Some Potential Negative Social Consequences of Cigarette Smoking: Marketing Research in Reverse[1]

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The effects of cigarette smoking on first impressions were examined in an interlocking series of studies. Provided college students evaluated peers who were neither extremely attractive nor unattractive, smoking typically reduced the positivity of evaluations regardless of participants' smoking. Targets photographed with smoking material were rated, for example, to be less considerate, calm, disciplined, honest, healthy, well-mannered, and happy than when smoking material was absent. Replication with apparently older participants evaluating college students did not reveal smoking to influence ratings strongly. Further replication did not reveal smoking material simply to influence college students' ratings of an attractive professional model. These results were compared with earlier studies of the effects of cigarette smoking on interpersonal evaluation and an educational unit for deterring smoking was discussed.

Although for most of this century cigarette smoking may have enhanced the attractiveness of persons, this may no longer be true (Department of Health, Education, & Welfare, 1976) except for certain subcultures. A growing sentiment against cigarette smoking may help reduce smoking (Gritz, 1977; Wynder, 1977). The premise that cigarette smoking reduces attractiveness appears to have most frequently been assessed through surveys. For example, Johnston, Bachman, and O'Malley (1982b) since 1975 have asked thousands of high school seniors annually to respond to statements about cigarette smoking and, more recently, cigarette smokers (also see Department of Health, Education, & Welfare, 1976).

Because surveys, however, often explicitly sensitize participants to what is being studied, it was long ago suggested (Haire, 1950) that projective tech-

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niques be used in marketing research. Moreover, when persons describe their reactions to cigarette smokers as a class, there is no way to measure the extent reactions would hold for particular smokers. This is problematic from the standpoints of understanding the generality of responses evoked by cigarette smoking or smokers (e.g., Cook & Campbell, 1979, p. 65), and deterring smoking by presenting information about its negative consequences. Studies suggest that people presented with relevant statistical information often do not optimally utilize it in their social judgments and attributions. In contrast, target-by-target information regarding social biases against smoking may more effectively deter smoking (see, e.g., Borgida & Brekke, 1981; Borgida and Nisbett, 1977).

Studies that appear to have minimized the extent participants were aware that cigarette smoking was being examined are presented in Table 1. The findings appear more variable than survey findings: Cigarette smoking has either disadvantaged, advantaged, or not influenced evaluative behavior. Nevertheless, these findings suggest that smoking may typically disadvantage targets. This is so because even if a "similarity" effect prevails, such as in the first and last studies in the table, the vast majority of Americans do not smoke.

We conducted a series of interlocking experiments at about the same time as most of the research reviewed above. We believed that a systematic approach would be most informative about the potential social consequences of cigarette smoking. We used photographed targets because they offer greater experimental control and are easier to use than live targets. Most participants were college students because of convenience and the possibility that knowledge of our findings might deter their smoking. Nearly all targets were neither extremely attractive nor unattractive because knowledge of the effects of smoking for such targets may more effectively deter smoking than knowledge about effects for extremely attractive targets. Finally, we explicitly examined cigarette smoking on a target-by-target basis.

Method[3]

Participants

The number of participants and location in which they were sampled are indicated in Table 2. The "campus" experiments were conducted at either the University of Wisconsin–Milwaukee or Marquette University. The "airport" studies were conducted at the local municipal airport.[4] Persons were hap-

[3]We thank Gary Behagen, Cathy Beres, Allen Bostwick, William Braier, Christine Doerfler, Colleen Nieves, Connie Smith, Tammy Ribbens, Joel Rynders, Terry Wellin, and Mary Zelenko for their help.

[4]Participants were interviewed throughout the airport, including areas controlled by Republic Airlines whose special cooperation we acknowledge.

Table 1

Experimental Studies of the Effects of Cigarette Smoking on Interpersonal Evaluations

Live Targets	
Bleda & Sandman (1977)	
1. Enlisted men.	
2. Target[a] was an enlisted man who either did not smoke, smoked courteously, or smoked discourteously (by exhaling smoke toward a participant).	
3. Nonsmoking participants rated the target not smoking most favorably, "refraining smokers" rated the target courteously smoking most favorably, "indulging smokers" rated the target discourteously smoking most favorably.	
Bleda & Bleda (1978)	
1. An adult sitting alone on a bench in a shopping mall.	
2. Target[b] sat 12 inches from the participant and either did not smoke or exhaled smoke discourteously toward participant.	
3. Participant most likely to leave bench when target smoked.	
Zillman, Baron, & Tamborini (1981)	
1. Undergraduate interacted with target (experimenter) and assistant.	
2. Either target or assistant[c] smoked in smoking conditions; neither person smoked in control condition.	
3. Regardless of source of smoke, ratings of targets were most negative in the smoking conditions.	
Photographed Targets	
Weir (1967)	
1. 16- and 17-year-old science students.	
2. Targets[d] photographed with smoking material; material removed by retouching to produce control photographs.	
3. Participants checked adjectives; data analysis obscure; no results were presented for female targets perhaps because the smoking material was difficult to discern.	
Carll (1978)	
1. Undergraduate cigarette smokers and nonsmokers.	

continued

(Table 1 *continued*)

2. College student targets[e] photographed with smokng material; material removed by retouching to produce control photographs.
3. Only smokers' ratings influenced by smoking material; targets smoking were rated most positively.

Delaney (1978)

1. 4th, 7th, and 11th graders.
2. Used same photographs as Carll (personal communication, 1982).
3. Targets smoking rated least conforming, dependable, careful, and healthy, and most daring.

Polivy, Hackett, & Bycio (1979)

1. Undergraduate cigarette smokers and nonsmokers.
2. College student targets[d] photographed twice, with and without smoking material.
3. Only nonsmokers' ratings influenced by smoking material; targets not smoking rated most positively.[f]

Note. Because of space limitations, information is only provided regarding participants (1.), smoking material manipulations (2.), and effect of manipulation (3.).
[a]Only one target was used. [b]Two male and three female targets were used, but findings for individual targets were not presented. [c]One male experimenter-assistant pair and one female experimenter-assistant pair were used. Effects were invariant across pairs. [d]Two male targets and two female targets were used. [e]One male target and one female target were used. [f]Interaction pattern not reported for each target.

hazardly sampled at these locations with about 15% of those approached declining participation.

