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Sequential treatment for nicotine dependence and postcessation weight concern in a female diagnosed with paranoid schizophrenia.

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Despite declines in smoking prevalence, some populations represent significant challenges to tobacco cessation programs, including smokers with psychiatric comorbidity and/or weight concerns. Few studies have found effective interventions for tobacco cessation or addressed the prevalence of smoking-related concerns in psychiatric populations. The side effects of many psychotropic medications, decreased participation in physical activity, and weight gain following cessation suggest that postcessation weight concerns and actual weight gain may be significant barriers to cessation as well. Therefore, serial interventions, rather than simultaneous ones, seem well suited to address these issues. This case study represents the piloting of serial cessation and postcessation weight gain prevention interventions in a female diagnosed with paranoid schizophrenia. Results suggested that the serial implementation of cognitive-behavioral interventions can be effective in promoting tobacco cessation in individuals with co-occurring disorders.

Keywords: *body weight; psychiatric comorbidity; smoking cessation*

1 Theoretical and Research Basis

Cigarette smoking is the leading cause of preventable death and disease in the United States (U.S. Department of Health and Human Services [USDHHS], 2004). An estimated 21% of the general population smokes (Centers for Disease Control and Prevention [CDC], 2007). Despite significant national reductions in tobacco use, cessation rates have leveled off (USDHHS, 2004). There continue to be multiple subpopulations that display disproportionately high rates of nicotine dependence, such as individuals diagnosed with schizophrenia (Brown, Birtwistle, Roe, & Thompson, 1999), veterans (Miller et al., 2001), and smokers with weight concerns (Jeffery, Hennrikus, Lando, Murray, & Liu, 2000). An essential direction for future research is to modify tobacco cessation interventions to reach these potentially challenging populations (USDHHS, 2004).

Smoking and Schizophrenia

Approximately 1% of the population suffers from schizophrenia (American Psychiatric Association, 2000). Individuals diagnosed with schizophrenia smoke at higher rates (68% – 80%) than the general population and other psychiatrically diagnosed groups (Brown et al., 1999; de Leon et al., 1995; Goff, Henderson, & Amico, 1992). Compared to the general population, smokers who are diagnosed with schizophrenia smoke more cigarettes per day (Kelly & McCreadie, 1999; Lasser et al., 2000), are less likely to quit (Weiner, Ball, Summerfelt, Gold, & Buchanan, 2001; Ziedonis & George, 1997), and have higher relapse rates (George et al., 2002). Consistent with high smoking rates, higher rates of cardiovascular and respiratory disease exist in this population (Joukamaa et al., 2001), as well as death due to smoking-related diseases (Brown, Inskip, & Barraclough, 2000). Previous research has shown that 40% of individuals suffering from schizophrenia who smoke would like to quit in the future (Forchuk et al., 2002). However, individuals with schizophrenia face unique barriers to cessation because of their limited cognitive and social resources and lack of alternative reinforcers. For example, patients with schizophrenia report greater perceived benefits of smoking compared to nonpsychiatric controls and indicate a preference for cigarettes over other forms of rewards (i.e., engaging in alternative pleasant activities) (Spring, Pingitore, & McChargue, 2003). This finding suggests that motivation to quit smoking might be an important target of intervention for this population because perceived benefits of continued use are experienced more strongly than in the general population.

Motivation is viewed as a central component for behavior change in the transtheoretical model (TTM) (Prochaska & DiClemente, 1983). The TTM is an evidence-based theory that conceptualizes the behavior change process as occurring in five stages (precontemplation, contemplation, preparation, action, and maintenance), each of which is distinguished by distinctive cognitions, intentions, and behaviors that reflect one's motivation and readiness to change (Prochaska & DiClemente, 1983). This model has been extensively applied to smoking and smoking cessation (DiClemente et al., 1991; Prochaska, Velicer, DiClemente, & Fava, 1988; Velicer, Prochaska, Fava, Laforge, & Rossi, 1999), with the idea that readiness to change depends on establishing a discrepancy between the perceived benefits of continued smoking versus the perceived benefits of quitting. In short, cognitive processes predominate in earlier stages of change, and behavioral processes are indicated at later stages (Rosen, 2000).

