Weight Locus of Control and Smoking

Among High School and College Females

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Increased attention has focused on the heightened prevalence of smoking among adolescents as a whole, both in high school and college settings. Tobacco use often begins in early adolescence, typically by age 16 (Klesges, Elliott, & Robinson, 1997). The percentage of high school seniors reporting daily smoking has increased from 18% in 1992 to 22% in 1996 (Gilpin, Choi, Berry, & Pierce, 1999). Generally one-third to one-half of students who ever try smoking become regular smokers (Everett, Warren, Sharp, Kann, Husten, & Crossett, 1999). The trend continues at the collegiate level as cigarette use increases nationwide in all types of colleges and universities (Wechsler, Rigotti, Gledhill-Hoyt, & Lee, 1998).

Of specific concern is the perpetual rise in female adolescent smoking initiation and maintenance. Sociocultural standards of attractive body shape for females promote thinness and concern with body image (French & Perry, 1996). Tobacco advertisements exploit these rising concerns with being slim by emphasizing the weight-controlling benefits of smoking (Greenfield, Quinlan, Harding, Glass, & Bliss, 1987). Increasing in number are the older adolescents, namely college females, who have utilized smoking as a means of controlling weight and as a form of dieting (Klesges & Klesges, 1988) to achieve the societal ideal weight. Since society places emphasizes female thinness and because smoking helps in controlling body weight (Wack & Rodin, 1982) many females, especially those who are overweight compared to their peers, use smoking as a weight loss strategy (Halek, Kerry, Humphrey, Crisp, & Hughes, 1993; Klesges & Klesges, 1988). Smoking enables females to lose substantial amounts of weight and to control their weight especially during child bearing years (Crisp, Sedgwick, Halek, Joughin, & Humphrey, 1999). Women metabolize nicotine slower than men do, which may contribute to its enhanced effect on body weight among women (Jarry, Coambs, Polivy, & Herman, 1998). Nicotine also increases metabolism, thus decreasing caloric storage ability.
Smokers as a group, regardless of sex, socioeconomic status, or culture, weigh consistently less than persons who have never smoked (Wack & Rodin, 1982; Klesges & Myers, 1989).

Most research on smoking and weight control has focused on eating disordered females who are restrained eaters, dieters, or overweight. Few studies examined the non-disordered, normal weight smoking female population. Of those conducted, results suggest that smokers are more focused on weight control than nonsmokers (Wiseman, Turco, Sunday, and Halmi, 1998) and that concern about “fatness” and attempts to curb it, affect females other than eating disorder populations as the concern is widespread among teenage girls (Crisp et al., 1999). Women that smoke often have a negative body image and feel less attractive to the opposite sex than do non-smokers (Ben-Tovim & Walker, 1991). Women who are highly preoccupied with their weight are more likely to use smoking as a weight control device (Jarry et al., 1998). In white, adolescent females, weight concerns and dieting behavior are risk factors for smoking initiation (French, Perry, Leon, and Fulkerson, 1994). Worry over body weight is often a precursor in beginning to smoke (Halek et al., 1993) yet few studies address this specifically. Generally, women who negatively evaluate the size and shape of their bodies were more likely to begin smoking to lose weight and continue the habit in fear of weight gain (King, T. K., Matacin, M., Marcus, B. H., Bock, B. C., & Tripolone, J., 2000).

In addition to females’ desire for and beliefs about weight control as a possible predictor of smoking, locus of control may also correlate with cigarette smoking. Weight locus of control is the belief that one can affect or control one’s weight (Stotland & Zuroff, 1990). External weight locus of control is the belief that one’s weight is due to factors outside of one’s control, such as luck, genes, fate, or social support; whereas, internal weight locus of control is the belief
that one’s own behavior determines one’s weight (Stotland & Zuroff, 1990). Internal locus of control is a potential predictor of success in weight-loss programs (Stotland & Zuroff, 1990). A study conducted by Nir and Neumann (1991) supported this hypothesis as subjects with an internal locus of control lost more weight than did subjects with an external locus of control. On the contrary, a 1997 study found that smokers designated as internally oriented were more likely to quit smoking than their external counterparts (Molloy et al., 1997). It should be noted, however, that the sample was small and chosen by convenience. Burgess and Hamblett (1994) found similar evidence of ex-smokers being more internally oriented but render support for the current hypothesis that smokers embrace internal locus of control characteristics.

The present study investigates whether or not differences exist between smokers and nonsmokers on weight locus of control. Smokers are hypothesized to have a higher internal locus of control compared to nonsmokers. If a difference exists between these two groups, it may be possible to place value on weight locus of control in predicting smoking initiation and maintenance. In addition, females’ beliefs about smoking are assessed with an emphasis on attitudes associated with smoking and the perceived “benefits” of smoking for weight control. Specifically, the hypothesis states that smokers will say “yes” to the following questions more than nonsmokers: (1) smoking keeps people from gaining weight; (2) smoking helps people eat less; (3) smoking makes people feel less hungry; (4) smoking helps reduce body weight; (5) smoking helps control body weight.

