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Understanding Treatment-seeking Smokers' Motivation to Change: Content Analysis of the Decisional Balance Worksheet

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Abstract

The Decisional Balance Worksheet (DBW), an open-ended measure of motivation to change, may be used to record the pros and cons of smoking versus abstinence among treatment-seeking smokers. Recent findings indicated that the open-ended DBW could be quantified to validly reflect people's level of motivation to stop smoking (Collins, Eck, Torchalla, Schröter, & Batra, 2010). The goal of the current study was to enhance our understanding of these participants' motivation to change by examining the qualitative content of their decisional balance. Participants were treatment-seeking smokers (*N*=268) who had participated in a larger randomized controlled trial of tailored smoking cessation interventions (Batra et al., 2010). Using the DBW, participants recorded their pros and cons of smoking versus abstinence, and content analysis methods were used to extract common themes. Findings indicated that the physical and psychological effects/functions of smoking and abstinence were most commonly mentioned as both pros and cons. Although the decisional balance categories were substantively similar over time, their relative frequency shifted from pre- to posttreatment. For the sample as a whole, the number of pros of smoking generally decreased, whereas the pros of abstinence increased from pre- to posttreatment. Findings suggest clinicians can expect certain perceived pros and cons to characterize their clients' decision-making process about smoking and abstinence. At the same time, the use of the decisional balance allows for assessment of individuals' unique motivational set.

Keywords

decisional balance; motivation to change; smoking cessation; motives for smoking; qualitative analysis; smoking

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Contributors S.E. Collins developed the study idea, the design and methodology and served as the lead author on most sections of the article. S.E. Collins and S. Eck co-conducted the content analyses. Within the context of her Master's thesis, S. Eck drafted a manuscript that included an initial version of these analyses. She also reviewed and provided feedback on the current version of the analyses and write up. I. Torchalla, M. Schroeter and A. Batra reviewed and contributed to the initial study design as well as critically reviewed and provided feedback on the article. All authors approved the final article.

Conflict of Interest All authors declare they have no conflicts of interest.

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In the past two decades, there has been an uptick in the development of measures assessing various aspects of smoking motivation to change (e.g., smoking motives, reasons, motivation, decisional balance; Biener & Abrams, 1991; Crittenden, Manfredi, Warnecke, Cho, & Parsons, 1998; Dijkstra, De Vries, & Bakker, 1996a; Piper et al., 2004; Sciamanna, Hoch, Duke, Fogle, & Ford, 2000; Simmons, Heckman, Ditre, & Brandon, 2010; Velicer, DiClemente, Prochaska, & Brandenburg, 1985). The items included in these measures, however, are generated by researchers instead of by participants themselves. The exclusive use of researcher- versus participant-generated items may not adequately capture motivation to change for a few important reasons. First, researchers are primarily approaching the topic from an academic perspective, and may therefore identify and prioritize different motivational factors than affected individuals. Relatedly, by providing participants with pre-generated items, researchers may be artificially constructing participants' reasons for smoking to which participants passively respond. This approach may have the unwanted side effect of making respondents aware of pros and cons they may not have otherwise considered and which may not represent their own unique motivational set. This phenomenon may explain why many of these measures have provided mixed findings regarding predictive validity (Abrams, Herzog, Emmons, & Linnan, 2000; Borland et al., 2010; Carey, Purnine, Maisto, & Carey, 1999). In contrast, use of an open-ended response format allows participants to express their own motivational state rather than respond—potentially in a socially desirable way—to researchers' perspectives and values (Fischoff & Quadrel, 1991).

A new use for the open-ended decisional balance worksheet (DBW) has been introduced to elicit a representation of participants' own motivation to change (Collins, Carey, & Otto, 2009; Collins, et al., 2010). The decisional balance, which is a formalized consideration of pros and cons of a certain behavior versus potential alternatives, has been identified as one aspect of the multidimensional motivation-to-change construct (Miller, 1999). In a recent study, the open-ended DBW was used to elicit pros and cons of smoking versus abstinence among treatment-seeking smokers (Collins, et al., 2010). Findings indicated that participants' open-ended decisional balance could be quantified by summing the counts of the pros of abstinence and cons of smoking and dividing by the total number of decisional balance entries. The resulting decisional balance proportion (DBP) was then used to represent the extent to which the decisional balance is tipped towards change, while controlling for individual differences on number of total items reported. Findings from this study conducted with treatment-seeking smokers showed that increasing motivation to change (as measured by post-minus preintervention difference on the DBP) predicted smoking abstinence up to one year after a smoking cessation intervention (Collins, et al., 2010).

The quantification of participant-generated responses represents a predictively valid and clinically relevant snapshot of the strength of an individuals' motivation to change. On the other hand, given the open-ended nature of the DBW, two individuals may have the same strength of motivation to change as reflected by the DBP but will likely not have identical content. Thus, the exploration of these raw qualitative data may provide additional clinical insights into the clients' motivations that may complement the quantitative data.

Additionally, studies have shown that qualitative data regarding pros and cons of smoking and/or abstinence may be generalized to describe a larger sample or population's values and attitudes about their smoking (Esterberg & Compton, 2005; Okuyemi, Caldwell, et al., 2006). Such qualitative evaluations have provided important insights that may be applied to the design of treatment components in both clinical and research contexts. For example, the qualitative analysis by Okuyemi, Caldwell, et al (2006), which yielded themes regarding homeless smokers' reasons for and against smoking, informed treatment development for a

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subsequent research trial (i.e., Okuyemi, Thomas, et al., 2006). A qualitative evaluation of the content of open-ended decisional balance data may therefore be helpful from a research perspective to describe smokers' beliefs about their smoking and abstinence and thereby inform future treatment development.

Although they can yield rich and well-grounded data, qualitative approaches often involve time-intensive data collection and analysis procedures (Miles & Huberman, 1994). Thus, it would be helpful to determine whether the more concise and structured DBW, which may be self-administered within the context of a larger questionnaire battery, yields similar information as is gleaned from more time- and cost-intensive focus group or interview-based qualitative investigations (cf. Esterberg & Compton, 2005; Okuyemi, Caldwell, et al., 2006). If so, the DBW may be a more efficient way to both gather clinically rich individual data and generate larger sample descriptions that may inform the research literature and subsequent treatment development.

