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ASSESSING THE IMPACT OF CO-ACTIVE LIFE COACHING AS AN INTERVENTION FOR SMOKING CESSATION: A DEMONSTRATION STUDY

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ASSESSING THE IMPACT OF CO-ACTIVE LIFE COACHING AS AN INTERVENTION FOR SMOKING CESSATION: A DEMONSTRATION STUDY

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ABSTRACT

The purpose of this demonstration study involving adults aged 19-29 was to assess Co-Active Life Coaching (CALC) compared to a control condition on facilitating smoking cessation utilizing various constructs linked with cessation. The study also qualitatively explore smoking triggers and obstacles to cessation, and participants' coaching experiences. In this repeated measures, between groups design 20 participants were randomly assigned to either the CALC or control group. Between groups there was a statistically significant difference in group retention (90% CALC versus 30% control group, $p < .05$). Across time, statistically significant differences were observed in smoking cessation; decrease in number of cigarettes smoked per day and cigarette dependency; and increases in both internal and external self-efficacy. Qualitatively, stress and social situations were identified as triggers; the main cessation obstacle was the control and cigarette relationship; and only the CALC group found coaching to aid in cessation.

Keywords: Co-Active Life Coaching, smoking cessation, cigarette dependency, self-esteem, self-efficacy

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To the next adventure!

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CHAPTER 1

INTRODUCTION

Smoking is the second leading cause of preventable death in the world: half of the world's smokers, approximately 650 million people, will be killed eventually by tobacco-related diseases (Fagerstrom, 2002). In Canada, an estimated 22% of individuals 12 years and older, or approximately 5.9 million people, were smokers in 2005 (Shields, 2007). This number is down from 26% in 2000 (Shields, 2007). Despite the decline in the prevalence of smoking, the number of deaths attributed to smoking is on the rise (Shields, 2005).

To date, many cognitive behavioural interventions for smoking cessation have been developed and tested. These interventions utilized common strategies to facilitate smoking cessation and included: social support; motivation; tailoring programs to individuals; and group cessation programs (Cohn et al., 2000; Kjaer et al., 2007; May, West, Hajek, McEwen & McRobbie, 2006; Williams et al., 2006). Despite the emergence of these common strategies in cognitive behavioural smoking cessation interventions, no strategy has demonstrated consistent success in assisting smokers to achieve cessation (Elkins & Rajab, 2004; May et al., 2006; O'Loughlin, Paradis, Renaud, Meshefedgian & Barnett, 1997; Rodgers et al., 2005). Consequently, additional research is needed to help ascertain the efficacy of the aforementioned common strategies and to find new interventions, such as the Co-Active Life Coaching intervention utilized in this study.

Co-Active Life Coaching (hereafter life coaching) is a health behaviour change model encompassing three strategies previously utilized individually in cessation

interventions, thus positioning life coaching as an intervention which merits further investigation. The common strategies employed in life coaching are social support, motivation, and tailoring the intervention to the individual (Whitworth, Kimsey-House, Kimsey-House & Sandahl, 2007). Although life coaching has not been assessed directly for utility with regard to smoking cessation, it was found that two participants quit smoking while participating in a previous study where life coaching was the intervention (Newnham-Kanas, Irwin & Morrow, 2008). Furthermore, the life coaching model is theoretically grounded and amalgamates the use of constructs from various previously established theories inclusive of Social Cognitive Theory, The Theory of Reasoned Action, and The Theory of Planned Behaviour (Bandura, 1989; Irwin & Morrow, 2005; Madden, Ellen & Ajzen, 1992). Given the previous success of smoking cessation associated with life coaching and its strong theoretical foundation, the Co-Active Life Coaching model merits investigation as a viable method of behaviour change.

Purpose

The purpose of this demonstration study was three-fold: to assess the impact of life coaching on smoking cessation in adults aged 19 to 29 years; to explore smoking triggers and obstacles to cessation, and to assess participants' experiences of life coaching. The first purpose was to assess the impact of life coaching compared to a control condition using several assessment criteria: smoking cessation; average number of cigarettes smoked per day; cigarette dependency; self-esteem; and self-efficacy to quit smoking among adults who smoke. Subsidiary purposes were to explore qualitatively smoking triggers and obstacles to cessation as well as to discern participants' perspectives on the impact of coaching on their cessation goal.

Rationale

Tobacco-related medical conditions cost Canada's healthcare budget an average 17 billion dollars annually (Health Canada, 2007). These medical conditions include various types of cancer, coronary heart disease, stroke, and chronic lung disease (Fagerstrom, 2002; Shields, 2005). Additionally, non-smokers subjected to second-hand smoke also experience negative health effects that further contribute to the drain on the healthcare budget (Brownson, Eriksen, Davis & Warner, 1997; Siegel, 1993). The numerous tobacco-related health effects, combined with the associated economic burden, position tobacco reduction as a societal necessity (Health Canada, 2007; Shields, 2005).

The health benefits of smoking cessation are well established (Shields, 2005). The most effective and the most cost-efficient way for a smoker to improve his or her health is through cessation (Edwards, 2004). Smoking cessation results in a decrease in the risk of developing various tobacco-related medical conditions such as: different types of cancer; heart disease; stroke; and chronic lung disease (Surgeon General's Report, 1990). Additionally, the age at which a smoker quits smoking is directly proportional to the number of years he or she adds to his or her life (Taylor, Hasselblad, Henley, Thun & Sloan, 2002).

Persistent smoking behaviour is partly the result of nicotine, an addictive substance in cigarettes (Shields, 2005). The addictive nature of nicotine is analogous to the addictive level of several narcotics including heroin and cocaine (Fagerstrom, 2002). The highly addictive nature of nicotine in cigarettes impedes cessation and is the most common reason cessation initiatives fail and relapse rates are so high (Shields, 2005). Individuals who attempt to quit smoking on their own have only a five percent success

rate (Elkin & Rajab, 2004). Therefore, taking all major factors together, the prevalence of smoking, the rising number of deaths associated with tobacco, the substantial financial drain smokers put on the health care system, the obvious positive factors associated with smoking cessation, and the difficulty smokers face when trying to overcome their addiction, the need for more research to help create and establish efficacious smoking cessation programs is evident.

In a review of literature, life coaching demonstrated utility in facilitating positive health changes for many health issues including asthma, poor cardiovascular health, depression, and diabetes (Newnham-Kanas, Gorczynski, Morrow & Iriwn, 2009). Considering the previous success of life coaching at enabling positive health behaviour change, the strong theoretical basis of the life coaching model, and the fact that life coaching incorporates three strategies currently utilized in cessation programs, life coaching merits investigation as an intervention for smoking cessation.

CHAPTER II

REVIEW OF LITERATURE

To date, many smoking cessation interventions have been utilized and assessed with regard to their efficacy at facilitating cessation. In a review of self-help cessation studies, quit rates were found to be between 1% and 11%, averaging 5% (Lancaster & Stead, 2008). These findings indicated the limited success of self-help material unless tailored to the individual (Lancaster & Stead, 2008). Moreover, a review of nicotine replacement therapy interventions found six-month cessation rates were 14% for the intervention group and 11% for the placebo group (Stead, Perara, Bullen, Mant & Lancaster, 2008). These numbers further decreased by 10% and 12%, respectively when a two-year follow-up was completed (Stead et al., 2008). With individual behaviour counselling there is no difference between intensive and brief counselling; however, individual counselling proved more effective than the control with an odds ratio of 1.56 (Lancaster & Stead, 2008). Despite the various successes of the aforementioned interventions, the quit rates were not consistent nor did they demonstrate overwhelming success. Consequently, continual evaluation of the numerous cessation programs is required to determine which programs yield significant cessation rates. The need for efficacious smoking cessation programs is underscored by the high prevalence of smoking, the negative health outcomes of smoking and positive benefits to cessation, and the addictive nature of cigarettes. It is the purpose of this literature review to examine current smoking cessation programs utilizing cognitive behavioural interventions. Interventions focusing on changing thought patterns to enhance control over behaviour were examined to ascertain the most common and efficacious strategies for increasing

cessation rates among participants. Furthermore, this literature review examined the similarities between current strategies utilized in smoking cessation interventions and life coaching. Life coaching utilizes many of the strategies currently used in cessation interventions; however, having all of these strategies combined in a single intervention is unique to life coaching.

To address the purpose of this literature review, four databases were utilized to search for smoking cessation programs employing behaviour modification and coaching articles: CINAHL 1982-2007; Sage Journals 1982-2007; SCOPUS 1869-2007; and SocINDEX 1895-2007. The following search terms were used within each of these databases: smoking cessation; intervention; program; and adults. These searches generated 31 potential articles. Each article was carefully reviewed for the following inclusion criteria: a primary study; adult participants in the age range of 18 to 64, with no co-morbidity; and the reporting of smoking cessation statistics. Nineteen studies met the aforementioned inclusion criteria and are summarized in Table 1.

Upon examining the 19 journal articles, the emergence of several strategies used to promote smoking cessation became evident: social support; motivation; tailoring programs to individuals, and group cessation programs.

Social Support

Social support is commonly understood to mean "leading the subject to believe that [s]he is cared for and loved, esteemed, and a member of a network of mutual obligations" (Cobb, 1976, p. 300). Social support, when implemented in smoking cessation programs, typically involved providing the participant with an individual who supported him or her in the achievement of his or her cessation goal (May et al., 2006).

Table 1. **Summary of cessation programs 1995 to 2007**

Table 1

Summary of Behavioural Modification Based Smoking Cessation Programs From 1995 to 2007

Author	Population		Intervention Type	Intervention Description	Cessation Results
	Intervention	Control			
Carlson et al. (Bultz) (2000)	N = 971 M age = 39.9 yrs 66.1 % were female M number of cigarettes per day 25.1 * motivated to quit		Cognitive behavioural	Intervention: Eight 90-minute group sessions over four-months utilizing education, self-monitoring, nicotine fading, motivation, and behavioural modifications	Self report at 8 yrs Intervention: 16.2%
Carlson et al. (Casebeer) (2003)	N = 1800 M age = 42.2 yrs 63.1 % were female M number of cigarettes per day 21.4 * motivated to quit		Cognitive behavioural	Intervention: Eight 90-minute group sessions over four-months utilizing education, self-monitoring, nicotine fading, motivation, and behavioural modifications	Self report at 3 mos Intervention: 39.5%
Cohn et al. (2000)	N = 111 57 people smoked 20 + cigarettes a day and 54 smoked between 10-20 cigarettes a day		Cognitive behavioural	Intervention- Six-week, seven session program with education and prevention for relapse based on "Freedom from Smoking" program.	Self report at 6 weeks Intervention: 44%

Table 1 (continued). **Summary of cessation programs 1995 to 2007**

Author	Population		Intervention Type	Intervention	Results
	Intervention	Control			
COMMIT Research Group (1995)	11 Communities in US and Canada *Matched Target population aged 25-64	11 Communities in US and Canada *Matched Target population aged 25-64	Cognitive behavioural	Intervention: public education through the media and community-wide events, health care providers, work-sites, other organizations and cessation resources Control: No intervention	Self report at 15 yrs Intervention:3.5% Control: 3.2 % Confidence intervals p = .09 Not statistically significant
Elkins & Rajab (2004)	N = 21 M age = 47 yrs 43 % were female M number of cigarettes per day 24 * motivated to quit		Cognitive behavioural	Intervention: Hypnosis- 3 sessions	Self report at 1 yr Intervention: 22%
Gilbert & Sutton (2006)	N = 753 M age = 39.3 yrs 65.8 % were female * motivated to quit	N = 704 M age = 39.1 yrs 64.2% were female * motivated to quit	Cognitive behavioural	Intervention: Quitline, a hotline smokers can call to receive smoking cessation support and 0-4 proactive calls by counsellors at Quitline Control: No intervention	Self report at 1 yr Intervention: 9.3% Control: 9.5% F test Not statistically significant
Kjaer et al. (2007)	Individual counselling N = 765 M age = 48.6 yrs 63 % were female M number of cigarettes per day 19.6	Group counselling N = 2751	Cognitive behavioural	Individual counselling: 5 one-on-one individual sessions Group counselling: 10-12 people meet with counsellor for 5 sessions	Self report at 12 mos Individual: 19% Group: 16%

Table 1 (continued). **Summary of cessation programs 1995 to 2007**

Author	Population		Intervention Type	Intervention	Results
	Intervention	Control			
May et al. (2006)	N = 237 Given as entire population statistics M age = 43.6 yrs 62 % were female M number of cigarettes per day 23 * motivated to quit	N = 326 * motivated to quit	Cognitive behavioural	Intervention: Group-based treatment consisting of 6 weekly sessions based on the 'withdrawal-oriented' model of cessation and assigned buddy Control: Group-based treatment consisting of 6 weekly sessions based on the 'withdrawal-oriented' model	Self report at 24 weeks Intervention: 13% Control: 15% Not statistically significant
O'Loughlin et al. (1997)	N =113 M age = 44.8 yrs 73.5 % were female M number of cigarettes per day 27.5 * motivated to quit	N = 299 M age = 38.6 yrs 51.4 % were female M number of cigarettes per day 20.8 * motivated to quit	Cognitive behavioural	Intervention: "Yes, I Quit" -5 two-hour group sessions at one week intervals with one booster session after the intervention and 2 booster mail-outs at three- and six-months after the intervention Control: Baseline assessment only	Self report at 6 mos 22.3% of subjects reported cessation
Resnicow et al. (1997)	N =703 M age = 44 yrs 58% were female M number of cigarettes per day 15.3 * motivated to quit	N= 541 M age = 46.4 yrs 65% were female M number of cigarettes per day 16.5 *motivated to quit	Cognitive behavioural	Intervention: Health education materials (booklet and video) plus booster call asking them to complete health education material Control: Health education material (booklet and video)	Self report at 6 mos Intervention: 11.2% Control: 7.9% Chi square p = .06 Not statistically significant

Table 1 (continued). **Summary of cessation programs 1995 to 2007**

Author	Population		Intervention Type	Intervention	Results
	Intervention	Control			
Rodgers et al. (2005)	N = 852 18+ years of age * motivated to quit	N = 853 18+ years of age * motivated to quit	Cognitive behavioural	Intervention: Regular text messaging providing education and distraction Control: 1 text message every 2 weeks reminding them they were in the study	Self report at 6 weeks Intervention: 28% Control: 13% Confidence intervals p < .0001 *Statistically significant
Romand et al. (2005)	N =119 M age = 40 yrs 64% were females Median number of cigarettes smoked daily = 20 * motivated to quit	N = 109 M age = 43 yrs 54% were females Median number of cigarettes smoked daily = 20 * motivated to quit	Cognitive behavioural	Intervention: 5 therapy sessions discussing physiopathological, psychological-cognitive aspects of tobacco and support by psychologist and health adviser Control: General education for one hour	Self report at 1 yr Intervention: 16% Control: 11%
Swartz et al. (2006)	N = 171 18 + years of age 53.2 % were female * motivated to quit	N = 180 18+ years of age 50.6% were female * motivated to quit	Cognitive behavioural	Intervention: Internet site that presented current strategies for smoking cessation and motivational material tailored to participants' ethnicity, sex, and age Control: Received nothing for 90 days	Self report at 3 mos Intervention: 12.3% Control: 5.0% Chi square *Statistically significant

