

The Role of Tobacco Advertising and Promotion in Smoking Initiation

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INTRODUCTION Tobacco industry spokespersons claim that the intent of tobacco advertising and promotion is to increase a brand's market share among current smokers, and not to recruit new smokers. They claim most adamantly that their marketing activities are not directed toward the youth market (Bynum, 1998). The public health community has been equally adamant in insisting that

- 1) tobacco companies purposely market to youths because they know that few people initiate smoking in adulthood, and
- 2) the tobacco industry's advertising and marketing strategies are indeed quite effective and are responsible for increasing the rate at which young people start smoking (Lynch and Bonnie, 1994; Giglio, 1996).

This chapter reviews the research that has been brought to bear on the issue of tobacco advertising as it impacts smoking initiation among adolescents. It also presents findings from recent research on youths in Massachusetts.

TOBACCO MARKETING AND YOUTH SMOKING: EVIDENCE FOR A CAUSAL RELATIONSHIP Causation can never be proven beyond question. The strongest evidence for causality comes from controlled experiments in which individuals are randomly assigned either to a group that will receive exposure to the causal agent—in this case, cigarette advertising—or to one or more control groups that are not exposed to the causal agent, but are identical to the exposure group in every other way. This kind of study is obviously impossible to arrange in the case of cigarette advertising and also for most other potentially harmful exposures of interest to public health professionals. However, even the randomized controlled trial, the *sine qua non* of scientific causal evidence, can allow for alternative explanations, and whole books have been written to enumerate the variety of threats to validity that can compromise interpretation of such trials (Campbell and Stanley, 1966; Kerlinger, 1985). The best that one can do is attempt to build a body of evidence that supports a causal inference.

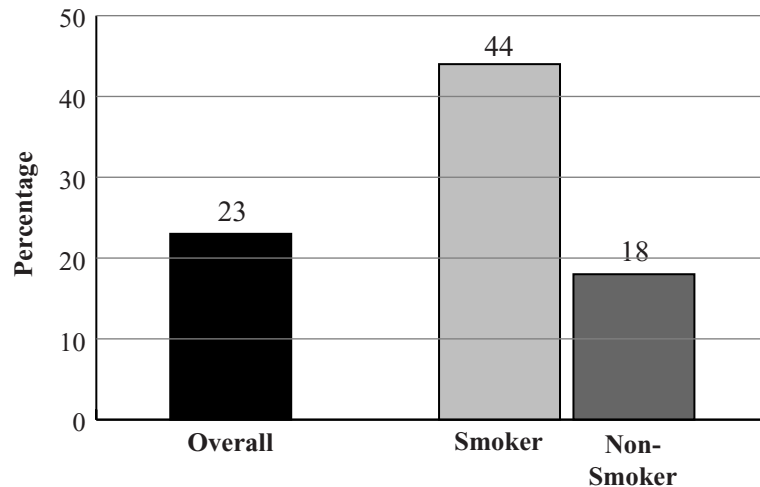
Three types of evidence must be brought to bear in support of a causal inference. At a minimum, evidence of causality must include correlation. In the case of advertising, correlational evidence would demonstrate, for example, that increases in advertising expenditures are associated with increases in smoking among youths or that, relative to youths with low levels of exposure to cigarette advertising, those with high levels of exposure are more likely to be smokers. The second type of evidence needed is that

which rules out plausible alternative explanations for the correlation. The most obvious alternative explanation for the correlational evidence described above is that smoking, or the interest in smoking, is what causes the advertising exposure or is what stimulates the advertising expenditures. The most common sort of evidence to rule out this interpretation is that which demonstrates the temporal ordering of exposure to tobacco advertising on the one hand and indicators of smoking on the other—evidence that can be provided by longitudinal studies. The third type of evidence needed to support a causal inference is evidence relevant to a mechanism by which the advertising leads to smoking initiation.

Correlational Evidence Historical analyses show that variations in advertising are associated with concomitant variations in smoking uptake among youths (Cummings *et al.*, 1995; Gilpin and Pierce, 1997). Other studies have documented a correlation between the intensity of brand-specific cigarette advertising and brand awareness, brand preference, or brand market shares among youths (Pierce *et al.*, 1991, 1994; Pierce and Gilpin, 1995; Chapman and Fitzgerald, 1982; McNeill *et al.*, 1985; Aitken *et al.*, 1987b; Goldstein *et al.*, 1987; Aitken and Eadie, 1990; DiFranza *et al.*, 1991; Hastings *et al.*, 1994; CDC, 1994; Pollay *et al.*, 1996). Some of this evidence has been criticized for choosing controversial measures (should the measures of advertising and of behavior be simultaneous or should the behavior measure be lagged?), for showing small effects, or for frequently showing no effects (Schudson, 1993; Sullum, 1998).