This study comprises a content analysis of written, open-ended responses to a DBW. The aim of the study was to understand the perceived pros and cons of smoking versus abstinence from the perspectives of German treatment-seeking smokers, and to qualitatively and quantitatively assess the changes in their decisional balance over the course of a smoking cessation intervention. There were no hypotheses for this exploratory, mixed methods study.

2. Material and Methods

2.1 Participants

Participants (N=268; 55% women) were adult, treatment-seeking, daily smokers who volunteered to participate in a smoking cessation research trial in southwest Germany (for information on the parent study, see Batra, et al., 2010). See Table 1 for a description of participants' pretreatment demographic information.

2.2 Measures

The Sociodemographic and Smoking Baseline Questionnaire (SSBQ) was created by our research group in the context of previous trials. It comprises a series of single items assessing sociodemographic information and pretreatment smoking intensity (i.e., mean number of cigarettes smoked per day), duration, and quit attempts (Batra, et al., 2010; Batra, Collins, Torchalla, Schröter, & Buchkremer, 2008). These items were used to describe the sample at pretreatment.

The *Decisional Balance Worksheet* (DBW) was used to assess participants' motivation to change via their decisional balance (Collins, et al., 2009; Collins, et al., 2010). Directly translated from German, the instructions were: "Please list the following in the corresponding boxes: What are some advantages you associate with your smoking? What are some disadvantages? What are some advantages you associate with your not smoking? What are some of the disadvantages?" Participants recorded the pros ("advantages") and cons ("disadvantages") they associated with smoking versus abstinence on the open-ended DBW.

2.3 Procedure

This study is a secondary analysis of data collected in the context of a smoking cessation intervention study (for study details, see Batra, et al., 2010). All procedures were approved by the Institutional Review Board at the home institution and followed ethical principles outlined in the Helsinki Declaration. Participants provided written, informed consent prior to

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the study. In the main treatment trial (*N*=268), there were two conditions, treatment-as-usual control (i.e., motivational plus behavioral intervention and recommendation for nicotine replacement therapy), and modified treatment (i.e., the treatment-as-usual condition supplemented with cognitive, psychoeducational and interpersonal components and tailored recommendations for nicotine replacement therapy and/or Bupropion). Modified treatment was tailored for 3 risk profiles (i.e., depressive, novelty-seeking/hyperactive and highly dependent smokers; for details on risk profiles see Batra, et al., 2010; Batra, et al., 2008). Weekly, 2-hour treatment sessions were conducted over a 6-week period by trained master's-level therapists. Treatment conditions were controlled for using dummy-coded covariates in the inferential analyses included in this study.

At in-person assessment sessions, bachelor-level research assistants read scripted instructions on questionnaire completion aloud to participants. All questionnaires came with additional written instructions and examples. Participants were encouraged to ask questions about the appropriate completion of measures, and research assistants checked over participants' questionnaires to ensure item completion. The DBW, SSBQ and other psychological measures were administered pretreatment. Immediately posttreatment, participants completed the second DBW as part of the larger questionnaire battery in the parent study.

2.4 Data Preparation and Analysis Plan

The pros and cons of current smoking versus abstinence were transcribed from the DBW into a spreadsheet program. Sampling units were the individual participants, recording units were the DBW responses and context units were individual pros and cons described in the DBW. A conventional content analysis, which is a methodology that facilitates description of qualitative data through a systematic process of coding and classification, was conducted (Hsieh & Shannon, 2005; Krippendorff, 2004). Data were coded separately as participants responded to the prompts and according to their predetermined contextual units. In this way, separate codes and categories were created for pros of smoking, cons of smoking, pros of abstinence and cons of abstinence.

Participants' responses were reviewed by two raters, a clinical psychologist (first author) and a masters'-level psychology graduate student (second author), to identify recurring themes and categories (Miles & Huberman, 1994). Initial coding was conducted independently, with codes being applied line-by-line. After the initial independent coding phase, a codebook was created in consensus meetings, pooling incident-by-incident codes and removing or collapsing idiosyncratic or redundant codes. After the codebook was established, the first and second authors trained two master's level psychology and medical students on the coding procedure and manual. The two students rated the first 25 pretreatment DBWs, and then ratings were discussed. In the case of discrepancies, definitions of the categories were clarified in the codebook and with all raters, and rating was repeated until interrater consistency for these items reached standards in the literature (i.e., 80%; Shek, Tang, & Han, 2005). After adequate consistency was attained, ratings from one rater, a medical student who was in the lab for an extended period of time, were used for the primary analyses.

Quantitative analyses included descriptive proportions of the decisional balance categories represented, as well as inferential testing of the pre- to posttreatment changes in the number of pros and cons of smoking versus abstinence. Because the latter involved the analysis of positively skewed, count variables, four generalized estimating equation models (GEEs) were conducted using the Poisson distribution, the log link and robust standard errors to account for the nonindependent data.

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3. Results

3.1 Pretreatment Decisional Balance Findings

Of the four decisional balance fields at pretreatment, participants generated cons of smoking most frequently (34%), followed by the pros of abstinence (31%), pros of smoking (21%), and cons of abstinence (13%). Figure 1 shows the frequencies of responses within each of the overall categories.

3.1.1. Pros of smoking—For the pros of smoking, the psychological effects and functions category was the most frequently cited, and represented well over one-third of all participants' responses (see Table 2 for category percentages for the pretreatment pros of smoking). Psychological effects and functions were typically represented in three subcategories. First, participants credited smoking with the achievement of desired affective states, such as "inner peace," "psychological stability," and/or "balance". Second, participants reported that smoking helped them cope with negative internal states and external situations. For example, smoking was cited as helping to "relieve stress," "give myself a reward," and "reduce anxiety." A very small percentage of the psychological effects and functions responses also indicated the importance of one's identity as a smoker (representing only 2.4% of this category).

Structuring time was the second most cited pro of smoking. Smoking reportedly helped "pass the time" and gave participants "something to do." Additionally, smoking provided a means of dividing up challenging or tedious tasks at work and facilitated periodic breaks from work or family life.

The third most common pro of smoking was enjoyment. Participants reported either enjoyment of the cigarette in and of itself (e.g., "It just tastes good," "I like to smoke," "smoking is simply enjoyable") or enjoyment of smoking in combination with either eating or drinking. Particularly common were reports that smoking is satisfying after a good meal or that it "tastes good" when drinking either coffee or alcohol.