Material

For Experiment 1, three-quarter length, color portraits of three male and three female undergraduates were made. Targets held a lit cigarette in their right hand; as a control, identical prints were cropped to remove the cigarette, right hand, and a portion of the lower arm.

For the second through sixth experiments, color photographs were produced that eliminated the confound between the manipulation and the size of the photograph. New targets (see the exception for Experiment 4 in Table 2)

Table 2

Methodological Details

Experiment	Time	Number of participants	Location	Number of targets	Survey
1	1978	513	Campus	3 men 3 women	Long
2	1979	145	Airport	1 man 1 woman	Short
3	1980	143	Airport	1 man 1 woman	Short
4	1980	240	Campus	Same targets as Exp. 2	Long
5	1981	256	Campus	1 man 1 woman	Short
6	1981	256	Campus	1 man 1 woman	Short
7	1981	260	Campus	1 woman	Short

Note. The following items appeared on the Long Survey: (1) sexually attractive/sexually repulsive, (2) inconsiderate/considerate, (3) impulsive/self-controlled, (4) unsociable/sociable, (5) creative/uncreative, (6) nervous/calm, (7) attractive/unattractive, (8) relaxed/tense, (9) unimaginative/imaginative, (10) unpopular/popular, (11) mature/immature, (12) disciplined/undisciplined, (13) honest/dishonest, 14) healthy/unhealthy, (15) messy/neat, (16) intelligent/unintelligent, (17) ill-mannered/well-mannered, (18) happy/unhappy, (19) bad-smelling/good-smelling, (20) use illegal addictive substances (e.g., heroin), (21) become an alcoholic, (22) be recommended for a job involving interacting with the public, and (23) be an inattentive driver. The Short Survey was formed by revising items 1 (sexy/unsexy), 4 (unfriendly/friendly), 7 (physically attractive/unattractive), 20 (become a heroin addict), 22 (be recommended for a job involving working with the public), and 23 (be a safe and careful driver). Items 3, 8, 9, and 19 were deleted and a happy/unhappy item was added.

were photographed with their hands on a horizontal surface, as illustrated at the left of Figure 1. All targets held a lit cigarette in their right hand which was near a cigarette package. Across targets, the brand of cigarettes varied as well as the presence of a lighter, pack of matches, or ashtray. All targets wore a blue sweater.

Figure 1. Photograph format for Experiment 2 through Experiment 6.

In the smoking material condition, the right side of the complete photograph was cropped, as illustrated by the vertical line at the left of Figure 1. Two types of control photographs were produced. The true image control was constructed by cropping the left portion of the complete photograph, so that all smoking material was removed, as illustrated at the center of Figure 1. The mirror image control was constructed by reversing the negative and analogously cropping the right portion of the resulting photograph, as illustrated at the right of Figure 1. Thus, for each target three photographs were produced.[5]

In our last experiment, we examined the effect of smoking material on evaluations of an *attractive* professional model. We copied only the reclining model and her hand-held cigarette from the Virginia Slims advertisement on the inside cover of the February 21, 1981 issue of *Time*; as a control, the cigarette was removed.

Procedure

Participants were randomly assigned to a photograph; the experimenter did not know which photograph was presented until the data had been collected. Participants were told that first impressions were being studied. They were asked to carefully examine a photograph and record their first reactions by placing a check mark anywhere along a series of rating scales. Participants were asked to work fairly fast without lingering over items.

The Long Survey included 23 items with ratings made on 85 mm scales. The Short Survey—initially designed for the airport—included 20 items with ratings made on a 120 mm scale. The items were selected for their relevance to the manipulation and their clear evaluative implications. The items are presented in Table 2. For the items that included verbs, participants indicated the likelihood of the action.

After completing the survey, participants indicated whether they regularly smoked cigarettes. If they said that they did not smoke cigarettes, they were asked if they ever had regularly smoked cigarettes. Participants were classified as either smokers, nonsmokers, or reformed smokers.

For the last experiment, the procedure was modified since a model from a national advertisement was used. When participants first saw the photograph, they were asked if they had ever seen the target. If they responded affirmatively, they were asked to rate the target with respect to her life when not modeling. If they responded negatively, they were simply asked to rate her.

[5]Since participants did not know the targets, their evaluations should not differ across the true image control and the mirror image control (but, see Mita, Dermer, & Knight, 1977). For the fourth through sixth experiments, we tested for the type of control photograph and we could not at all detect an effect.

Results and Discussions

Analyses

Only data for participants completing all items were analyzed. Only findings for the smoking material manipulation and its interactions with other factors are described. Due to unequal cell frequencies, the sequence in which effects were tested is important.[6] Because we wished to estimate treatment effects uninfluenced by cell frequencies, a full rank analysis of variance model was used with the contribution of each effect tested last (see, e.g., Edwards, 1979, pp. 172–174). Therefore, the marginal means presented in this report are unweighted averages of the cell means.

Because analyses of a composite are an economical way of examining smoking material effects on a target-by-target basis, responses to items were first transformed so that high scores uniformly indicated more favorable impressions. An alpha coefficient for the items, based on the pooled within-cell covariance matrix, was next calculated. In all experiments, coefficients exceeded .81. Therefore, responses were summed across items to form an impression composite. Composite means have been divided by the number of contributing items to facilitate interpretation.

Experiment 1

The data were organized into 48 cells where the factors were targets' sex, target person, smoking material manipulation, and participants' smoking (smoker, nonsmoker). All factors were crossed except the target person factor which was nested within the targets' sex factor.

Impression composite. Targets smoking were, on the average, evaluated more negatively ($M = 45$) than targets not smoking ($M = 49$, $F[1,465] = 23.43$, $p < .0001$). The effect of smoking material did, however, depend on targets' sex, $F(1,465) = 3.85, p < .05$, such that females were more disadvantaged by smoking than were males.

It should be noted, however, that smoking typically produced evaluative decrements, regardless of targets' sex. This can be seen in Figure 2 where evaluations of targets smoking are indicated with a cigarette, and evaluations of targets not smoking are indicated with a check. Except for the first target, it can be clearly seen that ratings of each target are consistent with the smoking material main effect that is depicted on the first scale. Whereas smoking did not produce a reliable decrement for the first male target ($p = .99$) and third

[6]Special thanks are due Robert Mislevy, Michael Waller, and Gilbert Walter for advice regarding the nonorthogonal analysis of variance.