Table 1 (continued). **Summary of cessation programs 1995 to 2007**

Author	Population		Intervention Type	Intervention	Results
	Intervention	Control			
Tindle et al. (2006)	N = 17 M age = 48 yrs Gender =11 female , 6 male 20 or less cigarettes per day = 11 20 + cigarettes per day = 6 * motivated to quit	N= 17 M age = 49 yrs Gender = 11 female , 6 male 20 or less cigarettes per day = 11 20 + cigarettes per day = 6 * motivated to quit	Cognitive behavioural	Intervention: Six guided imagery sessions and a home study which included a workbook and four audio CDs Control: Wait-listed	Self report and saliva Cotinine at 12 weeks Intervention: 29% Control: 12% Not statistically significant
			Mixed Interventions		
Andrews et al. (2007)	N= 51 women living in subsidized housing in Georgia Population Statistics M age = 40.2 yrs M number of cigarettes per day 13.27 * motivated to quit	N= 52 women living in another subsidized housing development in Georgia * motivated to quit	Mixed: Cognitive behavioural and pharmacological aid	Intervention: Empowerment counselling in a group (6 sessions and 2 booster sessions), nicotine replacement therapy, social support, and spiritual support Control: Self-help written smoking cessation materials and education	Self report at 6 mos Intervention: 27.5% Control: 5.7% *Statistically significant
Gomez-Zamudio et al. (2004)	N = 3033 60 % were females Support -1795 Pharm. aids- 1333 Control- 1795 * motivated to quit		Mixed: Cognitive behavioural and pharmacological aid	Intervention: buddy support systems Intervention: pharmacological aids (any combination) Control: Commit to 6 week abstinence and win prizes	Self report at 1 yr Support: 20.6% Intervention: 23.9% * Control : 19.7% *Statistically significant

Table 1 (continued). **Summary of cessation programs 1995 to 2007**

Author	Population		Intervention Type	Intervention	Results
	Intervention	Control			
Graham et al. (2007)	N = 1776 M age = 44.1 yrs 45 % were female		Mixed: Cognitive behavioural and pharmacological aid	Intervention: QuitNet, a website giving advice to quit smoking, assistance in setting a quit date, motivation, information, practical counselling, advice on pharmacological intervention	Self report at 12 mos Intervention: 13%
Prapavessis et al. (2007)	Cognitive Behavioural Therapy (total) N =66 M age = 38.2 yrs 10+ cigarettes per day * motivated to quit	Exercise (total) N = 76 M age = 37.9 yrs 10+ cigarettes per day * motivated to quit	Mixed: Cognitive behavioural, exercise, and nicotine patch	Cognitive Behavioural Therapy: Three 45-minute group education sessions per week for 12-weeks (with half receiving the patch) Exercise: Three 45-minute exercise sessions each week for 12-weeks (with half receiving the patch)	Self report at 1 yr CBT only: 44% CBT and Patch: 42% Exercise only: 17% Exercise and patch: 36% *Statistically significant when compared to exercise only group
Williams et al. (2006)	N =714 M age = 45.5 yrs 62.7 % were females M cigarettes per day 20.3 30.8% used pharmacological intervention	N= 292 M age = 44.8 yrs 66.8 % were females M cigarettes per day 20.9 15.8% used pharmacological intervention	Mixed: Cognitive behavioural and pharmacological aid	Intervention: Self-Determination Theory - Meet with counsellors 4 times, received Public Health Services booklet 'You can stop Smoking' and list of active cessation programs in their area. Control: Received Public Health Services booklet 'You can stop Smoking' and list of active cessation programs in their area.	Self report at 6 mos Intervention: 11.8% Control: 4.1% Chi Square test with p = .001 *Statistically significant

Note. N= number of participants; M = mean; yrs= years; mos= months; pharm= pharmacological

This method was utilized in May et al.'s (2006) study where individuals were randomly assigned either to a control or intervention group. Both arms received group-based treatment; however, the participants in the intervention were matched with a 'buddy', from their group, to provide support *to* and receive support *from* (May et al., 2006). The cessation rates of the intervention and control groups were comparable at 13% and 15%, respectively. These results failed to demonstrate a statistically significant difference between the intervention and control groups (May et al., 2006). This study's researchers hypothesized all participants had pre-existing social support from family members and friends that masked the social support effect in this study. Furthermore, a study by Andrews, Felton, Wewers, Waller, and Tingen (2007) examined changes in social support as a possible predictor of continued smoking cessation. They determined that changes in total social support did not significantly affect abstinence outcomes. O'Loughlin et al. (1997) found social support from a significant other to be associated with smoking cessation at the six-month follow-up; however, further research is required to determine the magnitude of this correlation. Prapavessis et al. (2007) measured changes in perceived social support in their study in which participants were randomly assigned either to an exercise or education group, and half of the participants in each group received the nicotine patch. Of the four groups, participants in the education group-intervention scored significantly higher with regard to perceived social support when compared to the exercise intervention ($p < .001$) (Prapavessis et al., 2007). The above-noted studies yielded mixed results with regard to the efficacy of social support as a successful strategy for facilitating smoking cessation.

Motivation

Another strategy employed in previous cessation programs was motivation, specifically intrinsic motivation. Motivation is generally understood to be based on individual drives to achieve a desired behaviour or outcome (White, 1959). A study by Williams et al. (2006) tested the utility of Self-Determination Theory (SDT) as an intervention for smoking cessation. SDT purports that an individual's autonomy and intrinsic motivation together facilitate the desired behavioural change (Williams et al., 2006). Random assignment was utilized in this study, and the participants in both the control and intervention groups received public health services booklets and a list of cessation programs available in the area (Williams et al., 2006). The intervention group also received 4, one-on-one counselling sessions with a focus on augmenting intrinsic motivation (Williams et al., 2006). This intervention proved successful when compared to the control group with cessation rates of 11.8% and 4.1%, respectively (Williams et al., 2006). These results were statistically significant and supported the SDT and, more specifically, intrinsic motivation as the basis for an efficacious strategy in facilitating smoking cessation (Williams et al., 2006). Conversely, in their study involving proactive phone calls to participants from 'Quitline,' a telephone service available to individuals trying to quit smoking, Gilbert and Sutton (2006) found no difference with regard to cessation rates between the control and intervention groups with 9.5% and 9.3% respectively. This predominantly unsuccessful proactive call on the part of 'Quitline' counsellors was an attempt to instil motivation in the participants (Gilbert & Sutton, 2006). Gilbert and Sutton (2006) hypothesized that motivation to quit smoking cannot be thrust upon participants, rather participants must be intrinsically motivated to quit.

Furthermore, a study by Carlson, Taenzer, Koopmans, and Casebeer (2003) determined that certain aspects of the Transtheoretical Model (TTM; Prochaska, DiClemente & Norcross, 1992), a model based on various stages of readiness to change, were predictive of smoking cessation at three months. However, when the same smoking cessation program was utilized and participants were followed up after eight years, the elements of the TTM which were significant predictors of cessation at three months, were no longer significant predictors (Carlson, Taenzer, Koopmans & Blutz, 2000; Carlson et al., 2003). This lack of significant predictability at eight years provided conflicting evidence regarding motivation as an efficacious strategy in promoting long-term smoking cessation. Given the mixed results regarding the impact of motivation on smoking cessation, the need for further research to investigate this relationship is evident.

Tailoring Cessation Programs to the Individual or Group

Some smoking cessation programs have attempted to tailor programs to reflect cultural and personal factors in order to facilitate cessation. A study by Swartz, Noell, Schroeder, and Ary (2006) randomly assigned participants to either a website-based intervention that provided users with cessation material tailored to the participants' ethnicity, sex, and age or to the control group where participants were wait-listed. These researchers found statistically significant cessation rates between the intervention group, 12.3%, and the control group, 5.0%. Once again, this study supports the efficacy of cessation programs tailored to individuals. Rodgers et al. (2005) randomly assigned participants to either an intervention group, who received regular personalized text messages offering them smoking cessation education and distraction from their cessation goal, or a control group, who received a text message every two weeks reminding them

they were participating in the study. Cessation rates for the intervention group were significantly higher when compared to the control group, 28% and 13% respectively (Rodgers et al., 2005).

However, not all cessation programs utilizing tailored interventions resulted in statistically higher cessation rates when compared to control groups. A study by Cohn et al. (2000) recruited smoking parents of children with respiratory diseases and offered them a cessation program designed to take into account personal factors, specifically how smoking was impacting their children negatively. This program resulted in cessation for 44% of participants. Although these results seem astounding, the statistical significance of these results was not tested by the researchers. Furthermore, a study by Elkins and Rajab (2004), that utilized direct hypnotic suggestion and tailored the suggestions to reflect the goals of the individual participants, found that 22% of participants had abstained from smoking one year post-intervention. Elkins and Rajab (2004) did not use a control group nor did they indicate whether or not the results were statistically significant. A study by Tindle et al. (2006) utilized participant-generated guided imagery as an intervention to promote smoking cessation. Tindle et al. (2006) used a control group and random assignment and found no statistically significant difference in smoking cessation rates between the control and intervention groups with cessation rates of 12% and 29%, respectively. A study by Resnicow et al. (1997), that utilized a cessation program based on the cultural values of African American women of low socioeconomic status, found no statistically significant difference between the intervention group, who received cessation education material and reminder calls to complete the educational material; and the control group, who received the educational material only. Therefore,

personalizing smoking cessation programs for the individual or the culture generated mixed results with respect to promoting cessation.

Group Cessation Programs

A meta-analysis by Kottke, Battista, and DeFriese (1988) reported that group behavioural interventions were the most efficacious methods for achieving smoking cessation. A benefit to group cessation programs is their unique ability to offer an intervention to a large number of people in a highly cost-effective manner. Kjaer et al. (2007) randomly assigned 3516 participants to either a group intervention or individual counselling and for reasons of feasibility, the majority of the participants were assigned to the group intervention. At post-test, 19% of intervention participants quit smoking compared to 16% of control participants (Kjaer et al., 2007). The statistical difference between these results was not assessed; however, this study demonstrated the plausibility of large-scale group-based interventions (Kjaer et al., 2007). Another study that did not assess the significance of the cessation results, but which also implemented a large-scale intervention, was by Graham, Cobb, Raymond, Sill, and Young (2007). These authors also concluded that cessation programs could be designed to reach a large number of people (Graham et al., 2007). Furthermore, the COMMIT program utilized a population-based approach to smoking cessation where 22 communities were randomly assigned either to an intervention group, who received an education-based media campaign for smoking cessation; or the control group, who received no intervention (COMMIT, 1995). The cessation results for the intervention group were not statistically significant when compared to the control group with cessation rates of 3.5% and 3.2%, respectively.

Other group smoking cessation programs have yielded statistically significant cessation results (Gomez-Zamudio et al., 2004; Romand, Gourgou & Sancho-Garnier, 2005). Romand et al. (2005) utilized the random assignment of participants either to a control group, where participants received one general education session regarding cessation; or an intervention group, where participants received five consecutive behavioural therapy sessions. The authors of this study found the intervention was more effective in promoting smoking cessation with quit rates of 16% for the intervention group compared to 11% for the control group. Gomez-Zamudio et al. (2004) utilized a 'Quit and Win' cessation campaign where participants utilized a buddy system, pharmacological aids, or an incentive program to win prizes if abstinence was achieved for one year. Only the pharmacological aids group exhibited statistically significant cessation rates in comparison to the incentive group with cessation rates of 23.9%, and 19.7%, respectively. Moreover, the buddy system group did not demonstrate statistical significance when compared to the incentive group, 20.6% and 19.7% respectively (Gomez-Zamudio et al., 2004). These studies provide evidence of the possible efficacy of group interventions for smoking cessation. The aforementioned group cessation studies present mixed results with regard to their efficacy at promoting smoking cessation illuminating the need for further research.

Quality Concerns

The recurring use of self-reporting to determine cessation was found in all studies with the exception of two (Prapavessis et al., 2007; Tindle et al., 2006). The remaining 17 studies used a self-report method as the means of data collection. This method raises concern about internal validity, namely the possibility of social desirability bias (SDB)

contributing to spurious relationships between variables thereby artificially inflating the results (King & Bruner, 2000). SDB holds that participants tend to give responses congruent with what is favourable in the circumstance instead of responding accurately (Passer, Smith, Atkinson, Mitchell & Muir, 2002). SDB has several tenets: self-deception; impression management; and the perceived desirability of the behaviour, with the latter having the greatest influence on the individual's response (Randall & Fernandes, 1991). Whether or not an individual will be impacted by SDB is largely dependent on the cultural values of the individual. SDB has been found in research conducted in North America (Fisher & Katz, 1999). Therefore, given the possible presence of SDB, and given that no other methods were employed to ascertain whether or not cessation had occurred, concern is raised regarding the validity of the results in many of the aforementioned smoking cessation programs.

The concern of self-report is further amplified as one of the two studies which employed Cotinine, a biological verification that smoking cessation has occurred, yielded mixed results regarding statistically significant cessation rates (Prapavessis et al., 2007; Tindle et al., 2006). This is concerning because the observed significance of the results in the other 17 studies may reflect a misrepresentation of smoking cessation rates caused by SDB instead of the actual effectiveness rates of the programs. Furthermore, of the 17 studies examined in this literature review that exclusively used self-report as the method for determining the success of the intervention, only seven identified self-report as a possible limitation to their studies. The need for empirically rigorous and biologically verified cessation studies is evident.

Co-Active Life Coaching

Life coaching is a unique health-behaviour intervention that reflects a combination of current strategies individually utilized in smoking cessation interventions: social support; motivation; and tailoring interventions to individuals. It is the amalgamation of all of these strategies in a single intervention that makes life coaching fundamentally different than the currently used Cognitive Behavioural interventions. Life coaching creates a supportive relationship that works in service of the client to empower and enable goal attainment.

