The Relationship Between Smoking Cessation and Self-Efficacy

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Abstract

Tobacco use and nicotine addiction are significant health concerns in the United States. Early research regarding the relationship between self-efficacy (SE) and the addictive behaviors suggested that the higher the level of SE to quit smoking, the more likely an individual would be to successfully quit smoking (Conditte & Lichtenstein, 1981). More recent research has shown that high, but not extremely high SE is ideal for successful smoking cessation (Staring & Breteler, 2004). Although the present study was not able to clarify the ideal SE percentage for those attempting to quit smoking, it did reveal important information about the relationship between SE and smoking cessation success.
The Relationship Between Smoking Cessation and Self-Efficacy

Tobacco use and nicotine dependence are significant health concerns in the United States. The percentage of cigarette smokers in the total US population has decreased steadily since 1965, going from 42% to 21% (Centers for Disease Control [CDC], 2007). The percentage of US smokers who quit smoking for at least 1 day has increased since 1965 from 14% to 21% (CDC, 2007). While these numbers seem encouraging, they may be a bit deceptive. From 2004 to 2006, the smoking population dropped <1%, suggesting that perhaps the number of smokers has leveled off and will only be fluctuating slightly from now on (CDC, 2007). The amount of smokers who quit for at least 1 day has followed somewhat of a bell curve, hitting its highest percentage of 25% in 1990 and 1993 and dropping steadily to 21% in 2006 (CDC, 2007); also, it may be inaccurate to define quitters as those who have been quit for 1 or more days during the previous 12 months, as the majority of those people fail to maintain permanent smoking cessation (CDC, 1993). Despite the many known health risks of smoking, the percentage of the population that continues to smoke is larger than might be expected.

However, of the 21% of the population who smoke, 70% claim that they want to quit (CDC, 2008). From 2005 to 2006, approximately 44% of adult smokers and 54% of high-school age smokers had made a quit attempt that lasted at least 1 day; there is no report of how many of these attempts resulted in long-term smoking cessation (CDC, 2008). Research has shown, however, that most quit attempts result in relapse (Ockene, Emmons, Mermelstein, Perkins, Bonollo, Voorhees, et al., 2000). Nicotine has been found to be more addictive than alcohol, and as addictive as heroin (Hunt, Barnett, & Branch, 1971). The amount of smokers who quit smoking and remain abstinent after 1 year ranges between 13-31% (Garvey, Bliss, Hitchcock, Heinold, & Rosner, 1992; Norregaard, Tonnesen, & Petersen, 1993; McIntyre, Lichtenstein, &

*Nicotine addiction & self-efficacy*

Albert Bandura (1977) originally defined self-efficacy (SE) as a person’s belief that he can successfully perform a behavior in order to obtain certain results. Initial research found a positive correlation between SE and the length of time a behavior change would be pursued (Bandura & Adams, 1977; Bandura, 1980). Researchers believed that the higher the level of SE, the more successful a person would be in making and maintaining behavioral changes. When a person feels like he has little or no ability to exercise control over a certain behavior, he is less likely to try to change that behavior. If he does decide to try, he is more likely to give up when results are not immediate or setbacks occur (Bandura, 1997). Evidence for this theory was first found for anxiety behaviors such as coping and fear-extinguishing (Bandura, Adams, Hardy, & Howells, 1980; Bandura, 1980).

In 1981, Condiotte and Lichtenstein were the first to apply SE theory to cigarette-smoking behavior. They hypothesized that there would be a positive correlation between SE and successful maintenance of smoking cessation (Condiotte & Lichtenstein, 1981). Results strongly supported the hypothesis, adding to the body of literature theorizing that higher SE is more beneficial for behavior execution (Condiotte & Lichtenstein, 1981).

However, an extension of Condiotte and Lichtenstein’s research revealed that pre-treatment SE is not a good predictor of smoking cessation success, while post-treatment SE is a good predictor of short-term change only; it does not predict well smoking cessation at 1 year (McIntyre, Lichtenstein, & Mermelstein, 1983). This study suggested that SE is not a stable construct; further research has shown that it fluctuates in response to different situations and
different mental and physical states (DiClemente, 1986; Ockene, et al, 2000). Because SE can be so malleable, an SE score at a given point during cessation treatment is not necessarily indicative of long-term change.

