Journal of Addictive Diseases
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/wjad20

Gender, Weight Concerns, and Adolescent Smoking

Sharon M. Boles PhD [a] & Patrick B. Johnson PhD [a]
[a] National Center on Addiction and Substance Abuse , Columbia University , USA
Published online: 12 Oct 2008.

To cite this article: Sharon M. Boles PhD & Patrick B. Johnson PhD (2001) Gender, Weight Concerns, and Adolescent Smoking, Journal of Addictive Diseases, 20:2, 5-14, DOI: 10.1300/J069v20n02_02

To link to this article: http://dx.doi.org/10.1300/J069v20n02_02

Gender, Weight Concerns, and Adolescent Smoking

Sharon M. Boles, PhD
Patrick B. Johnson, PhD

ABSTRACT. This study examined the beliefs that adolescents' hold regarding smoking and weight. In particular, this study examined the relationship between smoking status and self-perceptions of body weight. In addition, it examined gender and age differences in adolescent male and female smokers' beliefs about smoking and weight control. Analyses were conducted on the telephone interview responses of 1,200 adolescent smokers and nonsmokers between the ages of 12 and 17. Chi-square analyses were utilized for univariate comparisons, and logistic regression for multivariate comparisons. Results revealed gender and age differences in perceptions of body weight. In addition, female smokers were more likely than male smokers to adhere to the belief that smoking controlled weight. While no relationship was observed between males' perceived weight and their smoking status, females who perceived themselves to be either overweight or underweight were more likely to smoke. Findings suggest a gender bias in processing social/environmental cues linking smoking and weight control. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-342-9678. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com>*

At the time this article was written, Sharon M. Boles was affiliated with the National Center on Addiction and Substance Abuse at Columbia University. She is currently with the UCLA Drug Abuse Research Center.

Patrick B. Johnson is affiliated with The National Center on Addiction and Substance Abuse at Columbia University.

Address correspondence to: Sharon M. Boles, PhD, UCLA Drug Abuse Research Center, 1640 S. Sepulveda Boulevard, Suite 200, Los Angeles, CA 90025 (E-mail: sboles@ucla.edu).

The research described in this paper was supported from a grant from the Robert Wood Johnson Foundation. Preparation of this manuscript was supported in part by a grant from the Counterdrug Technology Assessment Center of the Office of National Drug Control Policy.

KEYWORDS. Gender, weight, adolescent smoking

INTRODUCTION

Research has consistently shown a connection between smoking and weight among adults. For example, studies have found that smoking cessation among adults often leads to weight gain.[1-3] Conversely, studies have also demonstrated that among adult smokers, particularly female smokers, heightened concern about weight gain is associated with weaker intentions to quit smoking in the future and with fewer quit attempts.[4-5]

There is a widespread belief among both adult smokers and nonsmokers that smoking controls body weight and evidence suggests that many people (particularly women) begin to smoke to control their weight.[4,6-8] In fact, the perception that smoking helps to control weight is frequently mentioned by people as the reason they began to smoke or continue to do so.[9]

Meyers and colleagues[7] found that the smokers most likely to be concerned about their weight tended to be female, tended to weigh less, and were less likely to be overweight than smokers not expressing weight concerns. Even though they tended to weigh less and were not likely to be overweight, these smokers had higher levels of concern about weight.

Unlike the research on weight and weight concerns among adults, little attention has been given to adolescent smoking and weight-related issues.[10] This has changed somewhat in recent years, however, as researchers have begun to explore the connections between adolescent smoking and weight concerns.[10-11] Like adults, adolescent smokers, especially young women, are aware of nicotine's weight suppressing effects.[12] Studies indicate that adolescent smokers are more likely to believe that smoking helps to control weight than adolescent nonsmokers.[10,13-14] In particular, weight concerns have been found to be most prevalent among adolescent female smokers compared to male smokers and male and female nonsmokers.[6,10,13] Many adolescent girls are also aware of the inverse relationship between smoking and weight gain and often use the anticipation of weight gain as a reason for not initiating smoking cessation.[5,15] In addition, girls (but not boys) who constantly thought about weight were more likely to initiate smoking than those who did not report weight concerns.[16] These findings indicate that weight-conscious women may initiate smoking in an attempt to control their body weight or continue smoking as a weight-control strategy, believing that smoking has strong anorexic effects.[10,17]

In a study examining the relationship between smoking and how adolescents perceived their own weight, Tucker[18] found that boys who perceived themselves to be overweight reported higher rates of intentions to smoke than did their counterparts. Relatedly, Pederson and colleagues[19] found that ado-

lescent smokers who thought that they were too heavy were more likely to be involved with smoking compared to nonsmokers, past smokers, or experimenters.