Social aspects were the fourth most common pro of smoking at pretreatment. Participants particularly noted the fact that smoking provides an instant connection to and something in common with others. This fact reportedly makes smoking a "communication facilitator" with new people, deepens existing relationships, and provides a sense of "belonging." Finally, participants reported that smoking is a pastime they enjoy with established friends and acquaintances (e.g., "sitting together, talking and smoking," "it's fun to sit and smoke with others").

Physical aspects of smoking were the next most common perceived advantage to smoking. Within this category, 82% of responses focused on the use of smoking to control one's appetite and weight. The other 18% of the perceived positive physical aspects of smoking included the fact that it facilitates digestion, falling asleep at night and a sense of "physical well-being."

The smoking ritual was also cited as a positive aspect of smoking (e.g., "ritual," "pleasant habit"). We also included in this category responses indicating the use of cigarettes "with coffee" or "with beer," when "enjoyment" was not explicitly mentioned and did not appear to be the primary factor. The positive cognitive aspects of smoking were represented as well: participants noted that smoking facilitates concentration. Relief of nicotine cravings and withdrawal symptoms in the short term was mentioned as an additional positive aspect of smoking.

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3.1.2. Cons of smoking—As shown in Table 2, the most frequently endorsed category of smoking cons at pretreatment was concern about one's health. This category consisted most commonly of health concerns in general (i.e., participants simply named "health"). Some participants were more specific, noting for example, a "fear of developing cancer" in the future, whereas others cited their concerns that smoking might worsen their existing medical conditions (e.g., emphysema).

The health concerns category was followed closely by negative physical side effects participants attributed to smoking. Physical side effects included worsening of physical condition/endurance, physical appearance (e.g., skin aging, yellow fingers and teeth, bad breath), and physical symptoms (e.g., coughing, weezing). Financial cost was the next most cited con of smoking, followed by the distaste for the lingering smell of smoke on clothes, carpets and walls. Social aspects of smoking were cited as the fifth most common category of smoking cons, and included conflicts about smoking at home with partners and children, at work and in society more generally (e.g., "social discrimination").

Psychological effects and functions of smoking served as the next most common category, and fell into two primary subcategories. The first represented the negative emotional effects of smoking, including "feeling tired, worn-out" or experiencing mood swings throughout the day. The second subcategory represented negative attitudes about smoking, ranging from "guilt" about smoking to concerns about "not setting a good example for my kids." Less commonly cited cons of smoking included immaterial costs (e.g., "Smoking takes up a lot of my time," "Can't travel to certain countries because smoking's not allowed"), environmental/political reasons (e.g., "negative effects on the environment"), loss of productivity, and cognitive effects (e.g., "difficulty concentrating," "forgetfulness").

3.1.3. Pros of abstinence—At pretreatment, the most commonly reported pros of abstinence were the physical aspects (see Table 2 for category percentages for the pros of smoking). Expected improvements in physical side effects of smoking were most frequently cited (e.g., "improvements in taste," "to be able to catch my breath," "less coughing"). Next, participants expected improvements in their physical fitness (e.g., "more in shape," "more endurance when playing sports"), and outward presentation and appearance ("better breath," "fewer blemishes"). Additionally, some participants simply expected to "feel better" in general.

Health benefits were the second most common category of the projected pros of abstinence at pretreatment. The vast majority of responses in this category projected better health in general (e.g., "living healthier," "health"). A smaller percentage of responses focused on specific health-related pros, such as reduced cancer and cardiovascular risks.

The decreased financial cost of smoking was the third most commonly cited pro of abstinence. Next, participants noted the feeling of being free from nicotine dependence. While some responses simply stated "no more dependence," others were more specific ("no more withdrawal symptoms") and even philosophical (e.g., "freedom," "no longer a slave to my cigarettes"). The next most common category was the decreased smell of smoke in the participants' immediate environment ("It won't stink in my apartment anymore," "My clothes will smell better").

Psychological benefits were cited next and included reductions in psychological symptoms attributed to smoking as well as positive emotions stemming from a successful quit attempt. Representing the former, participants reported expecting to have "more pep," "feel more balanced," and have a "clearer head." Representing the latter, pros reflected increased self-efficacy ("I can do it," "I am stronger than my addiction"), and improved self-image ("good

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role model for my kids"). Social benefits included having fewer conflicts about smoking and being more esteemed by one's partner, family, friends and co-workers (e.g., "fewer fights with my wife," "my colleagues respect me more," "no more discrimination"). Less frequently cited pros of abstinence included reduced immaterial costs (e.g., time), environmental/political aspects ("not supporting Big Tobacco"), and improved quality of life.

3.1.4. Cons of abstinence—Psychological effects and functions comprised the most commonly projected cons of abstinence at pretreatment (see Table 2 for category percentages for the pros of smoking). The majority of the psychological cons reflected concerns about potential psychological symptoms of withdrawal, such as "nervousness," "difficulty concentrating" and "irritation." Concerns about inadequate coping strategies to deal with psychological stress were the second most common subcategory. These were sometimes expressed as rhetorical questions ("How will I deal with stress?" "What can I hold onto when times get tough?" "How will I reward myself after a long day?"), or were specifically identified by participants (e.g., "I won't have my crutch anymore."). Less common were expressions of low self-efficacy for abstinence achievement and fear of losing one's identity as a smoker.

The second most common projected con of abstinence had to do with potential physical symptoms believed to be precipitated by abstinence, particularly the concern about increased appetite and weight gain. Next, participants expressed concern about the loss of the smoking ritual and/or habit. Participants primarily named missing smoking in conjunction with coffee or alcohol consumption as a concern. Next, participants named the experience of withdrawal symptoms once abstinence was achieved -- "craving," "urge to smoke," "withdrawal." Perceived social cons were named and included no longer feeling like they belong, feeling less sociable, and having to explain why they're not smoking. There was also a concern that —particularly in work situations—important work-related contacts and information might be missed because they were not present with colleagues on smoke breaks.

The projected reduction in quality of life and the pleasurable experience of smoking represented another con of abstinence cited by participants. The loss of a means of structuring and filling one's time without smoke breaks was a concern about becoming abstinent. Less commonly projected cons of abstinence included the time (e.g., attending a smoking cessation treatment), energy and financial costs (e.g., nicotine replacement therapy) of a quit attempt, as well as the projected cognitive effects of abstinence (e.g., difficulties concentrating).