The supportive relationship between the client and coach is similar to social support. Social support, relating to smoking cessation and positive health practices, encompasses two constructs: increasing self-esteem; and augmenting self-efficacy (Andrews et al., 2007; Gecas, 1989; Muhlenkamp & Sayles, 1986). Social support in cessation interventions facilitates success through encouragement and creates accountabilities thereby making successes conscious and measurable (Andrews et al., 2007; May et al., 2006; O'Loughlin et al., 1997). In life coaching, strategies employed to provide social support are achieved through various tools including championing, acknowledgment, and accountabilities (Irwin & Morrow, 2005; Whitworth et al., 2007). Championing is advocacy *by* a coach *for* a client when the client doubts his or her abilities (Whitworth et al., 2007). Acknowledgment is a life coaching tool that deals with seeing the client for who he or she had to be to accomplish the action or awareness he or she achieved (Whitworth et al., 2007). Both championing and acknowledgment provide social support, as demonstrated in current cessation interventions, as they offer encouragement to the client thereby increasing the client's self-esteem and self-efficacy

to quit and maintain cessation (Irwin & Morrow, 2005; Whitworth et al., 2007). Lastly, accountabilities are achieved by having the client report on what they agreed to do during the coaching session (Whitworth et al., 2007). Accountabilities offer the client proof of his or her completed actions (Whitworth et al., 2007) resulting in an increase in self-esteem and self-efficacy as successes become apparent.

A current strategy in cessation interventions mirrored in the life coaching model is motivation. In life coaching, motivating the client is achieved through fulfillment coaching which helps the client to identify the personal values which drive client goal attainment (Irwin & Morrow, 2005; Whitworth et al., 2007). Through fulfillment coaching, the client can determine which actions are important to him or her and how those actions are anchored in or opposed by his or her values. Determining values offers the client internal motivation to succeed as it becomes clear why a certain goal is important to him or her (Whitworth et al., 2007). Additionally, a cornerstone of the life coaching model is recognizing that clients are naturally-creative-resourceful-and-whole (NCRW) and as such are not broken and do not need fixing (Whitworth et al., 2007). When clients are held NCRW by their coach this offers them the assurance that the coach trusts they are capable of achieving their goals. Having that level of confidence assumed further increases intrinsic motivation.

Additionally, the life coaching model is inherently a client-centered model as each coaching session is unique and individually tailored to the client's agenda: a strategy utilized in cessation interventions and previously explored in this literature review (Gorczynski, Morrow & Irwin, 2008; Newnham et al., 2008; van Zandvoort, Irwin & Morrow, 2009; Whitworth et al., 2007). In life coaching, both the coaching relationship

and coach work in service of the client and his or her goal/agenda. Selecting the agenda gives control to the client (Whitworth et al., 2007) thereby inherently facilitating an increase in self-esteem (Newnham-Kanas et al., 2008; van Zandvoort et al., 2009). Further augmentation of the clients' control is available through the coaching relationship in which the coach and client work together in service of the client's progress (Whitworth et al., 2007).

In life coaching, the coach supports the client in achieving his or her desired goal (Irwin & Morrow, 2005). Goal attainment in life coaching is accomplished by utilizing social support to increase the self-esteem and self-efficacy of the client, tailoring the intervention to the client, and motivating the client through values' clarification. Because life coaching offers a combination of many strategies currently individually employed in cessation interventions, the potential success of coaching as an intervention for smoking cessation is apparent. Moreover, in addition to the theories noted earlier, life coaching also shares many elements from the Shared Helper Model (Egan, 1997), Self-Regulation Theory (Kanfer, 1970), Social Determination Theory (Ryan & Deci, 2000), and Motivational Interviewing (Miller & Rollnick, 2002); however, unique to life coaching is that these constructs are incorporated into a single approach. This attribute positions life coaching as an intervention that merits investigation (Newnham-Kanas et al., 2008; van Zandvoort et al., 2009).

Conclusion

This literature review examined the various interventions for smoking cessation and their efficacy with regard to cessation rate. These strategies included social support, motivation, tailoring programs to individuals, and group cessation programs. An

emergent trend for cessation programs was the mixed success of the current strategies utilized. Further research is required to ascertain the extent to which social support impacts cessation programs. Additionally, it was found that intrinsic motivation was a better predictor of cessation success (Williams et al., 2006) than when other individuals attempted to instil external motivation (Gilbert & Sutton, 2006). The mixed results regarding the TTM on cessation requires further examination in order to accurately decipher the relationship between TTM and smoking cessation programs (Carlson et al., 2000; 2003). Furthermore, programs tailored to individuals demonstrated mixed results with regard to facilitating smoking cessation (Cohn et al., 2000; Resnicow et al., 1997; Rodgers et al., 2005; Swartz et al., 2006). Lastly, group cessation programs are being investigated with regard to their efficacy in promoting smoking cessation. Despite the appealing nature of these cost-effective designs, the inconsistency in their efficacy with regard to smoking cessation creates concern.

A major limitation to current research on smoking cessation programs is the reliance on self-report tools as the only method of data collection. Without biological verification that cessation has occurred, there is the possibility that SDB artificially inflates cessation results (King & Burner, 2000). This concern results in the need for further research into smoking cessation programs which include biological verification of cessation. Biological verification will eliminate the potential effect of SDB and allow for a definitive determination that the observed cessation rates accurately depict individuals who have quit smoking. The studies examined in this literature review represented a diverse compilation of smoking cessation programs. However, the consistent lack of information indicating whether or not results were statistically significant made it

difficult to determine the efficacy of the strategies utilized by the cessation programs. Future research should provide significance levels for the results.

Given the detriments to health caused by smoking and given the benefits of cessation are well established, the prevalence of smoking in Canada is alarming. There is a need for efficacious smoking cessation programs. These smoking cessation programs need to be evaluated based on stringent criteria, and the replication of findings needs to be assured in order to be confident the most efficacious cessation programs are being offered to the smoking public. Therefore, future research should be founded on empirical methods and should focus on determining the efficacy of the current strategies utilized in smoking cessation programs.

The need for further research focusing on the efficacy of cessation programs and the need for empirical rigor indicates a gap in the literature. Current strategies utilized in cessation interventions include social support, motivation, tailoring programs to individuals, and group interventions. The implementation of these strategies has yielded mixed results regarding the efficacy of the intervention to promote cessation (Gilbert & Sutton, 2006; May et al., 2006; Resnicow et al., 1997; Swartz et al., 2006; Williams et al., 2006). Consequently, it is important that future research incorporates the previously implemented strategies in order to ascertain the interventions' successes in promoting cessation among participants.

Life coaching (Whitworth et al., 2007) is an intervention reflective of the current strategies used in cessation programs; however, unique to life coaching is that three of these strategies are present in a single intervention. There are several underlying tenets of life coaching such as: social support; motivation; and tailoring programs to individuals

(Irwin & Morrow, 2005; Whitworth et al., 2007). In life coaching, the coach's role is to support the client to achieve his or her desired goal or outcome (Whitworth et al., 2007). This is accomplished by utilizing various principles which focus on motivating the client to live his or her most fulfilling life, helping the client to see different perspectives and allowing those perspectives to inform choices and actions, and to experience his or her life as a whole (Irwin & Morrow, 2005; Whitworth et al., 2007). These underlying elements of life coaching are congruent with several strategies currently used in smoking cessation programs as well as current health behaviour change models and theories. Therefore, utilizing life coaching as an intervention for smoking cessation would help to determine if the strategies used together have potential as an efficacious cessation tool.

CHAPTER III

METHOD

Purpose

The purpose of this demonstration study was three-fold. The first purpose was to assess the impact of life coaching compared to a control condition on: smoking cessation; average number of cigarettes smoked per day; cigarette dependency; self-esteem; and self-efficacy to quit smoking among adults (aged 19 to 29 years). Subsidiary purposes were to explore qualitatively smoking triggers and obstacles to cessation, and participants' perspectives on the impact of life coaching and the control condition on their cessation goal. The following section will describe the study design, participant recruitment process, procedure, and data analysis and interpretation.

Study Design

To address the first purpose of this study, a repeated measures, between-groups design was utilized. A repeated measures design consists of measuring various constructs over several time intervals (for this study, measures took place before, during, and after the intervention). The constructs for this study included smoking cessation, average number of cigarettes smoked per day, cigarette dependency, self-esteem, and self-efficacy. A between-groups design refers to the division of participants into two groups; for this study, an intervention and control group was utilized. An experimental design has three essential features: manipulation of the independent variable; measuring whether the manipulation results in a change in the dependent variable; and attempting to control extraneous variables (Passer et al., 2002). All of these features were present in this study and are discussed in turn.

The independent variable in this study was whether or not participants received life coaching and the dependent variables were smoking cessation, number of cigarettes smoked per day, cigarette dependency, self-esteem, and self-efficacy. Manipulating the independent variable and measuring the resulting changes allowed changes in the dependent variable to be associated with changes in the independent variable, which is a main benefit of the experimental design (Passer et al., 2002).

The participants for this study represented a non-probability sample in that all members of the target population did not have an equal chance of being part of the sample (McKenzie, Neiger & Smeltzer, 2005). This type of sampling was used as recruitment of participants could be achieved only through self-selection. From the non-probability sample participants were randomly assigned to either the control or intervention group in an attempt to equalize the impact of extraneous variables on both groups (Trull, 2005). Secondly, control over extraneous variables was enhanced through the provision of pamphlets on tobacco to all participants to help create equality in participant knowledge (Canadian Cancer Society, 2007; Government of Ontario, 2003; Government of Ontario, 2008). Furthermore, consistent protocol was utilized throughout the study including all interactions with participants, all materials, and all forms of data collection acting to further equalize the groups (Breckler, Olson & Wiggins, 2006).

Lastly, an intervention design was selected as this method offered inherent benefits in increasing internal validity (Trull, 2005). Internal validity was enhanced because only one independent variable was manipulated thereby enabling changes in the dependent variable to be associated with the independent variable (Trull, 2005).

Participant Recruitment

Twenty participants were recruited for this demonstration study, 10 each for the control and intervention groups. The 20 participants were recruited utilizing a variety of methods. Initially, ethical approval was obtained to recruit utilizing an advertisement in the *London Free Press*, a local newspaper in London, Ontario (Appendix A). However, after four weeks this advertisement yielded only one interested participant who did not attend the initial intake appointment and subsequently did not return the researcher's three phone calls. Consequently, due to a lack of participants, the first amendment to ethics was submitted and approved and the means of recruitment was extended to include posters at fitness clubs in London, Ontario; on campus at the University of Western Ontario and Fanshawe College; public libraries in London, Ontario; and a poster was sent to Charlene Root (Smoking Cessation Coordinator) of the Middlesex-London Health Unit to be distributed. All of these methods of recruitment resulted in one participant contacting the researcher and who subsequently enrolled in the study in October 2008.

Due to the continued lack of reaching potential participants a second ethical amendment was submitted and approved in November 2008 to extend recruitment to include: advertisements on London radio stations; posters at London transit sites at the University of Western Ontario, grocery stores, and malls; and a poster was sent to Karen Loney, the Smoke Free Ontario Coordinator for Chatham-Kent Public Health Unit, who sent it to all of her contacts within a one-hour travel radius of London. Also, an increase in the age range of potential participants from 20-24 to 19-29 years of age was made. Over a three-week period 12 potential participants responded to the radio advertisement wanting further information about the study. Two individuals declined participation as

there was no nicotine replacement therapy or financial compensation associated with this study. Three of the remaining ten participants did not attend scheduled meetings and did not respond to the researcher's several contact attempts and the remaining seven participants were enrolled in the study at the beginning of January 2009 for a total of eight participants.

In January, a conference call was conducted with the researcher's thesis advisory committee members in order to determine a course of action with regard to recruitment as only eight of the needed 20 participants were enrolled in the study. The outcome was to submit one last amendment to ethics to further extend recruitment methods to include the Quitline, additional radio stations, and a mass e-mail to students at the University of Western Ontario. The Quitline advised they were unable to inform callers about the study as it would require permission from their board as well as an amendment to their ethical approval: a lengthy process. The three additional radio stations approached were not interested, as there was no relevance to their current programming (unlike the January advertisement that had relevance to New Year's resolutions). However, the approved mass e-mail to University of Western Ontario students resulted in 175 e-mail responses and six telephone calls over a three-week period. Of these respondents, 158 individuals met the inclusion criteria. Participants who called were given priority and four were enrolled in the study and the remaining two were wait-listed and not included in the study as the study had reached its maximum number of participants. Moreover, reply e-mails with more information were sent to the first 50 viable participants (asking about the study, not about financial compensation [10], or crude comments [5]). Of these 50 e-mails, appointments were set with eight individuals, two of whom did not attend the

intake meeting and were replaced immediately resulting in 20 participants enrolled in the study. Once all spots in the study were full an e-mail was sent to all participants who expressed interest advising there was no more space. However, a wait-list of three individuals was kept for one month.

During recruitment, participants were advised of both the target quit date of four weeks after their intervention commenced and the 10 dollar fee per session. Having participants pay for each session is part of the coaching model (Whitworth et al., 2007), and in theory, it seemed logical that it would help to increase the dedication of the participants to the study, encourage their buy-in, and augment commitment to the entire study. However, most participants were students or young adults and expressed concern about not having sufficient money. Therefore, an agreement was made with all participants that instead of charging a fee per session, each missed session would cost participants 10 dollars. Depending on the participant, some provided the researcher with a deposit and others worked on the 'honour system.' Unbeknownst to them all monies were returned to participants, regardless of missed sessions, at the conclusion of the study.

Participant Inclusion Criteria

Several inclusion criteria were utilized to determine each respondent's eligibility to participate in the study. Participants were required to speak English proficiently and be between the ages of 19 and 29. This age group was selected as they have the highest smoking rate in Canada and are also the largest subpopulation of the entire smoking population according to the Statistics Canada, Canadian Tobacco Use Monitoring Survey (2006). Additionally, many people in the age group 19 to 29 years also fall within the

age category 15 to 24 years: the category which has the greatest risk associated with smoking (Statistics Canada, 2006). Participants must have an above average nicotine dependence, operationally defined as a score of 30 or more on the Cigarette Dependence Scale (Appendix B; Etter, Houezec & Perneger, 2003). This study focused on individuals who were addicted to nicotine; having a medium to high nicotine dependence was one way of establishing addiction (Etter et al., 2003). Another inclusion criterion for this study was smoking duration, as participants must have been smoking for a minimum of six months. According to the TTM, engaging in an activity for six months indicates the individual is in the maintenance stage of his or her behaviour and, in this case, further substantiated addiction (Prochaska et al., 1992). Moreover, participants must have agreed to the target quit date of four weeks after their intervention commenced. A standard quit date was set to allow the participants the opportunity to acquire strategies for cessation prior to their attempt and having participants experience only one change at a time, first the intervention and then the cessation. The last inclusion criterion was participant consent to complete a Cotinine saliva test (Appendices C and D), to verify self-reports of cessation biologically thereby increasing the empirical rigour of this study.