Dijkstra and de Vries (2000) studied how four types of SE (Situational SE, Skill SE, Relapse SE, and Try SE) were related to cigarette smoking behavior and smokers’ quit history, as well as how well these SE types predicted future quit behavior. They defined the different facets of SE as follows: Situational SE is a person’s confidence in his ability that he will be able to perform a new behavior in different situations; Skill SE is a person’s confidence that he will be able to use specific skills to combat temptations that threaten his behavior change; Relapse SE is a person’s confidence that he will be able to return to the new behavior after a lapse or relapse into the old behavior; and Try SE is a person’s confidence in his ability to partially or temporarily change his behavior (Dijkstra & de Vries, 2000).

This study found that the only type of SE that was not significantly correlated with intention to quit smoking was Relapse SE, or perceived ability to maintain behavior change after a relapse (Dijkstra, & de Vries, 2000). Of the other three types of SE, Skill SE was the most strongly correlated with intention to quit, such that smokers who perceived themselves to have greater skills to cope with triggers and potential setbacks had stronger intentions to quit smoking than did those with low Skill SE (Dijkstra & de Vries, 2000). Skill SE and Relapse SE were the only predictors of an actual quit attempt, such that high Skill SE predicted that a quit attempt of at least 24 hours would be made, while high Relapse SE decreased the chances that a quit attempt would be made (Dijkstra, & de Vries, 2000). It is interesting to note that SE seems more linked to intention to quit than to actual quit success. This study points future research in the
direction of finding the connections between intention and action, and exploring how SE can strengthen these connections.

In 2006, Baldwin, Rothman, Hertel, Linde, Jeffery, and Finch, et al studied the influence of SE to quit smoking and satisfaction beliefs about quitting on initiation and maintenance of smoking cessation in smokers utilizing a cessation program. They found that both participant SE and perceived satisfaction with quitting immediately prior to quitting was positively correlated with attempt to quit; however, only satisfaction with quitting was predictive of cessation maintenance at 2 months after the program ended (Baldwin, et al, 2006). Satisfaction with quitting after 2 months of being quit was positively correlated with maintenance of smoking cessation at 9 months after the program ended; however, neither SE nor satisfaction with quitting after 9 months of cessation were predictors of cessation maintenance at 15 months after the program ended (Baldwin, et al, 2006). This research suggests that SE to quit smoking is only predictive of an attempt to quit; SE to quit does not predict successful cessation maintenance. It seems that once a person quits smoking, other factors become more influential on their decision to remain quit; they are no longer as influenced by confidence in their ability to maintain.

*Quit history*

Some of the influences that cause SE to fluctuate include personal mastery (Yzer & van den Putte, 2006); depressed mood (Scholte & Breteler, 1997); and social and peer pressures (Chang, Lee, Lai, Chiang, Lee, & Chen, 2006). In the realm of smoking cessation, personal mastery is one of the greatest determinants of SE to quit. Quit history is probably a good indicator of a smoker’s feelings of personal mastery for the task of ceasing to smoke. Carey and Carey (1993) found that smokers who successfully quit for 1 year had higher SE scores before they quit than did their relapsing counterparts. Also, successful quitters’ SE scores went up
significantly after they quit, while non-successful quitters’ SE scores went down significantly. These results suggest that smokers who try to quit and fail will feel less confident in their ability to quit and may be less likely to try again.

Yzer and van den Putte (2006) found that duration of past quit attempts was predictive of intention to attempt quitting again, and had a small but significant effect on SE to quit successfully in the future. Smokers whose prior quit attempts were short (7 days or less) had lower SE than smokers whose prior quit attempts were long (1 to 3 months) (Yzer & van den Putte, 2006). However, there was a stronger correlation between current SE to quit and current quit intention for smokers whose prior quit attempts were short; there was a weaker (but still significant) relationship between current SE to quit and current quit intention for smokers whose prior quit attempts were long (Yzer & van den Putte, 2006). These results indicate that smokers who have quit for very short periods of time in the past base their current smoking cessation SE more heavily on their quit history than smokers who were able to quit for long periods of time in the past, although quit history remains a predictor of intention to quit for both groups. It is important to note that this study was focused on smokers’ intention to quit after past quit attempts, not on smokers’ success in quitting after past quit attempts.

