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Predictors of social support provided to smokers

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PREDICTORS OF SOCIAL SUPPORT PROVIDED TO SMOKERS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Psychology

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Diana Williams Stewart
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ABSTRACT

Over 20% of adults in the U.S. presently smoke cigarettes. The highest rates (28.5%) are among 18-24 year-olds. Therefore, cessation interventions targeting young adults are needed. Cessation efforts and maintained abstinence in smokers have been associated with positive social support from others (i.e., “support persons”) throughout the cessation process. Support persons’ attributions about smokers may affect the consistency and amount of support they provide to a smoker during a cessation attempt. The present investigation addressed the relationship between support persons’ attribution style and the quality and quantity of support they provided to smokers. College students ($N=244$) were asked to identify a smoker about whom they were concerned, to report demographic and smoking background information about themselves and the identified smoker, nicotine dependence, perceived positive and negative social support provided, and attributions about their identified smokers’ smoking habits. Multivariate analyses of variance (MANOVA) predicting gender, smoking status ($p < .10$), relationship type (romantic vs. platonic; $p < .10$), and cohabitating status as the factors indicated nonsignificant trends in differences in amount and quality of social support provided. Those romantically involved with their smokers tended to report providing significantly more positive ($p < .05$) and marginally less negative support ($p < .10$) than their respective counterparts. Compared to never-smokers, smokers and ex-smokers provided marginally more negative support ($p < .10$). Regression analyses revealed that external attributions did not predict self-reported positive support and internal attributions did not predict negative support. These findings suggest the importance of relationship factors in the cessation process and highlight the need for future research in this area.

INTRODUCTION

Cigarette smoking is the most preventable cause of illness and death in the United States. Each year, 8.6 million people live with smoking-related illnesses, and 438,000 die either from smoking or being exposed to smoke (CDC, 2007). In fact, smoking increases the risk for heart disease, which is the leading cause of death in the United States. Approximately 30% of deaths in 2001 were attributed to heart disease (CDC, 2004a). Despite these negative health risks, 23.9% of men and 18.1% of women in the United States endorsed being current smokers in 2005 (CDC, 2006a). Smoking prevalence varies by region of the country, age, gender, race, education, and work status (Behavioral Risk Factor Surveillance System [BRFSS], CDC, 2006b). For example, while approximately 20.2% of adults in the United States smoked in 2006, smoking prevalence was much higher in some states, such as Louisiana (23.4%). In addition, Louisiana smoking rates were higher for both men (26.6%) and women (20.5%) compared to national prevalence rates (23.9% and 18.1%, respectively) (CDC, 2006a; 2006b).

Smoking Patterns and Characteristics among Young Adults

Prior to 1998, adults between 25-44 years had the highest smoking prevalence. However, by 1998, young adults (i.e., individuals between the ages of 18-24 years) had the highest smoking rates (CDC, 2000). Since then, young adults have continued to smoke more than any other age group (28.5% in 2004; CDC, 2004b). As this age group has the highest smoking prevalence of any age group in the U.S., young adults are an extremely at-risk population.

Smoking at young ages predisposes smokers to tobacco-related illness and mortality. In Louisiana, young adult smokers are more likely than smokers in other age groups to have smoking-related illnesses (CDC, 2006b). Of young adults who smoke, 28.7% have smoking-related disparities such as chronic bronchitis or asthma (CDC, 2006b). Previous research shows that if smokers quit smoking and maintain cessation by the time they are 30, chances of illness and mortality are decreased and often completely prevented (Doll, Peto, Boreham, & Sutherland,

2004; USDHHS, 1990). Therefore, tailored interventions for this age group are needed. These efforts should be based on research of smoking-related characteristics (i.e., age participants started smoking, smoking rates, difficulty with quitting) of young adults (Kishchuk, Tremblay, Lapierre, Heneman, & O'Loughlin, 2004; Lawrence, Fagan, Backinger, Gibson & Hartman, 2007; Rigotti, Lee, & Wechsler, 2000).

According to data from the Tobacco Use Supplement portion of the 1998-1999 United States Current Population Survey (TUS-CPS), respondents between the ages of 18-24 years who were currently enrolled in either high school or college were less likely (77.2% and 59.7%, respectively) than those not enrolled to be current or ex-smokers. Young adults living in the South, Midwest, and Northeast regions of the United States were most likely current smokers. Those living in the South were more likely to report daily smoking and heavier smoking (at least 20 cigarettes per day) than those living in other regions of the United States. Thus, researchers should focus not only on tailoring tobacco prevention programs specifically to young adults and adolescents, but also on designing smoking cessation interventions specifically for young adults who smoke. Researchers must also consider various characteristics such as region of the country and education level of smokers when designing interventions for young adult smokers.

College-aged Smokers

Previous research on smoking characteristics of college students indicated that young adults attending college are less likely to smoke cigarettes (Choi, Harris, Okuyemi, & Ahluwalia, 2003; Koontz et al., 2004; Waters, Harris, Hall, Nazir, & Waigandt, 2006). However, this rate is quickly increasing (Rigotti et al., 2000; Wechsler, Rigotti, Gledhill-Hoyt, & Lee, 1998). Rigotti and colleagues (2000) reported that 32% of college smokers were occasional (e.g., less than 1 cigarette per day) rather than daily smokers.

Perhaps college students report smoking fewer cigarettes because they are more willing to use other forms of tobacco (i.e., smokeless tobacco or cigars; Rigotti et al., 2000). Students

who smoke occasionally might minimize the perceived health risks of smoking and be less likely to tell their physicians they smoke (Koontz et al., 2004). As a result, it is unlikely that physicians will talk to student patients about cessation (Koontz et al., 2004). Kishchuk and colleagues (2004) conducted focus groups with college students aged 18-24 years. Students endorsed smoking as a means of coping with stress associated with school and work, which in turn negatively affected setting a quit date. However, students reported peer social support might help them cope with daily stress and stress associated with cessation. Thus, students' usage, views, and provision of social support are important to study, as they have been in other areas of substance abuse (Kishchuk et al., 2004).

Suggested Methods for Cessation

Approximately one-third of all smokers attempt to quit smoking yearly. However, many try to quit on their own without further assistance. Consequently, only 5% of those who attempt cessation are successful (Fiore et al., 2000). Much effort has been devoted to increasing the availability of methods of assistance that may include intervention programs, group or individual counseling, self-help materials, nicotine replacement therapy (NRT), and identifying a partner to help support quitting efforts (Fiore et al., 1990; Zhu, Melcer, Sun, Rosbrook, & Pierce, 2000).

Smoking Cessation and Social Support

Support from family, friends, and peers might help smokers stop smoking and maintain abstinence. The 2000 U. S. Department of Health and Human Services' clinical practice guideline for treating tobacco use and dependence recommended social support as a necessary part of cessation treatment and asserted that it also is needed outside of formal treatment (i.e., in smokers' natural environments; Fiore et al., 2000). Researchers define social support in several different ways, but definitions are typically broad, describing social support as actions (intended or unintended) to assist another person (Cohen et al., 1988). Social support acts as a buffer against stress and is typically helpful for those undergoing difficult or stressful situations (Cohen,

2004). Cohen and colleagues (1988) suggested that in instances of behavior change such as smoking cessation, social support is “any behavior by others that is presumed by either the giver or receiver to facilitate a positive and desired behavior change” (p. 212). However, givers and receivers of social support might have conflicting ideas about which behaviors are helpful and which are harmful in facilitating behavior change.

A number of studies have examined discrepancies between smokers’ and support persons’ perceptions of supportive behaviors (Boutin-Foster, 2005; Cohen et al., 1988; Pollack et al., 2001; Thomas et al., 2005). Although support persons might perceive their helping behaviors as productive and supportive, smokers might feel as though these same helping behaviors are mal-intended or not helpful at all. Therefore, it is difficult to distinguish behaviors that are helpful from those that are harmful, and it is critical to operationally define each.