Likely given concerns of symptom exacerbation, relative to cessation studies in the general population, fewer nicotine cessation efforts have been aimed at this population (Bradshaw, Lovell, & Harris, 2005). However, concerns that individuals with schizophrenia may

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experience adverse consequences on quitting smoking have not been substantiated by research (i.e., no change in positive or negative symptoms) (Addington el-Guebaly, Campbell, Hodgins, & Addington, 1998; Smith, Pristach, & Cartagena, 1999). Recent findings show promise in decreasing smoking behavior and increasing cessation on posttreatment with this population; however, few treatment programs have been able to maintain abstinence rates at 6-month follow-up (Addington et al., 1998; George et al., 2002; Ziedonis & George, 1997). For example, abstinence rates of 42% to 50% at completion of treatment tend to decline to 12% to 19% by 6-month follow-up (Addington et al., 1998; George et al., 2002; Ziedonis & George, 1997), which are lower than prolonged quit rates in nonclinical samples (Fiore et al., 2000).

Behavioral therapy (Ziedonis & George, 1997), contingency management (Tidey, O'Neill, & Higgins, 2002), counseling (Addington et al., 1998), and nicotine replacement therapy (NRT) (Addington et al., 1998; Tidey et al., 2002; Ziedonis & George, 1997) have all been shown to be moderately effective treatments for smoking cessation in this population in the short term with improved treatment outcomes occurring when counseling (group or individual) is combined with NRT (Addington et al., 1998; Ziedonis & George, 1997). Consequently, treatment interventions need to focus on improving long-term maintenance of cessation rates in this population.

Smoking and Weight

Previous research has found that weight gain is a consequence of smoking cessation for many individuals (Caan et al., 1996; Klesges et al., 1998). Weight gain is a common barrier for many smokers to resist cessation (Weekley, Klesges, & Relyea, 1992), fail quit attempts (Meyers et al., 1997), and relapse (Klesges & Klesges, 1988). Concerns about weight gain have been found in men (Borrelli, Spring, Niaura, Hitsman, & Papandonatos, 2001), women (Talcott et al., 1995) (i.e., African American; Ludman et al., 2002), and veterans (Cooper, Dundon, Hoffman, & Stoevers, 2006). Women tend to fear weight gain more, be less confident in their ability to control postcessation weight gain (Jeffery et al., 2000), and exhibit the highest risk for weight gain following cessation (Caan et al., 1996; Klesges et al., 1998). Continuous abstinence can result in weight gains as high as 13 pounds following a one-year period (Klesges et al., 1997). However, health risks associated with weight gain following smoking cessation are minimal compared to the risks associated with continued smoking (John, Hanke, Rumpf, & Thyrian, 2005; USDHHS, 2004). It is necessary for smoking cessation treatment programs to include education components about the potential risk of weight gain, as well as behavioral components to prevent or minimize postcessation weight gain.

There is some evidence to suggest that nicotine in cigarettes produces an acute increase in the metabolism of smokers (Perkins, Epstein, & Pastor, 1990; USDHHS, 1990). Consequently, increases in weight gain may occur not only because of diets high in fat and sedentary lifestyles (Klesges, Eck, Clark, Meyers, & Hanson, 1990; Perkins et al., 1990; USDHHS, 1990) but also because of a decrease in the amount of extra calories smoking had previously burned (USDHHS, 1990).

Common findings from studies of nicotine replacement, serotonin-enhancing drugs, and bupropion include either promising short-term results, or in longer length studies modest weight suppression in drug intervention groups, followed by weight rebound, so that by follow-up, weights do not differ between groups (Borelli et al., 1999; Jorenby et al., 1999;

Li Wan Po, 1993; Spring et al., 1995). Similarly, behavioral interventions to reduce weight gain following cessation have produced mixed results (Danielsson, Rossner, & Westin, 1999; Hall, Tuskell, Vila, & Duffy, 1992). Previous research suggests that simultaneous interventions focusing on weight gain and smoking behaviors would overwhelm the individual and reduce the likelihood of smoking cessation (Hall et al., 1992; Pirie et al., 1992). Persky, Spring, Vander Wal, Pagoto, and Hedeker (2005) found that participants in a simultaneous multiple behavior intervention were able to adhere to the regimens for smoking cessation and dietary restriction, but not for increased physical activity. These results suggest that when faced with multiple behavior changes, participants may find it easier to change behaviors that are similar in nature (e.g., decreasing smoking and eating, rather than decreasing smoking and increasing exercise).