Scholte and Breteler (1997) found a significant positive correlation between length of last quit attempt and pre-treatment SE for smokers who successfully quit during their study; this correlation was not significant for smokers who relapsed during the study. These results indicate that smokers who successfully quit base their pre-quitting confidence levels on how long they were able to quit in the past, while smokers who relapse do not. Perhaps smokers who are able to quit successfully have more realistic views of their potential to succeed before they try, while smokers who relapse do not strongly link their potential to succeed to past behaviors. It is
interesting to note that this study did not find any significant correlation between number of past quit attempts and SE (Scholte & Breteler, 1997). Smokers place more importance on their most recent example of personal mastery to quit than they do on cumulative information from all of their past quit attempts.

Relapse

One of the greatest challenges in treatment of addictive behaviors is the high rate of relapse. Marlatt (1978) developed and proposed a cognitive-behavioral model of relapse prevention that is still used today. The central aspect of the model is the taxonomy of factors that can contribute to relapse (Larimer, Palmer, & Marlatt, 1999). These factors fit into two categories: immediate determinants, such as high-risk situations, coping skills, outcome expectancies, and the abstinence violation effect (guilt felt as a result of violation of self-imposed rules about abstinence) (Marlatt & Witkiewitz, 2005); and covert antecedents, such as general lifestyle imbalances between external demands and internal desires, and cravings for the addictive substance (Larimer, Palmer, & Marlatt, 1999).

Currently, Relapse Prevention Therapy (RPT) is characterized by education to challenge misperceptions and maladaptive thoughts combined with behavioral skill training (i.e., identification of high-risk situations for relapse, development of coping skills) (Marlatt & Witkiewitz, 2005). This model has also incorporated SE as an important determinant of relapse behavior. One of the goals of RPT is to not only increase the addicted person’s awareness of high-risk situations, but to raise the person’s SE for resisting substance use during high-risk situations.

While total abstinence is the ideal, some newer approaches embrace a more lenient, and possibly more realistic, smoking goal. Tobacco Harm Reduction (THR) consists of four
categories of behaviors meant to reduce the harmful health effects of tobacco for tobacco users: reduction of number of cigarettes smoked daily; use of products similar to cigarettes that contain fewer toxins; making a switch to smokeless tobacco; and use of nicotine replacement therapy (NRT) tools such as nicotine patch or gum (Shiffman, Kassel, Gwaltney, & McChargue, 2005). THR can be useful for therapists treating relapsing smokers who may resume high rates of smoking after a setback, and also for therapists treating smokers who do not wish to quit completely. People who want to quit smoking may have higher SE to start with smoking reduction; successful smoking reduction can lead to increased SE for complete abstinence. Studies have shown that smoking reduction often leads to a greater likelihood to quit altogether (Shiffman, Kassel, Gwaltney, & McChargue, 2005).

Overconfidence

Recent literature has shown that, while moderately high SE is beneficial when attempting a change in behavior, extremely high SE is detrimental. Extremely high SE, or overconfidence, can cause a person to overlook their possible vulnerabilities, making them more susceptible to relapse. General research has shown that overconfidence impedes performance; in fact, having slightly negative expectations, or expecting to perform at an “average” level, is correlated with better performance than having high expectations to perform above-average (Stone, 1994).

In the realm of smoking behavior, overconfidence can significantly hinder attempts at smoking cessation. Haaga and Stewart (1992) found that smokers who tried to quit and relapsed were more likely to regain their abstinence when they had moderate levels of SE to recover from a relapse than when they had extremely high levels of SE. These results indicate that very high SE can be as detrimental as or more detrimental than very low SE. Very low SE to quit smoking may prevent a person from attempting to quit at all; however, very high SE to quit smoking may
prevent a person from being realistically aware of unpleasant physical and social consequences of quitting, and hindering their development of proper coping strategies.