Smokers identify encouragement, positive reinforcement, cooperation, empathy, providing information about quitting smoking, helping with problem solving, and decreasing smokers’ stress as supportive, helpful behaviors. They recognize nagging, drawing attention to withdrawal symptoms, counting lapses, policing, and over-monitoring as negative, unhelpful behaviors (Coppotelli & Orleans, 1985; Fisher, 1997; Mermelstein, Lichtenstein, & McIntire, 1983; Park, Tudiver, Schultz, & Campbell, 2004; Thomas et al., 2005). Roski et al. (1996) examined effects of partner-provided positive and negative behaviors by studying smokers and significant others that lived together. Smokers whose partners exhibited few negative behaviors (i.e., nagging and policing) were more likely to be successful at quitting smoking for at least one week and remaining smoke-free. Maintaining a high frequency of positive, supportive behaviors throughout the cessation process predicted more recovery from lapses and more attempts at quitting. The authors suggested that during a quit attempt, support persons should focus on providing positive supportive behaviors throughout all stages, especially during maintenance.

Results indicated that a high frequency and ratio of positive to negative supportive behaviors influenced cessation outcomes and were associated with abstinence after one year.

Continuous and positive social support may provide a sense of comfort to smokers attempting to quit smoking. In his classic studies of baby rhesus monkeys, Harlow (1958) noted that, except when they were hungry, monkeys preferred “terrycloth mothers” that were soft and comforting over abrasive, “wire mothers” that fed them. Similarly, Fisher (1997) argued that social support is not a means to an end, but a source of comfort. He suggested that in terms of smoking, social support and cigarettes are commodities that can replace each other. When social support is provided, smokers are more likely to abstain from smoking. However, when support ends, smoking might be more appealing.

Social Support and Cessation Interventions

Much research suggests that support persons are important as means for social support in smoking cessation programs (Cohen et al., 1988; Coppotelli & Orleans, 1985; Kviz, Crittenden, Madura, & Warnecke, 1994; Lichtenstein, Glasgow, & Abrams, 1986; Lichtenstein, Andrews, Barckley, Akers, & Severson, 2002; Patten et al., 2008; Pirie, Rooney, Pechacek, Lando, & Schmid, 1996) and within smokers’ natural environments (Ames et al., 2008; Cohen, 2004; Croghan et al., 2001; Herzog, Abrams, Emmons, & Linnan, 2000). Recent research examined how support persons might facilitate quitting smoking in cessation programs in terms of increasing motivation to quit, decreasing stress during withdrawal, encouraging perseverance through withdrawal symptoms, and/or monitoring availability of environmental smoking cues (Cohen et al., 1988). Results from a community-wide smoking cessation contest indicated that having a support person predicted cessation throughout the 4-week contest (Croghan et al., 2001). The Mayo Clinic Nicotine Research Center sponsored a Quit and Win cessation contest in Olmsted County, Minnesota. Community residents were invited to enroll either as smokers attempting to quit or as support persons (Croghan et al., 2001). Smokers with support persons

had higher levels of abstinence than their counterparts, especially if support persons were smokers' romantic partners. Hence, support persons provided support not only within the cessation program, but also in smokers' natural environments (i.e., within naturally occurring relationships; Croghan et al., 2001).

Kviz and colleagues (1994) measured effects of social support in a minimal contact smoking cessation program (i.e., smokers did not meet with a group). Over 20 days, smoking participants read from a cessation manual, watched televised program segments, and were encouraged to enlist help in quitting from nonsmoking, positive, encouraging, and sympathetic support persons, or "buddies." Despite the fact that enlisting a support person was optional, one third of participants did so, and by the end of the program, smokers with buddies were three times more likely to be abstinent than those without buddies. Those enlisting spouses or romantic partners as support persons were more likely to quit smoking by the end of the program than those enlisting support persons that were friends or other family members. This pattern repeated at follow-ups three, six, and 12 months after the end of the program, but differences between groups were not statistically significant. Perhaps this is because the cessation program emphasized partner support for 20 days, but lacked guidance in maintaining social support.

In 2002, Lichtenstein and colleagues studied the effects of support provided to smokeless tobacco users in a self-help program designed to help chewers quit. Chewers enrolled in this study along with their spouses or partners. Although support persons were generally motivated to help their partners, providing positive support was related to short-term (24 hour), but not long-term abstinence (six month). The authors suggested social support should be implemented within treatment as well as within natural environments. Murray and colleagues (1995) stated that within the natural environment, social support between a support person and smoker is most effective (at both short-term and long-term assessments) if a supportive relationship already

exists between the two. That is, existing relationships based on cooperation and rewards, rather than punishment, are conducive to facilitating cessation (Coppotelli & Orleans, 1985).

Although research has indicated support persons are an asset to cessation programs and can be helpful to smokers outside of treatment, some results suggest that social support might not be useful in smoking cessation. Park and colleagues (2004) conducted a meta-analysis of nine cessation interventions including social support-enhancing and control components. In this meta-analysis, relationships between smokers and support persons varied (i.e., romantic partners, family members, friends, and coworkers), and support persons did not necessarily live with the smoking participants. Smoking participants reported a current smoking status between six and nine months post-treatment, but there were no significant differences in support between enhanced support and control groups. The authors concluded that most of the studies were limited by a small sample size, insufficient power, and the likelihood that support persons had limited contact with smoking participants since they did not live together. Thus, there was limited opportunity to exert a meaningful or supportive influence. May and colleagues (2006) randomly assigned smokers in a cessation program to groups either in pairs with a smoking buddy or alone. The authors reported that solely using a “buddy system” did not produce more abstinence in smokers. The authors suggested that in addition to high attrition rates in their study, the support persons themselves were smokers, which likely adversely affected or altered supportive non-smoking behaviors.

Smoking Status of Support Persons

Success in attaining and maintaining cessation is largely related to the smoking status of support persons. Researchers have consistently recommended that support persons be nonsmokers (Carlson, Goodey, Bennett, Taenzer, & Koopmans, 2002; Coppotelli & Orleans, 1985; Kviz et al., 1994; May et al., 2006; Mermelstein et al., 1986; Murray et al., 1995; Pirie et al., 1996; Walsh et al., 2006) or ex-smokers (Murray et al., 1995). Smoking participants with

support partners who were smokers and were uninterested in quitting had less than a 2% chance of achieving and maintaining smoking cessation (Kviz et al., 1994). Further, Walsh and colleagues (2006) reported that long-term relapse is two times more likely to occur when support persons also smoke. When designing social support and smoking cessation programs, researchers must consider not only support provided, but also support persons' smoking status.

Maintenance of Support through Stages of Quitting

Research supports the importance of maintaining positive support throughout the cessation process (Carlson et al., 2002; Fisher, 1997; Lichtenstein et al., 2002; Mermelstein et al., 1986), but especially during maintenance (Gottlieb, 2000). Carlson and colleagues (2002) gave smokers enrolled in a cessation program the option of bringing support persons with them. Out of 600 participants, 156 participants chose to bring support persons. The majority of support persons were smokers' spouses or significant others. Those who brought support persons to attend cessation support groups had higher quit rates than those without support persons at three, six, and 12 months post-cessation. Further analysis indicated that at three, six, and 12 months, men with support persons were 20% more likely to be abstinent than women with support persons. Moreover, men with support persons were consistently more successful at quitting and maintaining abstinence than men without support at all time points. However, women with support persons showed this pattern only at three months after cessation. In other words, these women were no more likely than women without support persons to show long-term abstinence (at six and 12 months).

Perhaps support provided does not remain constant after cessation, and inconsistent support results in relapse. Thus, high quit rates may follow treatment including support components, but the effect might not be significant at follow-up assessments. Recent research examining self-managed cessation programs with support persons suggests that when smokers are given freedom over program components (i.e., given the option to use a support person),

effects extend beyond program terminations and initial abstinence, and are likely maintained for extended periods of time (Kviz et al., 1994).

Gender and Support Provided

Most smokers in Carlson and colleagues' (2002) study brought spouses as support persons. However, men were more successful in maintaining abstinence, suggesting the possibility that women might provide a higher level of or more consistent long-term support (Carlson et al., 2002). Research has suggested that women are more likely than men to provide positive supportive behaviors at all levels of smoking cessation (Carlson et al., 2002; Lichtenstein et al., 2002; Ward, Klesges, Zbikowski, Bliss, & Garvey, 1997). This could explain the trend in more effective results for men's cessation attempts when using spouses as supporters (Carlson et al., 2002; Murray et al., 1995; Pirie et al., 1996). Carlson and colleagues (2002) suggested gender differences in social support provided. Specifically, while women are likely to provide consistent positive support during maintenance levels of cessation, men might initially engage in positive supportive behaviors, but eventually resort to negative behaviors in later stages of the cessation process (Carlson et al., 2002; Coppotelli & Orleans, 1985; Mermelstein et al., 1983). Since behaviors of support persons can positively or negatively affect cessation and maintenance of abstinence, future research should study support persons as well as smokers.