3.2 Comparing Pretreatment and Posttreatment Decisional Balance Findings

Examination of the pre- and posttreatment decisional balances indicated that the categories of pros and cons of smoking and abstinence essentially remained the same. There was, however, some movement in terms of the proportional representation of the categories (see Table 2 for category proportions and rankings according to frequency). Of the four decisional balance fields at posttreatment, participants generated pros of abstinence most frequently (36%), followed by the cons of smoking (33%), pros of smoking (19%), and cons of abstinence (13%). Figure 1 shows the frequencies of responses within each of the overall categories.

Changes in the pre- to posttreatment counts of pros and cons of smoking and abstinence were tested using four GEE models. See Table 3 for means and standard deviations and Figure 1 for distributions of the overall category counts (number of pros and cons of smoking and abstinence, respectively) at pre- versus posttreatment. Findings indicated that neither the cons of smoking, $\chi^2(1, N = 265) = 0.65$, $p = .42$, nor the cons of abstinence, $\chi^2(1,$

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$N = 262) = 0.22, p = .64$, changed significantly over the course of treatment. On the other hand, models for the pros of smoking, $\chi^2(1, N = 263) = 7.47, p = .01$, and pros of abstinence, $\chi^2(1, N = 264) = 7.83, p = .01$, were significant. Specifically, the number of the pros of smoking decreased by approximately 16% ($IRR = 0.84, p = .01$), and the number of the pros of abstinence increased by 9% ($IRR = 1.09, p = .01$) from pre- to posttreatment for the entire sample. In additional analyses, we examined the potential effects of treatment group and a time x treatment group interaction. Because there were no significant findings for these additional variables, however, we have not included them here, and have instead collapsed the treatment groups.

4. Discussion

4.1 Summary of findings

The decisional balance has been used for decades to record individuals' motivation to change health-related behaviors, such as smoking (Janis & Mann, 1977; Miller & Rollnick, 2002; Velicer, et al., 1985). In a previous study, the open-ended DBW, which asked treatment-seeking smokers to list the pros and cons of both smoking and abstinence, was quantified to produce the decisional balance proportion. Findings indicated that the quantification of the DBW, which represents individuals' balance towards smoking abstinence, was a reliable and predictively valid measure of motivation to change (Collins, et al., 2010). The current study sought to add to these quantitative findings by exploring the qualitative data collected using the DBW using mixed methods analyses. These findings will be presented in the context of the qualitative and quantitative literature on decisional balance findings.

4.1.1. Pros of smoking—By far, the most common pro of smoking at both pre- and posttreatment comprised the psychological effects and functions participants ascribed to smoking, primarily including achieving a positive affective state and coping with negative affect. Contrary to another study, which found that 17% of smokers endorsed identity as a smoker as a key smoking motive (Fidler & West, 2009), identity as a smoker was not a very frequently volunteered response in this sample, with less than 1% of overall responses falling into this category. This finding may point to differences in the study samples (i.e., general smoker population versus treatment-seeking smokers); however, it also may signal the difference in weighting and salience of motives if they are researcher- versus participant-generated.

The second most common pro of smoking at pretreatment was the use of smoking as a means of structuring or filling one's time. It fell, however, to fourth place at posttreatment—overtaken by social pros of smoking which moved to second place. This finding corresponded to our clinical observations during the smoking cessation treatment: smokers cited missing the friends and familiar places they had chosen to distance themselves from during the early stages of their cessation. Fortunately, many of our smoking cessation group members formed "nonsmoking circles" with one another to socialize after the treatment ended, and this may be recommended in clinical contexts to help clients fulfill their need to socialize without sacrificing their abstinence goals. Enjoyment of smoking—either alone or in conjunction with alcohol, coffee or the end of a meal—remained the third most frequent pro of smoking at both pre- and posttreatment.

Taken together, the findings regarding the pros of smoking corresponded to those of other studies, which have also found that psychological factors (e.g., stress relief) and enjoyment were primary reasons for smoking (Esterberg & Compton, 2005; Fidler & West, 2009; McEwan, West, & McRobbie, 2008). On the other hand, the Likert-scale measures used in other studies (e.g., Smoking Motives Questionnaire) included an item covering the time-

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filling but not the time-structuring properties of cigarettes. In this way, the open-ended nature of this questionnaire likely broadened the conceptualization of this perceived pro of smoking.

4.1.2. Cons of smoking—At pretreatment, the most common cons of smoking were concerns about 1) health, 2) undesirable physical symptoms and 3) the financial costs of smoking, which corresponded to the findings of other studies involving nontreatment-seeking smokers (Esterberg & Compton, 2005; Okuyemi, Caldwell, et al., 2006). At posttreatment, however, physical symptoms were named more frequently than health concerns. Financial costs of smoking remained the third most common category at both pre- and posttreatment.

When reporting on health concerns, participants most often reported simply “health,” whereas a much smaller minority cited specific health concerns, such as “fear of developing cancer.” In contrast, participants’ concerns about smoking-related physical symptoms were much more specifically described—aging skin, yellow fingers, bad breath. The undesirable physical symptoms of smoking therefore seemed to have a greater salience, perhaps due to their more visible and immediate effects. This phenomenon was further reflected in the fact that the fourth most common con of smoking was the “smell of smoke” in one’s hair, clothing and apartment, which was more often cited as a con than physical dependence, psychological detriment and social pressures. These findings are in line with behavioral economics and self-control theories which suggest that smaller effects delivered sooner are more salient than larger effects delivered later (Glautier, 2004). Although this is usually discussed in terms of the rewarding effects of smoking, it appears the short-term and more visible cons of smoking may be more salient and definable than more serious adverse effects that may loom in the future.