Most recently, Staring and Breteler (2004) attempted to better pinpoint a percentage at which SE stops indicating success and begins indicating failure. They distributed the Fagerstrom Nicotine Dependence Test (FTND; Fagerstrom, 1978) and a 6-question SE survey to 381 adult smokers attempting to quit through an 8-session, 6-week treatment program in the Netherlands (Staring & Breteler, 2004). At the end of the treatment program, 7 weeks after all smokers had quit, they were asked one question: “Are you, at this moment, still abstinent from smoking?” (Staring & Breteler, 2004). One year after the treatment program ended, participants were contacted again and asked the same question (Staring & Breteler, 2004). At the end of the treatment program, 71% of participants identified themselves as abstinent; at 1 year after the treatment program, 17% of participants identified themselves as abstinent (Staring & Breteler, 2004).

This study yielded three main results: first, that SE at the onset of a smoking cessation program was not correlated at all to short-term or long-term success; second, that SE 7 weeks after smoking cessation did predict both short-term and long-term success; third, that SE change between 7 weeks after quitting and 1 year after quitting was not a good predictor of long-term success (Staring & Breteler, 2004). Arguably the most important result reported was that optimum SE was approximately 79% of the maximum (Staring & Breteler, 2004). Participants who scored higher than 79% SE 7 weeks after quitting were more likely to relapse as their scores increased, just as participants who scored lower than 79% SE 7 weeks after quitting were more likely to relapse as their scores decreased (Staring & Breteler, 2004). This study was the first
that attempted to pinpoint the exact percentage of SE that predicted the most successful behavior change.

The present study attempts to replicate Staring and Breteler (2004). However, this study will eliminate the consideration of long-term smoking cessation. This decision was made because Staring and Breteler found that SE change did not predict well long-term smoking cessation success (2004). Therefore, this study will only attempt to measure the optimal level of SE for smoking cessation at 7 weeks after quitting.

Method

Participants

Participants were 58 adult cigarette smokers recruited through a local general hospital’s Freshstart smoking cessation program. The Freshstart program is a 4-week, evidence-based behavioral modification program developed and endorsed by the American Cancer Society (S. Davis, personal communication, 11 August 2009). It is considered an effective smoking cessation treatment program due to high rate of participants who have quit smoking by end of the program (American Cancer Society [ACS], 2008). This program utilizes a trained facilitator who provides information and teaches coping skills in a group setting during weekly meetings (S. Davis, personal communication, 11 August 2009). From 2007 to 2009, 35.9% of participants who completed the program reported successful smoking cessation 1 month after program end; 24.8% reported successful smoking cessation 3 months after program end; 19.7% reported successful smoking cessation 6 months after program end (S. Davis, personal communication, 11 August 2009).

Participants were asked by the researcher to participate in this study at the beginning of their first Freshstart meeting. Participants were not excluded based on any demographic
information (see Table 1). Participants were compensated for their time and effort by being entered into a drawing for a $30 gift card to Applebee’s restaurant upon completion of all test points of the study.

Materials

A demographic questionnaire includes items regarding age, sex, race, education, income, and smoking history was used (see Appendix 1).

Nicotine dependence was assessed using the Fagerstrom Test of Nicotine Dependence (FTND), which includes eight questions regarding how often a person smokes, what time of day he smokes the most and enjoys smoking the most, and how difficult it is for him to smoke at times when smoking is not allowed or might be unpleasant (see Appendix 2) (Fagerstrom, 1978). The FTND has been significantly correlated with nicotine withdrawal symptoms and measures of physical tolerance, establishing it as a reliable and valid measure of nicotine dependence (Fagerstrom, 1978). Participants’ mean FTND score was 7.60 out of a possible 11.

Level of SE was determined using the 12-item Smoking Self-Efficacy Questionnaire (SEQ-12), which assesses confidence in ability to refrain from smoking in a variety of different situations involving both internal and external stimuli (see Appendix 3) (Etter, Bergman, Humair, & Perneger, 2000). The SEQ-12 has demonstrated test-retest reliability as well as content, construct, and predictive validity; it does not correlate significantly with social desirability scales (Etter, Bergman, Humair, & Perneger, 2000).