There is some evidence that the relationship between smoking and weight concerns may also be age related. For example, Camp and colleagues[10] found that older adolescent girls may be more likely to use smoking as a dieting strategy than young adolescent boys. In addition, Charlton[13] found that smokers under the age of 13 were not likely to endorse the belief that smoking would control their weight.

The present study was designed to examine the beliefs that adolescents' hold regarding smoking and weight. In particular, this study examined whether male and female perceptions of their own weight were linked to current smoking status. This study also examined, from an age perspective, differences in concern about weight gain among male and female smokers.

METHODS

Respondents. A random digit dial technique was employed by the Luntz Research Companies to conduct this survey. Randomly generated telephone numbers were pre-screened to determine if a adolescent in the 12-17 year-old age group resided in a household. Twelve hundred adolescents were interviewed as part of a survey designed to study the substance-related beliefs of adolescents and their parents. The adolescent sample was 51% male and 49% female. Sixty-six percent of the sample were Anglo, 12% were Hispanic, and 11% were African-American. The remaining 11% was comprised of Asian-Americans, Native Americans, and adolescents who reported their ethnicity as ''other.'' Table 1 presents sample characteristics.

The order of parent-adolescent interviews was based on opportunity and subsequent examination of these interviews revealed no order effects. In addition, because the adolescent samples' characteristics with respect to gender, ethnicity, socioeconomic status, and family composition were quite similar to those of the population of 12-17 year-olds in this country, no data weighting was required.

Procedure. Adolescents were told that the interviewer was a college student who was interviewing young people around the country ''about current events and about how it is to be a teenager in America today.'' The adolescents were also informed that the interview would take approximately 15 minutes and that there were no right or wrong answers to the questions.

Instrument. The adolescent survey contained 72 questions ranging from demographic questions including age, gender, and household composition to questions regarding the respondent's substance use beliefs and behaviors.

To assess current smoking behavior, adolescents were asked, ''Do you

TABLE 1. Sample Characteristics

	N	%
Gender		
Male	612	51.0
Female	588	49.0
Race/Ethnicity		
Anglo	791	65.9
African American	133	11.1
Hispanic	142	11.8
Other	134	11.2
Age		
12-13 Years Old	379	24.5
14-15 Years Old	427	27.6
16-17 Years Old	394	25.5
Smoking Status		
Smoker	140	11.7
Nonsmoker	1060	88.3

currently smoke, meaning one or more cigarettes per day?'' If the adolescent indicated that they did not currently smoke, they were asked, ''Have you ever smoked?'' Possible responses to the above questions were:

> Less than one cigarette per day, 1-5 cigarettes per day, 1/2 pack per day, 1 pack per day, 1 1/2 packs per day, 2 or more packs per day, not current smoker but smoked in the past, or never smoked.

Responses to the following questions were the focus of this paper.

1. ''Do you think that smoking cigarettes help you to control your weight?''
2. ''Do you consider yourself to be overweight, underweight, or is your weight about where it should be?''

RESULTS

To conduct age comparisons, the 12 to 17-year-old age range was divided into three groups: 12-13, 14-15, and 16-17. Categorization of the current