A large number of cross-sectional studies have reported associations between exposure to tobacco marketing on the one hand and attitudes toward smoking, susceptibility to smoking, smoking experimentation, or regular smoking among youths on the other (Charlton, 1986; Botvin *et al.*, 1991; Unger *et al.*, 1995; Evans *et al.*, 1995; Altman *et al.*, 1996; Gilpin *et al.*, 1997; Feighery *et al.*, 1998; O'Connell *et al.*, 1981; Aitken *et al.*, 1986a & 1986b, 1987a; Potts *et al.*, 1986; Klitzner *et al.*, 1991; Botvin *et al.*, 1993; Gallup International Institute, 1992; Roswell Park Cancer Institute, 1993; Slade, 1994; Coeytaux *et al.*, 1995; Schooler *et al.*, 1996; Sargent *et al.*, 1997; Richards *et al.*, 1995; Lam *et al.*, 1998). These relationships persist even when other factors shown to predict smoking initiation are controlled. The 1993 Massachusetts Tobacco Survey of youths provides evidence of this sort (Biener *et al.*, 1994). The data are from a telephone survey of a representative sample of 1,606 Massachusetts residents, aged 12 to 17 years. The survey measured involvement in cigarette promotional activities by asking respondents whether they owned a piece of clothing, a hat or bag, or some other item with a cigarette brand logo on it. The survey also asked whether they had a catalog from a tobacco company that showed what items could be obtained with coupons or proofs of purchase on cigarette packs.

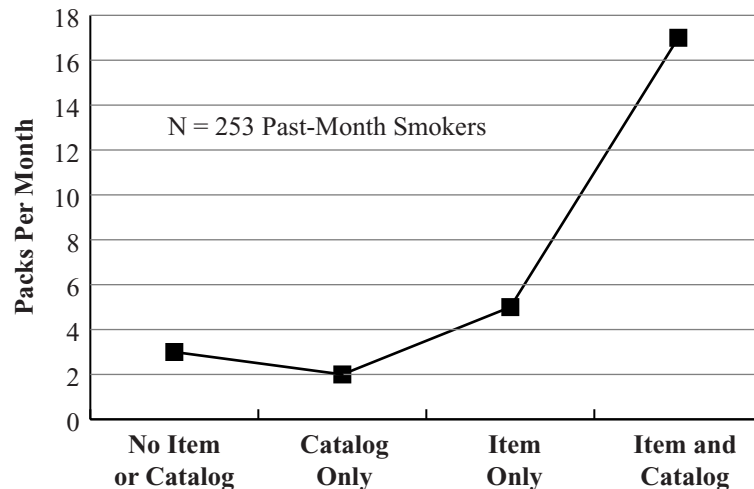
Figure 13-1
Ownership of Promotional Items among 12- to 17-Year-Old Youths—1993
Massachusetts Tobacco Survey



Twenty-three percent of the respondents indicated that they owned a promotional item. When ownership of promotional items was examined as a function of past-month smoking, multiple researchers have found a very strong relationship. Forty-four percent of adolescent smokers reported having a promotional item, compared to only 18 percent of non-smokers (Figure 13-1). It was also found that, among smokers, the greater their involvement with cigarette promotions, the more heavily they smoked (Figure 13-2). Those teen smokers who owned neither a catalog nor a promotional item reported smoking about 3 packs of cigarettes per month. Those who owned either an item or a catalog, but not both, reported smoking from 2 to 5 packs per month. Those who owned both an item and a catalog reported smoking an average of 17 packs of cigarettes per month, or approximately one-half pack per day.

The establishment of positive correlations between involvement with marketing activities and adolescent smoking behaviors provides support for the contention that tobacco marketing is, to some extent, responsible for smoking initiation. If such correlations were the only evidence, however, it would be reasonable to argue that the causal arrow might point in the opposite direction—that is, becoming a smoker may lead young people to pay more attention to tobacco advertisements and promotional schemes. Only by establishing the temporal sequencing of the interest in promotions and smoking can the argument about reverse causation be addressed. If it can be demonstrated that nonsmoking adolescents who show more interest in tobacco advertising and promotion subsequently initiate smoking at greater rates than those who show less interest, it cannot be argued that the

Figure 13-2
Smoking Intensity by Involvement with Tobacco Promotions—1993 Massachusetts Tobacco Survey



smoking came either before or simultaneously with the exposure to advertising. Providing this evidence requires longitudinal studies that make observations on the same individuals over time.