More recently, novel smoking cessation interventions including physical activity components have been shown to reduce postcessation weight gain (Marcus et al., 1999). Light levels of exercise (5 or 10 min) have been found to produce reductions in cravings and withdrawal from cigarettes, as well as reductions in stress and tension levels (Daniel, Cropley, Ussher, & West, 2004). Spring et al. (2004) utilized a sequential treatment for smoking cessation and weight gain prevention. Their results show promise that when conducting treatments, multiple behaviors can be changed sequentially without producing detrimental effects to the main goal, in this case, smoking cessation, though further research is needed to confirm these results. Conceivably, innovative smoking cessation interventions that include physical activity components may aid in combating weight gain because of the aforementioned reduction of metabolic bursts from smoking cessation. In addition, these physical activity components may not need to consist of one lengthy time period but may comprise numerous short intervals of exercise throughout each given day (Daniel et al., 2004), thus being comparable to the frequency of which the former smoker once received these metabolic bursts.

Although no studies have specifically examined interventions aimed at preventing postcessation weight gain in psychiatric samples, a recent meta-analysis of lifestyle interventions for individuals with schizophrenia suggests that weight management programming can be just as effective for this population as for nonpsychiatric populations (Bradshaw et al., 2005).

Summary

Comorbid psychiatric illness is strongly associated with higher rates of nicotine dependence (Kalman, Morissette, & George, 2005). More recently, concern over smoking rates in mentally ill populations has grown, as have concerns over weight gain associated with antipsychotic medications and the development of diabetes, metabolic syndrome, and other cardiac risk factors in this population (Goff et al., 2005). In addition, relative to the general population, such smokers have failed to respond to current methods of nicotine dependence treatment (Lasser et al., 2000). A critical direction for future research is to develop tailored interventions that address the unique needs of these smoking populations (USDHHS, 2004). Multiple bout/lifestyle physical activity seems suitable to address the issue of postcessation weight gain, perhaps particularly in psychotic populations in which goal-setting activities can be self-determined and easily followed. The following case study illustrates the potential effectiveness of a cognitive-behavioral intervention for tobacco cessation and resultant

weight gain in an African American female with co-occurring psychiatric difficulties and weight concerns.

2 Case Introduction

At the time of treatment, Client A, a divorced African American female was age 55 years with 14 years of education. After high school, Client A joined the military. She is a veteran of the Marines Corps, served during the Vietnam era, and was honorably discharged.

3 Presenting Complaints

Client A presented at the Tobacco Cessation Clinic at the Veterans Affairs Medical Center (VAMC) for smoking cessation treatment. She was receiving a 100% service-connected disability for paranoid schizophrenia. Client A had been smoking for 12 years. She reported an average use of 20 cigarettes per day. She had three previous quit attempts, one of which lasted for 6 months.