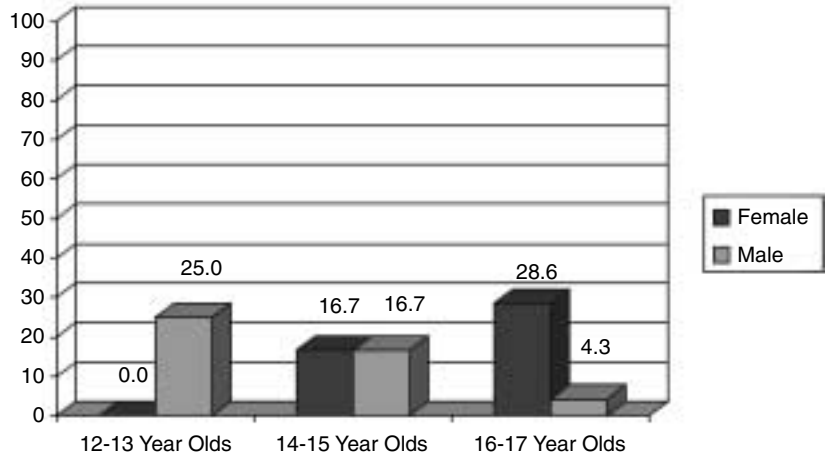
smoking behavior question yielded three groups: current smokers, current nonsmokers who smoked in the past (''past smokers''), and current nonsmokers who had never smoked (''nonsmokers''). For our smoker-nonsmoker comparisons, ''past smokers'' were merged into the nonsmoker category. The current smokers were almost evenly divided between males (53.6%) and females (46.4%). See Table 1 for age and smoking characteristics.

Comparisons of Smokers' Belief That Smoking Controls Weight

More than 15% of the current smokers (n = 140) adhered to the belief that cigarettes helped control weight. Since this question was only asked of smokers, we cannot say whether this percentage is more/less/the same as among adolescents who do not currently smoke.

Significantly more female smokers believed that smoking controls weight than male smokers (22.2% vs. 9.9%) ($X^2 = 3.86$, $df = 1$, $p < .05$). In addition, examination of this belief by both age and gender revealed distinct male and female patterns. For males, adherence to this belief was strongest in the youngest cohort and weakest in the oldest cohort. For females, the opposite pattern obtained (see Figure 1). In addition, a significant gender difference was observed in the oldest group of smokers where 4.7% of the males and 29.4% of the females indicated that they believed that smoking helped control weight ($X^2 = 8.85$, $df = 1$, $p < .005$).

FIGURE 1. Percent of female and male smokers who believe that smoking controls weight



Perceptions of Body Weight Comparisons

More than three-quarters of the total sample (n = 2100) perceived their weight to be ''where it should be,'' 9.5% perceived themselves to be underweight, and 14.0% perceived themselves to be overweight (see Table 2). Significantly more adolescent girls (17.4%) perceived themselves to be overweight than adolescent boys (10.8%) ($X^2 = 10.66$, $df = 2$, $p < .01$). Conversely, somewhat more adolescent boys considered their weight to be ''about where it should be'' than adolescent girls (79.3% vs. 73.4%). Perceptions of weight appear to significantly change with age. Significantly more of the youngest cohort perceived themselves to be underweight while the oldest cohort perceived themselves to be overweight. The middle cohort was most likely to perceive themselves to be weight appropriate ($X^2 = 14.93$, $df = 2$, $p < .01$) (see Table 2).

To determine the relative importance of gender, age, and smoking status in relationship to perceived weight appropriateness, these measures were entered simultaneously as determinants in separate logistic regression analyses, where the perceived body weight was the dichotomous outcome (e.g., appropriate vs. non-appropriate). As presented in Table 3, smokers were more likely than nonsmokers to perceive they were not at their appropriate weight. Not surprisingly, adolescent girls were more likely than adolescent boys to perceive they were not at their appropriate weight. Finally, a logistic regression indicated that older adolescents were less likely than younger adolescents to perceive their weight as appropriate.

DISCUSSION

Female smokers were more likely than male smokers to believe that smoking controls weight. This findings supports previous research conducted with adults[4,6-8] and more recent adolescent research.[6,10,13] Though not surprising, this finding is unfortunate since the belief that smoking controls weight may lead some adolescents (particularly girls) to initiate smoking as a weight control measure. It may also serve as a reason for not initiating smoking cessation attempts. Unfortunately, this question was only asked of smokers. Thus, it was impossible to compare the responses of smokers to nonsmokers on this question. It would have been interesting to see if nonsmokers also believed that smoking controls weight.