Design & procedure

At the start of first session of treatment, participants received two copies of a consent form that was read to them by the researcher (see Appendix 4); after having any questions answered, participants signed one copy of the form and returned it to the researcher, and kept the
other copy for their records. Participants were informed that the researcher would be contacting them via phone and/or email during the 4 weeks of the Freshstart program and for up to 7 weeks after the program ended. Those who agreed to participate, but refused to provide a phone number or email address, were excluded from the study. After informed consent was obtained, participants completed the demographic questionnaire, the FTND, and the SEQ-12. Those who agreed to participate, but refused to complete these measurements, were excluded from the study.

At the start of each of the three following sessions of treatment, participants were given a short form to report if they had quit smoking, what date they quit, how many cigarettes they had smoked since that quit date, and any smoking cessation aides that they were using (see Appendix 5). Quitting was defined as smoking 0-1 cigarettes per week. Although some studies define quitting as not smoking for at least one day (i.e., CDC, 2007), that definition seemed too broad for the purpose of this study; using such a definition would lump together those who had quit for just one day with those who had quit for the full 7 weeks of the study. In order to obtain the most accurate information regarding smoking cessation and SE, it was necessary to categorize quitters in more narrow and specific terms.

After reporting their quit dates, participants were tracked individually for follow-up purposes. At the start of the fourth and final Freshstart session, participants again completed the SEQ-12. Those who reported quitting during treatment and had not smoked more than 1 cigarette per week since their quit date were considered “quitters” (n = 15) and were contacted via telephone each week for 7 weeks following their quit date. During each telephone call, quitters were asked to report how many cigarettes they had smoked since the last time they had been contacted by the researcher, as well as any smoking cessation aides they were using. Quitters who did not answer these phone calls were left messages when possible, contacted again
the next day if they did not return the call by then, and considered relapsed if no further contact could be made at that point \((n = 3)\). Quitters who reported smoking more than 1 cigarette per week were also considered relapsed \((n = 6)\). During the final phone call 7 weeks after quit date, quitters completed for a third time the SEQ-12 over the phone.

Participants who did not report quitting during treatment also completed the SEQ-12 at the start of the final Freshstart meeting; however, these participants were contacted during follow-up only once, 7 weeks after treatment ended, to complete the SEQ-12 for a third time \((n = 43)\). Participants who did not answer the phone were left messages when possible, contacted again the next day if they had not returned the call by then, and counted toward the attrition rate if no further contact could be made at that point \((n = 37)\).

**Results**

Correlation testing revealed that dependence on nicotine (shown through the FTND score) did not significantly correlate with SE (shown through SEQ-12 score) at any of the three test points, \(p = .612\) at test point 1, \(p = .252\) at test point 2, \(p = .571\) at test point 3. This result indicates that level of confidence about smoking cessation was not significantly related to degree of addiction to nicotine.

Repeated-measures ANOVAs were performed to explore the effect of score change for participants throughout the course of the study on smoking cessation success. For non-quitters who participated at all 3 test points \((n = 8)\), SEQ-12 score did not significantly change over the course of the study, \(F(2, 14) = .660, p = .532, \eta^2 = .086\). Similarly, for quitters \((n = 6)\), there was no significant SEQ-12 score change over the course of the study, \(F(2, 10) = .969, p = .412, \eta^2 = .162\).
Linear regression was attempted to find the ideal SE percentage to predict quit success; however, due to a small number of participants both completing all three test points of the study and contributing information on cigarettes smoked per week \((n = 8)\), this test could not reveal such a percentage. Attrition rate for this study overall was 76%; correlation testing showed that higher SE score at test point 1 significantly indicated increased likelihood of participants’ remaining in the study until test point 2, \(p = .037\); however, there was no significant relationship between SE score at test point 1 and participation in the study at test point 3, \(p = .061\) or between SE score at test point 2 and participation in the study at test point 3, \(p = .842\).