Life Coaching

Recruitment of Certified Professional Co-Active Life Coaches (CPCC) was completed by obtaining contact information from current CPCCs known to the researcher, and sending five potential CPCCs an e-mail asking if they would like to provide life coaching for a research study for a fixed fee on a per participant, per session basis (Appendix E). The number of clients the CPCC was able to accept into his/her practice directly impacted whether or not the CPCC was utilized for this study, as the

fewest number of CPCC's was desired in an attempt to minimize differences in the intervention group. Two CPCCs were able to take on six and four participants, respectively, and were therefore utilized for this study (these coaches are hereafter referred to as A and B) and have six and ten years coaching experience, respectively. The intervention group received nine 30-minute life coaching sessions, approximately one week apart, with one of the CPCCs. The majority of the life coaching sessions were completed over the telephone; however, a few participants (3) opted to conduct sessions in person. During the life coaching sessions participant's called or met the coach, at a pre-arranged time, with a specific topic they wanted to explore during that session. The coach asked mainly open-ended questions tailored to the client in order to promote the attainment of insight into the topic. As described in the coaching model, the coach's role was to help the client access his or her own answers using a variety of techniques including the following: designing an alliance with the client; asking powerful questions that provoke thought; being genuinely curious about the client's experience; championing and acknowledging the client and his or her actions; challenging the client to attain his or her desired goals and holding the client accountable to those actions; and holding the client's agenda (for a complete description of the Co-Active Life Coaching model and the techniques utilized in coaching please refer to Whitworth et al., 2007).

To control the potential impact of one-on-one contact, the control group received nine 5 to 15 minute telephone sessions, approximately one week apart, with the research assistant (hereafter referred to as the control coach) who used an interview guide consisting of four questions (How are you doing?, Have you made your quit attempt?, How is it(referencing previous question) going?, Is there anything else you want to

discuss?). Due to scheduling difficulties, some participants opted to call the coach and others vice versa. The control coach was a senior undergraduate student, with no life coaching experience, hired and trained to read the aforementioned four questions.

Procedure

Preliminarily, a respondent's eligibility to participate was ascertained over the phone or via e-mail asking the participant's age and duration of smoking. Next the researcher met the participant at a mutually convenient time and location, provided him or her with the letter of information, explained the nature of the study, answered all study-related questions, determined study eligibility based on the remaining inclusion criteria utilizing the demographic questionnaire and CDS, and had the participant complete the informed consent form (Appendices F and G). The first 20 eligible respondents were randomly assigned to the control or intervention group, and all were given four pamphlets that provided facts about tobacco, steps to quit smoking, and reasons to quit [supplied by the Government of Ontario and Canadian Cancer Society (Appendix H)].

The remainder of the pre-test assessments, which served as a baseline, were then completed. These baseline assessments consisted of: the previously completed demographic questionnaire and CDS; the previously validated Rosenberg Self-Esteem Scale (RSES); and the Smoking Self-Efficacy Questionnaire (SEQ) [(Appendices I and J) Etter, Bergman, Humair & Perneger, 2000; Rosenberg, 1965]. At this time participants also engaged in a semi-structured interview (Appendix K). Prior to the participants completing the questionnaires and interview, honesty demands were utilized to encourage accurate responses from participants (Bates, 1992). Subsequently, participants began

their arm of the study creating a staggered start within each group. A staggered start was selected to accommodate participants' completion of all nine sessions prior to the school term ending.

Participant assessments for both groups were conducted at one-month (around the target quit date) and at three-months (upon completion of the sessions) in order to track participant progress from the initial time of cessation and at the final measurement. These assessments conducted individually either over the telephone or in person, consisted of selected items from the demographic questionnaire and the CDS, RSE, and SEQ. The time-tailored semi-structured interviews were also conducted at this time (Appendices K and L). During the final assessment, participants who claimed cessation occurred completed a confirmatory Cotinine saliva test and all participants were given a debriefing form and had the opportunity to review it with the researcher (Appendix M).

Quantitative Measures

Cigarette Dependence Scale (CDS). The CDS is a 12-item, self-administered, unidimensional, continuous measure that reflects Diagnostic and Statically Manual of Mental Disorders IV and International Classification of Diseases-10 criteria for cigarette dependence and is considered both valid and reliable (coefficient 0.89) (Etter, 2008; Okuyemi et al., 2007). The CDS utilizes many different rating scales with various ranges as well as a five point Likert scale with responses ranging from "totally disagree" to "fully agree." Examples of questions include: "Please rate your addiction to cigarettes on a scale of 0-100;" and "The idea of not having any cigarettes causes me stress." There are recoding values associated with the first four questions and the total score for the

measure is 60, with higher scores being interpreted as higher cigarette dependence (Etter, 2008).

Rosenberg Self-Esteem Scale (RSES). The RSES is a previously validated and reliable (coefficient 0.77 to 0.88) 10-item scale measuring global self-esteem using a four point Likert scale with answers ranging from "strongly agree" to "strongly disagree" (Blascovich & Tomaka, 1993; Rosenberg, 1965; Rosenberg, 1986). Examples of questions from the RSES include: "On the whole, I am satisfied with myself" and "I wish I could have more respect for myself" (Rosenberg, 1965). Half of the items on the scale are reverse-scored, and a higher score is interpreted as having higher self-esteem (Rosenberg, 1965).

Smoking Self-Efficacy Questionnaire (SEQ). The SEQ is a previously validated and reliable 12-item questionnaire that asks participants how tempted they are to smoke in various situations including "When I feel nervous" and "When having coffee or tea" (Etter et al., 2000). The SEQ is comprised of two sub-scales [the internal stimuli (questions 1 to 6) and the external stimuli (questions 7-12)] and measures responses on a five point Likert scale with response options ranging from "not at all tempted" to "extremely tempted" (Etter et al., 2000). The reliability coefficients for the internal and external stimuli are 0.95 and 0.94, respectively (Etter et al., 2000). The SEQ is scored with higher scores representing stronger temptation and lower smoking cessation self-efficacy (Etter et al., 2000).

Cotinine saliva test. Cotinine (a major metabolite of nicotine stable at room temperature for 20 hours) saliva tests consisting of a saliva swab were conducted on all participants who claimed cessation at the final follow-up (Feyerabend & Russell, 1990).

The swab, provided by Salimetrics, a Clinical Laboratory Improvement Amendments (CLIA) certified lab (e.g., they have successfully undergone federal inspection) was placed under the participant's tongue for two minutes in the presence of the researcher. The swab was then placed in the storage tube provided by Salimetrics and frozen in a freezer under lock and key. All identifiers were removed from the swabs, swabs were numbered, and a master list was created and stored securely. The samples were prepared in accordance with instructions from Salimetrics and shipped, via FedEx Ground International Overnight service. The samples were analyzed by Salimetrics for Cotinine levels using gas-liquid chromatography in a duplicate analysis procedure whereby the saliva was placed in two assays and two scores were recorded with the average Cotinine score of each participant provided to the researcher (as described by Feyerabend & Russel, 1990). Salimetrics e-mailed results to the researcher and disposed of the samples in accordance with the Pennsylvania Environmental Protection Agency Regulations.

Qualitative Measures

Semi-structured interview. The semi-structured interview guides developed for this study consisted of seven to eight questions to facilitate an understanding of smoking triggers, obstacles to cessation, and participants' experiences of 'coaching' on their cessation goal (Appendix K). The interview, conducted by the researcher, lasted approximately 10 to 15 minutes and was audio-recorded and transcribed verbatim.

Quality assurance steps, as suggested by Guba and Lincoln (1989), were utilized throughout data collection and the analysis phases of the study. During data collection member-checking was utilized by the researcher to increase credibility through ensuring accurate comprehension and interpretation of participants' responses (Bates, 1992; Guba

& Lincoln, 1989). Transferability was addressed through providing rich descriptions of the methods utilized during this study thereby enabling other researchers the opportunity to determine whether the results can be applied to their specific contexts. Additionally, during data collection all procedures were consistent and during data analysis two researchers independently analyzed the data and compared core themes to facilitate confirmability and dependability of the data and to counteract any potential research biases (Guba & Lincoln, 1989).

Data Analysis and Interpretation

Utilizing data from the aforementioned scales on smoking cessation, average number of cigarettes smoked per day, cigarette dependency, self-esteem, and self-efficacy to quit, a repeated measures Multivariate Analysis of Variance (MANOVA) was conducted to compare the control and intervention groups by analyzing the group variances at three time intervals creating a two by three design (Weiss, 2005). A MANOVA was completed to compare the control and intervention groups on the aforementioned continuous constructs and allowed the researcher to determine if statistically significant differences existed between the control and intervention group as well as within each group from pre-to post-intervention.

Inductive content analysis, as described by Patton (1987), was utilized to analyze transcripts from the interviews to gain insight into smoking triggers, obstacles to cessation, and participants' perspectives on 'coaching' regarding cessation goal achievement. Interviews were analyzed individually within the divisions of control/intervention group and the three assessment times. This categorization within the

analysis allowed for intervention and control group participants' experiences to be highlighted at various time points.

CHAPTER IV

RESULTS

Introduction

Below, demographic information is presented first followed by results of a chi square for attrition and then the repeated measures MANOVA, 2 x 3 (group by time) for: smoking cessation; average number of cigarettes smoked per day; cigarette dependency; self-efficacy; and self-esteem. Then, the qualitative findings from baseline, one- and three-month follow-up interviews will be presented using each time-frame's core themes as headings.

Demographic Information

Participants ranged in age from 19 to 29 years, averaging 24.43 years and 70% of participants were Caucasian, although no specific ethnic analysis was done for this study. Recruits were 10 males and 10 females who had started smoking between the ages of 12 and 20 with an average start age of 15.90 years (Table 3). Participants reported 0 to 30 previous cessation attempts. Participants had an average education level of 'some post-secondary education,' and ranged from 'high school only' to 'completed graduate school.' No statistically significant differences between the control and intervention group existed at the start of the study regarding demographic data.

Table 3

Demographic Data for All Study Participants

Measure	Control Group	Intervention Group	All participants
Age (years)	Range: 22-29 Average: 23.64	Range: 19-28 Average: 25.30	Average: 24.43
Gender	Males: 4 Females: 6	Males: 6 Females: 4	Males: 10 Females: 10
Average number of cigarettes smoked per day	Range: 3-21 Average:11.20	Range: 4-22.50 Average:13.61	Average: 12.43
Age when started smoking	Range: 12-18 Average: 15.40	Range: 12-20 Average: 16.36	Average: 15.90
Number of quit attempts	Range: 1-30 Average: 7.80	Range: 0-20 Average: 4.55	Average: 6.10
Highest level of Education achieved	Range: Some post-secondary – some graduate school Average: some post-secondary	Range: High school – graduate school Average: some post-secondary	Average: Some post-secondary

Quantitative Findings

Descriptive Statistics

Descriptive statistics for all quantitative constructs utilized in this study are provided in Table 4 and are discussed in relevant sections following the table..

Table 4

Descriptive Statistics for Quantitative Constructs

Construct	Intervention		Control	
	Mean	*SD	Mean	*SD
Average Number of Cigarettes Smoked per Day	Baseline: 13.61	6.41	Baseline: 11.20	5.26
	Time 1: 6.00	5.08	Time 1: 1.80	2.84
	Time 2: 5.33	5.17	Time 2: 4.40	6.06
Cigarette Dependency	Baseline: 48.89	5.82	Baseline: 44.00	7.74
	Time 1: 35.11	13.78	Time 1: 23.20	10.82
	Time 2: 30.89	13.20	Time 2: 26.80	16.10
Self-Efficacy (Internal)	Baseline: 24.78	3.19	Baseline: 23.40	3.91
	Time 1: 20.78	5.87	Time 1: 14.00	8.40
	Time 2: 18.11	5.90	Time 2: 15.20	8.04
Self- Efficacy (External)	Baseline: 25.33	2.55	Baseline: 21.00	7.97
	Time 1: 20.67	5.39	Time 1: 15.60	9.21
	Time 2: 18.33	6.63	Time 2: 14.60	8.23
Self-Esteem	Baseline: 21.67	3.77	Baseline: 26.20	1.30
	Time 1: 22.44	5.03	Time 1: 28.80	1.30
	Time 2: 25.44	3.28	Time 2: 28.80	1.30

**SD= Standard Deviation*

Attrition

From baseline to the conclusion of the study eight participants dropped out, seven from the control group and one from the intervention group (e.g., the intervention arm of the study had a 90% retention rate compared to the control condition's retention rate of 30%). The different in retention rates is statistically significant both between groups and over time $c^2(1,N=20)=7.50, p < .05$. Upon notification of a missed session, the researcher attempted to contact the participant, asked the participant to reschedule the session, or requested the participant complete a final assessment if he or she opted to drop out of the study. Some participants declined the final assessment but provided the researcher with a reason for leaving the study. Table 5 outlines descriptive data on the number of sessions each participant completed, the reason for dropping out (if available), and the last follow-up. Participants who provided data at the final follow-up, despite dropping out of the study, were included in the analysis.

Table 5

Reasons for Study Participant Drop-Out at Time of Attrition

Participant Number and Group	Number of Sessions Completed	Reason for Drop Out	Last Follow-up Time
N2: Intervention	5	Felt coach was prying into life, not what participant expected from study	Time 2
N4: Control	3	No longer had access to telephone	Time 2
N8: Control	5	Participant not available	Time 2
N9: Control	5	Feel like being surveyed and only adding to lack of motivation to quit smoking	Time 2
N13: Control	3	Going through difficult time with family	Time 1
N15: Control	7	Call scheduling challenges	Time 3
N19: Control	8	Call scheduling challenges	Time 3
N20: Control	4	Participant not available	Time 2

Smoking Cessation

Over time, that is, from baseline to the three-month measurement, a statistically significant difference was identified with regard to the number of participants who quit smoking $F(1,12) = 113.36, p < .05$. At the end of the study, five of the nine remaining intervention group participants (56%) made a quit attempt during the study and, of those, three (33%) remained smoke free at final assessment (see Table 4). Comparatively, three of the five control group participants who completed the time three assessment made a quit attempt and all three remained smoke-free at final assessment. Salimetrics biologically verified all cessation claims and results ranged from none detected to 9.62ng/mL; scores less than 15ng/mL are indicative of no exposure to secondhand smoke and no smoking (Appendix N).

Average Number of Cigarettes Smoked Per Day

For all participants, the average number of cigarettes smoked per day at baseline was 12.43 and, at one-month measurement, cigarette consumption decreased to an average of 4.50 per day (see Table 4), representing a statistically significant change over time $F(1,12) = 17.76, p < .05$. However, no statistically significant difference in average number of cigarettes smoked per day was detected between one- and three-month measurement or between control and intervention groups.

Cigarette Dependency

Cigarette dependency for all participants at baseline averaged 47.14, and at the one-month measurement this score decreased to an average of 30.86, and continued to decline to 29.42 at the three-month measurement (see Table 4). The decline between baseline and one-month measurement was statistically significant, $F(1,12) = 22.21$,

$p < .05$. No statistically significant decrease in cigarette dependency was observed between the control and intervention groups.