It also appears that as females move through adolescence, a greater proportion of female smokers come to believe that smoking can help control their weight. Whether this change represents an attempt to rationalize why they do not want to stop smoking or to reduce the frustration they feel at

TABLE 2. Number and Proportion of Adolescent Responses for Perceived Body Weight by Gender, Age Group, and Smoking Status

		Gender		Age Group			Smoking	
	Total N, (%)	Male n, (%)	Female n, (%)	12-13 n, (%)	14-15 n, (%)	16-17 n, (%)	Yes n, (%)	No n, (%)
Perceived Body Weight								
Underweight	114 (9.5%)	60 (9.8%)	54 (9.2%)	52 (13.8%)	31 (7.3%)	31 (7.9%)	17 (12.3%)	97 (9.2%)
Overweight	168 (14.0%)	66 (10.8%)	102 (17.4%)	54 (14.3%)	51 (12.0%)	63 (16.0%)	25 (18.1%)	142 (13.5%)
Appropriate	915 (76.4%)	484 (79.3%)	431 (73.4%)	272 (72.0%)	344 (80.8%)	299 (76.1%)	96 (69.9%)	816 (77.3%)

Note: Total, Gender, Age, or Smoking specific numbers may not be equal due to missing data.

TABLE 3. Multivariate Odds Ratios (and 95% Confidence Intervals) for Perceived Body Weight Given Gender, Age, and Smoking Status

	Perceived Appropriate Body Weight
GENDER (Girls vs. Boys)	1.4 (1.1, 1.8)
AGE	
(14-15 vs. 12-13)	.56 (.40, .78)
(16-17 vs. 12-13)	.71 (.41, 1.0)
SMOKING (Yes vs. No)	1.7 (1.2, 2.6)

being unable to quit even when they have tried or something else is impossible to know. What it does reflect, however, is increasing adherence to a belief that will ultimately make it more difficult for them to initiate a serious quit attempt. In the absence of such attempts, these young women cannot quit and increase the likelihood that they will be less likely to do so should they try to stop smoking.

A further possibility for the increase in proportion of females (as they age) who believe that smoking can control weight is the change in shape which will be occurring between the youngest and oldest cohort. The youngest group is moving from a child's to a woman's shape. When body fat begins to be deposited in areas such as hips and model images are of narrow hips the issue of weight may become more pressing and raise further anxieties.

More adolescents girls than boys perceived themselves to be overweight. This perception of being less weight appropriate appears to increase with age.

Adolescent smokers were also less likely to perceive themselves to be at their appropriate weight. The present findings support previous work that has shown weight concerns connected to female, but not to male smoking status.[18-19] In addition, analyses revealed that while males' beliefs about the impact of smoking on weight decreased with age, females' beliefs increased. This suggests that a gender-specific bias may exist in the processing of social cues regarding the smoking-weight control connection. It may be that females are more attuned to weight-relevant environmental cues because weight issues are more salient for them. Previous research[20] revealed that young females also appeared to be more attuned than young males to information about the self-medicating properties of alcohol.

More research needs to be conducted on the relationship of weight concerns and smoking relapse among adolescents. Several authors have hypothesized that the prospect of weight gain may inhibit smoking cessation efforts and increase relapse in adults smokers.[1,5,21] For example, Streater and colleagues[22] speculated that women, because they fear a resultant weight gain from smoking cessation, do not stop smoking as readily as do men or, if they do attempt to stop, relapse as the fear of weight gain increases. Likewise, weight gain following cessation may be a factor in resumption of smoking among some ex-smokers.[1] Little is known about the relationship between concerns about weight gain and smoking relapse among adolescents.

At the same time, an effort should be made to determine whether a connection exists between smoking status, perceived weight appropriateness, and gender. This is necessary to separate the effects of weight concerns generally and the effects of concern about being overweight on cigarette use. Unfortunately the interview did not include information about the adolescents' actual weight and height. This information would have provided additional insight into the issue of ''ideal body shape,'' particularly in the lives of adolescent females.

Caution should be exercised in interpreting the present findings for at least three reasons. First, the small number of young adolescent smokers militated against finding proportional differences among younger and older adolescent smokers. Second, since the question regarding whether smoking controls weight was only asked of smokers, it was impossible to make smoker-nonsmoker comparisons. Third, the fact that parents were also interviewed during the same phone call may have led to the low rate of reported adolescent smoking.

REFERENCES

1. Emont SL, Cummings KM. Weight gain following smoking cessation: A possible role for nicotine replacement in weight management. Addict Behav. 1987; 12: 151-5.