Although linear regression did not reveal an ideal SE percentage necessary for successful smoking cessation, it did show that 74% of the variance in the amount of cigarettes smoked after quitting was accounted for by the variance in the three SEQ-12 scores, \(F = 7.631, p = .039, r^2 = .740\). It is also interesting to note that average SE score of successful quitters \((n = 6)\) was higher than average SE score of non-quitters \((n = 8)\) at all three test points (see Table 2). Although paired-samples \(t\)-tests revealed no significant score change between test points for either of the groups, there does seem to be a trend of score increasing for successful quitters and decreasing for non-quitters.

Perhaps most importantly, one-way ANOVAs were performed to explore any significant relationship between SEQ-12 at the three test points and quit status. These tests showed that, at each test point, higher SEQ-12 scores indicated significantly greater likelihood to successfully quit smoking, \(F(1, 56) = 5.867, p = .019, \eta^2 = .095\) at test point 1, \(F(1, 29) = 14.296, p = .001, \eta^2 = .330\) at test point 2, \(F(1, 12) = 11.334, p = .006, \eta^2 = .486\) at test point 3. At all three test points, successful quitters had significantly higher SEQ-12 scores than did non-quitters; the implications of this result will be discussed in the next section.
Discussion

Although this study did not indicate an ideal SE percentage for successful smoking cessation, as originally intended, it did yield some valuable results. The fact that successful quitters had significantly higher SE scores than did non-quitters at all three test points shows that SE is a good indicator of future quit success, and also that higher SE may mean greater likelihood to successfully quit. At the beginning of treatment, only one quitter had an SE score of below 70%; at the end of treatment and 7 weeks after quitting, all quitters scored 70% or above on SE.

Even though this study could not support Staring and Breteler’s (2004) result of ideal SE being 79%, it does seem to support the idea that having an SE score in the upper 30% of the possible may be beneficial to smokers looking to quit; successful quitters’ SE scores on average were 78.61% at test point 1, 86.11% at test point 2, and 92.50% at test point 3. Smokers who feel capable of succeeding while still allowing for, and preparing for, the possibility of failure seem to have the greatest likelihood of reaching their goal. Overconfidence, as past research has shown, is as detrimental to goal achievement as is very low SE (Stone, 1994; Haaga & Stewart, 1992). However, due to the fact that this study did not reveal an ideal SE percentage, there is no way to gather from this study’s results the point at which high SE becomes overconfidence.

This study also supports the idea that SE increase over the course of treatment and during a quit attempt is beneficial to quitters. Starting at low-moderate SE and experiencing an SE increase as one experiences short-term success can lead to greater likelihood of long-term success. This idea is the basis of current relapse prevention models such as Relapse Prevention Therapy (RPT) (Marlatt & Witkiewitz, 2005) and Tobacco Harm Reduction (THR) (Shiffman,
Kassel, Gwaltney, & McChargue, 2005). A series of small successes can be highly beneficial in the process of ending substance use.

There are a couple of implications of this study for future treatment programs. First of all, treatment programs should include an attempt to measure and raise feelings of SE over the course of treatment, as RPT and THR do. Second of all, treatment providers should use the information they obtain about their clients’ SE levels over the course of treatment to determine which clients may need to be targeted for more attention than others. Perhaps lower initial SE scores do not have to mean lower likelihood of success; people with those lower scores could benefit from targeted focus from the treatment provider, such as attending individual counseling sessions as well as group treatment meetings, and end up succeeding. However, integrating this individual attention into group treatment programs may be difficult due to participant attrition rate, inadequate amount of meeting time, and too few treatment provider staff members per program group.

During the course of this study, many limitations were revealed. Diverse use of smoking cessation aides had not been anticipated; some participants used NRT, some used prescribed medications such as Chantix, some took part in telephone counseling offered through the toll-free West Virginia or Ohio Quit Lines, and some used no aides. Also, the range of attendance among participants was highly varied; without all participants attending all meetings, any possible effects of SE change as a result of treatment were lost.

