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**Smoking Cessation: A Qualitative Investigation into the Cessation Process and  
Intervention Perceptions among Former Irish Smokers**

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## **Abstract**

Smoking cessation, a health promoting behaviour, reduces likelihood of developing negative health consequences to which smoking is an attributed risk factor. Although cessation interventions may have empirical evidence bases, qualitative investigations can provide understanding of effective intervention characteristics which can be used to inform and guide the continual development of cessation interventions. Six semi-structured interviews were conducted to investigate the smoking cessation process and intervention perceptions from the perspective of former Irish smokers. Thematic analysis led to the development three super-ordinate themes: smoking initiation and maintenance, motivation and commitment and cessation methods and intervention perceptions. Findings span from identification of motivators and hindrances to cessation, the process of cessation, methods used to facilitate cessation as well as broad and specific intervention perceptions. Key findings highlight the important roles intervention awareness, intervention components/characteristics and individual characteristics and preferences play in intervention efficacy perceptions. Implications and recommendations are further discussed.

## **Executive Summary**

The aim of this study was to investigate the smoking cessation process from the perspective of former Irish smokers alongside gaining an understanding of effective and ineffective cessation intervention characteristics. Understanding why interventions may be perceived as effective or ineffective can be used to inform the development, administration and evaluation cessation interventions.

### **Introduction**

Smoking is a risky health behaviour associated with higher risk of negative health outcomes which is not limited to regular or heavy smokers (Bjartveit & Tverdal, 2005), as such, cessation is required to reduce the likelihood of experiencing associated negative health effects. Cessation interventions are developed to encourage the commitment and maintenance of cessation. Possible cessation interventions and methods include, but are not limited to, nicotine replacements, support groups, prescribed medications, advice from a healthcare professional, self help manuals, online/telephone services, exercise, therapies, the tobacco control programme and alternative methods such as hypnosis and acupuncture.

Although empirical evidence for each of these interventions is available it is important to investigate how smokers engage with these cessation interventions and whether former smokers believe these interventions effectively supports cessation. The efficacies of the aforementioned ten interventions were qualitatively evaluated in the current Irish study.

### **Methods**

A qualitative research paradigm was adopted to gain insight into former smokers' perceptions of cessation interventions. Semi-structured, participant driven interviews were conducted with six former Irish smokers with equal representation of males and females. A

card sorting task was utilised to rank and rate ten interventions as well as to stimulate discussion of subjective perceptions of these interventions. Interviews were conducted between March and June 2016 with the research in its entirety spanning from December 2015 to August 2016.

## **Results**

Semantic level thematic analysis led to the development three super-ordinate themes: (1) smoking initiation and maintenance, (2) motivation and commitment and (3) cessation methods and intervention perceptions.

**Smoking initiation and maintenance.** Young initiation appears to be facilitated by social conformity and in some cases parental modelling. Smoking is maintained by positive effects such as stress reduction, enjoyment, socialisation and avoidance of withdrawal effects.

**Motivation and commitment.** Cessation attempts were reported as “spur of the moment” decision to quit. Willpower was believed to be the driving forces behind cessation. Reasons to quit included: cost, experienced negative health consequences and hygiene/cosmetic factors such as smell, taste and yellowed fingers. Positive peer influence/social support also encouraged cessation. Cessation was viewed as a process which progresses over time.

**Cessation methods and intervention perceptions.** Declaration of cessation, distraction, keeping reserve cigarettes, setting a quit date, keeping a ‘money-jar’, weaning and quitting with someone else were self-quit cessation methods used by the participants.

Intervention components/characteristic which influenced efficacy perceptions included: consistency of effects, transparency of evidence, the source of intervention advice/information (former smoker vs. non smoker), the availability of real person examples,

effort level required and perceived distance of the intervention. The tobacco control programme and nicotine replacements were generally perceived as the most effective interventions while self help manuals and alternative methods such as hypnosis and acupuncture were perceived as the least effective interventions.