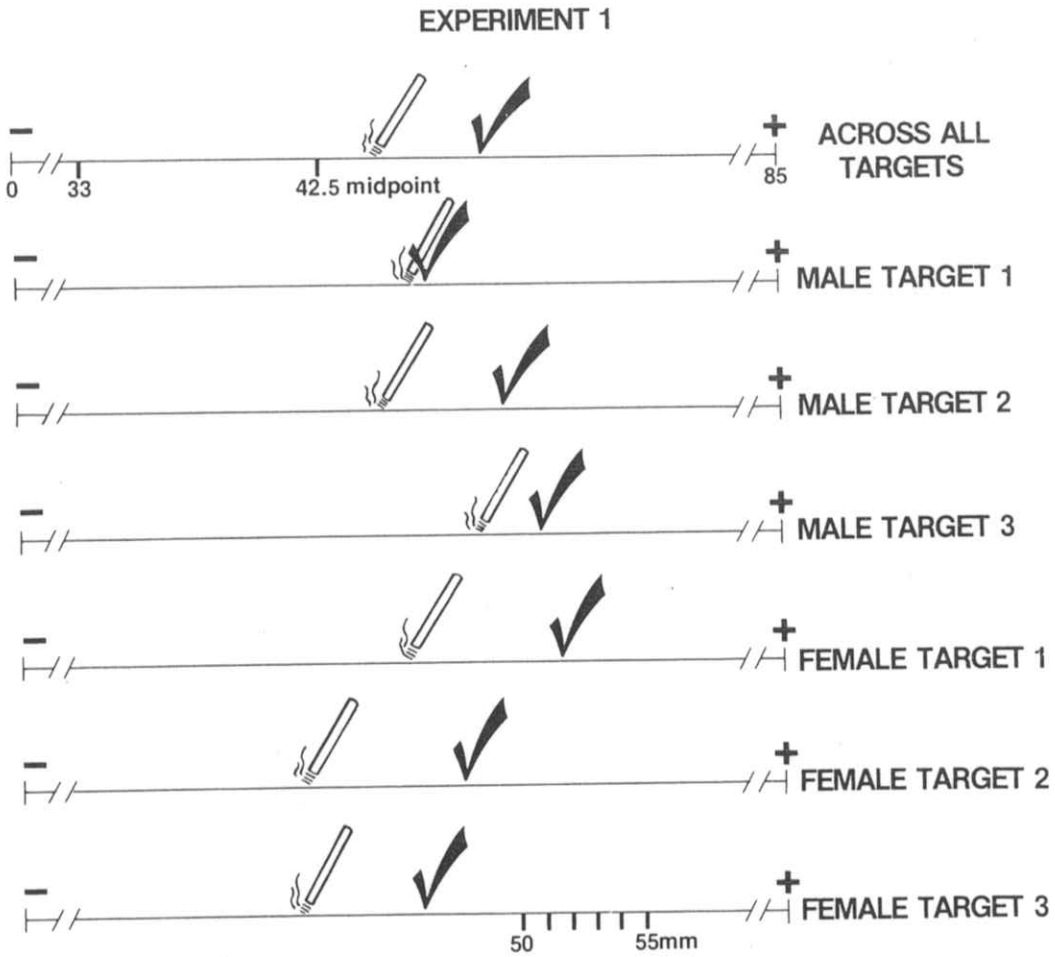

Figure 2. Average impression composite for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), across targets and for each target in Experiment 1. The scale was 85mm long.

male target ($p = .27$), it produced reliable decrements ($p < .02$) for remaining targets.

Individual items. Analyses of individual items permit specification of judgments evoked by smoking. Multivariate analysis of variance revealed a reliable smoking material effect, $F(23,443) = 3.81, p < .0001$. The 14 items yielding univariate effects are presented in Figure 3. For each item, smoking disadvantaged targets.

The multivariate smoking material main effect was qualified, somewhat, by a reliable multivariate smoking material by targets' sex interaction, $F(23,443) = 1.63, p < .03$. Of the 14 items yielding a reliable smoking material main effect, four items—mature, disciplined, healthy, and well-mannered—yielded univariate smoking material by targets' sex interactions. For female

targets, the smoking produced reliable evaluative decrements; whereas for male targets, smoking was ineffective, except for judgments of health.

Univariate smoking material by targets' sex interactions were also detected for the relaxed and neat items; the interaction patterns were similar to those described above. For the item "being recommended for a job involving in-