Studying the Support Person

Extensive research has been conducted in the area of social support and smoking cessation, but it has typically focused on the smoker, rather than the support person. As previously mentioned, discrepancies likely exist between smokers' and support persons' perceptions of supportive behaviors (Boutin-Foster, 2005; Cohen et al., 1988; Fisher, 1997; Patten et al., 2003; Pollack et al., 2001; Thomas et al., 2005; Thomas, Patten, Offord, & Decker, 2004). In a study of support provided by spouses to their pregnant smoking partners, support persons believed they were providing more positive support than smokers perceived they were

getting (Pollack et al., 2001). One way to ensure that smokers receive effective positive support is to study those discrepancies and create interventions solely for support persons. Thomas and colleagues (2004) suggested that support persons might not understand the importance of maintaining high levels of positive support, or reinforcement, throughout quitting and maintenance phases. They also stated that smokers might view supporters' "helping" behaviors as negative rather than positive. Therefore, one aspect of ensuring proper support is to assess current support provided to smokers in order to inform support persons on how to offer consistent and positive support.

Despite this need, few studies within tobacco research have assessed support persons' perceptions of social support in the context of quitting smoking (Lichtenstein et al., 2002; Patten et al., 2001; Patten et al., 2003; Patten et al., 2008; Pollack et al., 2001; Thomas et al., 2004; Thomas et al., 2005). Patten et al. (2001) developed the first intervention tailored specifically for support persons. Support persons learned about the difference between helpful and unhelpful supportive behaviors. Researchers administered the Support Interview, a 22-item measure of type of support provided to smokers, both at baseline and six weeks. Between the two time periods, support persons reported an increase in positive support provided. Thomas and colleagues (2004) revised the Support Interview (Patten et al., 2001), making it more appropriate as a self-report measure of support provided to smokers (SPM; Support Provided Measure). This preliminary research guided the development of a face-to-face group-based smoking cessation intervention targeting support persons (Patten et al., 2004) as well as a telephone-based intervention (Patten et al., 2008). In the face-to-face intervention, support persons attended weekly group-training sessions over five weeks. Those who completed the intervention endorsed providing more support, as measured by the SPM (Thomas et al., 2004) and their identified smokers were more likely than controls to be abstinent at a 6-month follow-up assessment.

While much of this research focuses on positive and negative supportive behaviors and how they may change over time, researchers have neglected to study reasons why support levels and perceptions of support may change over time. Perhaps types of attributions that support persons make about their smokers' reasons for continuing to smoke may directly influence levels of support provided, which may affect cessation success.

Causal Attributions and Behavior Change

People typically use causal attributions to explain their own or others' behaviors, especially when describing causes for successes or failures (Weiner, 1974; 1985). Weiner (1974; 1985) proposed an attributional theory of achievement motivation and emotion in order to study the relationship of emotion and motivation to causal thinking. Three causal dimensions influence emotion and achievement expectations: locus (internal or external characteristics), stability (across time) and controllability (whether or not the behavior can be controlled). According to his model, Weiner (1985) predicted that "expectancy and affect direct motivated behavior" (p. 549). In other words, attributions determine expectancies and affect. Weiner's attributional theory has influenced studies of interpersonal relationships (Fincham, Bradbury, & Grych, 1990; Fincham & Bradbury, 1992; Miller & Bradbury, 1995), helping behaviors (Meyer & Mulherin, 1980), and areas of health behavior change including smoking cessation (Eiser, Van der Pligt, Raw, & Sutton, 1985; Schoeneman, Stevens, Hollis, Cheek, & Fischer, 1988) and exercise (Minifee & McAuley, 1998; Schoeneman & Curry, 1990). However, this research has not yet addressed how support persons' attribution styles might influence support provided and smokers' cessation outcomes.

Smoking and Attributions

Smoking-related attribution research has typically focused on attributions that smokers make about their own and others' failures (relapse) or successes (abstinence) at cessation. People usually make external attributions for their own failures (blaming stress for a relapse) and

internal attributions for others' failures (blaming a lack of motivation for inability to quit; Jones & Nisbett, 1971; Eiser et al., 1985; Schoeneman et al., 1988; Spanier, Shiffman, Maurer, Reynolds, & Quick, 1996). For example, Eiser et al. (1985) studied smokers' attributions for their own and others' failures at quitting smoking. Results indicated that stability is positively correlated with self-efficacy, or confidence, to quit smoking. For example, when failure is attributed to stable, internal factors, smokers have more negative outcome expectancies about quitting and lower self-efficacy, which is conceptualized as confidence to quit.

People generally attribute in-group members' failures to external factors and successes to internal factors (Hewstone, 1990). However, when people make attributions about out-group members, they attribute successes to external factors and failures to internal factors. Gibson (1998) reported that nonsmokers (in-group members) discriminate against smokers (out-group members). He suggested that this is because nonsmokers may perceive smokers as members of an out-group. Thus, attributional theories related to in-groups/out-groups are applicable to treatment-seeking groups. He provided evidence for an in-group versus out-group attributional bias between smokers and nonsmokers. This may indicate that nonsmokers are likely to make internal attributions about smokers' lapses, relapses, and reasons for continuing to smoke since they view smokers as part of the out-group. However, relationship factors between nonsmokers and smokers might affect this pattern.

Relationships and Attributions

Research in the area of marital and romantic relationship attributions also provides evidence that relationship characteristics affect attributional style (Gibson, 1998; Hewstone, 1990). In particular, contentment within a relationship influences attribution style (Fincham & Bradbury, 1992). Results from this study indicated that discontented spouses typically make internal and stable attributions about their partners. These attributions tend to be global, and are perceived to affect the relationship as a whole, rather than the specific parts. In contrast,

contented spouses attribute negative behaviors to external and unstable factors, and are more specific to certain situations. Therefore, content couples may be more forgiving of lapses and might engage in fewer negative “helping” behaviors.

It is important to note that hypotheses in the present investigation are based upon the above references in the attribution literature regarding contentedness in marital and other close relationships. However, it is also likely that individuals make attributions about smokers in general, given the stigma presently associated with smoking, and the overwhelming evidence that smoking severely compromises the health of smokers and others within smokers’ environments. Support persons’ attributions about smokers in general may influence the way they relate to specific smokers with whom they have personal relationship. Moreover, attributions might differ as a function of relationship (e.g., romantic versus platonic; family versus friend).

Current Study and Hypotheses

Given the high rates of smoking in young adults, research is needed to identify specific features to include in prevention and cessation efforts/programs targeting this population. Previous research suggests smokers benefit from social support during cessation and maintenance, but only if they perceive the support as helpful (Coppotelli & Orleans, 1985; Fisher, 1997; Lichtenstein et al., 2002; Roski et al., 1996). When smokers perceive support as helpful, they might be more likely to abstain from smoking, as support and cigarettes might be perceived as interchangeable commodities, according to extensive models based on Harlow’s (1958) work. Research also suggests that support provided to smokers should be consistent and positive throughout the process of quitting to increase the chance of maintained abstinence (Carlson et al., 2002; Fisher, 1997; Lichtenstein et al., 2002; Mermelstein et al., 1986). Previous studies indicated discrepancies between smokers’ and support persons’ perceptions of support provided. Thus, it is important to examine support persons’ perceptions of support provided.

Nonsmokers' attributions about smokers might affect levels of support provided as well as consistency of desired positive support. Although previous researchers have studied social support provided to smokers, they have neglected to investigate how attributions might influence the nature of support.

The current study sought to assess the relationship between support persons' causal attributions and their perceptions of social support provided to smokers. More specifically, support persons' attributions (external or internal) for why their smoking partners currently smoke were examined.

The following hypotheses were tested:

(1) Self-reported nonsmoking support persons would endorse providing more positive support to smoking partners than would support persons who currently smoke. Of the nonsmoking support persons, ex-smokers (defined as smoking more than 100 cigarettes in lifetime, but not smoking within the last 30 days) would provide the greatest level of positive support to smoking partners.