### **Conclusion and Recommendations**

Cessation is has many associated factor which both promote and impede commitment towards a smoke free lifestyle. Cessation is a subjective experience with intrapersonal factors influencing engagement with and perception of interventions to some degree. Intervention components/characteristic as well as appraisals of the source and credibility of advice/information appear to influence how positively an intervention is perceived. Key findings of this study concern the practical intervention features and individual differences which appear to in some way influence intervention efficacy perceptions. Findings suggest successful cessation occurs due a combination of events, methods, decisions, behavioural alterations, cognitions supports and derived from a variety of sources.

Possible intervention developments or improvements include: the development of adaptive/tailor made interventions, restricted access to cigarettes by means of advanced tobacco control (e.g. coupon system) or informal community support networks. Lack of intervention awareness and issues around accessibility off services need to be addressed as participants highlighted a lack of awareness of both the existence of some interventions and how to gain access to them. It's worthwhile to consider offering 'test-runs' of interventions or reducing cost of cessation aids as a means to promote the initiation of cessation.

## Introduction

The Irish government has engaged in efforts to produce a tobacco free Ireland (i.e. <5% prevalence rate) by 2025 (Tobacco Policy Review Group, 2013). Prevalence rates suggest most Irish smokers are male (54%), between the ages of 25 and 44 (49%) and smoke on average 12.7 cigarettes per day (HSE, 2015). The average smoking initiation age in Ireland is 16.4 years (European Commission, 2012). Proposed adolescent smoking uptake risk factors include: parents', siblings' and peers' smoking behaviour, social approval of smoking, parents' socioeconomic status, education level and living in homes that allow smoking, (de Vries, Engels, Kremers, Wetzels & Mudde, 2003; Tjora, Hetland, Aarø & Øverland, 2011; Conrad, Flay & Hill, 1992).

The Irish Governments' Tobacco Control Programme (TCP) as informed by the Public Health (Tobacco) Act (Department of Health, 2004) is one of the most comprehensive implementations of tobacco control interventions according to Joossens & Raw (2014). It includes a complete indoor smoking ban, advertisement ban, high tax rate and extensive use of warning labels on tobacco products.

Smoking is a risky health behaviour associated with higher risk of negative health outcomes such as cancer, coronary heart disease, decreased life expectancy, chronic obstructive pulmonary disease and stroke (Ogden, 2012; Weissmann, Grimminger & Seeger, 2012; Wolf, D'Agostino, Kannel, Bonita & Belanger, 1988) which is not limited to regular or heavy smokers (Bjartveit & Tverdal, 2005). Smoking cessation, a health promoting behaviour, thus reduces likelihood of developing these adverse health consequences.

Smoking is perpetuated by an addiction the active ingredient nicotine, a nicotinic acetylcholine agonist, which linked to the stimulation of the mesolimbic dopaminergic system; the brain pathway linked to reward and reinforcement (Pierce & Kumaresan, 2006;

Benowitz, Hukkanen & Jacob, 2009). Nicotine dependence is characterised by a desire/preoccupation to smoke, consumption of large amounts of tobacco over time, continued use regardless of its negative effects, desire but difficulty to cease and withdrawal at cessation (DSM-5, American Psychiatric Association, 2013).

Maintenance of smoking behaviour or use of nicotine containing products is linked to a variety of motives, including stress alleviation, boredom relief, pleasure, heightened cognition (concentration, alertness), social acceptance, weight control, adoption of a smoker identity; behavioural habituation; and reduction of withdrawal effects such as concentration difficulties, restlessness, irritability and hunger (Hughes, Gust, Skoog, Keenan & Fenwick, 1991; Hughes, 1992; Todd, 2004; McEwen, West & McRobbie, 2008; Ho, 1989; Fidler & West, 2009). An understanding of smoking motives provides insight into the possible methods through which cessation can be aided (i.e. inform intervention development).

### **Smoking Cessation – Model of Change**

The Transtheoretical model (TTM) (Prochaska & DiClemente, 1982) is by far the most widely used model of change in smoking cessation research. The TTM highlights a variety processes and cognitions of change. Notably the TTM factors in the role of motivation, attribution, self efficacy and risk perception with regard to self perceived health related behaviour (Ogden, 2012). The TTM proposes five stages of behavioural change (pre-contemplation, contemplation, preparation, action and maintenance) taking the individual from denial of smoking as a negative health behaviour to the point where they have successfully abstained from smoking and are resisting temptation. According to this model a former smoker is someone who has abstained for more than six months and is in the maintenance stage of change.