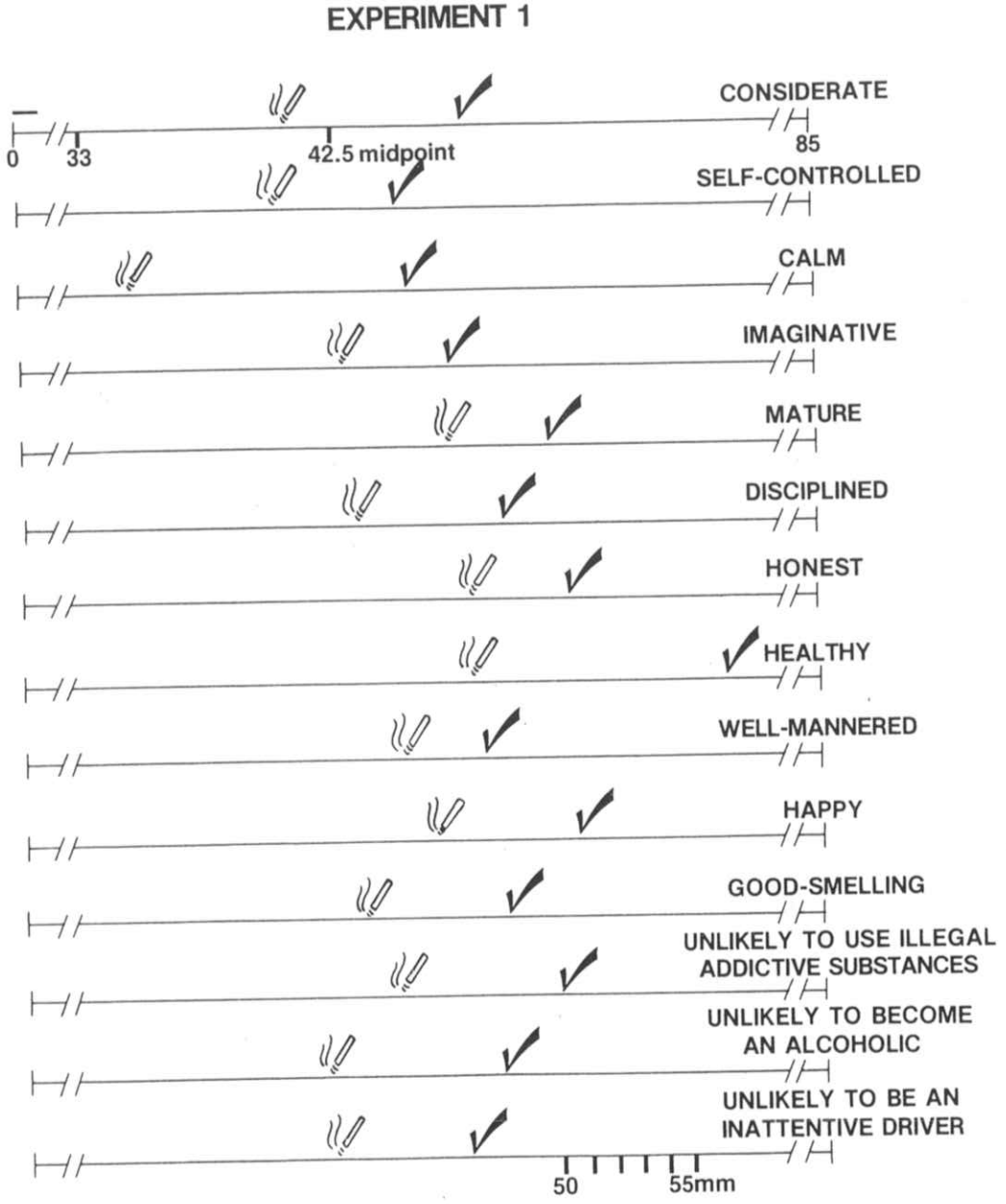

Figure 3. Average ratings for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), for the 14 items yielding reliable smoking material main effects in Experiment 1. The scale was 85mm long.

teracting with the public," an interaction pattern was detected in which only male targets were disadvantaged.

The univariate smoking material by targets' sex interactions clearly indicate that the decremental effect of smoking depends on the targets' sex. Nevertheless, smoking often produced evaluative decrements for each target and item when responses were averaged across participants. Consider the weakest case—the first male target. He was evaluated on 23 items either smoking or not smoking. For 16 items, the average evaluation was most negative when he smoked. For male targets two and three, and female targets one through three, the corresponding "disadvantaged" values were 22, 18, 22, 23, and 19, respectively. The average "disadvantaged" value was 20; or expressed as a percentage of the number of items, about 87.

Discussion

For the impression composite, four of the six targets were reliably disadvantaged by smoking. The first male target's evaluations, of course, were not at all reliably influenced. This target appeared most masculine. The targets' sex by smoking material interaction was, of course, partially due to this target. Figure 2, however, indicates that females generally were more disadvantaged by smoking material than were males. The findings for the individual items paralleled the results for the impression composite. Fourteen of the 23 items yielded reliable decremental smoking material effects.

Our first experiment indicated that smoking typically disadvantaged targets. Inspection of Figure 2 reveals the magnitude of smoking effects to be small, but the nature of the evaluations, indicated in Figure 3, suggests social and economic consequences that could deter smoking.

These results, of course, were encouraging. Each control photograph was, however, smaller than its smoking material counterpart. We thought it desirable to replicate our work without this confound. More importantly, our first experiment only used student participants. We wondered whether older persons with longer exposure to information glamorizing smoking would respond as our college students. So, we sampled older persons in the next two experiments.

Experiment 2 and Experiment 3

Smoking material did not reliably affect evaluations in Experiment 2. We thought the failure to replicate the first experiment might be due to the new targets, so we replicated Experiment 2 with two new targets. For this report, the data for the two experiments were organized into 32 cells resulting from crossing a replication factor (Experiment 2, Experiment 3) with the targets'

sex, smoking material manipulation, participants' sex, and participants' smoking factors, as defined in Experiment 1.

Impression composite. In contrast to Experiment 1, smoking material did not produce a reliable main effect, $F(1,256) = 1.74, p < .19$. The mean for targets smoking was only slightly less ($M = 60$) than the mean for targets not smoking ($M = 63$). Examination of the average evaluation for each target revealed that targets smoking were evaluated less positively than when not smoking, with the exception of a reversal for a female target. None of these differences was, however, reliable.

Individual items. Multivariate analyses of variance revealed a reliable smoking material main effect, $F(20,237) = 3.18, p < .0001$. Univariate effects were detected for only three items: considerate, calm, and healthy. For each item, smoking disadvantaged targets. The effect of smoking often depended on other factors, but in no case did smoking reliably enhance evaluations.

Smoking was not associated with substantial decrements for each target and item when responses were averaged across participants. In Experiment 2, the male target was evaluated along 20 scales, either smoking or not smoking. For 13 items, the average evaluation was most negative when he smoked. For the female target in Experiment 2 and the male and female targets in Experiment 3, corresponding "disadvantaged" values were 13, 12, and 8, respectively. The average "disadvantaged" value was 11.5; or expressed as a percentage of the number of items, about 58. This value, of course, is far less than the "disadvantaged" percentage of 87 reported for the first experiment.

Discussion

The failure to replicate the results of the first experiment may be attributed to many factors, including differences in the type of participant, setting, items, rating scale format, targets, and photograph format. The absence of a general smoking material effect across targets suggested that the failure was not due to the new targets. Since most people believe smoking is unhealthy, ratings of health may be considered an indirect manipulation check. Participants discerned the smoking material since targets were judged less healthy when smoking material was present than when absent. The failure to replicate, therefore, cannot be attributed to participants not noticing smoking material.

Nevertheless, when smoking was found ineffective in Experiment 2, Experiment 3 had not been conducted. So, immediately after analyzing Experiment 2, we duplicated the procedures of Experiment 1 except for using the targets of Experiment 2. Clearly, if we found the targets of Experiment 2 to produce consistent smoking material effects, the failure to replicate could neither be attributed to the new targets nor the new photograph format. So, we again sampled persons on campus.