(2) Female support persons would endorse providing more positive social support to their smoking partners than male support persons, regardless of smokers' gender. In addition, a gender by smoking status interaction was predicted, such that female ex-smokers would provide more positive social support to their smokers than nonsmokers or current smokers of either gender.

(3) Support persons living with their smokers would report providing more positive support to their smokers than those not living with their smokers. Support persons who were romantically involved with smokers would provide more support than those in platonic relationships with their smokers. A significant relationship between cohabitating status and relationship type was also predicted. Expressly, support persons who were both romantically involved (i.e., boyfriend, girlfriend, spouse) and living with their smokers were expected to

endorse providing more positive support to their smokers than those in platonic relationships (i.e., friend, family member) and not living with their smokers.

(4) Support persons' external attributions were hypothesized to be associated with providing more positive support to their smoking partners. Conversely, it was expected that internal attributions would be related to the provision of more negative, unhelpful support to their smokers.

METHOD

Participants

Participants were recruited through the undergraduate subject pool at Louisiana State University (LSU). Eligible participants were between the ages of 18-24 years, currently enrolled as either part- or full-time students at LSU, and endorsed concern about someone close to them (e.g., parent, spouse, partner, friend, etc.) who smoked cigarettes whom they thought should quit. Participants received course credit as compensation for participation in this survey-based study.

Measures

Demographics and Smoking Background (see Appendix). Participants indicated demographics and smoking background information in a 17-item self-report measure. This background questionnaire included questions about age, race, gender, marital status, university enrollment status, smoking status and year in school. Smoking status was ascertained by asking participants if they had smoked at least 100 cigarettes during their lives. Those who denied this were categorized as “never smokers.” Of those who affirmed smoking at least 100 cigarettes in their lifetimes, those who reported “yes” to having smoked cigarettes in the past 30 days were categorized as “current smokers” and those who reported “no” were classified as “ex-smokers.” Participants were also asked, “Is there someone close to you (e.g., parent, spouse, partner) who smokes cigarettes whom you think should quit?” (Thomas et al., 2005). If participants endorsed concern, they were asked about their identified smokers’ demographic and smoking-related characteristics, the nature of their relationship with their identified smokers, how long they have known each other, and if they live together. Participants’ interest in helping their identified smokers quit and amount of time spent with their smokers per week were also assessed.

Fagerström Test of Nicotine Dependence - Participant (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991). Participants who reported current smoking status completed this 6-item measure of nicotine dependence. The FTND assesses smoking frequency and smoking-

related behaviors such as time to first cigarette after waking in the morning. Total scores range from 0 to 10, with higher scores indicating greater nicotine dependency. This measure demonstrates adequate internal consistency and reliability ($\alpha = .61$), and is positively correlated with biochemical measures of smoking (i.e., exhaled carbon monoxide; Heatherton et al., 1991).

Fagerström Test of Nicotine Dependence – Identified Smoker (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991). Regardless of their own smoking status, participants completed an additional FTND in order to assess their perceptions about their identified smokers' smoking frequency and smoking-related behaviors.

Hypothetical Vignette. Participants provided an answer to an open-ended question about how they might react if their identified smokers successfully quit smoking, but relapsed. Specifically, participants were asked to respond to the following: “*Imagine that you supported this smoker (e.g., significant other, family member, friend) through a smoking quit attempt, but he/she tells you that he/she has relapsed and started smoking again. How would you respond to this?*” For the purposes of this study, responses were recorded and similar responses were noted.

Support Provided Measure (SPM; Thomas et al., 2005). Support provided to a smoker was measured using the 22-item SPM. The SPM was developed to examine support persons' perceptions of support provided to smokers. This self-report measure assesses the following five content domains: directive motivating, punishing, problem solving, rewarding and self-oriented behaviors. It includes behaviors that smokers identify as either positive or negative (Coppotelli & Orleans, 1985; Fisher, 1997; Mermelstein et al., 1983; Park et al., 2004; Thomas et al., 2005). Participants are instructed to read each support statement and either endorse or deny providing various types of support to their identified smokers within the past two weeks. Participants pick from two possible responses, 1 (Yes) or 0 (No). Total scores range from 0 to 22, with higher scores suggesting more supportive behaviors. However, the SPM is made up of positive and

negative support items, making the contribution of positive and negative support unclear.

Therefore, positive and negative subscales will be considered separately in the analyses of the present study. This measure has adequate internal stability ($\alpha = .77$) in a college sample of young adults (Thomas et al., 2005). Scores on the SPM are correlated with demographic (i.e., gender, smoking status, relationship to smoker) and smoking (i.e., current, former, never) characteristics of the support person. Therefore, initial construct validity of this measure has been established (Thomas et al., 2005).

Levels of Attribution and Change – Identified Smoker (LAC; Norcross, Prochaska, & Hambrecht, 1985). Participants' attributions about their smokers' reasons for smoking were assessed with a modified version of the 60-item LAC, which measures loci and levels of attributions about self-selected problems. The LAC is composed of 10 subscales (five internal-dispositional, three external-situational, and two volitional). Statements are prefaced with, "My problem is partly due to..." Participants are then instructed to rate how much they agree or disagree with each statement. However, for the purposes of this study, participants responded to statements about their identified smokers' reason for smoking, so statements were prefaced with, "My smoker's reason for continuing to smoke is partly due to..." Responses are rated on a 5-point Likert scale with answers ranging from 1 (strongly disagree) to 5 (strongly agree). Thus, high scores indicate agreement. The LAC has good internal consistency ($\alpha = .87$) and has been used in samples of undergraduate college students (Flett, Blankstein, Occhiuto, Koledin, 1994; Norcross & Magaletta, 1990; Norcross et al., 1985) and smokers (Norcross, Prochaska, Guadagnoli, & DiClemente, 1984).

Levels of Attribution and Change – Smokers in General (LAC; Norcross, Prochaska, & Hambrecht, 1985). Participants' attributions for why smokers as a population continue to smoke

were assessed with an additional modified version of the LAC. Statements were prefaced with, “Smokers’ reasons for continuing to smoke are partly due to...”

Expired Carbon Monoxide (Vitalograph Incorporated, Lenexa, KS, USA; CO). Expired carbon monoxide (CO), a biological indicator of smoking status, was measured for each participant. The Society for Nicotine and Tobacco subcommittee on biochemical verification (2002) suggested that a CO reading of 8-10 parts per million (ppm) separates nonsmokers from smokers. They also reported that despite smoking status, environmental pollutants might lead to increases of 2-6 ppm (SRNT Subcommittee on Biochemical Verification, 2002).

Procedure

Screening and Assessment. Interested participants signed up for the study through the Personal Access Web Server (PAWS) psychology experiment system and were scheduled for screening and assessment. At this time, informed consent was obtained and participants completed a brief 17-item demographics and smoking background measure to determine eligibility. Participants reported if they were currently concerned about a smoker and indicated their willingness to help that smoker quit. They were also asked about characteristics of their smokers (i.e., gender, relationship, living situation) and completed the LAC – Smokers in General. Each participant then provided a measure of exhaled carbon monoxide (CO), and those who smoked completed the FTND – Participant. Eligible participants were invited to complete four additional measures (the SPM, the hypothetical vignette, the LAC – Identified Smoker and FTND – Identified Smoker).

RESULTS

Missing Data

The data were screened for missing values and seven missing data points were found; however, they were randomly scattered between the two Levels of Attribution and Change (LAC) measures. Therefore, missing data were replaced using mean substitution as described by Tabachnik & Fidell (2006).

Descriptive Statistics

Participant Characteristics. Three hundred twenty-one participants initially enrolled in the study and completed the screening phase. Among them, 77 individuals were ineligible to complete the study due to the following: (a) responding they were “not concerned about a smoker,” ($n = 72$); (b) falling outside the 18-24 inclusion age range ($n = 4$), and (c) both responding they were “not concerned about a smoker” and falling outside the inclusion age range ($n = 1$). The remaining 244 participants completed the study.

Participants were predominantly single (95.5%; $n = 233$), Caucasian (81.0%; $n = 198$), and female (75.4%; $n = 184$). Average age was 20.1 years (± 1.52). Table 1 provides participant information on demographic and smoking-related characteristics. Differences in demographics as a function of smoking status are described below.