Longitudinal Studies Longitudinal studies are less common than cross-sectional ones because they are more difficult and costly to mount. Three known studies have been conducted outside of the United States. Two of these were Australian studies that demonstrated that nonsmoking youths who either approved of cigarette advertising (Alexander *et al.*, 1983) or reported that cigarette advertisements made smoking appear attractive to them (Armstrong *et al.*, 1990) were significantly more likely to start smoking over the next year or two than youths who had more negative responses to cigarette advertising at baseline. The third study found that 11- to 14-year-old Scottish youths with higher awareness of, and liking for, cigarette advertisements at baseline were more likely to develop positive intentions to smoke after a 1-year follow-up period (Aitken *et al.*, 1991).

Only one longitudinal study on the effects of advertising on youths has been published in the United States. Pierce *et al.* (1998) found that receptivity to cigarette promotional activities (measured as having a favorite cigarette advertisement, being willing to use a tobacco promotional item, and owning a tobacco promotional item) was associated with movement along a four-point smoking initiation continuum over a 3-year follow-up period among 12- to 17-year-old adolescents in California. About one-third of the movement was from being a confirmed nonsmoker to being ambivalent about whether one would smoke in the future. Although changes in this

indication of “susceptibility to smoking” have been shown to reliably predict future smoking (Jackson, 1998; Pierce *et al.*, 1995, 1996; Choi *et al.*, 1997), stronger evidence of advertising impact would link exposure at time one with actual smoking behavior at time two.

A recent longitudinal study of Massachusetts youths has made that connection (Biener and Siegel, 2000). In 1997, this study re-contacted the respondents to the Massachusetts Tobacco Survey who were between the ages of 12 and 15 in 1993. It was not possible to trace 30.7 percent of this group, but interviews were completed with 83 percent of those who could be found, for an overall follow-up response rate of 57.8 percent. For this research, a subset of the sample was used, specifically those 529 respondents who indicated at baseline that they had smoked no more than one cigarette in their lifetime.

The outcome measure was a dichotomous indicator of whether the respondent had become an established smoker, defined as having smoked 100 or more cigarettes by follow-up. This is the criterion commonly used to define “ever-smokers” among adults.

A three-level indicator of receptivity to marketing was constructed from the following two survey questions: 1) “Some tobacco companies make clothing, hats, bags, or other things with the brand on it. Do you have a piece of clothing or other thing that has a tobacco brand name or logo on it?” and 2) “Of all the cigarette advertisements you have seen, which brand’s ads do you think attract your attention the most?”

The highest level of receptivity was assigned to those who reported owning a promotional item and who named a cigarette brand in response to the second question. Those who either owned an item or named a brand were scored as being moderately receptive to marketing. Those who neither owned an item nor named a brand were scored at the lowest level of receptivity. To rule out the possibility that some third factor could be responsible for causing both receptivity to tobacco marketing and subsequent progression to established smoking, the following baseline variables—shown to relate to both receptivity to marketing and becoming an established smoker—were included as covariates: whether the respondent reported having any close friends who smoked, whether the household included any adult smokers, and the respondent’s score on a six-item scale of rebelliousness.

Finally, the level of the youth’s involvement with smoking at baseline was also controlled. Although the cohort consisted of youths who had smoked at most one cigarette in their lifetime, they were differentiated into three smoking-status groups based on whether they had ever had a puff of a cigarette and on their responses to three items measuring “susceptibility to smoking.” Respondents in the lowest risk group (confirmed nonsmokers) reported having never had even a puff of a cigarette and displayed a firm commitment not to smoke in the future. Respondents in the moderate risk group (ambivalent nonsmokers) had never puffed a cigarette, but gave less definitively negative responses to questions about the potential for smoking in the future. Respondents indicating that they had had a puff or a whole cigarette were classified in the highest risk group (early experimenters).

Results indicated that 21 percent of the respondents became established smokers during the 4-year follow-up period. Progression to established smoking was significantly more likely among Whites than among minority youths, youths who lived with at least one adult smoker, youths who reported that at least one of their close friends was a smoker, those who were early experimenters, and those scoring high in rebelliousness.