Experiment 4

The data were organized into 24 cells resulting from crossing the following factors: targets' sex, smoking material manipulation, participants' sex, and participants' smoking (smoker, nonsmoker, reformed smoker). Except for the latter factor, the factors were defined as in Experiment 1.

Impression composite. Analysis of variance revealed targets smoking, on the average, to be evaluated more negatively ($M = 41$) than those not smoking ($M = 49$, $F[1,216] = 46.70$, $p < .0001$). Furthermore, smoking material interacted with the targets' sex, $F(1,216) = 4.35$, $p < .04$. The smoking material simple effect was reliable for each target, with the decrement being greater for the female target than for the male target. The main effect and simple effect for each target are illustrated in Figure 4.

Individual items. The multivariate analysis of variance for the smoking material manipulation was reliable, $F(23,194) = 6.56, p < .0001$. The 17 items yielding univariate effects are presented in Figure 5; smoking disadvantaged targets.

Given the absence of any substantial interaction with the smoking material manipulation, it is not surprising that "disadvantaged" values for the male and female targets were very high—21 and 23, respectively. These values expressed as a percentage of the number of items are 91 and 100, respectively.

Discussion

Since the same photographs were used in this experiment and Experiment 2, neither the target person nor photograph format variables can explain the

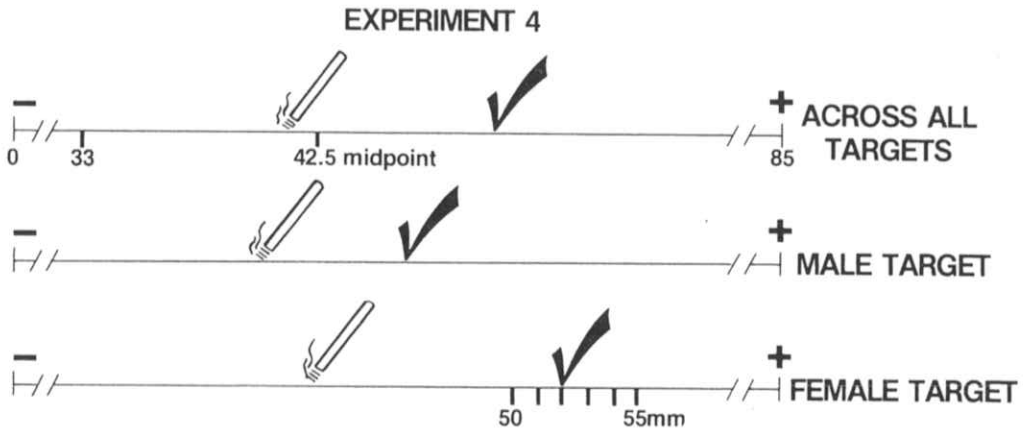

Figure 4. Average impression composite for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), across targets and for each target in Experiment 4. The scale was 85mm long.

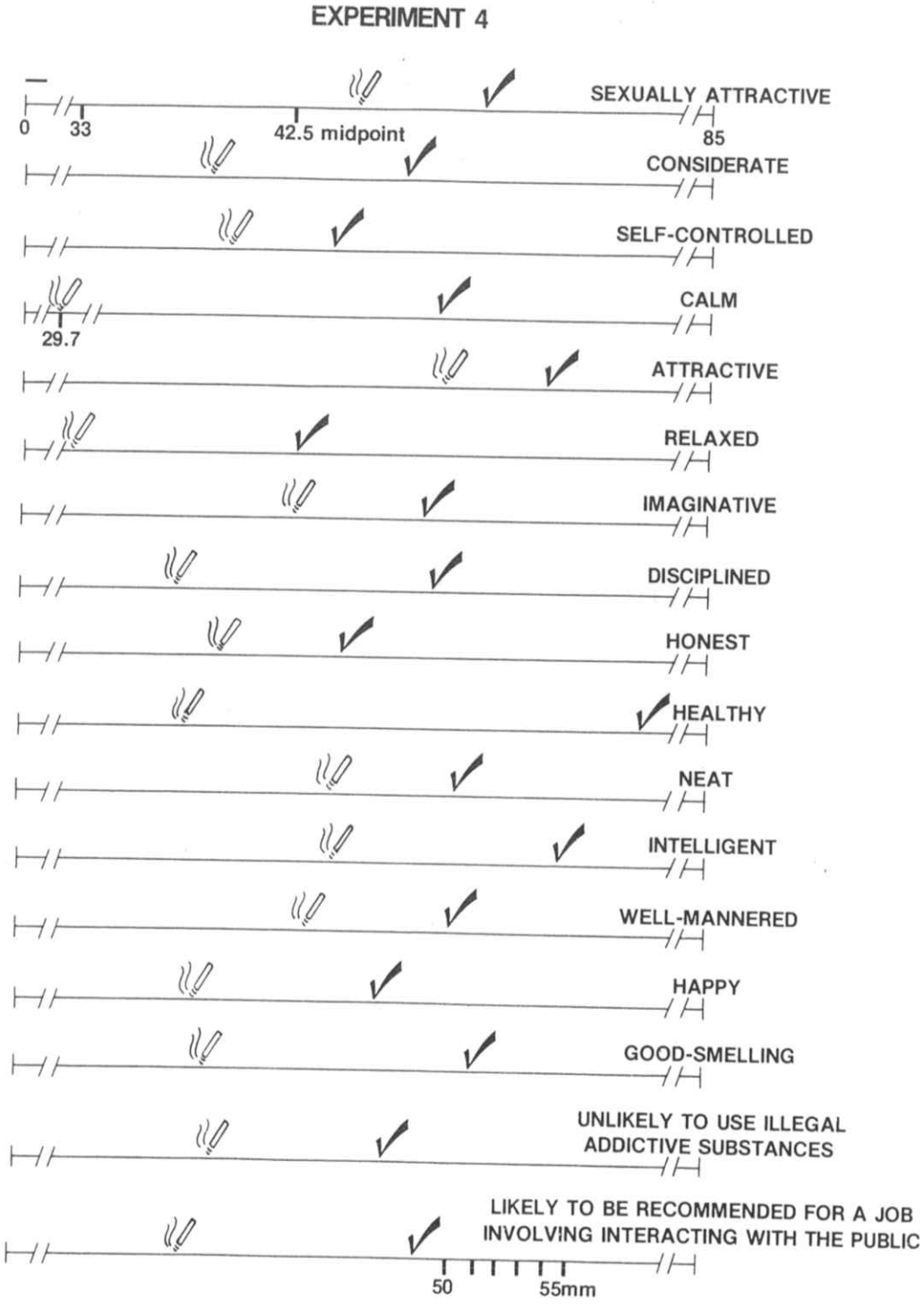

Figure 5. Average ratings for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), for the 17 items yielding reliable smoking material main effects in Experiment 4. The scale was 85mm long.