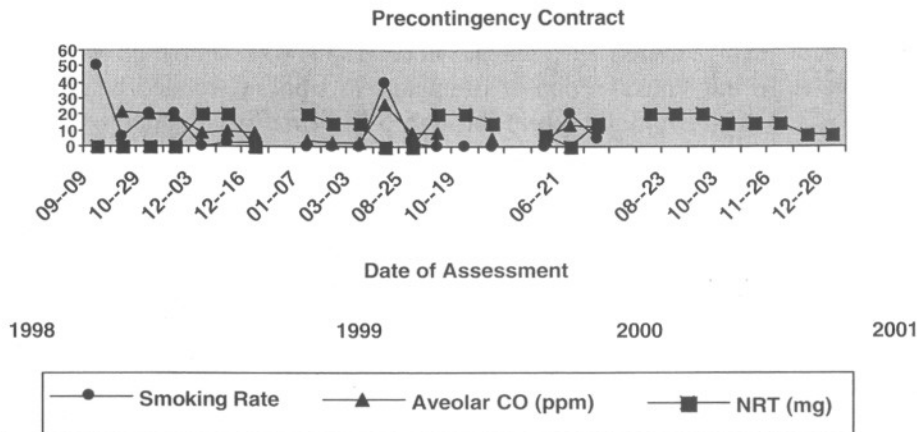
4 History

In 1998, Client A made her first attempt at smoking cessation known to Tobacco Cessation Clinic providers. She participated in a 6-week cessation program consisting of cognitive-behavioral therapy and nicotine replacement. By 1999, she achieved abstinence and completed the program (see Figure 1). She then participated in follow-up appointments over the next 18 months, during which time her results were mixed. She failed to keep several follow-up appointments and experienced several lapses to smoking (see Figure 1). During this period, her treatment team, comprising staff from the Tobacco Cessation Clinic, primary care, and pharmacy reported several conflicts with Client A regarding her use of nicotine replacement. In addition, Client A reported barriers to cessation that included increased appetite and cessation-related weight gain. In 2001, Client A requested NRT from her primary care provider. Over a 4-month period, she was able to reduce the dosage of her nicotine replacement from 21mg to 7mg; however, during this period her smoking status was not being monitored, and she was not participating in any program offered by the Tobacco Cessation Clinic (see Figure 1). In 2002, Client A expressed a desire to continue using nicotine replacement. Based on her history of using nicotine replacement and her inconsistent follow-up with the Tobacco Cessation Clinic, it was decided by a multidisciplinary team to discontinue her pharmacotherapy for smoking cessation and recommend a more structured, rigorous cessation plan (see Figure 2).

5 Assessment

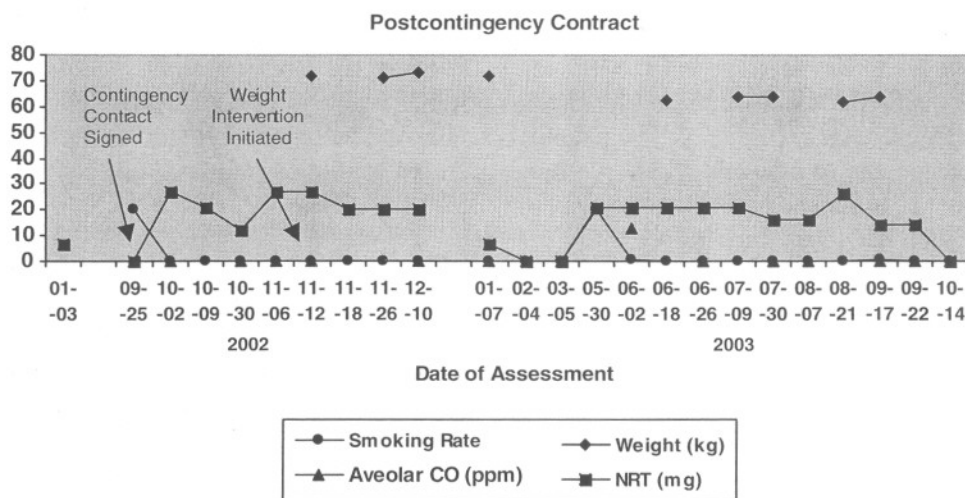
During her initial interview, Client A completed a variety of questionnaires. Demographic information (e.g., age, race, and gender), as well as information about psychiatric and medical diagnoses, medications, and tobacco use history were obtained from the Computerized

Figure 1
A Comparison of Client A's Smoking-Related Assessments Prior to the Implementation of a Contingency Contract



Note: Labels on the X-axis indicate the dates for appointments that Client A was assessed. Variables include smoking rate, alveolar CO, and nicotine replacement therapy (NRT). Alveolar CO was measured in parts per million (ppm). NRT was measured in milligrams (mg).

Figure 2
A Comparison of Client A's Smoking-Related Assessments Postcontingency Contract and One-Year Follow-Up



Note: Labels on the X-axis indicate the dates for appointments that Client A was assessed. Variables include smoking rate, alveolar CO, nicotine replacement therapy (NRT), and weight. Alveolar CO was measured in ppm. NRT was measured in milligrams (mg). Weight was measured in kilograms.

Patient Record System and a Tobacco Cessation Clinic Intake packet completed at the beginning of treatment. The following questionnaires were completed prior to individualized sessions and at the one-year follow-up: The Process of Change measure (Prochaska et al., 1988), the Temptation/Self Efficacy measure (Velicer, DiClemente, Rossi, & Prochaska, 1990), and the Decisional Balance (Velicer, DiClemente, Prochaska, & Brandenburg, 1985).