The smoking initiation rate among those high in receptivity to tobacco marketing (owned an item and named a cigarette brand as attracting their attention) was 46 percent, compared to 18 percent among those of moderate receptivity and 14 percent among those of low receptivity (chi square = 28.9, df = 2, $p < 0.0001$; Figure 13-3). The results of a multiple logistic regression that examined the impact of receptivity while controlling for all covariates revealed that adolescents who were highly receptive to marketing in 1993 were more than twice as likely to become established smokers by 1997 compared to those who were low in receptivity (OR = 2.70; 95% CI = 1.24-5.85). Being an early experimenter, having a close friend who smoked, and scoring above the mean on rebelliousness were also significant independent predictors of smoking initiation.

These findings demonstrate that paying attention to cigarette advertising and becoming involved in tobacco product promotions by obtaining an item of clothing, a sports bag, or some other piece of gear with a cigarette brand logo on it precedes, and reliably predicts, smoking initiation, even when controlling for other factors that have been shown to influence smoking uptake. Thus, even though the group of youths who were highly receptive to tobacco marketing at baseline were more likely to be rebellious, to have experimented with cigarettes, and to be exposed to parental or peer smoking at baseline, these factors taken by themselves do not fully explain the observed differences in progression to established smoking. This study demonstrates that the associations uncovered in prior studies are not solely due to increased participation in tobacco promotions among youths who have already moved along the smoking initiation continuum.

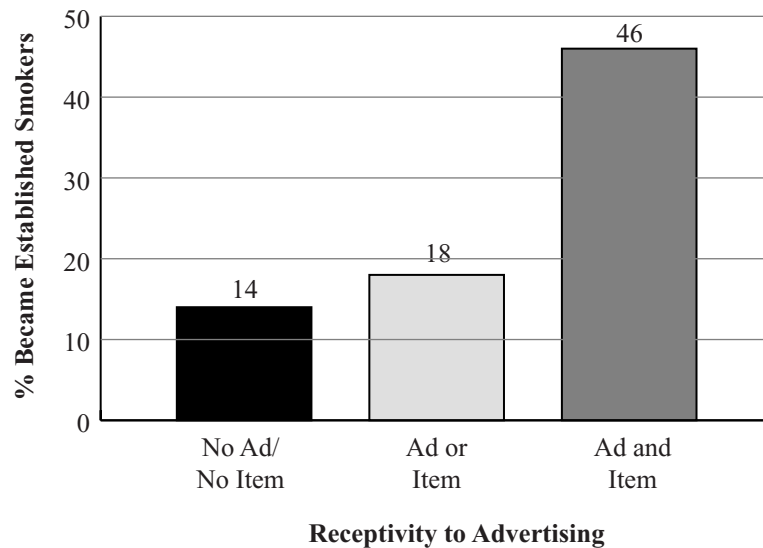
Evidence Regarding the Causal Mechanism

Cigarette advertising has been so pervasive on billboards, in storefronts, and in magazines and entertainment weeklies that most young people can name a brand whose ads capture their attention. Indeed, 75 percent of the above-mentioned sample of nonsmokers could do so. It is unlikely that simply distributing a T-shirt with a cigarette brand on it to a random sample of youths would induce a large proportion of those adolescents to become smokers. How is it, then, that noticing cigarette ads or owning a promotional item makes some adolescents more likely to become smokers?

A number of mechanisms have been hypothesized to account for the impact of tobacco advertising on youth smoking. It has been suggested that the pervasiveness of tobacco advertising gives the impression that most people are smokers (U.S. DHHS, 1994). Secondly, the advertisements undercut the fact that tobacco use is unhealthy, because the people pictured appear young, vibrant, and healthy. Thirdly, the messages conveyed by the advertising images are precisely those that would appeal to young people—

Figure 13-3

Progression to Established Smoking by Receptivity to Tobacco Advertising among Massachusetts Youths—Biener and Siegel, 2000



i.e., that smokers are independent, adventurous, popular, risk-taking, and attractive to the opposite sex (Altman *et al.*, 1987). In other words, cigarette advertising increases the perceived social value of smoking and, by doing so, increases the rate of smoking among adolescents. Additional analyses of the Massachusetts data tested that hypothesis by examining the relationships between knowledge of cigarette advertising, perceived social value of smoking, and position on the smoking initiation continuum.

The data for these analyses were primarily taken from the follow-up study of Massachusetts youths. A smoking initiation continuum was constructed from items on the baseline and follow-up surveys. This continuum combines items that assess susceptibility to future smoking, number of cigarettes smoked, and time since the last cigarette to yield an 11-point scale that ranges from 1 (has never had even a puff of a cigarette and is strongly committed to not smoking in the future) to 11 (has smoked more than 100 cigarettes in one's life and smoked on at least 20 days out of the previous 30) (U.S. DHHS, 1994).