absence of a strong smoking material effect in the second and third experiments. It is, of course, remotely possible that the new survey may have been responsible for the failure to replicate Experiment 1. In the fifth and sixth experiments, therefore, the new survey was used. Because we had found the effects of smoking material to be quite general across targets when participants were surveyed on campus, new targets were also used. Detecting a smoking material effect in these studies would indicate that the failures to replicate were not due to the new survey. Furthermore, the use of new photographic targets would enhance generality.

Experiment 5 and Experiment 6

The analysis was identical to that of the second and third experiments.

Impression composite. Targets smoking were more negatively evaluated ($M = 62$) than those not smoking ($M = 72$, $F[1,480] = 64.61$, $p < .0001$). This main effect and the corresponding effect for each target are illustrated in Figure 6. Each target was reliably disadvantaged.

Although smoking material did not interact with targets' sex ($p < .28$) as in the first and fourth experiments, these factors did interact with the replication factor. For Experiment 5, which was conducted by a woman, the female target tended to be more disadvantaged by smoking than was the male target,

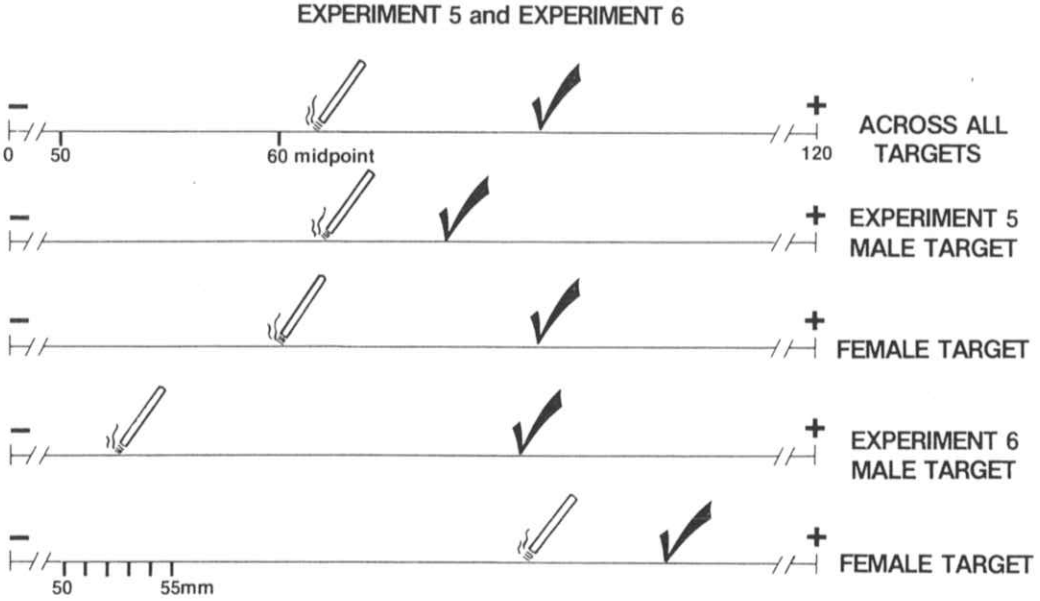

Figure 6. Average impression composite for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), across targets and for each target in Experiment 5 and Experiment 6. The scale was 120mm long.

$F(1,480) = 3.05, p = .08$. For Experiment 6, however, where the experimenter was a male, the male target was more disadvantaged by smoking than was the female target, $F(1,480) = 10.82, p = .0001$. Curiously three women and one man conducted the first experiment; the fourth experiment was conducted by a woman. But reanalysis of the first experiment revealed the smoking material by sex of target interaction to be independent of the experimenter.

It must be noted that the magnitude of the smoking material effect often depended on other factors. But tests for smoking material simple effects almost always resulted in a reliable decrement or at least a trend for targets to be disadvantaged.

Individual items. The multivariate analysis of variance for the smoking material manipulation was reliable, $F(20,461) = 9.11, p < .0001$. The 16 items yielding univariate effects are presented in Figure 7. Smoking disadvantaged targets. As for the composite, smoking material main effects depended on other factors. Examination of some complex interactions, however, revealed a target or targets to be reliably advantaged by smoking!

Even though many interactions were detected, smoking material did generally disadvantage targets when responses were averaged across participants. In Experiment 5, the male target was evaluated along 20 dimensions, either smoking or not smoking. For 17 items, the average evaluation was most negative when he smoked. For the female target in Experiment 5, and the male and female targets in Experiment 6, corresponding "disadvantaged" values were 18, 19, and 16, respectively. The average "disadvantaged" value was 17.5; or expressed as a percentage of the number of items, about 88. This is consistent with the first and fourth experiments.

Experiment 7

To test the generality of the disadvantaging effect of smoking material, college students responded to an *attractive* model either smoking or not smoking. The data were organized as in the fourth experiment with a knowledge factor (participant recalled or had not recalled seeing target before) replacing the targets' sex factor.

Impression composite. No effects were detected for the composite. Even participants considering the target a stranger did not rate her reliably more negatively when she smoked ($M = 84$) than when she did not smoke ($M = 86$).

Individual items. The multivariate analysis of variance for the smoking material manipulation was not reliable. Instead, a complex four-way multivariate interaction was detected. The "disadvantaged" value for participants considering the target a stranger was 6; or when expressed as a percentage of the number of items, a mere 30!