The Process of Change measure (Prochaska et al., 1988) was completed to assess which issues are related to the smoker's choice to engage in smoking-related behaviors. Items range on a 5-point scale from 1 (*never*) through 5 (*repeatedly*). Responses on different items are summed with higher scores indicating more attention to that factor in the process of change. Reliability of the 10 factors consisting of four items each, ranging from .69 to .92 have been found to be adequate.

The Temptation/Self Efficacy measure (Velicer et al., 1990) was completed to assess tobacco temptation, and control in situations considered to be positive, negative, or habitual. Items are rated on a scale ranging from 1 (*not at all tempted*) to 5 (*extremely tempted*). Responses are summed to indicate level of temptation in positive, negative, and habitual situations, with higher scores indicating greater temptation. The internal consistencies for the Positive Symptom Subscale (ranging from .87 – .91), Negative Symptom Subscale (ranging from .80 – .89), and the Habitual Subscale (ranging from .85 – .93) have been found to be acceptable (Schumann et al., 2005).

The final self-report instrument used was the Decisional Balance (Velicer et al., 1985), which assesses the smoker's pros and cons of smoking. Items are rated on a scale ranging from 1 (*not at all important*) to 5 (*extremely important*). Responses are then summed to indicate the strength of pros and cons toward smoking. Internal consistencies of the pros (.88) and cons (.89) of the measure have been found to be acceptable.

A Bedfont EC50 Micro III smokerlyzer was used to assess alveolar carbon monoxide (CO; a by-product of cigarette smoke) levels, which is considered to be a reliable indicator of recent smoking behavior. The Bedfont smokerlyzer assesses expired CO with a precision of 99.8% (Hald, Overgaard, & Grau, 2003). Higher CO readings indicate higher levels of smoking. CO was assessed via staff trained in the use of the machine, and Client A adhered to all instructions during these assessments. Digital readings of CO in parts per million (ppm) were then recorded. CO assessments were used to objectively document smoking abstinence and to maintain Client A's motivation for continued progress. At each individual post cessation session, Client A was weighed using a Detecto balance beam, eye level, scale with her shoes removed.

6 Case Conceptualization

Given Client A's previous treatment history, her reports in the initial interview, and baseline smoking rates, it was concluded that Client A met diagnostic criteria for paranoid schizophrenia and nicotine dependence. In addition, Client A's history with NRT, quit attempts, and inconsistent follow-up with the Tobacco Cessation Clinic warranted attention in designing and implementing time-limited NRT, as well as providing her with group and individualized cognitive-behavioral therapy (CBT).

In conjunction with Client A's pharmacist, the Tobacco Cessation Clinic, and Client A herself, a treatment plan consisting of combining cognitive-behavioral techniques (e.g., contingency contracting) and time-limited NRT (see Figure 2) was designed in an effort to eliminate cigarette consumption. A thorough assessment revealed the need to tailor the intervention to meet the particular challenges facing this client (i.e., psychiatric symptoms, previously documented weight concerns). Initially, Client A rejected this strategy but several months later recontacted the clinic and agreed to participate in the intervention.

7 Course of Treatment and Assessment of Progress

Given the primary goals of smoking cessation and nicotine replacement discontinuation, cognitive-behavioral techniques and time-limited NRT were introduced simultaneously. At the beginning of treatment, a behavioral contract was presented to Client A to facilitate history gathering, communication, and treatment planning. Within this contract, it was established that nicotine replacement was contingent on CO verification of smoking abstinence and consistent participation in group or individual counseling.

After agreeing to the behavioral contract, Client A initially participated in a 4-week series of cognitive-behavioral psychoeducational tobacco cessation groups. The group sessions educated her about identifying cues and external and internal triggers (e.g., thoughts, feelings, and emotions about smoking), enhanced motivation for quitting, and relapse prevention (e.g., managing cravings, time, social life, and slips). These session topics are designed to cover a broad range of client motivation and include more cognitive-based strategies (e.g., motivational enhancement), as well as more action-oriented ones (e.g., trigger management).

Following the psychoeducational group sessions, Client A participated in individual tobacco cessation counseling that focused on tobacco abstinence and relapse prevention. When individual sessions commenced, other perceived barriers to continued cessation and relapse prevention were identified including stress management, co-occurring psychiatric issues, accessing social support, and continued cessation-related weight concerns. CO and weight were measured at each session to ensure adherence with the above-mentioned behavioral contract.