2. Hall SM, Tunstall CD, Vila KL, Duffy, J. Weight gain prevention and smoking cessation: Cautionary findings. Am J Public Health. 1992; 82: 799-803.

3. Klesges RC, Meyers AW, Klesges LM, LaVasque ME. Smoking, body weight, and their effects on smoking behavior: A comprehensive review of the literature. Psychol Bull. 1989; 106: 204-30.

4. Klesges RC, Somes GW, Pascale R, Klesges LM, Murphy M, Brown K, Williams E. Knowledge and beliefs regarding the consequences of cigarette smoking and their relationships to smoking status in a biracial sample. Health Psychol. 1988; 7: 387-401.

5. Weekley CK, Klesges RC, Relyea, G. Smoking as a weight control strategy and its relationship to smoking status. Addict Behav. 1992; 17: 259-71.

6. Klesges RC, Klesges LM. Cigarette smoking as a dieting strategy in a university population. Int J Eat Disord. 1988; 7: 413-9.

7. Meyers AW, Klesges RC, Winders SE, Ward KD, Peterson BA, Eck LH. Are weight concern predictive of smoking cessation? A prospective analysis. J Consult Clin Psychol. 1997; 65: 448-52.

8. Pirie PL, Murray DM, Luepker RB. Gender differences in a cigarette smoking and quitting in a cohort of young adults. Am J Public Health. 1991; 81: 324-7.

9. Klesges RC, Ward KD, Ray J, Cutter G, Jacobs DR, Wagenknecht LE. The prospective relationships between smoking and weight in a young, biracial cohort: the Coronary Artery Risk Development in Young Adults Study. J Consult Clin Psychol. 1998; 66: 987-93.

10. Camp DE, Klesges RC, Relyea G. The relationship between body weight concerns and adolescent smoking. Health Psychol. 1993; 12: 24-32.

11. Perkins KA, Levine MD, Marcus MD, Shiffman S. Addressing women's concerns about weight gain due to smoking cessation. J Subst Abuse Treat. 1997; 14: 173-82.

12. U. S. Department of Health and Human Services. The health consequences of smoking: Nicotine addiction: A report of the Surgeon General. (DHHS Publication No. CDC 88-8406). Rockville, MD: Centers for Disease Control, Center for Health Promotion and Education, Office of Smoking and Health, 1988.

13. Charlton A. Smoking and weight control in teenagers. Public Health. 1984; 98: 277-81.

14. Feldman W, Hodgson C, Corber S. Relationship between higher prevalence of smoking and weight concern amongst adolescent girls. Can J Public Health. 1985; 76: 205-6.

15. U.S. Department of Health, Education, and Welfare. Adult use of tobacco 1975 (DHHS Publication No. CDC 21-74-520). Rockville, MD; Centers for Disease Control, National Clearinghouse for Smoking and Health, 1976.

16. French SA, Perry CL, Leon GR, Fulkerson JA. Weight concerns, dieting behavior, and smoking initiation among adolescents: A prospective study. Am J Public Health. 1994; 84: 1818-20.

17. Wiseman CV, Turco RM, Sunday SR, Halmi KA. Smoking and body image concerns in adolescent girls. Int J Eat Disord. 1998; 24: 429-33.

18. Tucker LA. Cigarette smoking intentions and obesity among high school males. Psychol Rep. 1983; 52: 530.

19. Pederson LL, Koval JJ, McGrady GA, Tyas SL. The degree and type of relationship between psychosocial variables and smoking status for students in grade 8: Is there a dose-response relationship? Prev Med. 1998; 27: 337-47.

20. Johnson, PB, Johnson HL. Children's beliefs about adult and adolescent drinking. Paper included in symposium ''The development of children's alcohol-related beliefs.'' Presented at Society for Research on Child Development Convention, Seattle, 1991.

21. French SA, Jeffery RW, Klesges LM, Forster JL. Weight concerns and change in smoking behavior over two years in a working population. Am J Public Health. 1995; 85: 720-722.

22. Streater JL, Sargent RG, Ward DS. A study of factors associated with weight change in women who attempt smoking cessation. Addict Behav. 1989; 14:523-30.