4.1.3. Pros of abstinence—At pretreatment, the expected decreases in the physical side effects of smoking, such as improvements in taste, physical fitness and outward appearance, were the most commonly cited pros of abstinence. In second and third place, participants mentioned the improvements in general health and decreased financial costs of smoking, respectively. The order of the top three pros of abstinence remained consistent from pre- to posttreatment. This finding corresponds to the literature, which has shown that present symptoms and future health concerns are major drivers of smoking behavior change (McCaul et al., 2006). However, the second most commonly cited motivation for quitting in the literature is social pressure (e.g., pressure to quit, effects on others; McCaul, et al., 2006). Social reasons were further down the list in our sample: #7 at pretreatment and #6 at posttreatment. These findings reflect the importance of capturing cultural nuances that may affect the decisional balance. At the time of this study, Germany was just beginning to introduce antismoking policy. Thus, although the resulting increased discussion may have increased motivation for and salience of quitting, smoking at the time of the study was generally not viewed with the same aversion as in the United States, where cultural shifts and social pressures towards nonsmoking norms took root as far back as the 1960s (Studlar, 2002).

4.1.4. Cons of abstinence—The most common perceived cons of abstinence at pretreatment were related to psychological aspects of abstinence achievement and maintenance. Participants’ concerns centered on psychological symptoms of withdrawal they believed would occur (nervousness, difficulty concentrating), psychological functions of smoking that would be lost (e.g., inadequate means of coping with stress), and to a much lesser degree, loss of identity as a smoker. The fact that psychological factors played such a large role in participants’ cons of abstinence echoes the findings of a study that qualitatively explored the factors promoting smoking versus quitting (Thompson, Thompson, Thompson,

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Fredrickson, & Bishop, 2003). The next most common perceived con of abstinence at pretreatment comprised physical symptoms— particularly potential increases in appetite and weight gain--followed by the loss of the ritual or habit of smoking.

Although psychological and physical aspects of abstinence remained the top two concerns at posttreatment, loss of ritual/habit of smoking fell from third place (comprising 9.2% of cons of abstinence) at pretreatment to ninth place (comprising 5.5% of cons of abstinence) at posttreatment. Social concerns moved up from fifth to third place at posttreatment, with participants noting they felt less sociable, less sense of belonging and more frustration explaining to friends, colleagues and acquaintances that they were no longer smoking. The impact of the social aspects of smoking are highly contingent upon more distal, cultural factors as well as more immediate, peer-related factors, and should not be underestimated. Clinicians should anticipate these challenges of abstinence and help clients work through these expected cons of smoking to make them more manageable after abstinence is attained.

4.2 Comparing Overall Decisional Balance Findings at Pre- and Posttreatment

At both pre- and posttreatment, participants generated very similar content for the pros and cons of both smoking and abstinence. At pretreatment, however, the cons of smoking were named most frequently, followed by the pros of abstinence, pros of smoking, and cons of abstinence. At posttreatment, pros of abstinence were most frequently named, followed by cons of smoking, pros of smoking and cons of abstinence. This finding corresponds somewhat to research that has been conducted with Likert-scale decisional balance measures, which has shown that smokers who intend to quit are less likely to report reasons for smoking and are more likely to report reasons for abstinence (Dijkstra, De Vries, & Bakker, 1996b). Despite the fact the categories remained relatively similar, participants mentioned fewer pros of smoking and more pros of abstinence at posttreatment compared to pretreatment. This finding suggested that, overall, participants' decisional balances tilted more towards change over the course of the intervention, which is in line with theories such as the transtheoretical model of change (Prochaska, 1994).

On the other hand, frequencies of perceived cons of smoking and abstinence remained unchanged. To maximize smoking cessation intervention effects on these aspects of clients' motivation to change, it may be helpful to find ways to decrease the perceived cons of abstinence and increase perceived cons of smoking. Clinicians may be able to play a role in decreasing perceived cons of abstinence. For example, the top concern about abstinence before and after the intervention was related to psychological symptoms of withdrawal, such as nervousness, difficulty concentrating, irritation and lack of alternative coping strategies. Further, affect regulation, the most common pro of smoking, accounted for about one-third of the responses at pre- and posttreatment. Taken together, these findings indicate that clinicians may help decrease the perceived cons of abstinence in the course of a smoking cessation intervention by increasing the focus on affect regulation and stress management skills. To increase clients' perceived cons of smoking, individual, micro-level change should be supported by macro-level public health interventions and policies that aim at changing public opinion and attitudes towards smoking.

4.3 Study Limitations

The study limitations deserve mention. First, the current methods were not designed to establish the degree to which participants are aware of and able to report upon the actual pros and cons that influence their behavior. These and other potential limitations of self-reported data collection may have influenced the study findings. Future studies may explore the ability of other types of data collection, such as implicit measures, to supplement these self-report findings.

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Second, we collapsed the data across intervention group in this secondary study, which may have impacted the content and weighting of the decisional balance. That said, the treatment-as-usual and modified conditions both comprised the same base of motivational and behavioral components and were therefore similar in terms of the driving theoretical orientation as well as overall content and structure. Because analyses indicated that the counts of pros and cons of smoking and abstinence did not differ by treatment group, the decision to collapse the groups was deemed appropriate.

Third, this study was conducted with a small sample of smokers in a mid-sized German university town. The relatively high levels of education and employment in this sample indicate a high socioeconomic level. Further, the sociopolitical climate during which these data were collected (2005-2007) was unique: some German states had just begun to introduce antismoking policies. One would therefore expect these developments to have affected participants' perceived pros and cons of smoking differently than in countries where smoking is less prevalent, less socially acceptable, and/or more strongly regulated (e.g., Canada) or in countries where smoking is even more prevalent, socially acceptable, and not as strongly regulated (e.g., Greece). These considerations may limit the external validity of these findings.

On the other hand, the fact that these findings are culturally specific highlights the strengths of using an open-ended DBW—it is a flexible measure that tailors itself to the motivational set of respondents. The fact that the DBW is open-ended and captures participant-generated pros and cons allows this measure to be used across various cultures, substance-use foci and individuals to most accurately capture salient pros and cons of substance use and substance-use behavior change.

4.4 Conclusions

The concept of the decisional balance has been used for decades to represent people's motivation to engage in a behavior and its alternatives (Janis & Mann, 1977; Miller & Rollnick, 2002; Velicer, et al., 1985). Previous measures of decisional balance, however, have used researcher-generated and not participant-generated pros and cons of either smoking or abstinence. The current study reported on use of the open-ended and participant-generated DBW to explore the pros and cons of smoking and abstinence among treatment-seeking smokers prior to and subsequent to a smoking cessation intervention. Findings indicated that, participants' report of the pros of smoking decreased over the course of a smoking cessation intervention, whereas the pros of abstinence increased. Both prior and subsequent to a smoking cessation intervention, psychological effects and functions of smoking as well as health-related concerns topped participants' lists of the pros and cons of smoking and abstinence.