Participant Smoking-Related Characteristics. The majority of participants denied a history of cigarette smoking (69.7%; $n = 170$). However, of the currently smoking participants, ($n = 52$), 87.3% ($n = 48$) smoked fewer than 10 cigarettes per day (CPD) and scored an average of 0.94 (± 1.60 , $Mdn = 0.00$; $Mode = 0.00$) on the FTND. Table 1 provides descriptive information for participants’ smoking-related characteristics.

Identified Smoker Characteristics. Of the 244 eligible participants, the majority estimated that their identified smokers smoked every day (92.2%; $n = 225$), smoked between 1 and 10 CPD

Table 1. Participant ($N = 244$) Demographic and Tobacco-Related Characteristics

Demographics	
Age, mean \pm SD yr	20.0 \pm 1.52
Women, n (%)	184 (75.4%)
Single/Never Married, n (%)	233 (95.5%)
Caucasian Ethnicity, n (%)	198 (81.0%)
Tobacco-Related	
Smoking Status	
Never Smoker, n (%)	170 (69.7%)
Current Smoker, n (%)	52 (21.3%)
Ex-Smoker, n (%)	22 (9.0%)
Smoked \geq 100 CPD in lifetime, n (%)	58 (23.8%)
Smoked cigarettes in the last 30 days, n (%)	65 (26.6%)
Cigarettes per day (CPD)	
5 or fewer, n (%)	39 (75.0%)
6-10, n (%)	9 (17.3%)
11-20, n (%)	3 (1.2%)
21-30, n (%)	1 (.4%)
CO reading (smoker), mean \pm SD score	5.04 \pm 7.13
FTND score, mean \pm SD score	0.94 \pm 1.60
Psychosocial Variables	
Frequency of discussing smoking with smoker, n (%)	
Occasionally, n (%)	97 (39.8%)
Seldom or Never, n (%)	95 (38.9%)
Interest in helping the smoker quit	
Definitely would want to help, n (%)	144 (59.0%)
Probably would want to help, n (%)	67 (27.5%)

(67.2%; $n = 164$), and had average FTND scores of 3.20 (± 2.27 , $Mdn = 3.00$; $Mode = 4.00$). Most of the identified smokers were male (57.0%; $n = 139$). Table 2 presents the descriptive information regarding identified smokers.

Table 2. Smoker ($N = 248$) Demographic and Tobacco-Related Characteristics

Demographics	
Male, n (%)	139 (57.0%)
Relationship to smoker	
Parent, n (%)	59 (24.2%)
Other Family Member, n (%)	67 (27.5%)
Friend, n (%)	90 (36.9%)
Romantic partner, n (%)	23 (9.4%)
Live with the smoker, n (%)	43 (17.6%)
Tobacco-Related	
Daily smoker, n (%)	225 (92.2%)
Cigarettes per day (CPD), n (%)	
5 or fewer, n (%)	64 (26.2%)
6-10, n (%)	100 (41.0%)
11-20, n (%)	47 (19.3%)
21-30, n (%)	27 (11.1%)
31 or more, n (%)	6 (2.5%)
FTND score, mean \pm SD score	3.20 \pm 2.27

Preliminary Group Analyses

Prior to testing specific hypotheses, comparisons between groups (i.e., eligible vs. ineligible, gender, smoking status, living situation, relationship status) on baseline and smoking background characteristics were made. In order to assess group equivalence, chi-square tests

were performed for categorical variables and either independent t-tests or analyses of variance (ANOVAs) were conducted for continuous variables.

Eligibility Differences in Demographic and Smoking Characteristics. Eligible participants ($N = 244$) were compared to ineligible participants ($n = 77$) on smoking characteristics to determine whether the groups differed significantly. Chi-square tests were conducted for categorical variables (i.e., gender, ethnicity, smoking status) and independent t-tests were used for continuous variables (i.e., age, carbon monoxide (CO) readings). Results revealed that females were more likely than males to be concerned about a smoker (79.0% vs. 68.2%) and were therefore more likely to be eligible to participate in the study, $\chi^2(1) = 4.08, p < .05$. However, there were no differences between eligible and ineligible participants on other demographic variables such as age, ethnicity, smoking status, or CO level.

Smoking Status and Gender Differences in Demographic and Smoking Characteristics. In my first hypothesis, I predicted that nonsmoking (specifically ex-smoking) participants would endorse providing more positive support to smoking partners than would those participants who were current smokers. In my second hypothesis, I expected that females would report providing more positive types of support than males. I also predicted a gender by smoking status interaction, with female ex-smokers providing more positive support above and beyond smokers or nonsmokers of either gender. Prior to testing these hypotheses, between groups comparisons according to gender and smoking status were conducted on demographic and smoking background information in order to test for group equivalence using chi-square tests for categorical variables (i.e., gender, ethnicity, smoking status, smoking history) and independent t-tests or ANOVAs for continuous variables (i.e., age, CO readings).

Results indicated that males were more likely to report a history of smoking. That is, 36.7% of males reported smoking at least 100 cigarettes within their lifetimes compared to

19.6% of females, $\chi^2(1) = 7.30, p < .01$. While 36.7% of men endorsed smoking cigarettes within the last 30 days, only 23.4% of women endorsed the same, $\chi^2(1) = 4.09, p < .05$. However, the relationship between gender and participants' current smoking status was not significant, $\chi^2(2) = 3.78, ns$.

Although average age for all participants was 20.1 years (± 1.52), ex-smoking participants had a mean age of 21.0 years (± 1.31), never-smokers had a mean age of 20.0 years (± 1.50), and current smokers had a mean age of 20.1 years (± 1.42). Results indicated a main effect for smoking status on age, $F(2, 241) = 10.09, p < .01, \eta^2 = .04$. Although there were no significant age differences between current smokers and nonsmokers, Tukey's post hoc tests indicated that ex-smokers were older than either current smokers or nonsmokers ($p < .05$). Females and males did not differ according to age, $t(242) = .01, ns$.

Smoking participants had a mean carbon monoxide (CO) reading of 5 ppm (± 7.13), and readings were significantly different across participant smoking status, $F(2, 241) = 26.89, p < .01, \eta^2 = .18$, such that smokers had significantly higher CO readings than both nonsmokers ($M = 1.16; \pm .59$) and ex-smokers ($M = 1.18; \pm .59$) ($p < .001$). However, CO levels for nonsmokers and ex-smokers were not significantly different from each other. CO levels for males and females also did not differ, $t(242) = 1.47, ns$. There were no further gender or smoking differences in demographics or smoking background.

Living Situation and Relationship Type Differences in Demographic and Smoking Characteristics. In my third hypothesis, I expected that support persons currently living with their identified smokers would report providing more positive levels of support than those not currently living with their identified smokers. I also expected that participants who were romantically involved with their smokers would provide more positive support than those currently in platonic relationships with their smokers. Finally, I hypothesized that there would be

a cohabitating status by relationship type interaction. Specifically, I expected that participants who were both romantically involved with and living with their smokers would endorse providing more positive support than those in platonic relationships and not living with their smokers. Before testing this set of hypotheses, between-groups comparisons (i.e., living situation, relationship type) were conducted on demographic and smoking characteristics using chi-square tests for categorical variables (i.e., gender, ethnicity, smoking status, smoking history) and independent t-tests or ANOVAs for continuous variables (i.e., age, CO readings).

Results revealed that participants who lived with their identified smokers were more likely to have higher CO levels, $t(242) = 2.63, p < .01$ ($M = 3.33; \pm 7.28$) than those who did not live with their smokers ($M = 1.70; \pm 2.30$). Even after controlling for the effect of participant smoking status [by performing an analysis of covariance (ANCOVA)], the effect of living situation on CO level remained significant, $F(1, 245) = 10.87, p < .05$. Results indicated that those currently living with their smokers were more likely to deny smoking 100 cigarettes or more during their lifetimes, $\chi^2(1) = 54.15, p < .05$. That is, of those living with their smokers, only 37.8% reported smoking at least 100 cigarettes during their lifetimes.

There was also a significant association between gender and participants' reported relationship status (romantic vs. platonic) with their identified smokers. Specifically, females were more likely than males (100% vs. 0%) to report being romantically involved with their smokers, $\chi^2(1) = 8.45, p < .001$. There were no further differences in age, ethnicity, smoking status, or CO level.

LAC – Identified Smoker and LAC – Smokers in General Subscale Differences.