## **Cessation Interventions and Methods**

A body of research surrounds the development and evaluation of smoking related interventions (e.g. Thorndike, Biener & Rigotti, 2002; Willemsen, van der Meer & Schippers, 2010; Armitage, 2007; Webb, Sheeran & Luszczynska, 2009; Ford, Clifford, Gussy & Gartner, 2013; Hetteema & Hendricks, 2010). Possible cessation interventions and methods include, but are not limited to, nicotine replacements (NR), support groups, prescribed medications (e.g. Varenicline, Bupropion), advice from a healthcare professional, self help manuals, online/telephone services, exercise, therapies, TCP and alternative methods such as hypnosis and acupuncture. Important to consider, is whether former smokers believe these interventions effectively encourages and supports cessation. A vast body of research focuses on any one of the above mentioned interventions. The efficacy of these ten interventions will be qualitatively evaluated in the current Irish study. Existing research for each intervention is explored as follows.

**Nicotine replacements.** (NR) NR's are used to reduce withdrawal effects and craving through the gradual delivery nicotine into the body. Although research has indicated NR's play a role in quit attempts and abstinence (e.g. Shiffman, Ferguson, Gwaltney, Balabanis & Shadel, 2006; Shiffman, Di Marino & Pillitteri, 2005), negative smoker perception of the efficacy and benefits of NR's may limit its uptake as a method to support the cessation process (Shiffman, Ferguson, Rohay & Gitchell, 2008; Silla, Beard & Shahab, 2014; Dugas, Wellman, Kermack, Tremblay & O'Loughlin, 2016).

In a contemporary context the use of electronically administered nicotine (e-cigarettes) has become increasingly popular. Research has indicated smokers use e-cigarette's to aid smoking cessation as they believe it is less harmful, it's relatively cheap in comparison rolled cigarettes and there are less barriers against e-cigarette use in public places (Etter &

Bullen, 2011; Wadsworth, Neale, McNeill & Hitchman, 2016). However, there are concerns regarding e-liquid effects on health as it still contains the toxic substances found in cigarettes albeit at lower levels (Etter & Bullen, 2011; Goniewicz et al., 2014; Hecht et al., 2015).

**Prescribed medications and healthcare professional assisted cessation.** A more formal pharmaceutical cessation aide is the use of prescribed medications such as Bromocriptine and Varenicline (Jarvik et al., 2000; West, Baker, Cappelleri & Bushmakin, 2008). Research has suggested the effects of these medications are greater if used as part of a multi-component cessation treatment plan, for example, alongside NR's (Ping-Hsun et al., 2015; Tulloch, Pipe, Els, Clyde & Reid, 2016). While doctors are an access point to these prescribed medications, patient visits are also an opportunity for impromptu cessation counselling to both facilitate and motivate the initiation of the cessation process.

Although practice guidelines indicate doctors should engage in cessation conversations with their patients (e.g. West, McNeill & Raw, 2000), there are discrepancies in how willing doctors are to engage in these conversations when patients aren't actively seeking smoking cessation related help. Qualitative studies have indicated this reticence is influenced by doctors' evaluations of the appropriateness of a cessation discussion based on their appraisal of the receptiveness of the individual, their anticipation of the patients' reactions, a desire to preserve an amicable doctor-patient relationship and the lack of time available to have these conversations (Coleman, Murphy & Cheater, 2000; Champassak et al., 2014). Reservations to engage in cessation counselling may limit the opportunities to prompt smoking cessation and inform smokers of the interventions available to them.

**Therapies.** Cognitive Behavioural Therapy (CBT) is the most widely used therapeutic approach to aide smoking cessation as it targets smoking maintaining cognitions and behaviours while attempting to substitute these with positive alternatives. Preliminary

evidence has also been provided for the use of Acceptance and Commitment Therapy as a therapeutic cessation intervention (accepting vs. negating unpleasant thoughts or emotions to foster behavioural commitment) (Hernández-López, Luciano, Bricker, Roales-Nieto & Montesinos, 2009; Bricker, Bush, Zbikowski, Mercer & Heffner, 2014).