Although we reported on overall themes in this report, we also noted a great deal of individual variability in participants' responses. In capturing this individual variability, the open-ended DBW measure may be used clinically to prepare clinicians and clients as to motivations for and barriers to abstinence achievement and maintenance. The DBW is also ideal for use in research. First, it may be universally applied and coded, thereby eliminating the need for different measures of motivation to change for different target substances (e.g., smoking, alcohol, illicit drug use) or change behaviors (i.e., quitting versus reducing versus maintaining a specific behavior; DiClemente, Schlundt, & Gemmell, 2004). Second, because the DBW yields concise qualitative data and may be self-administered, it is less time-intensive than many existing qualitative approaches. At the same time, this study's findings correspond to qualitative findings in the research literature, so it appears to provide similar results in a more time-efficient way. Third, the DBW collects data on pros and cons of both current and alternative behavior. Finally, it captures cultural and individual differences

thereby documenting the most salient pros and cons of substance use and substance-use behavior change among participants.

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References

Abrams DB, Herzog TA, Emmons KM, Linnan L. Stages of change versus addiction: a replication and extension. Nicotine and Tobacco Research. 2000; 2:223–229. doi: 10.1080/1462220005014748. [PubMed: 11082822]

Batra A, Collins SE, Schröter M, Eck S, Torchalla I, Buchkremer G. A cluster-randomized effectiveness trial of smoking cessation modified for at-risk smoker subgroups. Journal of Substance Abuse Treatment. 2010; 38:128–140. doi: 10.1016/j.jsat.2009.08.003. [PubMed: 19819661]

Batra A, Collins SE, Torchalla I, Schröter M, Buchkremer G. Multidimensional smoker profiles and their prediction of smoking following a pharmacobehavioral intervention. Journal of Substance Abuse Treatment. 2008; 35:41–52. doi: 10.1016/j.jsat.2007.08.006. [PubMed: 17931825]

Biener L, Abrams DB. The Contemplation Ladder: Validation of a measure of readiness to consider smoking cessation. Health Psychology. 1991; 10:360–365. doi: 10.1037//0278-6133.10.5.360. [PubMed: 1935872]

Borland R, Yong H-H, Balmford J, Cooper J, Cummings KM, O'Connor RJ, Fong GT. Motivational factors predict quit attempts but not maintenance of smoking cessation: Findings from the International Tobacco Control Four Country Project. Nicotine and Tobacco Research. 2010; 12:S4–S11. doi: 10.1093/ntr/ntq050. [PubMed: 20889479]

Carey KB, Purnine DM, Maisto SA, Carey MP. Assessing readiness to change substance abuse: A critical review of instruments. Clinical Psychology: Science and Practice. 1999; 6:245–266. doi: 10.1093/clipsy.6.3.245.

Collins SE, Carey KB, Otto J. A new decisional balance measure of motivation to change among at-risk college drinkers. Psychology of Addictive Behaviors. 2009; 23:464–471. doi: 10.1037/a0015841. [PubMed: 19769430]

Collins SE, Eck S, Torchalla I, Schröter M, Batra A. Decisional balance proportion: Quantifying qualitative data to represent motivation to change among treatment-seeking smokers. Drug and Alcohol Dependence. 2010; 111:82–88. doi: 10.1016/j.drugalcdep.2010.03.012. [PubMed: 20547012]

Crittenden KS, Manfredi C, Warnecke RB, Cho YI, Parsons JA. Measuring readiness and motivation to quit smoking among women in public health clinics: predictive validity. Addictive Behaviors. 1998; 23:191–199. doi: 10.1016/S0306-4603(97)00044-0. [PubMed: 9573423]

DiClemente CC, Schlundt D, Gemmell L. Readiness and stages of change in addiction treatment. The American Journal on Addictions. 2004; 13:103–119. doi: 10.1080/10550490490435777. [PubMed: 15204662]

Dijkstra A, De Vries H, Bakker M. Pros and cons of quitting, self-efficacy and stages of change in smoking cessation. Journal of Consulting and Clinical Psychology. 1996a; 64:758–763. [PubMed: 8803366]

Dijkstra A, De Vries H, Bakker M. Pros and cons of quitting, self-efficacy and the stages of change in smoking cessation. Journal of Consulting and Clinical Psychology. 1996b; 64:758–763. doi: 10.1037//0022-006X.64.4.758. [PubMed: 8803366]

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Esterberg ML, Compton MT. Smoking behavior in persons with a schizophrenia-spectrum disorder: A qualitative investigation of the transtheoretical model. Social Science & Medicine. 2005; 61:293–303. doi: 10.1016/j.socscimed.2004.11.057. [PubMed: 15893046]

Fidler JA, West R. Self-perceived smoking motives and their correlates in a general population sample. Nicotine and Tobacco Research. 2009; 11:1182–1188. doi: 10.1093/ntr/ntp120. [PubMed: 19640835]

Glautier S. Measures and models of nicotine dependence: Positive reinforcement. Addiction. 2004; 99(Suppl. 1):30–50. doi: 10.1111/j.1360-0443.2004.00736.x. [PubMed: 15128379]

Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. Qualitative Health Research. 2005; 15:1277–1288. doi: 10.1177/1049732305276687. [PubMed: 16204405]

Janis, IL.; Mann, L. Decision-making: A psychological analysis of conflict, choice, and commitment. The Free Press; New York: 1977.

Krippendorff, K. Content analysis: an introduction to its methodology. Sage Publications Ltd; Thousand Oaks, CA: 2004.

McCaul KD, Hockenmeyer JR, Johnson RJ, Zetocha K, Quinlan K, Glasgow RE. Motivation to quit using cigarettes: A review. Addictive Behaviors. 2006; 31:42–56. [PubMed: 15916861]

McEwan A, West R, McRobbie H. Motives for smoking and their correlates in clients attending Stop Smoking treatment services. Nicotine and Tobacco Research. 2008; 10:843–850. doi: 10.1080/14622200802027248. [PubMed: 18569758]

Miles, MB.; Huberman, AM. Qualitative data analysis: An expanded sourcebook. Sage Publishing, Inc.; Thousand Oaks, California: 1994.