High attrition rate was another limitation. Fourteen of 58 participants completed the study in its entirety by giving SEQ-12 data at all three test points; this gives an attrition rate of 76%, which is somewhat high. Most longitudinal studies on smoking cessation have attrition rates ranging from 10-50% (Curtin, Brown, & Sales, 2000). In hindsight, attrition rate could
have been lowered by reminding participants of the possible reward (a restaurant gift card) of participating in all three stages of the study. Also, offering participants multiple entries into the drawing for this reward could have served as an incentive to lower attrition rate. Contacting participants more frequently may also have helped to minimize attrition.

Another possible reason for high attrition rate in this study is the nature of the population of participants. As in many studies of addictive behaviors, most of the participants in this study were of lower socioeconomic status (income of $10,000-$20,000/year) and lower education level (no education beyond high school graduation); research has shown that people in these categories are more likely to drop out of a longitudinal addictive behavior study than those of higher socioeconomic status and education level (Siddiqui, Flay, & Hu, 1996; Thygesen, Johansen, Keiding, Giovannucci, & Grnbk, 2008). The reasons why income and education have such an influence on attrition rate are not entirely clear, but it is evident that they contribute significantly to the attrition rates of most studies concerning addictive behaviors.

Attrition rate may have impacted the study’s findings by removing some participants with very low and very high SE; it is possible that participants with very low SE attended one meeting and decided they could not be successful, while participants with very high SE attended one meeting and decided they could be successful without treatment assistance. Without these SE scores, the data did not have the range necessary to reveal complete results about SE influence on smoking cessation success.

Future research should follow the track laid by both this study and by Staring and Breteler (2004) to continue looking for the ideal SE score for those wishing to end the cycle of addictive behavior.
References


Smoking Cessation and Self-Efficacy


Table 1

Participants’ Demographic Information

<table>
<thead>
<tr>
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Table 2

*Mean (Standard Deviation) SE Scores of Quitters vs. Non-quitters*

<table>
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<tr>
<th>Test point</th>
<th>SE score %</th>
<th>Quitters (n = 6)</th>
<th>Non-quitters (n = 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test point 1</td>
<td>78.61 (22.77)</td>
<td>66.46 (25.24)</td>
<td></td>
</tr>
<tr>
<td>Test point 2</td>
<td>86.11 (10.36)</td>
<td>55.00 (10.98)</td>
<td></td>
</tr>
<tr>
<td>Test point 3</td>
<td>92.50 (12.19)</td>
<td>58.33 (22.34)</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1

Demographic Questionnaire

Date of birth: _____/_____/_____

Month   Day   Year

Are you…?

☐ Male
☐ Female

Which of these groups best describes you? (check all that apply)

☐ White
☐ Black or African-American
☐ Asian
☐ Other (please specify race/ethnicity) ________________________________
☐ Prefer not to say

How far have you gone in school?

☐ Less than 11th grade (no high school diploma)
☐ GED
☐ High school graduate (high school diploma)
☐ Vocational/technical school or Associate’s degree
☐ Some college (no degree)
☐ College graduate (B.A. or B.S. degree)
☐ Prefer not to say

What is your annual household income from all sources?

☐ Less than $10,000
☐ $10,001 - $20,000
☐ $20,001 - $40,000
☐ $40,001 - $60,000
☐ $60,001 - $80,000
☐ $80,001 or more
☐ Prefer not to say

How long have you been a smoker?

_____ years

How many times have you tried to quit smoking before?

If you have tried to quit smoking in the past, what methods have you used? (check all that apply)

☐ Nicotine replacement (i.e. nicotine gum, nicotine patch)
☐ Prescription medication (i.e. Chantix)
☐ Therapy/counseling
☐ Other (please specify) ________________________________

How long ago was your last attempt to quit smoking?

_____ years, _____ months, _____ days

During your most recent attempt to quit smoking, how long were you able to remain abstinent from smoking?