Self-efficacy

Self-efficacy for all participants was measured out of 60 and divided in terms of efficacy to overcome external (30) and internal (30) stimuli, with higher self-efficacy denoted by decreases in scores. External self-efficacy increased, with statistical significance, from baseline to one-month measurement for all participants [decreasing from 23.78 to 18.86 (see Table 4), respectively, $F(1,12) = 9.02$, $p < .05$]. Despite external self-efficacy further increasing for all participants to 17.00 at three-month measurement, this did not represent a statistically significant increase from the one-month follow-up. Moreover, no statistically significant difference was observed between the control and intervention groups.

Internal self-efficacy for all participants averaged 24.29 at baseline and increased to 18.36 and 17.07 at the one- and three-month measurement, respectively (see Table 4). The increase from baseline to the one-month measurement was statistically significant, $F(1,12) = 9.93$, $p < .05$; however, the increase from one-month to three-month measurement did not demonstrate statistical significance, nor did the differences between the control and intervention groups.

Self-esteem

Self-esteem for the control and intervention groups at baseline was 26.20 and 21.67 respectively, with higher scores representing higher self-esteem (see Table 4). Despite the random assignment of participants to groups, the groups were not equal. Rather, the control group had a higher self-esteem when compared to the intervention

group at baseline, $F(1,12) = 8.46$, $p < .05$. Since the control and intervention group were not equal at baseline further statistical analysis was not undertaken.

Qualitative Findings

Baseline Data for All Participants

To gain insight into participants' smoking triggers as well as obstacles to cessation, an interview at baseline was conducted. The core themes identified were (1) stress, (2) smoking as a social experience, (3) smoking and identity, and (4) lack of control over smoking and cessation.

Stress. Twelve participants identified stress as a trigger for smoking and indicated that smoking provides a coping mechanism for said stress. One participant, whose comment reflected the sentiments of a few, explained the stress and smoking relationship as a vicious cycle. She said, "[i]f I'm stressed I want a cigarette, if I don't have a cigarette I'm stressed. It's just a never-ending circle." Another stated that the reason he smokes is because

> I get stressed... I mean like five minutes outside getting a breath of fresh air while having a cigarette is a lot easier than say walking around for 20 minutes and getting it off my mind.

Smoking served as the primary coping mechanism for many participants, and one said simply, "I really don't have another coping mechanism ... if I get stress[ed]. I don't have that mechanism, instead of going for that cigarette... what else to do." Eight participants identified smoking as an effective coping mechanism for relieving stress and evoking relaxation. One participant described a variety of emotional states as triggers for smoking. He said, "[e]very time I get anxious, or nervous, or angry, or excited it's a

trigger to have a cigarette, go relax and have a cigarette." One participant compared her relationship with smoking and stress to a rollercoaster saying:

> I'd say it's a rollercoaster; I have my good days, where I don't smoke as much. I don't feel the urge to smoke as much and I'm content with a few or no cigarettes on occasion, but then it all depends on what's happening in my life and then the rollercoaster goes up when it's a crazy week at school and [I] have a lot in my head....

Smoking as a social experience. The vast majority of participants (17) identified smoking as a social phenomenon that serves as a trigger to smoke, and a deterrent to quit. One participant depicted the importance of the smokers' social network and her fear of losing it, were she to quit, when she said:

> ... I find that smokers have this social aspect to them and that's something I don't want to lose because most of the people, or the really cool people that I've met throughout my life, funnily enough, have been met while having a cigarette somewhere else. And I hate losing that aspect, because there is this social aspect about cigarettes that I would really miss.

Other participants echoed the strong social ties experienced by smokers saying "... plus there's a whole social network that comes with smoking, like at work there is a whole smokers' group that goes out." It was clear that the social processes involved in having a cigarette served an important role in smokers' lives. This was summarized well by one participant who explained:

> The biggest challenge [of quitting] is not being able to do the normal things that I usually do when I have a cigarette. Hang out with my friends, go out on break,

> coffee breaks at work and hanging out with the guys that have a cigarette. It's a social thing, not having that little social unity you have with other smokers when you're out there having a smoke.

Because of the strong social bonds and, therefore, cigarette triggers associated with smoking with others, several participants felt the need to withdraw from social situations to achieve cessation. One participant explained that to be successful at quitting she "...would have to say no to going out with my friends and especially drinking and hanging around people that smoke." Similarly, another person felt he would have to "...avoid the whole smoking scene altogether. So I think the whole bar scene is going to have to not play a part of it for a little while." A third participant stated:

> I would probably have to say 'no' to going out a few times... at least [in] this initial period because I know that's when I get tempted to smoke, it's tough to restrain yourself when you go out and you've had a couple drinks or something like that.

The relationship of alcohol and smoking was a common one expressed by over half of participants (11). One participant, whose explanation typified this theme, explained, "once I've had a few drinks I lose my concepts, my [smoking cessation] goals."

Smoking and identity. Another core theme was the impact smoking has on sense of self. Smoking as a part of self-identity was an obstacle to cessation described by half of the participants. One participant explained that "[smoking is] kind of like the thing that I define myself by." Two others said, "I feel like if I quit smoking I have to change the person that I am...," and "...smoking actually represents some of myself." Other participants identified smoking as a less central part of themselves but felt smoking was

an ingrained part of their lifestyle as one explained that "...it's just a lifestyle, just like everybody drinks coffee in the morning; I smoke everyday but I don't drink coffee...." Another said simply, "... I barely even think about it [smoking], it is just a part of my lifestyle." Embedded within lifestyle was the role of cigarettes as a reliable companion, as described by one participant when he said, "cigarettes are kind of like your best friend. They're there when you're the happiest and they're there also when you are the saddest."

Lack of control over smoking and cessation. A sense of lacking control over smoking and quitting was a cessation barrier more than half of participants described, as exemplified by the following quotations. One participant said," ... there's one thing I can't control in my life right now and that's smoking." Another stated that smoking is "something I've struggled with for a long time. I feel trapped and like I have no control." Some participants' perspectives about how smoking cessation would suddenly just 'happen' further complicated the struggle between control and the enjoyment associated with cigarettes. For example, one person said:

> Like I'm sure with most smokers like you always think that there will be one day when you wake up and you're just like that's it, 'I'm not [smoking] anymore.' But in the end... that day will never come; you know every day is today."

This self-described misperception was common among participants as illustrated by the self-talk of one who revealed, "I have always told myself, I was 15 when I started and I did [smoke] because it's cool, and I told myself 'hey, I'll quit before 20 because that's when people start getting cancer.'" Another participant acknowledged the many lies he told himself about quitting smoking when he said, "I don't have to [quit] right now, or

that I need to be in a place where I've decided I'm ready. Or when I'm ready I'll quit, I can [quit] when I want to, a whole bunch of crap."

One-Month Measurement for Control Group Participants

At the one-month measurement interview, the emergence of two sub-groups (high and low motivation to quit) within the control group was observed. Within the high motivation group two themes pertaining to successfully quitting smoking were apparent: (1) perceiving accountability as a key to success; and (2) thinking quitting smoking is easy. In the low motivation group, participants described (3) a decline, since baseline, in the desire to become smoke-free; (4) thinking quitting is difficult; and (5) concern over 'missing out' because of quitting smoking.

High Motivation Group

Accountability as a key to success. Of the remaining eight participants in the control group at the one-month measurement, three participants described an increased motivation to quit smoking since the start of the study. Moreover, of these three, two participants felt weekly calls by the control coach acted as an accountability and was the support they needed to quit smoking. One participant, whose explanation typified this theme, stated, "I guess just having someone there to provide support really kind of just gave me the extra push to quit." Another participant similarly expressed "... I needed someone to be accountable to, to quit. I guess."

Quitting smoking as easy. All three of the high motivation participants described quitting smoking as easy. Two participants whose sentiments were reflective of this theme said, "I don't know, [quitting smoking] was kind of just like a switch...." And, "I have no challenges with smoking anymore."

Low Motivation Group

Decline in the desire to become smoke-free. Of the five participants with decreased motivation to quit, two described their vacillating motivation as a barrier to cessation. One participant's honesty about his decline in motivation to quit was expressed as, "I have moments where I don't want to [quit smoking]." He went on to explain the struggle of his daily fluctuation in motivation, "... my motivation level to quit changes you know throughout the days, so depending how much I need that smoke or want it, or just the mood I'm in."

Quitting as difficult. A majority of participants (3) who experienced a decline in motivation to quit described quitting as difficult, as exemplified by one who said, "I'm still trying to quit smoking all together, but just with some things that have been going on, it's quite difficult for me right now." Another explained:

> I'm a single-mother, two children, and a full-time university student. So, I have a lot of stress in my life, really just ending up the term now so a lot of things are due and exams are coming up. So things are a bit challenging.

The realization that quitting smoking was more difficult than expected was expressed by another participant when he said, "[w]ell, you know how everyone's like 'I can quit if I wanted to', I've realized no, it's just one of those things where no, you cannot just quit if you want to, it's a little bit harder than that."

'Missing out' because of quitting smoking. Participants associated a feeling of loss and 'missing' out on parts of their lives as an obstacle to attempting cessation. One said, "I don't want to say, you kind of fall in love with [cigarettes], but it's the best way to describe it, and knowing you will never get the satisfaction out of the cigarettes again,

it's not a nice feeling." Two other participants in the low motivation sub-group described a sense of loss about not going out with friends and/or social drinking.

One-Month Measurement for Intervention Group Participants

The one-month measurement interview for the intervention group participants revealed their views on the importance of (1) identifying reasons for smoking. Also central themes from this time period were about (2) the relationship between control and cigarettes, and (3) their need for finding a substitute for smoking.

Identifying reasons for smoking. The majority of participants (6) in the intervention group described the importance of identifying underlying reasons for their smoking habit, in service of being able to quit. Half of these participants had made their quit attempt. One participant explained her journey of trying to identify reasons for smoking as "it's extremely difficult to wrap my head around quitting... I've been having and trying to identify reasons why I [smoke]...I'm finding it difficult." One said, "I've learned... why I smoke, and maybe we're still learning... why, what I'm trying to hide [emotionally] that I'm covering up with smoking." Another explained that the emotional connection he felt with cigarettes was a main focus of his quitting focus. He said, "I will also try to detach myself from the emotional attachment I have with cigarettes right now."

Control and cigarettes. An increased awareness about the obstacle of cigarettes' control over participants was apparent at the one-month measurement among seven intervention group subjects. The participants were at various stages of their control struggle. Of the three participants who had not yet made their quit attempt, one said, "I've learned how easy it is for me to be controlled by [cigarettes]." Of the four participants who had complied with their targeted quit date one participant explained that quitting

smoking was not 'just' about not smoking anymore. She said, "[quitting] means, like, officially I do not need to depend on cigarette[s], not even that once a week, or whatever." Regaining lost control over cigarettes was liberating according to some participants as illustrated by two who stated that quitting smoking "...means, it really does mean freedom...." And, "... fixing the aspect of my life where I depend on cigarettes, yea, where I let cigarettes influence my life."

Finding a substitute for smoking. One obstacle to cessation identified by six participants was the need to find a personally suitable substitute for cigarettes. Of these participants, four were currently utilizing a substitute, and all four had made a cessation attempt. Two participants had comments that exemplified this. The first one said, "[a]lso, maybe [a] substitute, substituting [cigarettes] with something else like a candy or something else that gives me a bit of a rush." The other participant substituted smoking with having a conversation with himself in order to remind him of his goal. He said, "I tried to have small monologues with myself where I get to, get to the point where, or I try to convince myself that I want to be a non-smoker." The two participants who had not made their quit attempt recognized the importance of finding a substitute; however, this had not yet come to fruition. One participant explained her specific need as:

> I've tried to find something that works that are alternatives to going out and smoking, but still ... being able to get away from my desk, maybe getting a basketball game, or something to do.

Three-Month Measurement for Control Group Participants

The further separation of the two sub-groups (high and low motivation) within the control group became apparent during the final measurement. Within the high

motivation subgroup the main theme of feeling no struggle in being a non-smoker emerged. Within the low motivation subgroup participants became further distressed by their lack of success and described feeling bad about failure and a sense of hopelessness on how to succeed.

High Motivation Group

No struggle in being a non-smoker. The three participants who initially displayed an increased motivation to quit smoking remained in this frame of mind and all three reported no urge to smoke and no obstacles in remaining a non-smoker. One participant described her success and future outlook on remaining a non-smoker as,

> I don't think I need anything [to help me stay smoke-free]. I'm there, and it's something that's kind of immovable in me like I don't feel any risk at all of relapsing into [smoking].

One participant's ease of becoming smoke-free led him to feel no plan was required to remain smoke-free. He said, "I honestly have no idea [what is going to help me stay on track of not smoking]. I just don't plan on smoking again."

Low Motivation Group

Sense of failure. Conversely, the two participants with a decline in motivation to quit smoking who provided a final measurement, described a feeling of failure. One participant felt weekly calls from the coach acted as a reminder of her failure:

> I think every time when the coach would call I would feel like okay, I have to start a quit date, okay yes, I have to quit and it would make me feel bad that I smoke because having someone remind you that you smoke and you should quit kind of makes you feel bad that you do smoke.

The other participant hoped she could utilize the feeling of failure she experienced during this study to motivate her to put forth more effort in a future cessation attempt, but she had no plan.

Hopelessness on how to succeed. Two of the low motivation control group participants lacked direction on how to proceed to be successful in a future cessation attempt, which was an obstacle unto itself. Both participants had potential ideas on what steps to take to facilitate their cessation; however, neither participant was overly optimistic. One participant described her apprehension about smoking, her need to quit, and her lack of direction when she said, "... mostly, I'm just concerned about my health at the age that I'm at, that I really need to stop and I think I'm going to try the patch and see if that works for me." Another participant suggested several life changes in order to increase her likelihood of success, but lacked a clear direction on how to proceed. She said, "[m]aybe, more advice and not hanging around the same people all the time or maybe quitting drinking for awhile just things that really want to make me smoke in the first place...and that kind of stuff...."

Three-Month Measurement for Intervention Group Participants

The final follow-up with participants in the intervention group revealed an overall sense of empowerment and a clear direction for the future. Specifically, participants built upon the themes identified at the one-month assessment and the following salient themes emerged: (1) establishing control; (2) attaining awareness; and (3) seeing future possibilities for change.

Establishing control. Similar to the one-month measurement, at the three-month measurement participants in the intervention group continued to focus on the relationship

between control and cigarettes, with seven participants describing attaining control over cigarettes as pivotal in their cessation journey. One participant described the feeling of control as "I feel I have more control and I don't have to rely on cigarettes or the feeling of having the cigarettes. So it's a good feeling." Another participant explained that "just knowing the real truth to smoking cigarettes, how it's almost self-imposed slavery to nicotine..." as an important realization and one that will help him to remain in control. Another participant was emotionally impacted as a result of establishing control as exemplified by his comment "... I'm glad I don't [smoke] anymore, I feel more in control now, just overall happy."