Miller, WR. Enhancing motivation for change in substance abuse treatment. Vol. Vol. 35. US Department of Health and Human Services; Rockville, MD: 1999.

Miller, WR.; Rollnick, S. Motivational interviewing: Preparing people for change. Second ed. US Guilford Press; New York: 2002.

Okuyemi KS, Caldwell AR, Thomas JL, Born W, Richter KP, Nollen NL, Ahluwalia JS. Homelessness and smoking cessation: Insights from focus groups. Nicotine and Tobacco Research. 2006; 8:287–296. doi: 10.1080/14622200500494971. [PubMed: 16766421]

Okuyemi KS, Thomas JL, Hall S, Nollen NL, Richter KP, Jefferies SK, Ahluwalia JS. Smoking cessation in homeless populations: A pilot clinical trial. Nicotine and Tobacco Research. 2006; 8:689–699. doi: 10.1080/14622200600789841. [PubMed: 17008196]

Piper ME, Piasecki TM, Federman EB, Bolt DM, Smith SS, Fiore MC, et al. A multiple motives approach to tobacco dependence: The Wisconsin Inventory of Smoking Dependence Motives (WISDM-68). Journal of Consulting and Clinical Psychology. 2004; 72:139–154. [PubMed: 15065950]

Prochaska JO. Strong and weak principles for progressing from precontemplation to action on the basis of twelve problem behaviors. Health Psychology. 1994; 13:39–46. doi: 10.1037//0278-6133.13.1.47. [PubMed: 8168470]

Sciamanna CN, Hoch JS, Duke C, Fogle MN, Ford DE. Comparison of five measures of motivation to quit smoking among a sample of hospitalized smokers. Journal of General Internal Medicine. 2000; 15:16–23. doi: 10.1046/j.1525-1497.2000.11198.x. [PubMed: 10632829]

Shek DTL, Tang VMY, Han XY. Evaluation of evaluation studies using qualitative research methods in the social work literature (1990-2003): Evidence that constitutes a wake-up call. Research on Social Work Practice. 2005; 15:180–194. doi: 10.1177/1049731504271603.

Simmons VN, Heckman BW, Ditre JW, Brandon TH. A measure of smoking abstinence-related motivational engagement: Development and initial validation. Nicotine and Tobacco Research. 2010; 12:432–437. doi: 10.1093/ntr/ntq020. [PubMed: 20190004]

Studlar, DT. Tobacco control: Comparative politics in the United States and Canada. Broadview Press, Ltd.; Peterborough, Canada: 2002.

Thompson B, Thompson LA, Thompson J, Fredrickson C, Bishop S. Heavy smokers: A qualitative analysis of attitudes and beliefs concerning cessation and continued smoking. Nicotine and Tobacco Research. 2003; 5:923–933. doi: 10.1080/14622200310001615277. [PubMed: 14668076]

Velicer WF, DiClemente CC, Prochaska JO, Brandenburg N. Decisional balance measure for assessing and predicting smoking status. Journal of Personality and Social Psychology. 1985; 48:1279–1289. doi: 10.1037//0022-3514.48.5.1279. [PubMed: 3998990]

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Highlights

- We conducted content analysis of treatment-seekers pros and cons of smoking and abstinence.
- Physical and psychological effects/functions of smoking and abstinence were most common pros and cons.
- Categories of pros and cons were substantively similar over time.
- Pros of smoking decreased and pros of abstinence increased from pre- to posttreatment.

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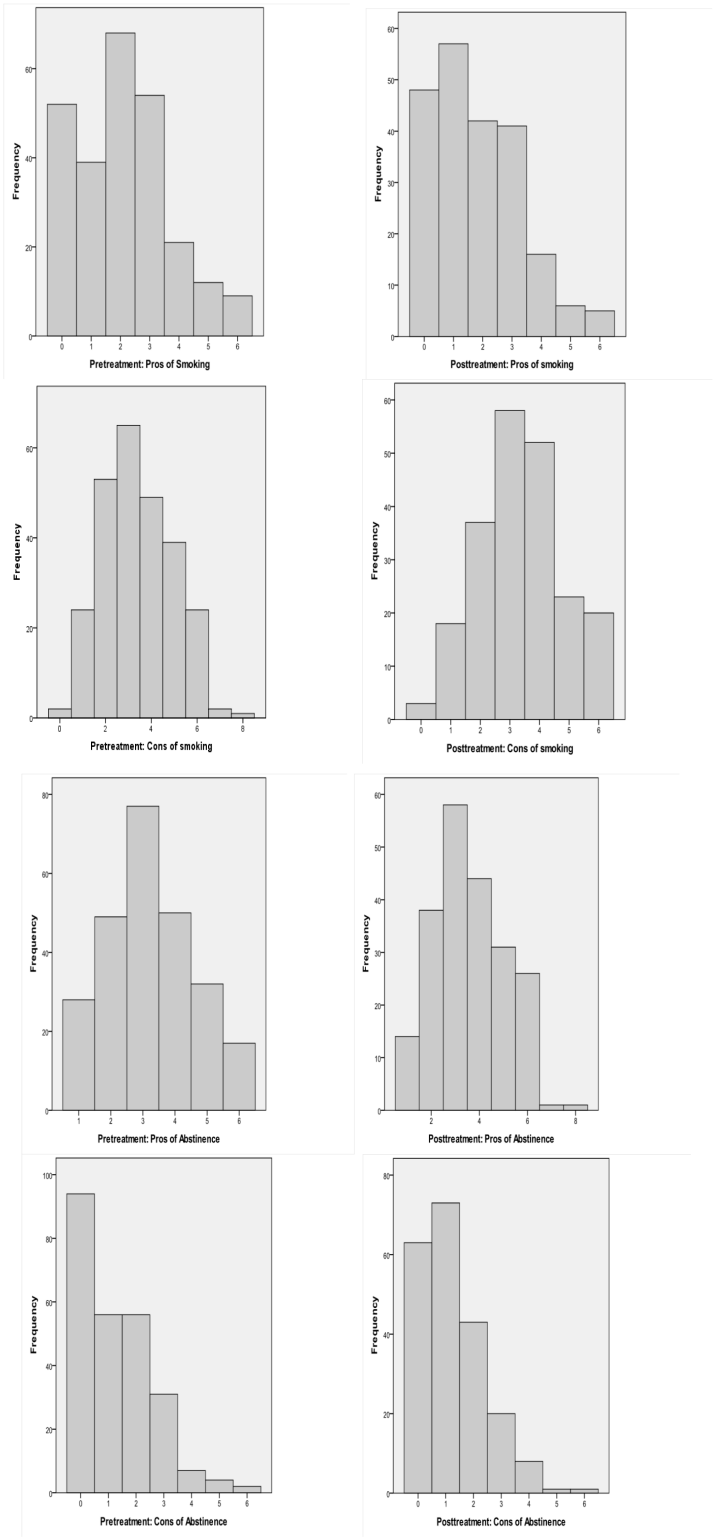

Figure 1.
Histograms showing the distributions of the overall category counts (number of pros and cons of smoking and abstinence, respectively) at pretreatment versus posttreatment.