**Self help manuals/materials.** Self help cessation materials such as pamphlets or booklets are usually developed based on the TTM and can be either generic or tailored (Lancaster & Stead, 2005). Self help manuals might be best used in a complementary fashion or act as a cue to cessation as it has been suggested their impact is minimal. Gilbert, Nazareth and Sutton's (2009) study on smokers' experience with self help manuals suggest the way in which these materials are constructed plays a crucial role in content engagement. Findings from this study indicated cessation information must be clear, concise and uncomplicated, formal yet understandable in tone and targeted to specific populations.

**Interpersonal support and counselling services.** Quitlines are generally part of a governmental intervention programme offering interpersonal support, advice and counselling. Quitline staff follow protocols guiding their interaction with smokers/former smokers and usually aim to provide advice, support and encouragement. The protocols adjust to the TTM stage the counsellor believes the individual is in with advice to use NR's most commonly given during a quitline call (Willemsen, van der Meer & Schippers, 2010). The initial quitline contact relies on the proactive behaviour of the smoker, that is, to some extent they are showing commitment to change. However, it has been suggested cold-calling can be used to reach a larger more diverse demographic and smoker profile (Tzelepis et al., 2012).

Support groups provide the opportunity of support and advice from facilitators and other smokers in the cessation process. Peer support can foster a sense of community and promote the maintenance of a smoke free lifestyle. Support groups allows individuals to learn

from each other especially when abstinence is difficult (Solomon, 2004). This sense of community derived from support groups has been associated with positive effects on abstinence and is not limited to face to face contact (Vambheim, Wangberg, Johnsen & Wynn, 2013).

**Exercise.** Individuals may choose to engage in differing intensities of exercise in order to promote the maintenance of cessation. It may be that cessation is maintained by the actual exercise or rather the secondary effects resulting from the exercise such lower levels of weight gain, increased fitness and positive affect. Research has indicated exercise can have positive effects on cigarette craving as well as general withdrawal symptoms (Roberts, Maddison, Simpson, Bullen & Prapavessis, 2012; Roberts et al., 2015; Bock et al., 2013).

**Alternative methods such as hypnosis and acupuncture.** Hypnosis may be used to increase motivation to quit smoking by inducing a suggestible state. Although there is not enough evidence to support its efficacy in cessation of smoking (Green & Lynn, 2000; Barnes et al., 2010), some research has suggested hypnosis may be effective when used in conjunction with other methods (Carmody et al., 2008). Similar evidence is available for acupuncture, the application of pressure to acupoints, the ear for smoking, to effect a positive change (Wu, Chen, Liu, Lin & Hwang, 2007). However caution is required when evaluating these findings which may be culturally bound as the most supportive evidence for the use of acupuncture comes from research using Chinese participant samples (Ma et al., 2015; Kang et al., 2013; Wu et al., 2007) to whom acupuncture is part of Traditional Chinese Medicine. A review by White, Rampes, Liu, Stead and Campbell (2014) highlight there is no clear evidence available in support of acupuncture as an effective cessation intervention. More detailed systematic studies are required to evaluate the efficacy of both acupuncture and hypnosis as rigorous evidence in both cases are limited (Tahiri, Mottillo, Joseph, Pilote & Eisenberg, 2012).

## **The Role of Evaluative Research**

Although evidence for these interventions are available in a wider context it is nevertheless important to engage in continual intervention evaluation research. Intervention evaluations give insight into the social awareness of cessation services and interventions, the perceived efficacy of the interventions, as well as insight into the intervention characteristics which are effective or ineffective. A study by Hammond, McDonald, Fang and Borland (2004) highlighted smokers are either unaware of or sceptical about cessation methods and aids such as NR's, prescribed medications, counselling, advice from healthcare professionals, support groups and quit services. This suggests an effective dissemination of intervention research to smokers appears to be somewhat lacking. Developing and refining interventions is not useful if the target population is either uninformed of their availability or unaware of their potential benefits. As most developmental and evaluative research is done in non naturalistic setting, there is a role for qualitative research to investigate perceptions and beliefs surrounding cessation interventions from the perspective of former smokers. Qualitative research can't be generalised across populations or across specific groups and thus the current study will attempt to explore the perceived efficacy and level of awareness of the above mentioned interventions in an Irish context which can be utilised to drive further investigation.