Attaining awareness. Through the realization that smoking was a decision, the majority of participants (6) overcame the obstacle of cigarette control. For one participant, awareness of the reasons she smoked was paramount to achieving cessation. She explained, "I've learned a lot about a lot of different things. But mostly that I needed to understand fully why I was smoking." Another participant discovered certain behaviours, such as smoking, were the result of other issues in his life. He said, "I've learned some things about myself just in terms of personality traits and different sort of, crutches that I have, or habits that I have that are really symptoms of something else." The impact of the newfound awareness on decision-making was an important discovery for several participants. One participant explained, "[i]t was nice to talk to someone who could sort of take your thoughts that are all jumbled up and put them into sort of a platter so you could look at them."

Seeing possibility for change in their life. Removing obstacles by attaining awareness in conjunction with other aspects of coaching facilitated eight participants to

discover the 'infinite possibilities' for their lives and provided them with a sense of hope. One participant simply expressed, "[quitting smoking is] possible. Really overall it's possible and at the beginning it seemed next to impossible when I was doing it alone before the study." The sense of possibility and hope was not just limited to smoking cessation, but rather, was also reflected in other aspects of participants' lives. Another participant described a shift in self-perception and what was possible for her as "I feel a lot more positive about myself and about different changes that I can make in my life." Reframing situations and shifting perspectives, two strategies utilized in coaching, seemed to raise some participants' sense of possibility. One participant explained, "I feel like I can deal with situations, everyday situations as well as extraordinary situations a lot better just by putting them in the right frame, in the right perspective."

Perspectives on Coaching

The coaching experience was explored for both the control and intervention groups. Only one, but very prevalent, theme emerged for the control group, 'coaching' taught participants nothing and did not contribute to their success. Conversely, participants in the intervention group had extremely positive coaching experiences which facilitated many self-discoveries. Three main themes consistently emerged from the actual coaching experience, namely: increased learning about self; the importance of making conscious choices; and the value of finding ways to cope. Although much of what is presented below has been described elsewhere, it seems fitting to also include an overview of participants' overall experiences with their participation in this study.

Control Group

Coaching taught participants nothing and did not contribute to their success. All five of the control group participants who completed the final assessment unanimously described the futility of the coaching (labelled as 'coaching' for the control group, this was actually a reading taken from an interview guide) offered by the research assistant. Disappointment with the coaching process was expressed by one participant who said, "I'm very dissatisfied with the coach aspect of the program. I didn't really feel like I got a lot of support there. I'm not blaming that, but I wish it could have been more useful to me I suppose." Another participant, who successfully quit smoking, attributed no part of her success to the study explaining, "I've learned nothing from the coaching experience. In fact I don't think it contributed at all to my quitting smoking." Moreover, all of the three participants who quit smoking in the control group shared the same sentiment.

Intervention Group

Learning about self. The introspection achieved by participants in the intervention group through life coaching was an aspect of the study experience that seven participants purported as useful in the pursuit of smoking cessation. Life coaching provided one intervention group participant, who quit smoking, the opportunity to get to know herself better. This was illustrated when she said, "I don't think I was out of control before but I mean just knowing that much more about myself allows me to lead that much better of a life knowing these things." Another participant, who also quit smoking, described the shift of control he experienced resulting from learning about himself as "I feel a lot more positive about myself and about the different changes that I can make in my life." Through coaching one participant realized she was very critical of

herself and despite not attempting cessation she was putting this learning into action saying she was "...trying to be not so hard on myself."

Making conscious choices. Intervention participants underscored the importance and value of realizing they are always 'at choice.' One participant's realization that, historically, his lack of choice was actually a choice in and of itself empowered him to start making conscious decisions. He explained, "I guess the main thing I learned was to just start making decisions for myself... and to stop letting the current just kind [of] take me where I am supposed to go." Another participant explained the impact choice had on him simply as:

> I am definitely more aware; I think the sessions really helped me be more aware of why you're doing what you do, when you do it, how you feel about it and if you can change it. So right now I'm feeling more aware of my choices, even if I still have that cigarette, it's nice to be aware [of] why I want to do it.

Another participant had the preconceived notion that coaching would involve someone telling him what do to. However, when this did not occur and, in fact, all actions were generated from himself, he was exhilarated by the opportunity to make a choice. He stated, "It's just a weird experience [be]cause it's not like someone is telling you what to do it's... it's just someone telling you to... you know get off your ass and make decisions for yourself."

Finding ways to cope. Six participants described a change in the way they dealt with daily struggles (related and not related to smoking) by seeing the issues within context, through the use of perspectives. The utility of coaching at providing, experiencing, and enlisting different perspectives further substantiated participants'

positive views of coaching. Applying context to problems increased one participant's ability to cope, as illustrated when she said, "I feel like I can deal with situations, everyday situations as well as extraordinary situations a lot better just by putting them in the right frame, in the right perspective." The ability to contextualize issues in a different way was one participant's main action resulting from coaching. He said, "I would say that the meetings that I've had with [the coach] definitely [gave] me a different way of looking at things." One participant explained that he felt empowered by his experience with the coach. He said "... just to have the different perspectives that [the coach] had was interesting and gave me lots of stuff to think about, that's for sure, and different ways to think about things."

CHAPTER V

DISCUSSION

Introduction

The purpose of this demonstration study was three-fold. The first purpose was to assess the impact of life coaching compared to a control group on: smoking cessation; average number of cigarettes smoked per day; cigarette dependency; self-esteem; and self-efficacy to quit smoking among adults aged 19 to 29. Subsidiary purposes were to explore qualitatively smoking triggers and obstacles to cessation, and determine participants' perspectives on their coaching experience.

A crucial finding that alters the context and discussion of the results of this study was the statistically significant attrition rate within the control group as compared to the intervention group. Attrition is an uncontrollable aspect of research and, for the most part, is present in all studies. Losing 10% of participants in the intervention group seems typical (e.g.; Andrews et al., 2007; Carlson et al., 2003); however, having 70% of participants in the control group drop out was staggering. The considerable attrition rate can be put into context by Backinger et al.'s (2007) review of 70 studies which found an 85% or higher retention rate when participants smoked six or more cigarettes per day, a criterion which was true of the majority of participants in this study. This substantial attrition rate can represent a result in and of itself as the retention qualities of the intervention arm of the study were clearly superior to the retention qualities of the control arm. Regardless of being a result itself, the attrition rate proved problematic because it affected the interpretation of results as the context of the research was changed. That is, the attrition rate skewed the perceived significance of the results of the intervention group

because the control group was no longer an equal comparison group. Specifically, the high attrition rate in the control group left a disproportional number of individuals in the study who were motivated to quit, and, as expected, their success rate was substantially higher than what would have been observed had all control group participants remained in the study. Therefore, the results for the intervention group should not be overshadowed by the overinflated success of the control group members who completed the final follow-up. Nevertheless, while the difference in attrition between the intervention and control conditions likely reflects the higher overall value of the intervention condition, it is important to note that two participants in the control group anecdotally mentioned that their calls with the control coach were inconsistent (i.e., control coach called late or needed to change the appointment time). Although the control coach indicated that scheduling challenges were worked out with each participant, the challenges perceived by two participants need to be acknowledged because it may have impacted their retention in the study. Prior to the study beginning, the control coach was trained on the importance of call consistency, maintaining scheduled calls, and what to say during the call. Researchers conducting similar studies in the future may find it useful to check-in more regularly with participants and coaches (in both control and intervention conditions) to ensure that appointment logistics function without incident.

Smoking cessation was attempted by five participants in the intervention group, and was achieved and biologically verified at the final follow-up for three of those five participants. This finding represents a quit rate 20% higher than the average success rate for cognitive-behavioural interventions (Lancaster & Stead, 2008; Stead et al., 2008). Moreover, compared to nicotine replacement therapy interventions which boast a 14%

cessation rate, life coaching in this study was associated with a cessation rate of 33% (Stead et al., 2008). Specifically, for participants with similar cigarette dependency as our study, a cognitive-behavioural intervention that utilized one-to-one counseling yielded a cessation rate of 11.8% versus 33% in life coaching (Williams et al., 2006). In comparison, only three participants in the control group attempted and achieved cessation. In the context of the number of participants who actually remained in the study, the attempted quit and quit rate observed in the intervention group is suggestive of the value of life coaching as an intervention for smoking cessation.

Between baseline and the one-month measurement both the control and intervention group experienced a statistically significant decrease in average number of cigarettes smoked per day and cigarette dependency. The small number of control participants makes statistical comparison futile; however, the clinical relevance is clear as all the positive gains for the intervention group, in terms of self-efficacy, cigarette dependency, and average number of cigarettes smoked per day observed at the one-month measurement, were maintained through to the three-month measurement. Comparatively, while gains for the control group were observed for all participants at the one-month follow-up only three participants maintained these gains while two participants' gains were reversed. This suggests life coaching may have an important and meaningful potential for reducing smoking behaviours. Decreases in number of cigarettes smoked per day and cigarette dependency are each strong predictors of success in future cessation attempts (Cohen et al., 1989; Mothersill, McDowell and Rosser, 1988; Ockene, Benfari, Nutall, Hurwitz and Ockene, 1982). Matheny and Weatherman (1998) found a decrease in the average number of cigarettes smoked per day coupled with a reduction in cigarette

dependency to be indicative of future success in cessation attempts. This finding further substantiates the value of life coaching as an intervention for smoking cessation.

Previous researchers (Kowalski, 1997; Ockene et al., 1982; Stuart, Borland & McMurray, 1994) found increased self-efficacy to quit smoking indicative of an increased motivation and commitment to behaviour change, and a significant predictor of attempting and sustaining cessation. Therefore the current study's intervention and control groups' increases in both internal and external self-efficacy, observed over time, may be illustrative of participants' changes in beliefs about their capabilities. The latter, in turn, can influence meaningful smoking-related behaviour changes. Realizing all participants in the intervention group maintained their increase in self-efficacy at the final assessment, as opposed to only 60% of control group participants who remained in the study, is an important finding because increased self-efficacy observed post-treatment has been correlated positively with the success of the cessation attempt (Stuart et al., 1994).

Intervention group participants offered rich descriptions about what they learned about their relationship to cigarettes and their smoking behaviours over the course of the intervention. Conversely, control group participants indicated that they learned very little from their 'coaching' experiences and felt it did not assist in their cessation. Intervention group participants indicated that they experienced a shift in control regarding their relationship with cigarettes. This shift may be indicative of a shift in their locus of control, which has been deemed important for long-term smoking cessation. Both Stuart et al. (1994) and Zimmermann, Hofer, Holzner, Strobl, and Gunther (2004) argued that a stronger internal locus of control is an essential step in the smoking cessation process, and, in fact, it is associated with higher abilities to quit smoking. Therefore, this

qualitative finding is an important feature of life coaching as a tool in smokers' battles to quit.

Participants' perspectives on life coaching became known through actions as well as data from the interviews. As discussed earlier, the substantial attrition in the control group compared to the high retention in the intervention group suggests participants responded more favourably to the intervention arm of the study. In addition to this finding was the qualitatively described positive experience of intervention group participants. Participants purported life coaching to be fundamental in gaining insight into themselves, providing awareness of their power to "choose" or "not choose to smoke" in every decision, and discovering and utilizing different perspectives in all situations. Changing perspective by increasing awareness of the many ways of looking at a decision, and encouraging participants to make a conscious choice are two prominent tools in the life coaching model (Whitworth et al., 2007). These life coaching tools help create a shift in perspective and promote choice, facilitating change (Whitworth et al., 2007). Participants felt that the life coaching experiences helped them to overcome long-standing obstacles to cessation, and helped them to achieve or be on the road to achieving their smoking cessation goals. Similar findings were not present for control group participants.

Limitations and Direction for Future Research

The results of this study provide some support for Co-Active Life Coaching as an efficacious intervention for smoking cessation in adults aged 19 to 29. However, limitations within the current study must be considered, and woven into suggestions for

future research. Specifically, the sample size, control group attrition rate, and relatively short follow-up are study limitations that must be addressed.

This demonstration study was intended to provide a preliminary assessment of the efficacy of life coaching as an intervention for smoking cessation. Inherent to a demonstration study is a small sample size which often limits the ability to detect statistically significant differences between groups. Moreover, the previously mentioned high attrition rate within the control group further amplified this limitation. A total sample size of 20 participants, 10 in each group, was sufficient to detect the hypothesized effect ($r^2 = .02$) of a two-level, between-groups independent variable less than 10 percent of the time using a .05 alpha level (Lee, 2004). Because the study had such small groups, it was expected that it would be difficult to find statistically significant differences between groups. The fact that statistically significant differences did exist demonstrated the considerable difference the intervention and control condition had on the outcomes under investigation. The high cessation rate of the intervention group compared to current cognitive behavioural cessation interventions suggests that life coaching offers value in aiding in cessation attempts, and therefore, merits further investigation as a potent intervention for smoking cessation. Because smoking cessation status can vacillate over-time, a longer follow-up period would provide a more accurate reflection of the intervention's longer-term success. The current study's logistical limitations to conducting a longer-term follow-up served as a limitation; future research should be conducted with a larger sample and have a longer follow-up period (to one-year) to detect changes between groups as well as the sustainability of cessation.

The statistically significant difference in self-esteem between the control and intervention groups at baseline is intriguing. Any differences between groups should have been resolved because random assignment was utilized for this study. However, as the sample size decreases, the possibility that random assignment cannot overcome differences between groups becomes ever-present (Trull, 2005). Moreover, the participants who were lost to attrition had lower self-esteem scores than the participants who remained in the study. Therefore, due to the small sample size, the lack of significant findings between groups, and inequality of the groups' self-esteem scores, it is not possible to determine whether the intervention had any impact on the self-esteem of smokers compared to the control group. Consequently, future research should focus on a larger scale study with more participants in each group to help ensure the intention of randomization is upheld.

Conclusions

Despite the limitations of this investigation, the results from this demonstration study are important, and indicate the substantial potential of life coaching, specifically Co-Active Life Coaching, as an intervention for smoking cessation. Several conclusions can be made regarding the value of life coaching as an intervention for smoking cessation:

1. Life coaching facilitates higher than average smoking cessation rates, when compared to previously published cessation intervention studies.
2. A statistically and clinically meaningful difference between the intervention and control condition was the retention rate; participants in the life coaching

condition were more likely to complete the study, and report favourably about their experience.

3. Life coaching compares favourably to other published interventions in terms of retention and decreases in cigarette dependency.
4. Based on qualitative date, life coaching seems to be associated with a strengthening of participants' internal locus of control, an important variable associated with smoking-related behaviour change.
5. Participants in the intervention group enjoyed the life coaching experience. They found it to be valuable for more than just smoking cessation; they reported life coaching had a positive impact in other areas of their lives. Conversely, control group participants' reported a lack of learning and impact resulting from their 'coaching' experience.
6. A study with a larger sample size and longer follow-up should be conducted to assess life coaching's full potential and utility as a smoking cessation intervention.