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Table 1

Descriptive Statistics of the Study Sample at Pretreatment (N = 268)

Variable	*M(SD)* / %
Age	46.39(10.45)
Nationality	96.3% German[a]
Ethnicity	92.3% German[b]
Relationship status	46.1% Married
	20.6% Single
	14.6% Unmarried, living with partner
	16.1% Divorced
	2.6% Widowed
Highest education level	47.0% Apprenticeship (post high school)
	29.8% University degree
	18.7% Technical/Associates degree
	4.5% High school only
Employment status	59.6% Full-time
	19.9% Part-time
	12.4% Retirement/disability
	4.5% Stay-at-home parents/homemakers
	3.4% Unemployed
Number of previous quit attempts	5.02(5.61)
Daily smoking intensity (cigarettes)	22.71(8.65)
Duration of “regular” smoking (years)	27.57(9.54)

[a] *Notes* 1.9% reported “Other” nationality, and <1% reported Austrian, Belgian, Greek or US American nationalities.

[b] 3.6% self-identified with “Other” ethnicity, and < 1% of the overall sample identified as Austrian, Belgian, Croatian, Greek, Italian, Polish, Serbian or US American.

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Table 2

Decisional Balance Categories at Pre- and Posttreatment Listed According to Rank Order

Pretreatment				**Posttreatment**		
Category	**Freq**	**%**	**Ranked order of category frequency**	**Category**	**Freq**	**%**
Pros of Smoking						
Psychological	205	36.7	1	Psychological	131	32.2
Time structure	80	14.3	2	Social	59	14.5
Enjoyment	71	12.7	3	Enjoyment	56	13.8
Social	54	9.7	4	Time structure	53	13.0
Physical	45	8.1	5	Physical	34	8.4
Ritual/habit	29	5.2	6	Other	28	6.9
Cognitive	28	5.0	7	Ritual/habit	23	5.7
Withdrawal relief	27	4.8	8	Withdrawal relief	12	2.9
Other	19	3.4	9	Cognitive	11	2.7
Improved condition/ performance	1	0.2	10			
Total	**558**	**100**		**Total**	**407**	**100**
Cons of Smoking						
Health	198	21.9	1	Physical	181	24.9
Physical	177	19.5	2	Health	165	22.7
Financial cost	132	14.6	3	Financial cost	101	13.9
Smell of smoke	116	12.8	4	Smell of smoke	82	11.3
Social	91	10.0	5	Dependence	78	10.7
Dependence	77	8.5	6	Psychological	48	6.6
Psychological	45	5.0	7	Social	31	4.3
Immaterial costs	27	3.0	8	Other	15	2.1
Other	23	2.5	9	Immaterial costs	14	1.9
Cognitive	9	1.0	10	Cognitive	6	0.8
Loss of condition/ performance	9	1.0	11	Loss of condition/ performance	5	0.7
Political aspects	2	0.2	12	Political aspects	0	0.0

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Pretreatment				Posttreatment		
Category	**Freq**	**%**	**Ranked order of category frequency**	**Category**	**Freq**	**%**
Total	**906**	**100**		**Total**	**726**	**100**
Pros of Abstinence						
Physical	212	25.7	1	Physical	236	30.3
Health	191	23.2	2	Health	134	17.2
Less financial cost	129	15.6	3	Less financial cost	96	12.3
No more dependence	98	11.9	4	Psychological	81	10.4
Less smell of smoke	48	5.8	5	No more dependence	80	10.3
Psychological	46	5.6	6	Social	46	5.9
Social	43	5.2	7	Less smell of smoke	44	5.6
Less immaterial cost	24	2.9	8	Less immaterial cost	24	3.1
Improved condition/ performance	14	1.7	9	Increased quality of life	12	1.5
Cognition	8	1.0	10	Cognitive	9	1.2
Political aspects	4	0.5	11	Other	9	1.2
Improved quality of life	4	0.5	12	Improved condition/ performance	9	1.2
Other	4	0.5	13	Political	0	0.0
Total	**825**	**100**		**Total**	**780**	**100**
Cons of abstinence						
Psychological	117	33.7	1	Psychological	86	31.4
Physical	67	19.3	2	Physical	39	14.2
Ritual/habit	32	9.2	3	Social	31	11.3
Withdrawal symptoms	29	8.4	4	Withdrawal symptoms	23	8.4
Social	29	8.4	5	Time structure	21	7.7
Other	23	6.6	6	Other	19	6.9
Loss of quality of life/pleasure	21	6.1	7	Loss of quality of life/pleasure	18	6.6
Time structure	19	5.5	8	Costs of quitting	16	5.8

Pretreatment			Ranked order of category frequency	Posttreatment		
Category	**Freq**	**%**		**Category**	**Freq**	**%**
Costs of quitting	6	1.7	9	Ritual/habit	15	5.5
Cognitive	4	1.2	10	Cognitive	6	2.2
Total	**347**	**100**		**Total**	**274**	**100**

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Table 3

Decisional Balance Counts of Pros and Cons of Smoking versus Abstinence M(SD)

Variables	Pretreatment	Posttreatment
Pros of smoking	2.10 (1.58)	1.80 (1.50)
Cons of smoking	3.41 (1.53)	3.36 (1.44)
Pros of abstinence	3.24 (1.38)	3.60 (1.48)
Cons of abstinence	1.28 (1.32)	1.25 (1.17)