To bolster prolonged cessation, stress management and issues related to Client A's psychiatric comorbidity warranted attention. Given maintenance of cessation was of primary importance, Client A was counseled to allow the delay of attention to postcessation weight gain. Although reminders were needed in early individual sessions that weight gain would become focal once prolonged abstinence was observed, Client A was able to demonstrate an understanding that simultaneously targeting tobacco cessation and weight management would present a potentially overwhelming challenge.

With regard to stress management, common CBT techniques such as cigarette substitution and the identification and implementation of trigger coping skills were used. Individualized intervention tailoring integrated particular needs and preferences of Client A to bolster the likelihood of success. Client A frequently reported using her religious faith as a coping resource. Consistent with her religious beliefs, attempts were made to integrate faith-based strategies (e.g., prayer during cravings for nicotine) within a cognitive-behavioral

framework. More concrete processes were also implemented to assist Client A in accessing social support for cessation (e.g., identifying supportive family members, ways to ask for help, identifying supportive behaviors). Furthermore, it was clear that Client A had a difficult time interacting with numerous Tobacco Cessation, primary care, and mental health providers regarding requests for nicotine replacement. As a result, she was provided with one Tobacco Cessation counselor as the primary point of contact. This provided Client A with an appropriate means of accessing tobacco cessation services and to build rapport with a counselor who could appropriately adapt interventions to her special needs (e.g., telephone sessions during periods of increased anxiety, scheduling sessions in conjunction with expressed delusional beliefs regarding restricted travel during certain periods of the month). All strategies were empirically (i.e., Fiore et al., 2000) and theoretically based (i.e., using action-oriented strategies to prevent relapse; Rosen, 2000).

After Client A had achieved cessation, individual and telephone follow-up sessions were conducted to aid in the maintenance of tobacco cessation and weight management. Client A received psychoeducation about suspected causes of postcessation weight gain. These topics included food preferences, caloric intake increases, and acute metabolic burst decreases. Dietary modification was recommended, and goals were set around food preferences and intake (e.g., limit sweets, snack with carrots). In addition, goals to increase lifestyle physical activity (e.g., increase in activity to cumulative 30 min per day) were created. To help boost Client A's metabolism several times a day, multiple bout exercise was utilized. This consisted of small, incremental bouts of physical activity that when added up would make up the recommended 30 min (e.g., parking at a distance from the grocery store, taking the stairs instead of the elevator). This weight management intervention was consistent with cognitive-behavioral tenets, the transtheoretical model, and Client A's specific needs. That is, delayed weight management employing education and goal setting is cognitive behavioral in nature, action oriented, and clearly designed to establish concrete and achievable goals. During face-to-face sessions, alveolar CO and weight were measured.