Cognitive behavioural cessation interventions have focused on several strategies to aid in cessation; these include social support, tailoring the intervention, motivation, and group interventions. Co-Active Life Coaching amalgamates several of these strategies previously employed individually in cessation interventions. The results of this study provide some support for the efficacy of Co-Active Life Coaching in facilitating smoking cessation. Therefore, at the very least, the potential that social support, tailoring the intervention to the individual, and motivation provide more benefit when utilized together

in one intervention and implemented utilizing Co-Active Life Coaching suggests the need for future research.

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Appendix A

Newspaper Advertisement

Want to quit smoking?

Dr. Jennifer Irwin and Dr. Don Morrow in the Faculty of Health Sciences at the University of Western Ontario are seeking participants for a life coaching and smoking cessation study. Adults between the ages of 19 -29, who have smoked for longer than 6 months, and speak English fluently are eligible to take part in this study.

If you meet the criteria, please contact Tara Mantler at (XXX-XXX-XXX) or XXXXXXX

Appendix B

Cigarette Dependence Scale (CDS-12)

Questions	Response options	Recoding
1. Please rate your addiction to cigarettes on a scale of 0 to 100: - I am NOT addicted to cigarettes at all = 0 - I am extremely addicted to cigarettes = 100	___ Addiction	0-20 = 1 21-40 = 2 41-60 = 3 61-80 = 4 81-100 = 5
2. On average, how many cigarettes do you smoke per day?	___ Cigarettes / day	0-5 = 1 6-10 = 2 11-20 = 3 21-29 = 4 30+ = 5
3. Usually, how soon after waking up do you smoke your first cigarette?	___ Minutes	0-5 = 5 6-15 = 4 16-30 = 3 31-60 = 2 61+ = 1
4. For you, quitting smoking for good would be:	Impossible = 5 Very difficult = 4 Fairly difficult = 3 Fairly easy = 2 Very easy = 1	No recoding
Please indicate whether you agree with each of the following statements:		
5. After a few hours without smoking, I feel an irresistible urge to smoke	Totally disagree = 1 Somewhat disagree = 2 Neither agree nor disagree = 3 Somewhat agree = 4 Fully agree = 5	
6. The idea of not having any cigarettes causes me stress	Totally disagree = 1 Somewhat disagree = 2 Neither agree nor disagree = 3 Somewhat agree = 4 Fully agree = 5	
7. Before going out, I always make sure that I have cigarettes with me	Totally disagree = 1 Somewhat disagree = 2 Neither agree nor disagree = 3 Somewhat agree = 4 Fully agree = 5	
8. I am a prisoner of cigarettes	Totally disagree = 1 Somewhat disagree = 2 Neither agree nor disagree = 3 Somewhat agree = 4 Fully agree = 5	

9. I smoke too much	Totally disagree	= 1
	Somewhat disagree	= 2
	Neither agree nor disagree	= 3
	Somewhat agree	= 4
	Fully agree	= 5
10. Sometimes I drop everything to go out and buy cigarettes	Totally disagree	= 1
	Somewhat disagree	= 2
	Neither agree nor disagree	= 3
	Somewhat agree	= 4
	Fully agree	= 5
11. I smoke all the time	Totally disagree	= 1
	Somewhat disagree	= 2
	Neither agree nor disagree	= 3
	Somewhat agree	= 4
	Fully agree	= 5
12. I smoke despite the risks to my health	Totally disagree	= 1
	Somewhat disagree	= 2
	Neither agree nor disagree	= 3
	Somewhat agree	= 4
	Fully agree	= 5

Note: Scoring is completed by adding up the score column and source: Etter, Houezec, & Perneger, (2003)

Appendix C

Demographic Questionnaire

Please complete the following questionnaire:

1. Gender Male / Female

2. Age _____

3. Do you speak English proficiently? Yes / No

4. Average number of cigarettes smoked per day _____

5. At what age did you start smoking? _____

6. How many attempts to quit smoking have you made? _____

7. Are you willing to set a quit date of 4 weeks into the intervention? Yes / No

8. What is the longest period of time you have quit smoking for? _____

9. Highest education level completed

High school	_____
Some postsecondary	_____
Postsecondary	_____
Some graduate school	_____
Graduate school	_____

9. Are you willing to complete a Cotinine Saliva test? Yes / No
(Declining to participate in Cotinine saliva testing does not preclude participation in the full study)

Appendix D

Information on Cotinine Saliva Tests

Q. What is cotinine?

A. Cotinine [COAT-e-neen] is a chemical that is made by the body from nicotine, which is found in cigarette smoke. Since cotinine can be made only from nicotine, and since nicotine enters the body with cigarette smoke, cotinine measurements can show how much cigarette smoke enters your body.

Q. Is cotinine harmful?

A. As far as we know, cotinine itself is not harmful. Cotinine is used simply to measure how much tobacco smoke has entered your body. However, many studies show that some of the 4,000 other chemicals found in tobacco smoke are harmful.

Q. Why should I have a cotinine test?

A. If you are serious about stopping or reducing your smoking, or if you are interested in the amount of smoke that has entered your body, this test can be very useful. By knowing what your starting level of cotinine is, you can see how successful your efforts to stop smoking are.

Q. How is cotinine measured?

A. A simple laboratory test can measure cotinine in blood, urine, or saliva.

Q. Why don't you just ask how much I smoke?

A. Smoking behavior varies. For example, two people could each smoke a pack of cigarettes a day. One may smoke unfiltered cigarettes, inhaling deeply with each puff, while the other may smoke a low tar, filtered cigarette, puffing lightly and smoking only half of each cigarette. The cotinine test would be able to show a difference in the amount of cigarette smoke entering the bodies of these two smokers.

Q. How much cotinine is normal?

A. People who do not smoke or who are not exposed to other peoples' smoke should not have measurable cotinine. People who do smoke will have a cotinine level of 10 or higher in their blood, and a typical smoker has levels of 150 to 450 units. Levels in urine are ten times higher.

Q. How can I reduce my cotinine?

A. The only way to reduce your cotinine level is to stop or reduce your exposure to cigarette smoke.

Q. How long should it take for me to see a drop in my cotinine level if I stop smoking today?

A. Depending on how high your level is to begin with, your level could drop to that of a nonsmoker in 7 to 10 days.

Q. If I stop smoking, then start again, how soon will cotinine show up in my body?

A. Laboratory testing will detect cotinine within hours after you've had a cigarette.

Q. If I switch to a low nicotine cigarette, will my cotinine level drop?

A. It might, but it depends on how you smoke low nicotine cigarettes. To satisfy a craving for nicotine, some people smoke more low nicotine cigarettes than they would regular cigarettes, and their cotinine level may actually increase.

Q. Do nicotine patches, gum, or aerosols have an effect on cotinine levels?

A. Because they all use nicotine, these devices can increase cotinine levels. If you are having a cotinine test, make sure that you mention on the lab slip that you are using nicotine replacement products.

Q. What about other people's smoke? Won't my cotinine level increase if I breathe other people's smoke?

A. If you breathe a lot of cigarette smoke even though you yourself don't smoke, your cotinine level may be higher than that of a non-smoker. If so, you should try to avoid places where there is a lot of smoke.

Q. How can I stop smoking?

A. There are many different ways to stop smoking, but there is no one way that's best for everybody. The cotinine test will help you to measure the success of whatever way you try. Ask your doctor for advice, or contact organizations that are experienced in helping people give up cigarettes.

Note: source: Foundation for Blood Research (2008). http://www.fbr.org/publications/pamphlets/cotinine.html

Appendix E

CPCC Recruitment E-Mail

Dear (Insert Coach's name here),

My name is Tara Mantler and I am a Master of Sciences' student in the Health and Rehabilitation Sciences' Graduate Program (Faculty of Health Sciences) at Western. I am looking for CPCC Coaches who are willing to take on clients in a smoking cessation study I am conducting with my supervisors, Dr. Don Morrow and Dr. Jennifer D. Irwin. I will have 10 participants (UWO students who smoke) in need of coaches as of late September to early October. These participants will need to receive 3 weekly coaching sessions per month for 3 months (30 minutes sessions). The session will occur over the telephone. I am contacting you on the recommendation of Don and/or Jen to see if you would be interested and willing to serve as a coach in this important research on the use of co-active coaching as a behavioural intervention for smokers.

There are several benefits that we perceive would accrue to you as a result of you coaching people recruited for this study. First and foremost, you would be contributing in a major way toward positive health behavior change among a significant at-risk population. Secondly, it is possible that the participants may decide to continue on with coaching after the study; any post-study coaching would be entirely between you and the participant. We would ask that this remain completely at the initiative of the participants and not be encouraged by you during the 3 months in order to protect the validity of the study. Additionally, there are 10 participants who are not receiving coaching as part of this study and they may request contact information for a coach, and coaches in this study would have opportunity to have their name put forth. Additionally, coaching for this study would offer you the opportunity to expand your business and your coaching repertoire to a demographic perhaps previously unfamiliar to you.

I will be providing payment for coaching sessions at a non-negotiable rate of $200.00 per month (3 sessions per month for 3 months) per client. We are fully aware that this, very likely, is much less than your customary coaching rate. Please understand that this research is being funded from my own grant and that this payment is the maximum I can afford given the number of subjects (10) and the 3-month duration of the study.

My involvement in the coaching is limited to a brief phone call or meeting with you to clarify our expectations or to answer any questions you might have. I will make arrangements for clients assigned to you and the payment for coaching sessions. During the course of the 3 months, I would require immediate notification if a participant misses a coaching session in order to make up the session, if possible. Other than those elements, I have no involvement in the coaching sessions. And, we need to be clear that the coaching sessions are wide-open regarding the client's agenda; clearly, each participant is coming to the study with a desire to quit/reduce smoking behavior. However, the nature of co-active coaching, as you know, is that each coaching session's

agenda is up to the client and therefore any or all sessions may not appear to be related in any way to smoking behavior.

I am contacting several coaches. My expectation is that each coach would accept 3-4 participants; however, you may have close to a full coaching complement in your practice, so please indicate the number of participants you would be willing to coach, from 1 to 4. Please note that as a coach you will not be a participant in the study but rather be offering a service. If you are interested or would like more information please feel free to contact me at XXX-XXX-XXXX or via e-mail at XXXXXXX

Many thanks,

Tara Mantler

Appendix F

Letter of Information (Intervention Group)

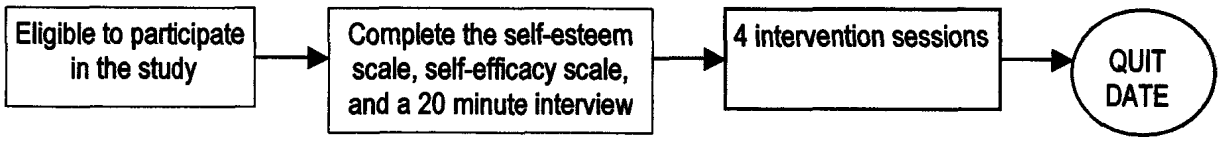
Assessing the Impact of Coaching as an Intervention for Smoking Cessation: a Demonstrative Study

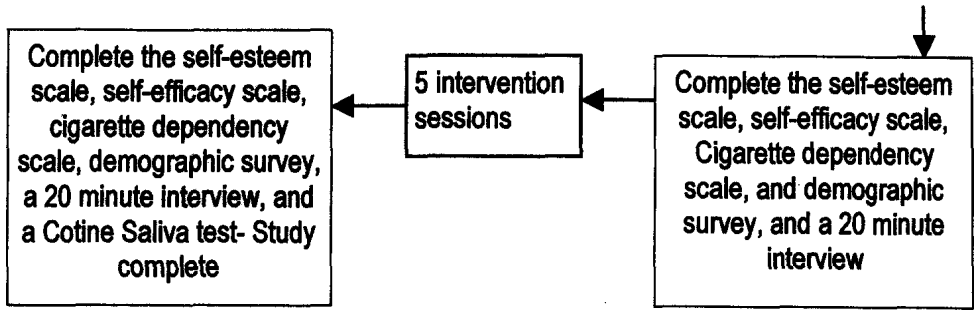
Investigators
Dr. Don Morrow, Faculty of Health Sciences, University of Western Ontario
Dr. Jennifer Irwin, Faculty of Health Sciences, University of Western Ontario

Background
Dr. Morrow and Dr. Irwin are conducting research to determine the effectiveness of coaching as an intervention for smoking cessation. If you speak English fluently; are between the ages 19-29; have an above average nicotine dependence, operationally defined as a score of more than 30 on the Cigarette Dependency Scale (this scale will be completed at your first screening); have been smoking for a minimum of 6 months; agree to the standard quit date of four weeks into the intervention; and agree to complete a Cotinine saliva test (placing a swab under you tongue for 2 minutes; please note that declining to participate in Cotinine saliva testing does not preclude participation in the full study), then researchers would like you to invite you to participate in the study. There will be a total of 20 participants in this study.

Possible benefits and risks to you for participating in the study
There are many benefits associated with quitting smoking namely: medical benefits including improved cardiovascular health; and financial benefits including money saved from cigarettes not purchased. Moreover, quitting smoking helps reduce pollution in our environment. However, there are physical and psychological risks associated with smoking cessation including withdrawal symptoms. Withdrawal symptoms include but are not limited to: stress, fatigue, frustration, sadness, and cravings. Should you experience withdrawal symptoms and would like help please contact the London Distress centre- 519-667-6711; your family physician; and / or a walk-in clinic or emergency department). You may not benefit personally from your participation.

What will happen in this study?
If you agree to participate you will be assigned a coach and will receive 9 intervention sessions over the telephone lasting approximately 30 minutes. At the beginning of the study you will be asked to complete a series of questionnaires and an interview with the researcher. You will be asked to set a quit date of 4 weeks into the study. At your quit date time you will be requested to complete the questionnaires and an interview again. The study will run for approximately 3 months. At the end of the study you will be asked to complete the questionnaires and interview for a final time. Additionally, at the end of the study you will be asked to complete a Cotinine saliva test. Moreover, past research has shown that Cotinine itself is not harmful. Cotinine is used simply to measure how much tobacco smoke has entered your body. The Cotinine saliva test will consist of placing a swab under your tongue and holding it there for two minutes. The swab will then have all identifying markers removed and sent to Salimetrics lab in Pennsylvania to be analyzed. Salimetrics will not keep any record of your results.





The purpose of the study is to determine the effectiveness of the Coaching at promoting smoking cessation, smoking reduction, increasing self-esteem and self-efficacy, as well as providing insight into the psychological mechanisms associated with smoking and to gain knowledge into the impact coaching has on goal attainment.

Alternative and your right to withdraw from the study
Your participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time.