Exposure to tobacco advertising was measured with a series of items on the follow-up survey that presented respondents with advertising slogans for various types of products with one word missing. For example: "Alive with BLANK," "Welcome to BLANK Country," and "I want to be like BLANK." The respondent was asked to fill in the blank. If the respondent provided a word for the blank, he or she was asked what product was being advertised. Six of the slogans were for cigarettes. Respondents were given one point for each blank correctly filled and one point for each cigarette brand correctly named. The total score could range from 0 to 12.

The social value of smoking was measured with six questions that had the respondents indicate whether smoking was an advantage, a disadvantage, or neutral for young people; the questions addressed a variety of dimensions. Respondents were asked, for example, "In general, do you think smoking has a good effect on how kids look, a bad effect on how kids look, or do you think it doesn't affect their looks one way or the other?" "Among people your age that you know, do you think those who smoke are more mature than those who don't, less mature, or is it about equal?" Similar questions assessed the relative advantages and disadvantages of smoking for popularity, intelligence, independence, and "how kids look at parties." Each item was scored 3 if smoking was seen as advantageous, 2 if it was seen as neutral, and 1 if it was seen as disadvantageous. The total score was the mean for all items and could range from 1.0 (smoking was seen as a disadvantage in all respects) to 3.0 (smoking was seen as an advantage in all respects).

Other variables in the analyses were the same as those described in the first study—age, gender, whether or not the respondent reported having a close friend who smoked at baseline, whether the respondent lived with at least one adult smoker, the household income level, the education level of the adult informant, and the youth's minority status.

Hierarchical multiple regression analysis was employed to estimate the effect of exposure to tobacco advertising on each respondent's position on the smoking initiation continuum at follow-up while controlling for position on the continuum at baseline and for the other control variables. Perceived social value of smoking was entered on the second step of the regression analysis. Change from Step 1 to Step 2 in the regression coefficient for exposure to tobacco advertising was computed. If the coefficient for tobacco advertising is reduced after adding perceived social value to the model, it would indicate that perceived social value is a mediating mechanism accounting for some proportion of the relationship between exposure to tobacco advertising and position on the smoking initiation continuum.

The results of the regression analysis are displayed in Table 13-1. Model 1 contains all predictors believed to be associated with adolescent smoking initiation, including the respondent's position on the uptake continuum at baseline. Step 1 includes all predictors except perceived social value of smoking. Results indicate that, when adjusting for all other predictors in the model, being at a higher level of initiation at follow-up is predicted by being at a higher level at baseline, having a close friend who smokes, having an adult smoker in the household, and knowledge of tobacco slogans. The only other predictor that approached significance was race/ethnicity, indicating that being a member of a minority group was associated with lower positions on the initiation continuum at follow-up. Respondents' scores on perceived social value of smoking were added in Step 2. As the results show (see Table 13-1), perceived social value of smoking was strongly related to position on the initiation continuum at follow-up, controlling for all other predictors. Furthermore, the coefficient for knowledge of tobacco slogans declined from 0.367 in Step 1 to 0.292 in Step 2, a reduction of 20 percent.

Table 13-1
Regression Coefficients for Predictors of Position on the Smoking Continuum at Follow-up for Cohort of Massachusetts Adolescents Surveyed in 1993 and 1997

Predictors	Model 1		Model 2	
	Step 1	Step 2	Step 1	Step 2
Age at baseline (12 to 17)	-0.223	-0.199	—	—
Gender (Male = 1; Female = 2)	0.382	0.436	—	—
Ethnicity (Non-Hisp. White = 1; Minority = 2)	-0.778	-0.572	-0.673***	-0.464
Baseline initiation continuum (1 to 11)	0.669***	0.583***	0.651***	0.574***
Close friend smokes (No = 0, Yes = 1)	1.030**	0.751*	1.084***	0.861
Adult smoker in household (No = 0; Yes = 1)	0.822*	0.673*	0.424	0.324
Household income (Under 50K = 1; Over 50K = 2)	-0.225	-0.000	—	—
Education of adult informant (HS or less = 1; More than HS = 2)	0.029	0.082	—	—
Knowledge of tobacco slogans (0 to 12)	0.367***	0.292***	0.300***	0.214***
Perceived social value of smoking (1 to 3)	—	4.857***	—	4.776***
Adjusted R square (R ²)	0.357***	0.453***	0.328***	0.439***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Model 2 repeated the multiple regression analysis, this time including only those predictors from Step 1 that were significant to at least the 0.10 level of confidence. In Step 2, when perceived social value of smoking was added to the model, the coefficient for knowledge of tobacco slogans declined from 0.300 to 0.214, a reduction of 32 percent.