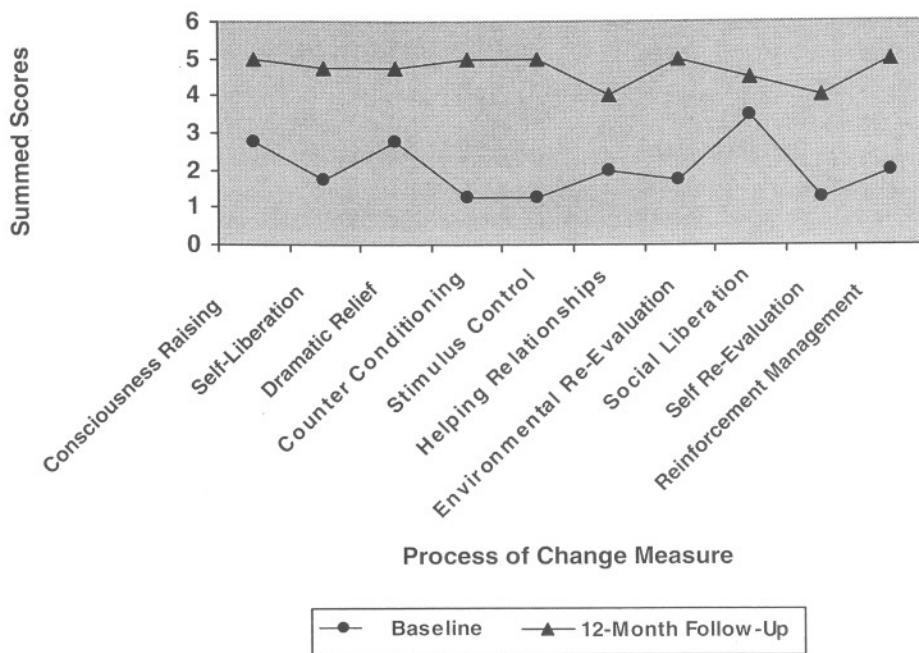
8 Complicating Factors

Client A's history of multiple failed smoking cessation attempts and her somewhat adversarial relationship with several Tobacco Cessation, primary care, and mental health providers regarding access to nicotine replacement required sensitivity in maintaining a trusting relationship and continued monitoring of her CO and weight measures. Relative to her initial tobacco cessation efforts, the implementation of a contingency contract resulted in a more consistent pattern of treatment and follow-up. Although Client A had some inconsistency in keeping appointments with her treatment provider, they were limited in intensity and duration (see Figure 2) and tended to be associated with her symptoms of schizophrenia (e.g., telephone sessions during periods of increased anxiety).

9 Managed Care Considerations

No managed care issues arose during treatment.

Figure 3
A Comparison of Client A's Process of Change at Baseline
and One-Year Follow-Up



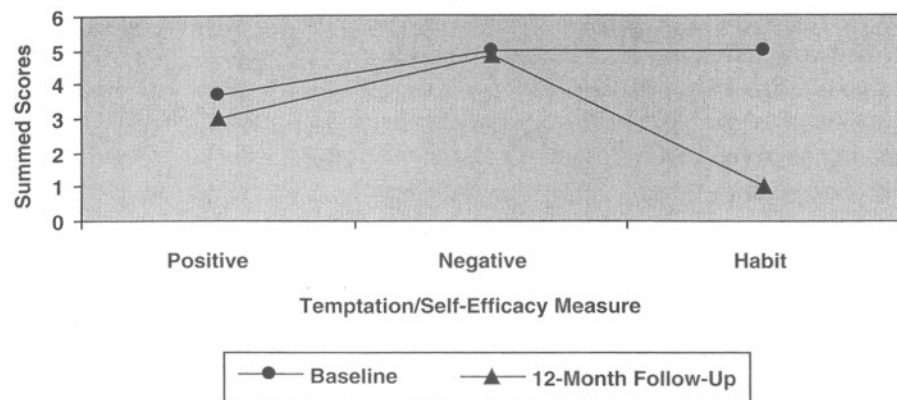
Note: Labels on the X-axis indicate the 10 processes of change. The Process of Change Rating was based on the summed scores for questions concerning why Client A choose to engage in smoking-related behaviors.

10 Follow-Up

At one-year follow-up, Client A completed the following measures: a smoking history questionnaire that included smoking rates and use of NRT, alveolar CO and weight measures, and the transtheoretical measures. The use of contingency contracting and other cognitive-behavioral techniques appeared to assist Client A in maintaining abstinence for a longer period of time. Abstinence from smoking was reported, apart from one 2-week relapse during the year reportedly related to increasing environmental stressors as opposed to exacerbations in psychotic symptoms or weight concerns per se (see Figure 2).