Method

Participants

The participants included 160 females recruited by convenience from four private Midwestern institutions in the United States (61 high school students; 99 college students). Thirty-
two of these women identified themselves as smokers. The majority of the sample (88%) consisted of white females and the other 12% included minority ethnicities. The age range for all females in the sample is between 15-49 with a mean age of 19. Height and weight measurements were used to calculate body mass index (BMI) for 156 participants; however, four participants did not reveal their weight. The normal BMI range for women is between 20 and 27; the mean BMI for this sample was 23. Smokers ($M = 22.80, SD = 5.24$) weighed less than nonsmokers ($M = 23.19, SD = 3.90$). The mean height for 160 females was 65 inches with a SD of 3.03, and mean weight (for 156 females) was 140 pounds with a SD of 27.60.

**Materials**

Each participant completed three different surveys including a brief demographics inquiry requiring respondents to indicate age, grade/year in school, weight, height, ethnicity, and the name of academic institution attending. Participants wrote the appropriate information in the blanks following each question.

The Dieting Beliefs Scale (DBS; Stotland & Zuroff, 1990) assessed weight locus of control. The original scale includes 16 Likert-type questions with 1 meaning “not at all descriptive of my beliefs” and 6 indicative of being “very descriptive of my beliefs” (Stotland & Zuroff, 1990). An example of an externally oriented question is “A thin body is largely a result of genetics”; whereas, “each of us is directly responsible for our weight” is internally focused (Stotland & Zuroff, 1990). Higher scores on the DBS, normed on female college undergraduates of normal weight, indicate individuals who are more internally focused. The DBS demonstrates promise as an internally consistent and reliable research tool with a Chronbach’s alpha of .68 and a test-retest score of .81 (Stotland & Zuroff, 1990). For the purpose of this study, one internally oriented question was added to the questionnaire: “by smoking cigarettes, one can lose weight.”
Initiating smoking to lose weight is considered an act of internal locus of control because one is utilizing personal initiative to attempt weight loss. Adding this statement to the DBS provided a way to assess whether this sample believes in smoking as a weight control strategy. In addition, the Likert scale for the DBS was changed from allowing choices between numbers one through six to answers ranging from one through five. This was done to save time and reduce selection fatigue for the participants. Item numbers 3 through 7, 12, 15, and 17 represent externally oriented questions and were reverse scored (a five is counted as one and four is counted as two and vice versa). If a participant chose the number three, it was always scored as a three.

The Smoking Beliefs Questionnaire (SBQ) assessed females’ beliefs about cigarette smoking as well as current smoking status. The SBQ includes 16 nominal scale items compiled from various smoking studies (Stanton & McGee, 1996; Crisp et al., 1999) as well as five additional questions posed by the researcher to assess smoking status: (a) I currently do not smoke cigarettes; (b) I formally smoked cigarettes but now do not; (c) I want to start smoking cigarettes; (d) I currently smoke cigarettes; and (e) I plan to continue smoking cigarettes. Each participant circled “YES” if the statement described their belief and “NO” if it did not describe their belief. Other questions on the scale include: (1) smoking makes me look good; (2) smoking keeps people from gaining weight; (3) smoking is a waste of money; (4) smoking helps people eat less; (5) smoking makes people feel less hungry; (6) smoking helps reduce body weight; (7) smoking helps gain friends; (8) smoking reduces stress; (9) smoking helps control body weight; (10) smoking helps people relax; (11) smoking helps people gain weight (Stanton & McGee; Crisp et al.). Of particular interest for the purpose of this study are the five questions dealing with weight control (2, 4-6, 9) which were compiled along with other non-weight related questions to conceal the purpose of the questionnaire which was to assess females’ beliefs about
the “benefits” of smoking. Examples of non-weight related questions include smoking for stress relief and the attainment of friends (see above). No scoring procedures were necessary for the SBQ since it was intended for descriptive purposes through yes and no responses.

Procedure

All participants completed two copies of the informed consent and were asked to return one copy of the informed consent to the researcher to indicate volunteer status and keep the other for personal record. Participants then received and completed the four questionnaires (demographics survey, Dieting Beliefs Scale, and the Smoking Beliefs Questionnaire) while seated in their normal classroom environments.

To reduce confounding error due to fatigue and thus increase internal validity, the questionnaires were counterbalanced between groups. Half of high school and college females received the questionnaires in this order: demographics survey, DBS, SBQ while the other half received the SBQ first followed by the DBS, and demographics survey.