This analysis indicates that knowledge of tobacco slogans is a strong predictor of movement along the smoking initiation continuum among 15- to 20-year-old Massachusetts adolescents, even controlling for their stage of initiation 4 years earlier. It also shows that, although reports of having a close friend who smokes and having an adult family member who smokes are also associated with becoming more committed to smoking, these factors do not remove or neutralize the impact of exposure to tobacco advertising. Furthermore, this analysis provides evidence that one of the reasons that tobacco advertising promotes smoking initiation among adolescents is that it increases their perception that smoking cigarettes confers social advantages to people their age. The more knowledge adolescents have about advertising slogans, the more likely they are to report that young people who smoke are more attractive, more mature and independent, and more popular than nonsmokers. The analysis suggests that from 20 to 30 percent of the power of tobacco advertising to move adolescents along the smoking initiation continuum is due to its success in increasing the perceived social value of smoking.

SUMMARY The studies reviewed here comprise an impressive body of evidence that tobacco advertising and promotional activities are important catalysts in the smoking initiation process. Any particular study, taken alone, is subject to criticism and alternative explanations. When viewed as a group, however, the conclusion that there is a causal relationship between tobacco marketing and smoking initiation seems unassailable. This is not to say that the nature of the relationship is clear or simple. Tobacco advertising has been unavoidable in the environment of adolescents and most teenagers do not become smokers. It is proposed that tobacco advertisements are particularly attractive to adolescents who, for one reason or another, are looking for an identity that the images are carefully designed to offer. These are the youths who would retain promotional items, while those whose identity needs are met in other ways would likely lose, discard, or forget about them. Having the items offers the vulnerable group an opportunity to “try on the image of a smoker” (Feighery *et al.*, 1998). Doing so is likely part of a longer term process of accepting the image and, eventually, the smoking behavior that goes with it. More careful examination of the differential effect of advertising on more and less vulnerable youths would be very useful in helping us gain a better understanding of its effect.

What can be expected for the future? The multi-state agreement with the major tobacco companies includes some restrictions on billboard and transit advertisements and also on some forms of promotional items. However, tobacco advertising images are still widely displayed inside and outside of stores, in magazines, in the entertainment sections of newspapers, and at local sponsored events. Since it is the images that hold the power to influence adolescent behavior, a more comprehensive restriction on image advertising would be warranted.

REFERENCES

- Aitken, P.P., Eadie, D.R. Reinforcing effects of cigarette advertising on under-age smoking. *British Journal of Addiction* 85(3):399–412, 1990.
- Aitken, P.P., Eadie, D.R., Hastings, G.B., Haywood, A.J. Predisposing effects of cigarette advertising on children's intentions to smoke when older. *British Journal of Addiction* 86(4):383–390, 1991.
- Aitken, P.P., Leather, D.S., O'Hagan, F.J., Squair, S.I. Children's awareness of cigarette advertisements and brand imagery. *British Journal of Addiction* 82(6):615–622, 1987a.
- Aitken, P.P., Leather, D.S., Scott, A.L., Squair, S.I. Cigarette brand preferences of teenagers and adults. *Health Promotion* 2:219–226, 1987b.
- Aitken, P.P., Leather, D.S., Squair, S.I. Children's awareness of cigarette brand sponsorship of sports and games in the UK. *Health Education Research* 1:203–211, 1986a.
- Aitken, P.P., Leather, D.S., Squair, S.I. Children's opinions on whether or not cigarette advertisements should be banned. *Health Education Journal* 45:204–207, 1986b.
- Alexander, H., Callcott, R., Dobson, A., Hards, G., Lloyd, D., O'Connell, D., Leeder, S. Cigarette smoking and drug use in schoolchildren: IV—Factors associated with changes in smoking behaviour. *International Journal of Epidemiology* 12(1):59–66, 1983.
- Altman, D., Levine, D., Coeytaux, R., Slade, J., Jaffe, R. Tobacco promotion and susceptibility to tobacco use among adolescents aged 12 through 17 years in a nationally representative sample. *American Journal of Public Health* 86(11):1590–1593, 1996.
- Altman, D.G., Slater, M.D., Albright, C.L., Maccoby, N. How an unhealthy product is sold: Cigarette advertising in magazines, 1960–1985. *Journal of Communication* 37:4, 1987.