Participants completed two attributional measures (LAC – Identified Smoker and LAC – Smokers in General). Given that participants were asked to complete these measures based on why either their identified smoker or smokers in general continued to smoke, paired samples t-

tests were conducted to test for differences between internal and external subscales. Results indicated that participants made fewer external attributions about why their identified smokers smoke, $t(243) = 8.36, p < .001$ ($M = 35.23; \pm 11.21$) than why smokers in general smoke, ($M = 39.88; \pm 10.83$). Results also revealed that participants made fewer internal attributions about why their smokers smoke $t(243) = 8.84, p < .001$ ($M = 82.15; \pm 25.16$) than why smokers in general smoke ($M = 94.05; \pm 22.58$).

Tests of Specific Hypotheses

Effects of Smoking Status and Gender on Support Provided. A 3 x 2 multivariate analysis of variance (MANOVA) was performed in order to determine the relationship between smoking status and gender on perceived amount of social support provided to smokers as measured by the SPM (hypotheses 1 and 2). This MANOVA examined positive and negative support scales as dependent variables with gender and smoking status as factors.

In the first hypothesis, it was expected that ex-smoking support persons would endorse providing more positive support (and therefore have higher scores on the positive support subscale of the SPM) than either nonsmoking or smoking support persons. It was also predicted that smoking support persons would report providing more negative types of support (and therefore endorse more items on the negative support subscale of the SPM) than either nonsmoking or ex-smoking participants. Results from the MANOVA indicated no significant differences in smoking status on SPM positive and negative subscales, Wilks' Lambda = .97, $F(4, 474) = 2.14, ns$. Nevertheless, there was a trend ($p < .10$) in which smokers ($M = 3.37; \pm .86$) and ex-smokers ($M = 3.41; \pm .91$) appeared to be more likely to endorse providing more negative types of support than nonsmokers ($M = 2.85; \pm 1.23$).

In the second hypothesis, a main effect for gender was expected, such that female support persons would endorse providing more positive support to their identified smokers, regardless of their identified smokers' gender. However, results from the MANOVA indicated no significant

gender differences in SPM positive or negative subscale scores, Wilks' Lambda = .98, $F(2, 237) = 1.87$, *ns*. Even so, females tended to report the provision of more positive ($M = 8.18$; $\pm = 3.98$) and less negative ($M = 2.91$; $\pm = 1.20$) types of support than males ($M = 6.75$; $\pm = 4.19$ and $M = 3.32$; $\pm = .97$, respectively).

A significant gender by smoking status interaction was also predicted, such that female ex-smokers would endorse providing the most positive support and therefore have the highest SPM scores. However, results did not support an interaction for this hypothesis, Wilks' Lambda = .99, $F(4, 474) = .86$, *ns*.

Effects of Living Situation and Relationship Type on Support Provided. A 2 x 2 MANOVA was conducted to determine the association between cohabitating status (living together vs. separate residence) and relationship type (platonic vs. romantic) on social support provided as measured by the SPM (hypothesis 3). Positive and negative support scales were entered as dependent variables and cohabitating status and relationship type were entered as independent variables.

In the first part of the hypothesis, it was expected that support persons currently living with their smokers would report providing more positive support (and therefore have higher scores on the positive support subscale of the SPM) than those who did not live with their smokers. Although results did not support a significant effect of living situation on SPM positive and negative subscales, Wilks' Lambda = .99, $F(2, 239) = .83$, *ns*, those who lived with their identified smokers reported providing more positive ($M = 9.35$; $\pm = 3.32$) and less negative ($M = 2.86$; $\pm = 1.28$) types of support than those who did not live with their smokers ($M = 7.50$; $\pm = 4.15$ and $M = 3.04$; $\pm = 1.15$, respectively).

Additionally, it was anticipated that participants who were romantically involved with their smokers would provide more positive support (and thus have higher scores on the positive support subscale of the SPM) than those who were platonically involved with their smokers.

Results indicated no significant relationships between relationship type and SPM positive or negative subscales, Wilks' Lambda = .98, $F(2, 239) = 2.73$, *ns*. However, there was a trend ($p < .10$) in which participants who were romantically involved with their identified smokers perceived themselves as providing more positive ($M = 10.30$; $\pm = 3.40$) and less negative ($M = 2.35$; $\pm = 1.61$) types of support to their smokers than those who were in platonic relationships with their smokers ($M = 7.57$; $\pm = 4.05$ and $M = 3.08$; $\pm = 1.09$, respectively).

A significant cohabitating status by relationship type interaction was also predicted, such that support persons romantically involved with their smokers and living with their smokers would have the highest positive subscale scores on the SPM. Results did not support this interaction, Wilks' Lambda = .99, $F(2, 239) = .47$, *ns*.

Relationship Type, Attributions, and Positive Support Provided. I predicted that participants' external attributions about their identified smokers' reasons for smoking would be associated with higher levels of self-reported positive social support. In order to test this hypothesis, I conducted a two-step hierarchical regression analysis in which the SPM positive support subscale was regressed on LAC – Identified Smoker scores. On step 1, the following external attribution subscales, as measured by the LAC – Identified Smoker, were entered: Spiritual Determinism, Bad Luck, and Biological Inadequacies. On Step 2, the internal attributions subscales, as measured by the LAC – Identified Smoker, were entered. These included the following: Environmental Difficulties, Maladaptive Cognitions, Familial Conflicts, Interpersonal Conflicts, and Intrapersonal Conflicts. On all regression analyses, data were checked to ensure adherence to assumptions of homoscedasticity and normality. Standardized residual statistics were examined to ensure there were no outliers greater than three standard deviations from the mean of their predicted value (Tabachnik & Fidell, 2006). No outlying cases were identified.

The regression analysis in which the SPM positive support subscale was regressed on LAC – Identified Smoker scores revealed that Step 1 was not significant, $F(3, 240) = 1.89, ns$. Results also indicated that Step 2, which included the three external attribution subscales, was not significant, $F(5, 235) = 1.17, ns$ (see Table 3).

Table 3: Regression Analysis Predicting Positive Support Provided

Variable	Step 1		Step 2	
	<i>b</i>	<i>SE b</i>	<i>b</i>	<i>SE b</i>
Constant	6.76	0.87	6.46	0.87
Spiritual Determinism	0.02	0.07	0.001	0.07
Bad Luck	-0.05	0.05	-0.04	0.05
Biological Inadequacies	0.11*	0.05	0.06	0.06
Environmental Difficulties			0.06	0.06
Maladaptive Cognitions			0.08	0.05
Familial Conflicts			-0.07	0.06
Interpersonal Conflicts			-0.04	0.06
Intrapersonal Conflicts			0.06	0.05

Note $R^2 = .02$ for Step 1; $\Delta R^2 = .02$ for Step 2 ($ps < .05$). * $p < .01$

Participant Smoking Status, Attributions, and Negative Support Provided. In my final hypothesis, I predicted that participants' internal attributions concerning their identified smokers' reasons for smoking would be related to increased self-reported negative support. In order to determine the relationship between internal and external attributions and negative support provided, I conducted a two-step hierarchical regression in which the SPM negative support subscale was regressed on the LAC – Identified Smoker subscales. On Step 1 the following

internal attributions subscales, as measured by the LAC – Identified Smoker, were entered: Environmental Difficulties, Maladaptive Cognitions, Familial Conflicts, Interpersonal Conflicts, and Intrapersonal Conflicts. On Step 2, the following external attribution subscales, as measured by the LAC – Identified Smoker, were entered in order to test for a relationship: Spiritual Determinism, Bad Luck, and Biological Inadequacies.

Results indicated that Step 1, which included the five internal attribution subscales, was not significant, $F(5, 238) = 1.77, ns$. The second step, which was made up of the three internal attribution subscales, was also not significant, $F(3, 235) = 1.95, ns$ (see Table 4).

Table 4. Regression Analysis Predicting Negative Support Provided.