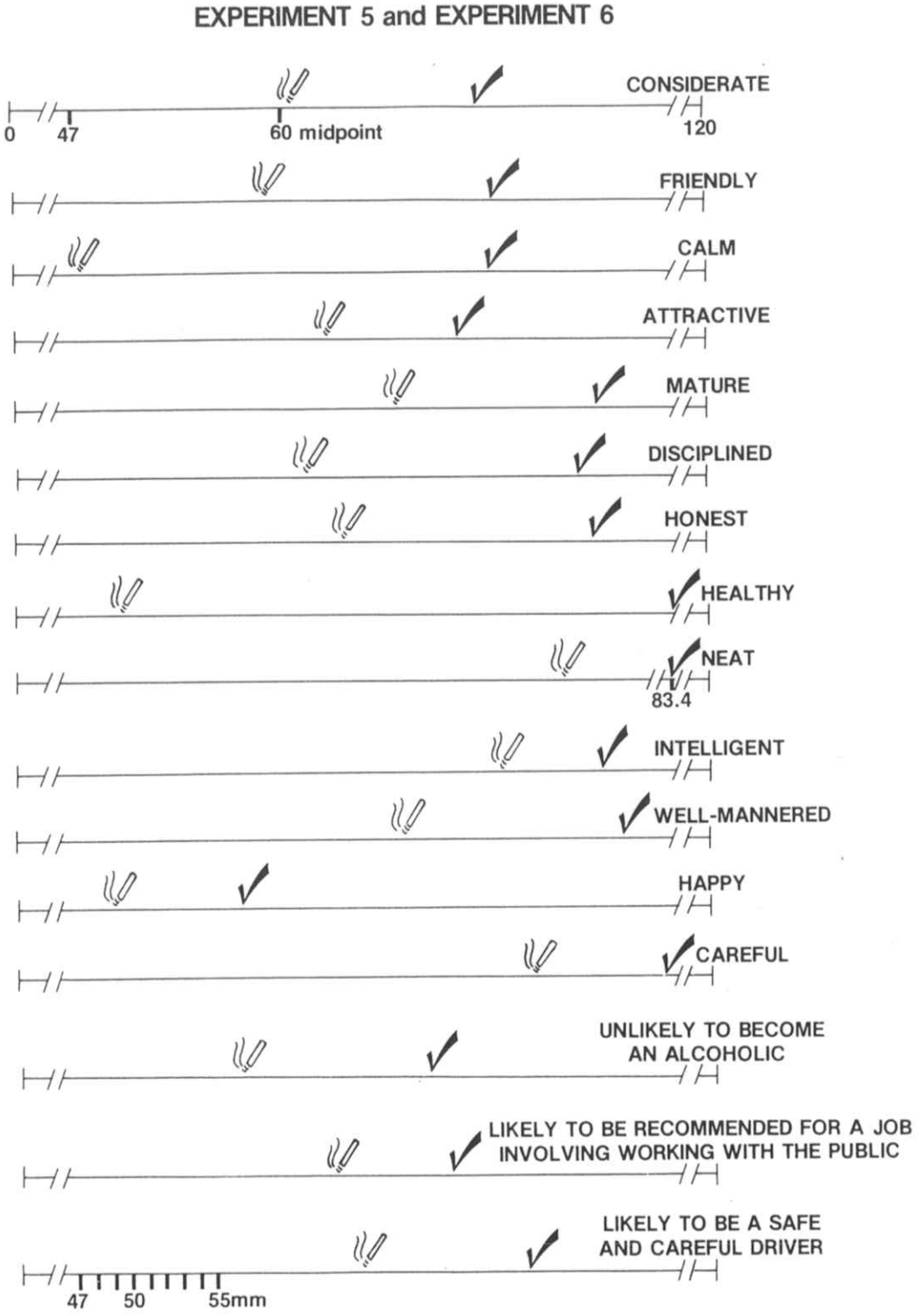

Figure 7. Average ratings for targets smoking (indicated with a cigarette) and targets not smoking (indicated with a check), for the 16 items yielding reliable smoking material main effects in Experiment 5 and Experiment 6. The scale was 120mm long.

Discussion

Although the same survey used in the "successful" fifth and sixth experiments was used and the number of participants exceeded that of the "successful" fourth experiment, smoking was not found simply to disadvantage this *attractive* target. It is possible that participants did not notice the cigarette since not even responses for the health item covaried with the smoking material manipulation, even for participants considering the target a stranger. But it may also be true that the effects of smoking depend on many still unspecified factors.

General Discussion

Major Findings

Provided participants were college students, findings for the impression composite indicate that smoking typically disadvantaged college student targets, who were neither extremely attractive nor unattractive, in this first impression situation. More precisely, smoking disadvantaged 10 of 12 targets. Although the magnitude of the effect sometimes depended on other factors, the direction of the effect was quite constant.

Findings for the individual items more precisely specify the prejudicial responses evoked by smoking. Across Figures 3, 5, and 7, it can be seen that smoking produced decrements with respect to the considerate, calm, disciplined, honest, healthy, well-mannered, and happy items. Moreover, smoking-produced decrements are also depicted in at least two of these figures (with some minor variations in wording) for the self-controlled, imaginative, mature, good-smelling, unlikely to use illegal addictive substances, unlikely to become an alcoholic, unlikely to be an inattentive driver, unlikely to be recommended for a job interacting with the public, intelligent, neat, and physically attractive items. Although the specific items along which smoking material effects were detected varied across studies, the direction of the effect paralleled findings for the composite.

The unfavorable effects of cigarette smoking may be due to health education portrayals of smoking as unhealthy, unclean, and unattractive. But the responses may also be due to actual covariation between smoking and various dispositions (see Secord and Backman's [1974] excellent discussion of stereotyping). In comparison to nonsmokers, smokers[7] are more likely to score higher on measures of impulsivity, antisocial tendencies (Smith, 1970), and

[7] Unfortunately, researchers have not always differentiated cigarette smoking from other forms of tobacco smoking in examining the correlates of smoking.

neuroticism (Kozlowski, 1979); indicate a higher rate of alcohol abuse, drunken driving (Matarazzo et al., 1982), and illicit drug use (Johnston, Bachman, & O'Malley, 1982a); and indicate earning lower grades in high school (Bachman, Johnston, & O'Malley, 1981).

Although smoking disadvantaged college-age targets *for many items* when participants were college students, only three items revealed effects when participants were older. Moreover, for two of the latter items (calm, healthy) the effects were reliably larger in the fifth and sixth studies (which used college students) than in the second and third studies (which used older persons). Additional analyses did not indicate the differential findings to be entirely due to differential statistical power.