- Armstrong, B.K., de Klerk, N.H., Shean, R.E., Dunn, D.A., Dolin, P.J. Influence of education and advertising on the uptake of smoking by children. *Medical Journal of Australia* 152(3):117–124, 1990.
- Biener, L., Fowler, F.J., Roman, A.M. *Results of the 1993 Massachusetts Tobacco Survey: Tobacco Use and Attitudes at the Start of the Massachusetts Tobacco Control Program*. Boston: Center for Survey Research, University of Massachusetts, Boston and Massachusetts Department of Public Health, 1994.
- Biener, L., Siegel, M. Tobacco marketing and adolescent smoking: More support for a causal inference. *American Journal of Public Health* 90(3):407–411, 2000.
- Botvin, E.M., Botvin, G.J., Michela, J.L., Maker, E., Filazzola, A.D. Adolescent smoking behavior and the recognition of cigarette advertisements. *Journal of Applied Social Psychology* 21:919–932, 1991.
- Botvin, G.J., Goldberg, C.J., Botvin, E.M., Dusenbury, L. Smoking behavior of adolescents exposed to cigarette advertising. *Public Health Report* 108(2):217–224, 1993.
- Bynum, R. *CDC: Joe Camel years see jump in teen smoking*. Associated Press [Atlanta, State and Regional section, Lexis/Nexis] October 9, 1998.
- Campbell, D.T., Stanley, J.C. *Experimental and Quasi-Experimental Designs for Research*. Houghton Mifflin College, 1966.
- Centers for Disease Control and Prevention. Changes in the cigarette brand preferences of adolescent smokers—United States, 1989–1993. *Morbidity Mortality Weekly Report* 43(32):577–581, 1994.
- Chapman, S., Fitzgerald, B. Brand preference and advertising recall in adolescent smokers: some implications for health promotion. *American Journal of Public Health* 72(5):491–494, 1982.
- Charlton, A. Children's advertisement-awareness related to their views on smoking. *Health Education Journal* 45:75–78, 1986.
- Choi, W.S., Pierce, J.P., Gilpin, E.A., Farkas, A.J., Berry, C.C. Which adolescent experimenters progress to established smoking in the United States. *American Journal of Preventive Medicine* 13(5):385–391, 1997.
- Coeytaux, R.R., Altman, D.G., Slade, J. Tobacco promotions in the hands of youth. *Tobacco Control* 4:253–257, 1995.
- Cummings, K., Shah, D., Shopland, D. Trends in smoking initiation among adolescents and young adults—United States, 1980–1989. *Morbidity Mortality Weekly Report* 44:521–525, 1995.
- DiFranza, J., Richards, J., Paulman, P., Wolf-Gillespie, N., Fletcher, C., Jaffe, R., Murray, D. RJR Nabisco's cartoon camel promotes Camel cigarettes to children. *Journal of the American Medical Association* 266(22):3149–3153, 1991.
- Evans, N., Farkas, A., Gilpin, E., Berry, C., Pierce, J.P. Influence of tobacco marketing and exposure to smokers on adolescent susceptibility to smoking. *Journal of the National Cancer Institute* 87(20):1538–1545, 1995.
- Feighery, E., Borzekowski, D., Schooler, C., Flora, J. Seeing, wanting, owning: the relationship between receptivity to tobacco marketing and smoking susceptibility in young people. *Tobacco Control* 7(2):123–128, 1998.
- Gallup International Institute. *Teen-age Attitudes and Behavior Concerning Tobacco*. Princeton, N.J.: The George H. Gallup International Institute, 1992.
- Giglio, J. *How Tobacco Company Advertising Influences Minors to Use Tobacco: A Summary of Independent Research and Internal Industry Documents*. Washington, D.C.: American Cancer Society, 1996.
- Gilpin, E.A., Pierce, J.P. Trends in adolescent smoking initiation in the United States: is tobacco marketing an influence? *Tobacco Control* 6(2):122–127, 1997.
- Gilpin, E., Pierce, J., Rosbrook, B. Are adolescents receptive to current sales promotion practices of the tobacco industry? *Preventive Medicine* 26(1):14–21, 1997.
- Goldstein, A., Fischer, P., Richards, J., Jr., Creten, D. Relationship between high school student smoking and recognition of cigarette advertisements. *Journal of Pediatrics* 110(3):488–491, 1987.
- Hastings, G., Ryan, H., Teer, P., MacKintosh, A. Cigarette advertising and children's smoking: why Reg was withdrawn. *British Medical Journal* 309(6959):933–937, 1994.
- Jackson, C. Cognitive susceptibility to smoking and initiation of smoking during childhood: a longitudinal study. *Preventive Medicine* 27(1):129–134, 1998.
- Kerlinger, F.N., *Foundations of Behavioral Research*. Harcourt Brace, 1985.
- Klitzner, M., Gruenewald, P., Bamberger, E. Cigarette advertising and adolescent experimentation with smoking. *British Journal of Addiction* 86(3):287–298, 1991.
- Lam, T.H., Chung, S.F., Betson, C.L., Wong, C.M., Hedley, A.J. Tobacco advertisements: one of the strongest risk factors for smoking in Hong Kong students. *American Journal of Preventive Medicine* 14(3):217–223, 1998.
- Lynch, B.S., Bonnie, R.J. (Editors). *Growing up Tobacco Free: Preventing Nicotine Addiction in Children and Youths*. Washington, D.C.: National Academy of Sciences, 1994.
- McNeill, A.D., Jarvis, M.J., West, R.J. Brand preferences among schoolchildren who smoke. *Lancet* 2(8449):271–272, 1985.