Variable	Step 1		Step 2	
	<i>b</i>	<i>SE b</i>	<i>b</i>	<i>SE b</i>
Constant	2.90	0.26	3.06	0.29
Environmental Difficulties	0.01	0.02	0.01	0.02
Maladaptive Cognitions	-0.01	0.01	-0.01	0.01
Familial Conflicts	-0.02	0.02	-0.02	0.02
Interpersonal Conflicts	0.04*	0.02	0.04**	0.02
Intrapersonal Conflicts	-0.02	0.01	-0.02	0.02
Spiritual Determinism			0.01	0.02
Bad Luck			-0.03*	0.01
Biological Inadequacies			-0.01	0.02

Note $R^2 = .04$ for Step 1; $\Delta R^2 = .02$ for Step 2 ($ps < .05$). * $p < .05$, ** $p < .01$

Participants' Beliefs Regarding a Hypothetical Quit Attempt

Participants completed hypothetical vignettes in which they were asked to imagine that they had supported their smokers through a smoking quit attempt, but were told by their smokers that they had relapsed and started smoking again. Participants were then asked how they (as support persons) might respond to this. These qualitative data were examined and reviewed for content theme and grouped into seven categories.

Approximately 59% of participants ($n = 144$) reported that they would be upset or disappointed that their smokers had relapsed, but would both encourage them to make another quit attempt and ask them what they could do to support them in the future. Another common response was that participants would feel as though their smokers had not made a sufficient effort at maintaining abstinence. In fact, 15.2% ($n = 37$) reported that this would cause them to feel as though their efforts had been in vain, which would make them less likely to be supportive in the future. However, an additional 2.5% ($n = 6$) described that they would still be willing to support their smokers in future quit attempts. About 11% of participants ($n = 28$) indicated that they would be disappointed that their smokers had attempted cessation, but had failed to remain abstinent. These participants also reported that they would not only share their disappointment with their smokers, but also tell them about the health risks related to smoking. Several participants (2.5%; $n = 6$) stated that they might blame themselves for their smokers' relapses, 6.6% ($n = 16$) reported that they would feel upset, and 2.9% ($n = 7$) specified other miscellaneous responses.

DISCUSSION

The primary purpose of this study was to determine predictors of social support provided to smokers. Results revealed that demographic and smoking-related factors (i.e., gender, smoking status, cohabitating status, relationship type) were not related to support persons' perceptions of social support provided to their identified smokers. However, there were nonsignificant trends in the expected directions. Nonsignificant trends were detected between smoking status and perceived social support provided as well as relationship type and perceived social support provided. Specifically, those romantically involved with their smokers reported providing more positive and less negative types of support than those in platonic relationships with their smokers. Compared to never-smokers, smokers and ex-smokers endorsed providing more negative types of support. Regression analyses revealed no significant relationships between attributions and type or amount of perceived support provided. That is, external attributions did not predict perceived positive support and internal attributions did not predict negative support.

Effects of Smoking Status and Gender on Perceived Social Support Provided

Significant differences between support persons' smoking status and amount and type of social support were expected; however, results supported a nonsignificant trend. Specifically, when compared to never-smokers, current smokers and ex-smokers endorsed providing more negative types of social support. For the most part, these results are consistent with previous literature suggesting that never-smokers (Carlson et al., 2002; Coppotelli & Orleans, 1985; Kviz et al., 1994; May et al., 2006; Mermelstein et al., 1986; Murray et al., 1995; Pirie et al., 1996; Walsh et al., 2006) and ex-smokers (Murray et al., 1995) are more likely to provide more effective types of social support to smokers when compared to current smokers (Kviz et al., 1994; May et al., 2006; Walsh et al., 2006). It is surprising that in the current study, ex-smokers endorsed providing greater negative types of support to smokers. Perhaps this is due to a small

number of ex-smokers in the present study. Specifically, of the 244 participants, 70% ($n = 170$) were never-smokers, while only 9% ($n = 22$) were ex-smokers. Lawrence and colleagues (2007) reported similar ex-smoking rates (8%) in their examination of more than 15,000 young adult smokers. It is probable that since the present sample was made up of young adults, participants were more likely to be either current or never-smokers due to their young age.

Contrary to hypotheses, the results of the present study did not show a relationship between gender and perceived support provided. Previous research has suggested that support persons' gender is predictive of amount, type, and consistency of social support provided to smokers. Specifically, females are more likely to provide consistent levels of positive social support throughout the cessation process (Carlson et al., 2002; Coppotelli & Orleans, 1985; Lichtenstein et al., 2002; Mermelstein et al., 1983; Ward et al., 1997), while men might resort to providing more negative types of support in later stages of quitting (Carlson et al., 2002; Coppotelli & Orleans, 1985; Mermelstein et al., 1983). The lack of relationship between gender and support provided may be due to the fact that support persons in the current study were young adults. Previous studies have not looked at social support characteristics in this sample. Therefore, it is possible that social support provided to smokers is not related to gender in a sample of young adult support persons. Alternatively, it is possible that there was a sampling bias. Participants were recruited to participate in a study examining the relationship between social support and smoking, so it is possible that males who participated in the study were more likely to endorse providing greater levels of to their smokers.

Effects of Cohabiting Status and Relationship Type on Perceived Support Provided

Although it was expected that support persons currently living with their identified smokers would report the provision of more positive and less negative types of support, there were no significant relationships between cohabiting status and support provided. It was also expected that support persons who were in romantic relationships with their identified smokers

would report providing more positive and less negative support to their smokers. Results revealed a nonsignificant trend, such that support persons in romantic relationships with their identified smokers endorsed providing more positive and less negative support than their respective counterparts. Researchers have reported that smokers supported by spouses or romantic partners are more likely to successfully quit smoking (Carlson et al., 2002; Croghan et al., 2001; Kviz et al., 1994; Lichtenstein et al., 2002; Murray et al., 1995; Park et al., 2004; Pirie et al., 1996; Roski et al., 1996). Croghan and colleagues (2001) reported that smokers who entered a cessation contest with romantic partners as support persons had higher cessation and abstinence rates. They suggested that this might have been due to increased contact between smokers and their support persons within their natural environments in addition to the support program. Further, Park and colleagues (2004) suggested that support persons not cohabitating with or not romantically involved with their identified smokers might be at a disadvantage for providing consistent quality support since opportunities to provide support would be limited. Unfortunately, no previous studies have specified whether or not smokers and their support persons lived together. Therefore, it is possible that being in romantic relationship with a smoker rather than cohabitating with a smoker is predictive of positive social support provided by support persons.

Results in the present study might have been affected by the small sample size of participants in romantic relationships with and/or living with their smokers. That is, 9% ($n = 23$) of participants were in romantic relationships with their smokers, 18% ($n = 43$) were living with their smokers, and only 2% ($n = 5$) were both living with and in romantic relationships with their smokers. There are two possible explanations for this. First, it is likely that nonsmoking participants were unlikely to be in romantic relationships with or to live with smokers due to personal preference. Second, since the sample was made up of young adults, it is unlikely that they would be married or living with a romantic partner due to their age.

Attributions and Social Support Provided to Smokers

This study is the first to consider how attributions support persons make about smokers might affect the amount and type (negative vs. positive) of support they provide to smokers. It was expected that participants' external attributions for why their identified smokers continued to smoke would be associated with perceived provision of more positive support to their smoking partners, while their internal attributions would be associated with more negative, or unhelpful types of support provided. However, results did not support these hypotheses. These hypotheses were based on previous attributional literature regarding contentedness in marriage and other close relationships (Fincham & Bradbury, 1992; Gibson, 1998; Hewstone, 1990). As previously suggested by Hewstone (1990), participants' attributions about their identified smokers might have been based on in-group/out-group principles. That is, participants might view their smokers as out-group members, thus attributing their failures to internal factors (Gibson, 1998). In order to control for the possibility that participants' attributions about their identified smokers might differ from their attributions about smokers in general, participants completed attributional measures about their identified smokers as well as for smokers in general. Participants tended to make fewer internal and external attributions about their identified smokers than about smokers in general, indicating a difference in attributions according to relationship. It is possible that the association between attributional style and social support provided to smokers differs as a function of relationship. As no previous research has examined the relationship between attributional style and social support provided to smokers, further research is needed in this area.

Hypothetical Scenario

Participants were asked to describe their potential reaction to the following hypothetical vignette: *"Imagine that you supported this smoker (e.g., significant other, family member, friend) through a smoking quit attempt, but he/she tells you that he/she has relapsed and started smoking again."* Responses to this open-ended question were reviewed for content theme. The

following seven general categories were detected: disappointed, but willing to offer future support; disappointed and unwilling to offer future support; angry with the smokers and uninterested in providing future support; disappointed and angry with the smokers, but did not indicate whether or not they were willing to provide future support; blamed self for smokers' relapses; hopeful that smoker would be able to quit in the future; upset; and other (e.g., would not care). Most (59%) participants reported that although they might feel disappointed, they would encourage their identified smokers to make another quit attempt and ask them what they could do to support them in the future. Conversely, only about 15% of participants indicated that they would feel as though they had wasted their time and thus be uninterested in supporting their smokers in the future. The remaining 26% of participants fell into the following categories: disappointed/angry, self-blame, hopeful, upset, and other.