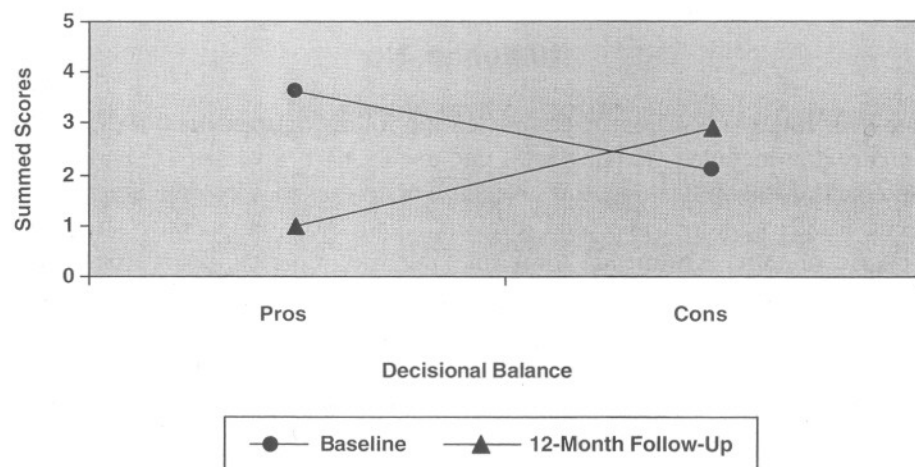
Delaying the weight management intervention until smoking cessation was achieved resulted in minimal change in weight for Client A (see Figure 2). Self-report measures suggested positive changes in the transtheoretical measures of readiness to quit (see Figures 3, 4, and 5). More specifically, Client A reported higher scores across all the factors on the Process of Change measure (Prochaska et al., 1988), indicating that she was giving more attention to those factors in her decision to quit smoking. Client A reported a reduction in temptation for positive and habitual situations as measured by the Temptation/Self Efficacy measure (Velicer et al., 1990). Last, Client A reported greater strength of cons and lesser

Figure 4
A Comparison of Client A's Temptation/Self-Efficacy at
Baseline and One-Year Follow-Up



Note: Labels on the X-axis indicate the Temptation/Self Efficacy constructs. The Temptation/Self-Efficacy Rating was based on the summed scores for questions concerning the positive, negative, and habitual situations, with higher scores indicating greater temptation.

Figure 5
A Comparison of Client A's Decisional Balance at Baseline
and One-Year Follow-Up



Labels on the X-axis indicate smoking-related pros and cons. The Decisional Balance Rating was based on the summed scores for questions concerning the pros and cons toward smoking.

strength of pros toward smoking as measured by the Decisional Balance (Velicer et al., 1985). Changes in these measures not only provided evidence to the treatment team of successful smoking related attitude changes but also enabled the ability to systematically address these changes with Client A at follow-up. Such feedback allowed Client A to recognize not only the importance of her behavior changes but also the salience of her smoking-related reevaluations in her cessation and maintenance successes.

11 Treatment Implications of the Case

This case is the first demonstration of a sequential intervention for tobacco cessation and weight gain in an individual diagnosed with nicotine dependence and paranoid schizophrenia and with a demonstrated history of failed smoking cessation attempts. Despite a history of failed attempts at smoking cessation, as well as fear of weight gain, use of empirically based interventions consisting of a behavioral contract, group and individual smoking cessation counseling sessions, and weight management counseling following cessation can result in an effective treatment for promoting and maintaining smoking cessation.

12 Recommendations to Clinicians and Students

Several recommendations follow from treating nicotine dependence with this type of intervention. First, a controlled clinical trial needs to be conducted using contingency contracting as an intervention to promote smoking cessation in individuals with co-occurring psychiatric disorders. Although the results from Client A seem promising, this type of treatment needs to be performed with a larger number of people to promote generalizability. Second, a controlled trial using a sequential tobacco cessation weight management intervention protocol needs to be conducted in a larger group of participants with psychiatric diagnoses. By structuring treatments in this manner, participants will be able to address one behavior change at a time rather than attempting to modify both challenging behaviors simultaneously. Third, research is still needed that examines the efficacy and effectiveness of weight management strategies involving lifestyle and multiple-bout physical activity.

Although research is still warranted, clinicians may wish to assess the salient assessment and treatment components of the current case for implications relevant to their own clients. First, in addition to utilizing evidence- and theory-based interventions, the use of multiple and congruent assessment tools allowed for outcome tracking and client feedback. Second, the tailoring of tobacco-related CBT strategies to those with psychiatric comorbidity may include the use of behavioral contracting tempered with appropriate accessibility to tobacco cessation services. Third, by counseling clients early on that concerns about weight gain will be addressed following prolonged cessation, clients' anxiety may be reduced and adherence to the cessation program may be increased as a result. Finally, given that many clients in practice suggest daily time limitations for physical activity, it may be of benefit to use multiple-bout, lifestyle-based physical activity. In doing so, clients may benefit from metabolic bursts throughout the day with little impact on their daily schedule, which may increase adherence to and self-efficacy for the proposed treatment resulting in physical

activity increases, reduced postcessation weight gain, and greater likelihood of smoking abstinence.

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