_____ years, _____ months, _____ days
Appendix 2

Fagerstrom Test of Nicotine Dependence (FTND)

1. How many cigarettes per day do you smoke? (There are 20 cigarettes in a pack)
   - [ ] 10 or less
   - [ ] 11-20
   - [ ] 21-30
   - [ ] 31 or more

2. What brand of cigarettes do you smoke? (Specify if they are regular, light, or ultra-light)

3. Do you inhale?
   - [ ] Always
   - [ ] Sometimes
   - [ ] Never

4. Do you smoke more frequently during the first hours after waking than during the rest of the day?
   - [ ] No
   - [ ] Yes

5. How soon after waking do you smoke your first cigarette?
   - [ ] After 60 minutes
   - [ ] 31-60 minutes
   - [ ] 6-30 minutes
   - [ ] Within 5 minutes

6. Which cigarette would you hate to give up most?
   - [ ] The first one in the morning
   - [ ] Any other

7. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g. in a church, at the library, at the movies, etc.)?
   - [ ] No
   - [ ] Yes

8. Do you smoke even when you are so ill that you are in bed most of the day?
   - [ ] No
   - [ ] Yes
Appendix 3

Smoking Self-Efficacy Questionnaire (SEQ-12)

The following are some situations in which certain people might be tempted to smoke. Please indicate whether you are sure that you could refrain from smoking in each situation using one of the following answers:

1 = Not at all sure    2 = Not very sure    3 = More or less sure    4 = Fairly sure    5 = Absolutely sure

1. When I feel nervous
2. When I feel depressed
3. When I am angry
4. When I feel very anxious
5. When I want to think about a difficult problem
6. When I feel the urge to smoke
7. When having a drink with friends
8. When celebrating something
9. When drinking beer, wine, or other spirits
10. When I am with smokers
11. After a meal
12. When having coffee or tea
The purpose of this research is to investigate the relationship between self-efficacy (a person’s confidence in their ability to make a behavior change) and smoking cessation.

During the first session of the treatment program, you will be asked to complete a demographic questionnaire. You will also be asked to complete a questionnaire to assess your dependence on nicotine. You will also be asked to complete a questionnaire to assess your self-efficacy for being able to quit using nicotine. During the last session of the treatment program, you will be asked again to complete the questionnaire to assess your self-efficacy for being able to quit nicotine. You will be contacted via email and/or phone each week for 7 weeks following the date that you quit using nicotine and asked about your smoking cessation success. Each survey should take approximately 10-20 minutes to complete, making the entire process take approximately 1-2 hours altogether (over a span of 11 weeks).

This study poses no foreseeable risks other than those minimal risks associated with any mundane daily activity. While there are no direct benefits to you, this study could provide valuable information that sheds light on the process of smoking cessation. Participants who complete all stages of the process will be entered into a drawing to win a $30 gift card to Applebee’s restaurant as compensation for their time.

Your privacy will be protected by the researchers throughout the study. All information you supply will be kept confidential and used for research purposes only. Only the researchers listed on this form will have access to this information.

If you do agree to participate, you can withdraw participation at any time without penalty.

This project has been approved by the Marietta College Human Subjects Review Board. If you have any questions or concerns about research subjects’ rights, please contact Gloria Stewart, Marietta College Human Subjects Committee Chair (email gloria.stewart@marietta.edu; phone 740-376-4458). If you have any questions about this research project, contact Rachel Scheiding (email ras002@marietta.edu) or Dr. Ryan May (email ryan.may@marietta.edu).

I HAVE HAD THE OPPORTUNITY TO READ THIS CONSENT FORM AND ASK QUESTIONS ABOUT THE RESEARCH PROJECT. I AGREE TO PARTICIPATE IN THIS PROJECT BY SIGNING MY NAME BELOW.

Participant’s Signature ___________________________ Date ___________________________
Participant’s Name (PLEASE PRINT)

Participant’s Email Address

Participant’s Phone Number
Appendix 5

Weekly Smoking Status Questionnaire

1. Have you quit smoking in the past week since the last Freshstart meeting?
   □ No
   □ Yes

2. If yes, what date did you quit?
   ______/______  
   Month   Day

3. If yes, how many cigarettes have you smoked since your quit date?

4. If yes, please check all smoking cessation aides that you have used since your quit date.
   □ Nicotine replacement (i.e. nicotine gum, nicotine patch)
   □ Prescription medication (i.e. Chantix)
   □ Other (please specify) _______________________________
   □ I have not used any smoking cessation aides.