No previous studies have examined the utility of using a hypothetical vignette to assess how support person might react to relapse. In the present study, results suggest that most support persons would ask their smokers what they could do to help in the future, rather than employing their own agenda. Fisher and colleagues (1997) differentiated between these tactics in their description of directive and nondirective support. Directive support occurs when support persons take over responsibility for the problem (i.e., smoking), while nondirective support is a more cooperative process and is typically guided by the "coper" (i.e., the smoker; Fisher, La Greca, Greco, Arfken, & Schneiderman, 1997). Multiple studies have indicated that "copers" are more likely to report greater satisfaction and morale when receiving nondirective support when compared to directive support (Fisher et al., 1997; Harber, Schneider, Everard, & Fisher, 2005). Based on these pilot data, it is likely that the majority of support persons would prefer to provide nondirective rather than directive types of support to their smokers. Thus, future research is needed in this area.

Limitations

One limitation of the present study is the use of self-report measures, which might be biased or unreliable, especially since support persons were questioned about socially sensitive materials such as social support provided and attributions related to their identified smokers' reasons for smoking. Additionally, these measures were completed by support persons and not corroborated by their identified smokers. On the other hand, CO levels were measured to provide a biochemical marker of participant smoking status. Another limitation is the inequivalence in group sizes. For example, the majority of participants were female never-smokers in platonic relationships with and not living with their identified smokers. Few participants were ex-smokers ($n = 22$), romantically involved with ($n = 23$), or cohabitating with ($n = 43$) their identified smokers. This might have been due to the young adult population; however it is possible that the small sample sizes mean that participants were not representative of population characteristics. Although the total sample size was adequate, some group sizes might have been too small to detect significant differences. Finally, the measure of perceived social support provided (the SPM) is made up of positive and negative support items, making the relative contribution of positive and negative support unclear. Positive and negative subscales were calculated separately; however, the positive support subscale is made up of 18 items, while the negative subscale is made up of only four items. This might have limited participants' responses.

Strengths and Implications for Future Research

The current study has several strengths. It is the first known study to investigate how attributions might influence the amount and type of social support provided to smokers, and it is one of the few to examine support persons' perceptions of social support provided to smokers. Moreover, the sample was limited to college students between the ages of 18-24 because young adults have the highest smoking prevalence of any age group in the United States (28.5%; CDC, 2004b). Thus, research investigating factors related to smoking cessation in this population are

especially valuable. Although none of the proposed hypotheses in the present study were statistically significant, results from multivariate analyses of variance (MANOVA) indicated nonsignificant trends between smoking status and relationship type and differences in amount and type of social support provided. These findings suggest the importance of relationship factors in the cessation process and highlight the need for future research in this area.

This study utilized a sample of young adults currently enrolled in college. However, future studies should consider using samples of young adults who are not currently enrolled in either high school or college. Previous research has suggested that this sample might have higher smoking prevalence than their college or high school attending peers (Choi et al., 2004; Waters et al., 2006). Moreover, as many young adults are occasional (e.g., less than one cigarette per day) smokers (Rigotti et al., 2000), future studies should assess specific factors associated with this pattern of smoking.

In addition, future research should compare support persons' beliefs regarding social support provided to smokers and attributions for why their identified smokers continue to smoke with their identified smokers' perceptions related to support received and attributions about their smoking habits. Only one study has compared smokers' and nonsmokers' perceptions about types of social support that might be helpful during a cessation attempt (Patten et al., 2003). However, this study was conducted with adolescents. Results revealed that smokers were less likely than nonsmokers to believe that social support would be helpful during a quit attempt. Therefore, additional research is needed to determine whether this pattern applies to other populations such as young adults. Patten and colleagues (2003) suggested that differences in support persons' and smokers' perceptions might warrant the development of interventions tailored specifically for support persons. As this topic area is sensitive, support persons might respond in a socially desirable style. Therefore, future research should also include a measure of social desirability. Finally, researchers should consider the relationship between various types

(e.g., directive vs. nondirective) of social support provided and attributions about smoking. The present study suggests the importance of relationship factors in the smoking cessation process and highlights the need for future research in this area.

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APPENDIX A

DEMOGRAPHICS AND SMOKING BACKGROUND QUESTIONNAIRE (DSBQ)

1. CO Level: _____
2. What is your age?
 - a) 18
 - b) 19
 - c) 20
 - d) 21
 - e) 22
 - f) 23
 - g) 24
 - h) Other (specify): _____
3. What is your gender?
 - a) Female
 - b) Male
4. How would you describe your ethnic background?
 - a) Native American/Alaskan Native
 - b) Asian
 - c) Black/African American
 - d) White/Caucasian
 - e) Other (specify): _____
5. How would you describe your enrollment status at LSU?
 - a) Full-time (enrolled in 12 or more hours this semester)
 - b) Part-time (enrolled in fewer than 12 hours this semester)
 - c) LSU extension
 - d) Currently not enrolled in classes
6. How many semesters have you spent in college?
 - a) Less than one
 - b) One
 - c) Two
 - d) Three
 - e) Four
 - f) Five
 - g) Six
 - h) Seven
 - i) Eight or more
7. Which of the following describes your current marital status?
 - a) Married
 - b) Divorced/Separated
 - c) Living with a significant other
 - d) Single/Never married

- 8.a. Have you smoked at least 100 cigarettes in your lifetime?
- Yes
 - No
- 8.b. Have you smoked cigarettes in the last 30 days?
- Yes
 - No
- 8.c. How many cigarettes per day do you smoke?
- 5 or less
 - 6-10
 - 11-20
 - 21-30
 - 31 or more
 - Not applicable to me
9. Is there someone close to you (e.g., parent, spouse, partner) who smokes cigarettes whom you think should quit? IF NO, PLEASE STOP HERE.
- Yes
 - No
10. IF YES, does he/she smoke daily?
- Yes
 - No
11. How many cigarettes/day do you estimate he/she smokes?
- 5 or less
 - 6-10
 - 11-20
 - 21-30
 - 31 or more
12. What is your relationship with the smoker?
- Boyfriend/girlfriend/spouse
 - Parent
 - Other family member
 - Friend
 - Other (specify): _____
13. What is the gender of the smoker?
- Female
 - Male

14. How long have you known the smoker?
- a) Less than 1 year
 - b) Between 1 and 3 years
 - c) Between 3 and 5 years
 - d) Between 5 and 10 years
 - e) Between 10 and 15 years
 - f) Between 15 and 20 years
 - g) Between 20 and 24 years
 - h) Not applicable to me
15. Do you currently live with the smoker?
- a) Yes
 - b) No
16. How many hours per week do you spend with the smoker?
- a) One hour or less
 - b) Between one and three hours
 - c) Between three and five hours
 - d) Between five and ten hours
 - e) Between ten and fifteen hours
 - f) Between fifteen and twenty hours
 - g) Greater than twenty hours
17. How often do you talk with the smoker about his/her smoking?
- a) Very frequently
 - b) Frequently
 - c) Occasionally
 - d) Seldom or never
18. How would you describe your level of interest in helping this smoker quit?
- a) Definitely would want to help
 - b) Probably would want to help
 - c) Unsure
 - d) Probably would not want to help
 - e) Definitely would not want to help

APPENDIX B

HYPOTHETICAL VIGNETTE

Imagine that you supported this smoker (e.g., significant other, family member, friend) through a smoking quit attempt, but he/she tells you that he/she has relapsed and started smoking again. How would you respond to this?

To be recorded by research assistant: _____

VITA

Diana Stewart was born at Fort Knox, Kentucky, and raised predominantly in Lansing, Kansas. She attended the University of Kansas in Lawrence, Kansas, where she earned a Bachelor of Arts in psychology and a minor in English in 2005. Upon graduating, Diana entered the doctoral program in clinical psychology at Louisiana State University, where she is currently in her third year. Research and clinical interests include health behavior change (i.e., smoking cessation, weight loss) and social support.