**Objectives**

The objective of this qualitative study is to gain an understanding of the smoking cessation process from the perspective of former Irish smokers. Further aims include gaining insight into the potential difficulties associated with smoking cessation which can be targeted by interventions alongside gaining an understanding of the effective and ineffective intervention/method characteristics which can in turn inform the continual development, administration and evaluations of formal and informal cessation interventions/methods.

## **Methodology**

### **Design**

A qualitative research design was adopted to meet the objectives of exploring and attempting to understand former Irish smokers' opinions and perceptions regarding the smoking cessation process and cessation interventions/methods.

### **Participants**

The study recruited six Irish participants who had ceased smoking for at least six months and were over the age of 18, with equal representation of males and females. Initially a volunteer sampling method was used but due to lack of response to notice board invitations, a convenient sampling method was ultimately utilised. The six recruited participants came from varying demographic backgrounds and, to the best of the researchers' knowledge, were not acquainted with each.

Participants were required to have ceased smoking for a minimum six months as they are considered to be in the maintenance stage of health behaviour change (Prochaska & DiClemente, 1982) and at less risk of the interviews prompting relapse. Having theoretically moved through the initial stages of the cessation process, it was assumed participants had first hand insights, opinions and beliefs regarding the cessation process and associated interventions.

### **Data Collection**

Semi-structured participant driven interviews were used as a data collection technique to collect rich data of cessation beliefs, opinions and perceptions. The interview guide was developed to reflect the research objectives. Demographic data collected was limited to gender and age.

The researcher referred to questions from Carter-Pokras et al.,'s (2011) qualitative smoking cessation study as a template to develop the interview guide for the current study (Appendix A). A pilot interview session was conducted with a single, conveniently recruited and willing participant to practice the interview process, test the recording equipment, gauge the approximate interview length, and highlight any practical issues or weaknesses of the design which may have hindered the interview process (Turner, 2010). Concerns were considered during the revision of the interview guide.

The interview was conducted in four main segments: demographics - which included smoking profile questions (e.g. *'How long were you smoking for?'*); decision to quit - which included cessation behaviour questions (e.g. *'Can you walk me through the behaviours you undertook to quit?'*); perceptions of available interventions/methods - which utilised a card sorting task as described below; and possible service improvements and cessation advice (e.g. *'If you were to develop programme to help people quit, what would it be/include?'*).

A card sorting task was used to encourage discussion concerning perceptions of available smoking cessation interventions. Participants were first asked to *'Please indicate how you would **rank** the interventions/methods in terms of effectiveness (1 ineffective - 10 completely effective) in relation to each other'*. This was followed by *'Please indicate how you would **rate** the interventions individually in terms of effectiveness (1 ineffective - 10 completely effective)'*. A score of 0 (completely ineffective) was possible for the individual efficacy ranking task.

Intervention efficacy rankings and individualised intervention efficacy scores provided by participants were used to stimulate conversation and gain insight into perceptions and beliefs regarding the interventions. The ten interventions cards included: nicotine replacements, prescribed medications, advice from a healthcare professional, Support groups,

self help manuals, quit.ie/telephone services, exercise, therapies e.g. CBT, tobacco control programme, other – hypnosis, acupuncture.

Interview durations ranged from 14 minutes to 49 minutes and were recorded, with consent from the participants, using a mobile phone app (Easy Voice Recorder by Digipom). The audio recordings from the six participants were transcribed verbatim, checked against their original recordings and subjected to data analysis.

### **Data Analysis**

Thematic analysis (TA), as proposed by Braun & Clarke (2006), was used for the inductive coding and development of themes and categories in the current study. Thematic analysis was selected as it is the appropriate method of qualitative data analysis when the research objectives focus on perceptions, beliefs and opinions. Braun & Clarke (2006) define TA as “a method for identifying, analysing and reporting patterns (themes) within data...(which) minimally organizes and describes your data set in (rich) detail” (p. 79). TA does not ascribe itself to any theoretical stance or any specific epistemological standpoint (Braun & Clarke, 2006). The researcher assumed a realist stance in the current study.