- O'Connell, D.L., Alexander, H.M., Dobson, A.J., Lloyd, D.M., Hardes, G.R., Springthorpe, H.J., Leeder, S.R. Cigarette smoking and drug use in schoolchildren. II. Factors associated with smoking. *International Journal of Epidemiology* 10(3):223-231, 1981.
- Pierce, J.P., Choi, W.S., Gilpin, E.A., Farkas, A.J., Berry, C.C. Tobacco industry promotion of cigarettes and adolescent smoking. *Journal of the American Medical Association* 279(7):511-515, 1998.
- Pierce, J.P., Choi, W.S., Gilpin, E.A., Farkas, A.J., Merritt, R.K. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychology* 15(5):355-361, 1996.
- Pierce, J.P., Farkas, A.J., Evans, N., Gilpin, E. An improved surveillance measure for adolescent smoking? *Tobacco Control* 4(suppl 1):S47-56, 1995.
- Pierce, J.P., Gilpin, E.A. A historical analysis of tobacco marketing and the uptake of smoking by youth in the United States: 1890-1977. *Health Psychology* 14(6):500-508, 1995.
- Pierce, J., Gilpin, E., Burns D., Whalen, E., Rosbrook, B., Shopland, D., Johnson, M. Does tobacco advertising target young people to start smoking? Evidence from California. *Journal of the American Medical Association* 266(22):3154-3158, 1991.
- Pierce, J., Lee, L., Gilpin, E. Smoking initiation by adolescent girls, 1944 through 1988. An association with targeted advertising. *Journal of the American Medical Association* 271(8):608-611, 1994.
- Pollay, R.W., Siddarth, S., Siegel, M., et al. The last straw? Cigarette advertising and realized market shares among youths and adults, 1979-1993. *Journal of Marketing* 60:1-16, 1996.
- Potts, H., Gillies, P., Herbert, M. Adolescent smoking and opinion of cigarette advertisements. *Health Education Research* 1:195-201, 1986.
- Richards, J.W., DiFranza, J.R., Fletcher, C., Fischer, P.M. RJ Reynolds' "Camel cash": another way to reach kids. *Tobacco Control* 4:258-260, 1995.
- Roswell Park Cancer Institute. *Survey of Alcohol, Tobacco and Drug Use among Ninth Grade Students in Erie County, 1992*. Buffalo, NY: Roswell Park Cancer Institute, 1993.
- Sargent, J., Dalton, M., Beach, M., Bernhardt, A., Pullin, D., Stevens, M. Cigarette promotional items in public schools. *Archives of Pediatric and Adolescent Medicine* 151(12):1189-1196, 1997.
- Schooler, C., Feighery, E., Flora, J. Seventh graders' self-reported exposure to cigarette marketing and its relationship to their smoking behavior. *American Journal of Public Health* 86(9):1216-1221, 1996.
- Schudson, M. Symbols and Smokers: Advertising, Health Messages and Public Policy. In: Rabin, R.L., Sugarman, S.D. (Editors). *Smoking Policy: Law, Politics and Culture*. New York: Oxford University Press, p. 211, 1993.
- Slade, J. Teenagers participate in tobacco promotions. In: *Proceedings of the 9th World Conference on Tobacco and Health*. Paris, France: October 10-14, 1994.
- Sullum, J. *For Your Own Good: The Anti-Smoking Crusade and the Tyranny of Public Health*. New York: MacMillan, 1998.
- Unger, J.B., Johnson, C.A., Rohrbach, L.A. Recognition and liking of tobacco and alcohol advertisements among adolescents: relationships with susceptibility to substance use. *Preventive Medicine* 24(5):461-466, 1995.
- U. S. Department of Health and Human Services. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 1994.