Confidentiality
The researchers will keep your identity, comments, written data, questionnaire responses, and Cotinine Saliva tests confidential and secure. The Cotinine samples will be sent off site, to Salimetrics a lab in Pennsylvania with no identifiers that can be traced back to you. The samples are being sent to Salimetrics a lab in Pennsylvania as they are the closest facility capable of analyzing Cotinine saliva tests. The Cotinine saliva swab will be taken off site via the swabs being placed in the storage tube provided by Salimetrics and frozen in a freezer under lock and key. The samples will then be packed in a corrugated cardboard box with an insulating Styrofoam box (provided by Fisher). Dry ice will be placed in the cardboard box followed by several layers of newspaper, then the samples which will be stored in a Ziploc freezer bag. The remaining space in the box will be fixed with crumpled paper and the numbered list will be included in the box. The box will then be shipped via FedEx Priority Overnight service and an e-mail will be sent to Salimetrics informing them the samples are in the mail and a tracking number will be provided. The samples will have all identifiers removed prior to shipping the swabs to Salimetrics and only the Investigator and Co-investigators will have access to the master list. The master list will be securely stored under lock and key. Once Salimetrics has performed analysis the samples will be disposed of. Disposal procedure will include disinfecting the sample with a bleach solution of 1:10 (final dilution) prior to being poured into the sewer system. Proper care and personal protective equipment will be utilized. This method of disposal is in accordance with the Pennsylvania Environmental Protection Agency Regulations (PaDEP). Results from the analysis will be mailed to the researcher via a secure carrier. The data will be retained off-site long enough for the analysis to be run (incubation time of 2 hours).

If the results of the study are published, your name will not be used and no information that discloses you identity will be released or published without your explicit consent to the disclosure.

Representatives of The University of Western Ontario Health Sciences Research Ethics Board may contact you or require access to you study-related records to monitor the conduct of the research.

Costs and compensation
There is a $10 cost per session for participating in this study.

If you would like to receive a copy of the overall results of the study, please put your name on a blank piece of paper and give it to the researcher.

Contact Person (should you have any further questions about the study)
Dr. Don Morrow, University of Western Ontario. Phone: XXX-XXX-XXXX

If you have any further questions regarding your rights as a study participant, please contact The Office of Research Ethics at XXX-XXX-XXXX

This letter is yours to keep. You will also be given a copy of the consent form once it has been signed.

Western

Letter of Information (Control Group)

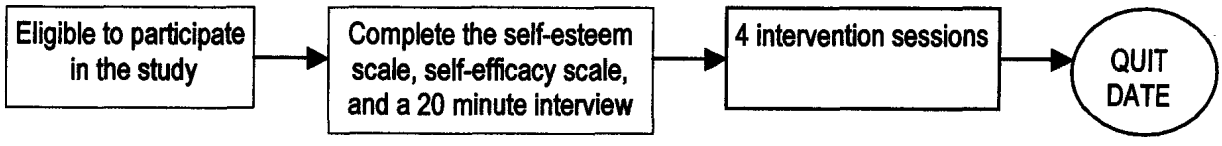
Assessing the Impact of Coaching as an Intervention for Smoking Cessation: a Demonstrative Study

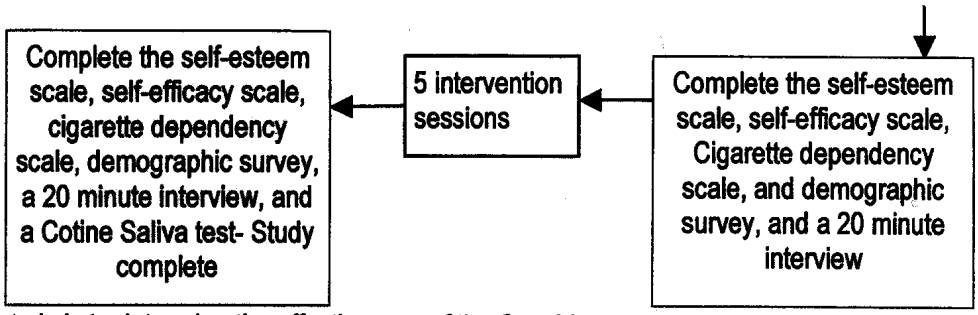
Investigators
Dr. Don Morrow, Faculty of Health Sciences, University of Western Ontario
Dr. Jennifer Irwin, Faculty of Health Sciences, University of Western Ontario

Background
Dr. Morrow and Dr. Irwin are conducting research to determine the effectiveness of coaching as an intervention for smoking cessation. If you speak English fluently; are between the ages 19-29; have an above average nicotine dependence, operationally defined as a score of more than 30 on the Cigarette Dependency Sale (this scale will be completed at your first screening); have been smoking for a minimum of 6 months; agree to the standard quit date of four weeks into the intervention; and agree to complete a Cotinine saliva test (placing a swab under you tongue for 2; please note that declining to participate in Cotinine saliva testing does not preclude participation in the full study), then researchers would like you to invite you to participate in the study. There will be a total of 20 participants in this study.

Possible benefits and risks to you for participating in the study
There are many benefits associated with quitting smoking namely: medical benefits including improved cardiovascular health; and financial benefits including money saved from cigarettes not purchased. Moreover, quitting smoking helps reduce pollution in our environment. However, there are physical and psychological risks associated with smoking cessation including withdrawal symptoms. Withdrawal symptoms include but are not limited to: stress, fatigue, frustration, sadness, and cravings. Should you experience withdrawal symptoms and would like help please contact the London Distress centre- 519-667-6711; your family physician; and / or a walk-in clinic or emergency department). You may not benefit personally from your participation.

What will happen in this study?
If you agree to participate you will receive 9 sessions over the telephone lasting 5-10 minutes. At the beginning of the study you will be asked to complete a series of questionnaires and an interview with the researcher. You will be asked to set a quit date of 4 weeks into the study. At you quit date time you will be requested to complete the questionnaires and an interview again. The study will run for approximately 3 months. At the end of the study you will be asked to complete the questionnaires and interview for a final time. Additionally, at the end of the study you will be asked to complete a Cotinine saliva test. Only participants who agree to complete a saliva test during the initial demographic questionnaire will be eligible to participate in this study. Moreover, past research has shown that Cotinine itself is not harmful. Cotinine is used simply to measure how much tobacco smoke has entered your body. The Cotinine saliva test will consist of placing a swab under your tongue and holding it there for two minutes. The swab will then have all identifying markers removed and sent to Salimetrics lab in Pennsylvania to be analyzed. Salimetrics will not keep any record of your results.





The purpose of the study is to determine the effectiveness of the Coaching at promoting smoking cessation, smoking reduction, increasing self-esteem and self-efficacy, as well as providing insight into the psychological mechanisms associated with smoking and to gain knowledge into the impact coaching has on goal attainment.

Alternative and your right to withdraw from the study
Your participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time.

Confidentiality
The researchers will keep your identity, comments, written data, questionnaire responses, and Cotinine Saliva tests confidential and secure. The Cotinine samples will be sent off site, to Salimetrics a lab in Pennsylvania with no identifiers that can be traced back to you. The samples are being sent to Salimetrics a lab in Pennsylvania as they are the closest facility capable of analyzing Cotinine saliva tests. The Cotinine saliva swab will be taken off site via the swabs being placed in the storage tube provided by Salimetrics and frozen in a freezer under lock and key. The samples will then be packed in a corrugated cardboard box with an insulating Styrofoam box (provided by Fisher). Dry ice will be placed in the cardboard box followed by several layers of newspaper, then the samples which will be stored in a Ziploc freezer bag. The remaining space in the box will be fixed with crumpled paper and the numbered list will be included in the box. The box will then be shipped via FedEx Priority Overnight service and an e-mail will be sent to Salimetrics informing them the samples are in the mail and a tracking number will be provided. The samples will have all identifiers removed prior to shipping the swabs to Salimetrics and only the Investigator and Co-investigators will have access to the master list. The master list will be securely stored under lock and key. Once Salimetrics has performed analysis the samples will be disposed of. Disposal procedure will include disinfecting the sample with a bleach solution of 1:10 (final dilution) prior to being poured into the sewer system. Proper care and personal protective equipment will be utilized. This method of disposal is in accordance with the Pennsylvania Environmental Protection Agency Regulations (PaDEP). Results from the analysis will be mailed to the researcher via a secure carrier. The data will be retained off-site long enough for the analysis to be run (incubation time of 2 hours).

If the results of the study are published, your name will not be used and no information that discloses you identity will be released or published without your explicit consent to the disclosure.

Representatives of The University of Western Ontario Health Sciences Research Ethics Board may contact you or require access to you study-related records to monitor the conduct of the research.

Costs and compensation
There is a $10 cost per session for participating in this study.

If you would like to receive a copy of the overall results of the study, please put your name on a blank piece of paper and give it to the researcher.

Contact Person (should you have any further questions about the study)
Dr. Don Morrow, University of Western Ontario. Phone: XXX-XXX-XXXX

If you have any further questions regarding your rights as a study participant, please contact The Office of Research Ethics at XXX-XXX-XXXX

This letter is yours to keep. You will also be given a copy of the consent form once it has been signed.

Appendix G

Informed Consent Form

I have read the letter of information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction

I agree to participate in the study.

(Date)	(Participant's Name)	(Participant's Signature)
(Date)	(Researcher's Name)	(Researcher's Signature)

Appendix H

Table 2

Table 2

Random Number Assignment Generation by Statistical Package for Social Sciences

N #	Group #
1	1
2	1
3	2
4	2
5	2
6	2
7	1
8	1
9	2
10	1
11	1
12	1
13	2
14	1
15	2
16	1
17	2
18	1
19	2
20	2

Note: Each number was given a participant in consecutive order as they were recruited into the study. Group 1 was the intervention group and group 2 was the control group.

Appendix I

Rosenberg Self-Esteem Scale (RSE)

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1. On the whole, I am satisfied with myself.	SA	A	D	SD
2. At times, I think I am no good at all.	SA	A	D	SD
3. I feel that I have a number of good qualities.	SA	A	D	SD
4. I am able to do things as well as most other people.	SA	A	D	SD
5. I feel I do not have much to be proud of.	SA	A	D	SD
6. I certainly feel useless at times.	SA	A	D	SD
7. I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8. I wish I could have more respect for myself.	SA	A	D	SD
9. All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10. I take a positive attitude toward myself.	SA	A	D	SD

Note: Scoring: SA = 3, A = 2, D = 1, SD = 0. Questions numbered 2,5,6,8,9 are reversed scored. The sum of the 10 items is used to determine self-esteem with higher scores meaning higher self-esteem; source: Rosenberg, 1965

Appendix J

Smoking Self-Efficacy Questionnaire (SEQ)

The following are some situations in which certain people might be tempted to smoke. Please indicate how much you are *tempted* to smoke in each situation.

1. When I feel nervous.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

2. When I feel depressed.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

3. When I am angry.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

4. When I feel very anxious.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

5. When I want to think about a difficult problem.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

6. When I feel the urge to smoke.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

7. When having a drink with friends.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

8. When celebrating something.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

9. When drinking beer, wine or other spirits.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

10. When I am with smokers.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

11. After a meal.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

12. When having coffee or tea.
Not at all tempted Not very tempted Somewhat tempted Very tempted Extremely tempted

Note: Questions 1-6 speak to internal stimuli and questions 7-12 speak to external stimuli impacting self-efficacy; Source: Etter, Bergman, Humair, & Perneger, 2000

Appendix K

Semi Structured Interview Guide

Baseline interview questions:

- What is it like being you?
- In your wildest dreams, what would your life look like? In what way would it be different from now?
- What does smoking represent?
- What would you have to say yes and no to, to make quitting smoking possible?
- What is the story you tell yourself about quitting smoking? What does the voice in your head say?
- What is challenging about quitting smoking?
- What do you need to facilitate your quitting smoking? And to be successful?

Quit date interview questions:

- What have you learned about yourself and smoking?
- What strategies will you use to help you quit?
- What will your biggest challenge be?
- What does quitting smoking mean to you?
- What is success for you, when it comes to smoking?
- What is preventing you from quitting smoking?
- What is driving you to quit smoking?
- How will quitting smoking impact you physically? Emotionally? Psychologically?

Post-intervention interview questions:

- What is it like being you now compared to the beginning of the intervention?

- What have you learned from your coaching experience? Your quitting experience?

- What has changed since the beginning of the study?

- What will help you stay on track?

- What actions have you taken, and do you attribute those actions to coaching?

- How do you see what you have learned impacting you over the next six months?

- How long since your last cigarette (for participant who reported quitting)?

- Is there anything else you would like to tell me regarding you participation in the study?

Appendix L

Demographic Questionnaire Revised

Please complete the following questionnaire:

1. Average number of cigarettes smoked per day _____

2. Have you made the quit attempt? _____

3. Number of sessions completed? _____

Appendix M

Debriefing Letter

Thank you for your participation in this study. As indicated in the letter of information the purpose of this study was to assess the impact of coaching on smoking cessation, average number of cigarettes smoked per day, self-esteem, self-efficacy, psychological mechanisms of smoking cessation, and the impact on attaining smoking cessation goals.

However, what you were unaware of is that there were two groups and participants were randomly assigned (like the flipping of a coin) to either the Co-Active Life Coaching group or the control group. The Co-Active Life Coaching group received coaching sessions from a Certified Profession Co-Active Coach (CPCC) that lasted approximately 30 minutes and they were coached based on the Co-Active Model. The control group received weekly calls lasting approximately 5-10 minutes from a research assistant who has no coaching training and the questions asked during each session were scripted. If you were assigned to the control group you will have your $10 fee per session returned to you. Additionally, if you would like the opportunity to seek the coaching services of a CPCC coach here are names and numbers of the coaches utilized during this study:

Judy: XXX-XXX-XXX Meni: XXX-XXX-XXXX Gail: XXX-XXX-XXXX

To properly perform this study we needed participants to be unaware of which group they had been randomly assigned to in order to comparatively assess smoking cessation, number of cigarettes smoked per day, self-esteem, and self-efficacy between the Co-Active Life Coaching group and the control group.

If you have any questions regarding this study please feel tree to ask the researcher at this time, or Dr. Don Morrow (Phone: XXX-XXX-XXXX or e-mail: XXXXXXXX).

Thank you again for your participation.

Appendix N

Table 6

Table 6

Cotinine saliva test results for all participants who maintain cessation at three-month follow-up

Participant	Result 1	Result 2	Average
N1 (Intervention)	0.30	0.39	0.35
N3 (Control)	None Detected	0.18	0.09
N5 (Control)	0.83	0.91	0.87
N17 (Control)	6.16	6.48	6.32
N10 (Intervention)	9.43	9.62	9.53
N12 (Intervention)	None Detected	None Detected	None Detected

Note: Interpretation is based on Salimetrics Normal Ranges, 2008; All results are in ng/ml.