We suspect that cohort differences between participant groups may have moderated the smoking material effect. For example, younger college students may have been exposed to more information about the adverse effects of smoking and less information about glamorous smokers than older participants. This interepretation, of course, is quite speculative.

Relation to Previous Research

In other research, the effect of smoking material on interpersonal judgment sometimes depends on whether participants smoked cigarettes. To approximate the analytic procedures of these studies, we reanalyzed our data by removing responses of reformed smokers. The expected interaction was not, however, detected. Another possibility was the dispositional versus the preferential nature of ratings. In our experiments, participants often rated targets regarding dispositions such as consideration, calmness, etc., that ostensively are target characteristics. In contrast, other studies required preferential ratings such as "I feel that I would probably like this person _____ much." which may more likely depend on participant characteristics. Unfortunately, this distinction did not permit us to understand when participants' smoking would moderate smoking material effects.

The least parsimonious but most plausible account of the differing findings across studies is that reactions to cigarette smoking depend on subcultural and historical variables. Clearly, prejudice against cigarette smokers or cigarette smoking is not a basic phenomenon.

Implications

Surveys have indicated that cigarette smoking is a social liability; our less reactive procedures corroborate survey findings. Indeed, considered together with other studies of smoking material reviewed earlier, the handicapping effect of smoking appears substantial. We are not confident, however, that

negative reactions to cigarette smoking are so great or robust that knowledge of them presently could substantially alter smoking.

Magnitude. First, the magnitude of the effects of smoking material on interpersonal judgment often appears quite small relative to the potential range. In our first experiment, for example, the material produced an evaluative decrement of 4 mm across targets which expressed as a percentage of the 85 mm scale is 4.7. The average rating of targets smoking was typically at the scale midpoint or at a slightly negative position. Moreover, inspection of the distribution of responses to targets, although revealing more extreme ratings, indicated that the distributions for targets smoking and not smoking overlapped tremendously.

The counterargument can be made, of course, that smoking produced small differences and only slightly negative responses because our manipulation was quite weak. In particular, our targets did not produce noxious cigarette smoke which should further disadvantage smokers. Zillmann, Baron, and Tamborini (1981) did use live targets, cigarette smoke, and had college students rate the extent targets should be reappointed research assistants and the pleasantness of their interpersonal manner. The authors indicated that the findings for these two ratings produced the largest differences. For these measures combined, the smoking material produced a decrement spanning 12% of the rating scale. Although this is larger than the differences typically detected in our research, the average rating of targets smoking was just above the scale midpoint. Thus, an obviously stronger manipulation does not appear to have evoked strong negative reactions.

Recently Barton, Chassin, Presson, and Sherman (1982) examined sixth graders' and seventh graders' responses to slides of same-age children either holding or not holding cigarettes. For both grades, smokers were rated least: healthy, wise, good, obedient, and likely to act their age. Although smoking reduced the positivity of ratings, and the reduction expressed as a percentage of the scale range was larger than that detected in the studies reviewed above, smokers were typically rated close to "a little" or at the scale midpoint. For example, sixth graders typically rated smokers "a little" bad whereas tenth graders rated smokers at the midpoint of the "good-bad" scale. Not even school children, presumably having been exposed to health education programs regarding smoking, uniformly rate smokers extremely negatively.

Robustness. Several findings suggest that the disadvantaging effect of cigarette smoking is fragile. Barton et al. (1982) initially planned to assess the effects of smoking as a within-subjects factor. They, however, detected order effects. If the effects of smoking substantially interact with order of presentation, they would not seem to be robust.

The greatest threat to the assertion that cigarette smoking is socially undesirable is, of course, discovering desirable effects (see in particular Table 1,

Carll [1978])! In our literature review, we noted that cigarette smokers were sometimes advantaged but this was typically due to the ratings of cigarette smokers. Barton et al., like Delaney (1978), only studied young people and reported that the reactions of these persons to smoking were ambivalent. In Barton et al.'s research, for example, smokers were rated most positively with respect to being tough, being interested in the opposite sex, and wanting to be with the group. Although smokers were typically not rated extremely positively, it should be emphasized that Barton et al. only studied students reporting never having smoked. Since the vast majority of young persons do not smoke, these findings suggest that young people can respond positively to cigarette smokers with respect to some dimensions.

If it is assumed that the *attractive* model's hand held cigarette was salient in our last experiment, then data from this experiment further indicate the disadvantaging effect of smoking to be fragile.

Indeed, the potential social consequences of smoking will likely vary across situations. For example, Heilman and Saruwatari (1979) hypothesized that ". . . factors which accentuate or downplay the extent to which a woman is considered to have womanly attributes can influence how she is evaluated when she applies for a job" (p. 370). Cigarette smoking might be one way that a woman could downplay womanly attributes and thereby enhance her chances of securing a managerial position that might otherwise be awarded to a male.

Conclusions

There can now be little doubt that cigarette smoking can reduce the positivity of interpersonal evaluations. At this time, however, the social consequences are probably not sufficiently strong to deter smoking.

Perhaps the young people we would most like to influence could best learn about the social consequences of smoking by generating their own data (also, see Flay, d'Avernas, Best, Kersell, & Ryan, 1983, p. 157). For example, high school students might easily learn what peers think of smokers by conducting impression formation studies where participants are asked to first talk about a photographed person before rating him or her. This would more closely approximate the projective market research procedure Haire (1950) advocated. The research could be conducted as a unit on stereotyping in a social studies course. It is imperative that the importance of researcher honesty (e.g., Azrin, Holz, Ulrich, & Goldiamond, 1961) and the social processes that promote honesty be discussed and in effect. If honest student researchers, using appropriate methods, find cigarettes enhance attractiveness—so be it!

The tobacco industry, of course, often portrays smokers to be sexy. It would, therefore, be most interesting to include a "likely to have had or

acquire a sexually transmitted disease" item in the impression formation survey, particularly since smokers are judged to be "risk-takers" and there is quite a stigma associated with such disease (Darrow & Pauli, 1983). Indeed, there may be a small correlation between cigarette smoking and sexually transmitted disease in young adults (W. W. Darrow, personal communication, May 1, 1985) in part because smoking negatively covaries with age at first intercourse among teens (Zabin, 1984).

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