all programs and services, and closing the 150-bed hospital. Financial losses of the one-year old project, reported to be about $8 million, are cited as the reason for closing it down, according to American Medical International (AMI), the owners and operators of the facility.

The project has been a joint effort between AMI and the University of Texas Health Science Center, with AMI providing the hospital, staff, and funding. The U-TX Health Science Center and the M. D. Anderson Hospital and Tumor Institute provided the medical and research activities of the AIDS center.

According to *Federation of American Health Systems Review*, problems centered around the failure to attract a high volume of AIDS patients, as well as the fact that many patients admitted to the facility had already exhausted their medical insurance benefits and personal financial resources.

The AIDS center has cared for about 700 patients during its year of operation, with only about a dozen of its 150-bed capacity filled on a given day. Thus, long-term prospects for the center were rendered impossible, with the cost of caring for an AIDS patient averaging about $1200 a day for inpatients and $400 a day for outpatients.

AMI estimated the cost of indigent care was $5 million during the first year. Only $250,000 had been set aside for indigent AIDS care.

AMI will continue to treat AIDS patients in its other hospitals, and support AIDS education, research and treatment through its Foundation for Immunological Disorders, the company said.