Results

The study was designed to assess differences between smokers and nonsmokers. The Dieting Beliefs Scale measured weight locus of control and mean scores differed between smokers and nonsmokers. Smokers were hypothesized to be more internally focused than nonsmokers. The mean score for smokers \( (M = 60.22, SD = 7.65) \) on the DBS was higher than nonsmokers \( (M = 56.52, SD = 6.17) \) supporting the given hypothesis \( (t = 2.88, p = .00, df = 158) \).

Five questions on the SBQ specifically addressed attitudes about smoking and weight control interspersed amid other smoking related questions used to hide the true purpose of the questionnaire. Each of these items was analyzed for differences between how smokers answered compared to nonsmokers. Chi square analyses revealed significant differences between smokers’
responses and the answers of nonsmokers on each of the five weight related questions. Smokers answered “yes” more often than nonsmokers ($X^2=20.95, p = .00$) on item two of the questionnaire (smoking keeps people from gaining weight) as well as for item number four ($X^2 = 4.05, p = .04$) which states that smoking helps people eat less. Smokers also answered “yes” more than nonsmokers ($X^2 = 6.99, p = .00$) on item five of the survey (smoking makes people feel less hungry). The same trend ($X^2 = 3.98, p = .04$) was found for item number six (smoking helps reduce body weight). In addition, smokers chose “yes” to item number nine of the questionnaire (smoking helps to control body weight) significantly more than nonsmokers ($X^2 = 6.31, p = .01$). Thus, answering “yes” more than nonsmokers to all five items demonstrated that smokers believe that smoking keeps them from gaining weight, eating more, and feeling hungry and allows them to reduce and control body weight.

**Discussion**

Female smokers scored higher on the DBS than nonsmokers, supporting the hypothesis that female smokers are more likely to be internally motivated to use smoking as a weight control strategy. Past research has only focused on locus of control in relation to the likelihood of losing weight (Nir and Neumann, 1991) or in relation to the likelihood of smoking cessation (Molloy et al., 1997) but did not associate internal locus of control with the likelihood of being a smoker. The current research supports the finding that internal locus of control positively relates to confidence, behavioral intent, and actual behavior (Holt, Clark, and Kreuter, 2001) concerning weight loss. Participants with an internal locus of control lost more weight than those with an external locus of control in a weight reduction program (Nir & Neumann, 1991). Since smoking initiation is considered to be an internally oriented decision and the majority of smokers believe
that smoking can control weight, it makes sense that internal weight locus of control was related
to current smoking status.

Results suggest that smokers, significantly more than nonsmokers, believe that smoking
can control weight by prohibiting weight gain, changing appetite, or reducing weight. Not only
did smokers believe in the properties of smoking for weight control, they \((M = 22.80, SD = 5.24)\) actually weighed less than nonsmokers \((M = 23.19, SD = 3.90)\). Previous research suggests that smokers are more concerned about body weight than nonsmokers (Wiseman, Turco, Sunday, & Halmi, 1998). Since research provides evidence that nicotine comprises possible weight-controlling attributes (Wack & Rodin, 1982), it follows that smokers smoke for weight-control purposes. The present findings suggest that current smokers believe that smoking affects weight but data does not reveal whether they originally commenced smoking for weight managing reasons. Future research should address whether females initiate smoking to control weight.

Limitations of the present investigation include threats to external validity. All participants \((N = 160)\) attended private institutions and the majority of the sample \((N = 141)\) included Caucasian females. More ethnic diversity and the involvement of females from public institutions could increase the validity of these findings. The sample also contained a limited number of smokers. If the study is replicated with more smokers and a similar difference \((t = 2.88, p = .00, df = 158)\) is found between smokers and nonsmokers’ internal locus of control according to the DBS, greater veritability can be placed on current results. As noted previously, the SBQ, constructed by the researcher, consists of statements compiled from various studies (Stanton & McGee, 1996; Crisp et al., 1999) and also items developed by the researcher. No measures of reliability or validity are included. Future replication should test the psychometric properties of this questionnaire.
Internal locus of control is often viewed positively in that people those characterized by this trait encompass increased likelihood of performing certain behaviors. This study indicates that internal locus of control may not always be a beneficial trait. Given the health risks associated with tobacco use (Wack & Rodin, 1982), smoking cannot be considered a healthy mechanism for weight loss. Future research can focus on whether females begin to smoke for weight loss reasons or if they continue for weight loss reasons after “benefiting” from the weight controlling effects of cigarettes. In addition, there may be a link between body image, self-esteem and smoking status. If so, future research could determine the extent of this association and whether or not smokers have a lower self-esteem than nonsmokers.
References