Braun & Clarke’s (2006) six analytical stages were followed in the current study. Initial familiarisation with the data included conducting, transcribing and continual re-reading of the transcripts. A narrow coding approach was adopted to gain insight into the specificities pertaining to the research objectives. Codes derived from the first stage of the data reduction process were explored in search of initial themes. Themes were named and defined as the analysis progressed. As qualitative analysis is an iterative process themes were reviewed throughout the duration of the analysis with the researcher continually exploring the transcripts while evaluating and comparing identified themes. N-Vivo 10 (QSR International) software was used to aid the analysis.

## Results

Six participants were included in the current study. Males and females were equally represented with the mean age of 36 years for the overall sample as well as for the male and female subgroups individually (range 19-56 years). Total years smoking ranged between 4 and 40 years. Smoking uptake in the sample occurred on average at 14.75 years old, younger than the national average of 16.4 years (European Commission, 2012) (range 13-17). All participants had ceased smoking for at least six months with most participants reporting abstinence of about 2 years (M1, M3, F1, and F3). Cessation methods utilised by participants included NR/e-cigarette (F1, F2), gradual decline in number of cigarettes smoked (M1), and cold turkey (F3, M2, M3). Although F1 and F2 had successfully quit smoking, both were still using an e-cigarette at the time the interviews were conducted. F2 was the only participant who reported a relapse period after a notable duration of abstinence. Participant profiles are depicted in Table 1.

*Table 1: Participant Profiles Including Demographics, Smoking and Cessation History*

Ps	M1	M2	M3	F1	F2	F3
Age (years)	21	25	56	19	50	33
Age Started Smoking (years)	14	17	14/15	13	14/15	16
Duration of Smoking (years)	6	7	± 40	4	30	13
Cigarettes a day	±10	10-15	30+	NA	20-30	ND
Cigars a Day			10			
Tobacco (pouch)				1 per day		
E-Cigarette				yes	yes	
Cessation Duration	2 years	1 year	± 2 years	± 2 years	6-7months	2-3years
Abstinence Prior to Relapse					3.5 years	

Note: M = Male Participant; F = Female Participant

## Intervention Rankings

For the first card sorting task participants ranked interventions both in relation to each other and gave each intervention an individual efficacy score. Table 2 depicts the rankings of the provided interventions, methods and services from the card sorting task by each participant. Upon inspection it can be noted that NR and the tobacco control programme were generally ranked as more effective in comparison to the other methods while self help manuals and other/alternative methods such as hypnosis/acupuncture tended to be ranked towards the lower end of the spectrum by most participants. Interestingly male participants ranked exercise to the higher end of the efficacy spectrum while females ranked exercise as least effective in comparison to other cessation methods/interventions.

*Table 2: Participant Perceived Efficacy of Cessation Methods, Services and Interventions Ranked in Relation to Each Other (1= Least Effective, 10 = Most Effective)*

	10	9	8	7	6	5	4	3	2	1
M1	EX	NR	TCP	SG	HCP	SHM	T	QT	PM	O
M2	EX	SG	HCP	PM	QT	T	TCP	NR	SHM	O
M3	HCP	PM	NR	TCP	SG	EX	QT	SHM	T	O
F1	NR	TCP	SG	O	SHM	T	HCP	QT	PM	EX
F2	NR	TCP	PM	HCP	SG	QT	O	EX	SHM	T
F3	HCP	NR	TCP	SG	T	QT	PM	SHM	O	EX

Note: EX = Exercise; NRT = Nicotine Replacements; TCP = Tobacco Control Programme; SG = Support Groups (internet/face to face); HCP = Advice from a Healthcare Professional; SHM = Self Help Manuals; T = Therapies e.g. CBT; QT = Quit.ie/ Telephone Services; PM = Prescribed Medications; O = Other (acupuncture or hypnosis)

Although the ranking range (1-10) is arbitrary it allowed the researcher to illustrate the average rankings of the 10 interventions/methods/services across the six participants (Table 3). This ranking is tentative and should not be considered as generalisable depiction of perceived intervention efficacies in comparison to each other.

*Table 3: Average Participant Perceived Efficacy Rankings of Cessation Methods, Services and Interventions*

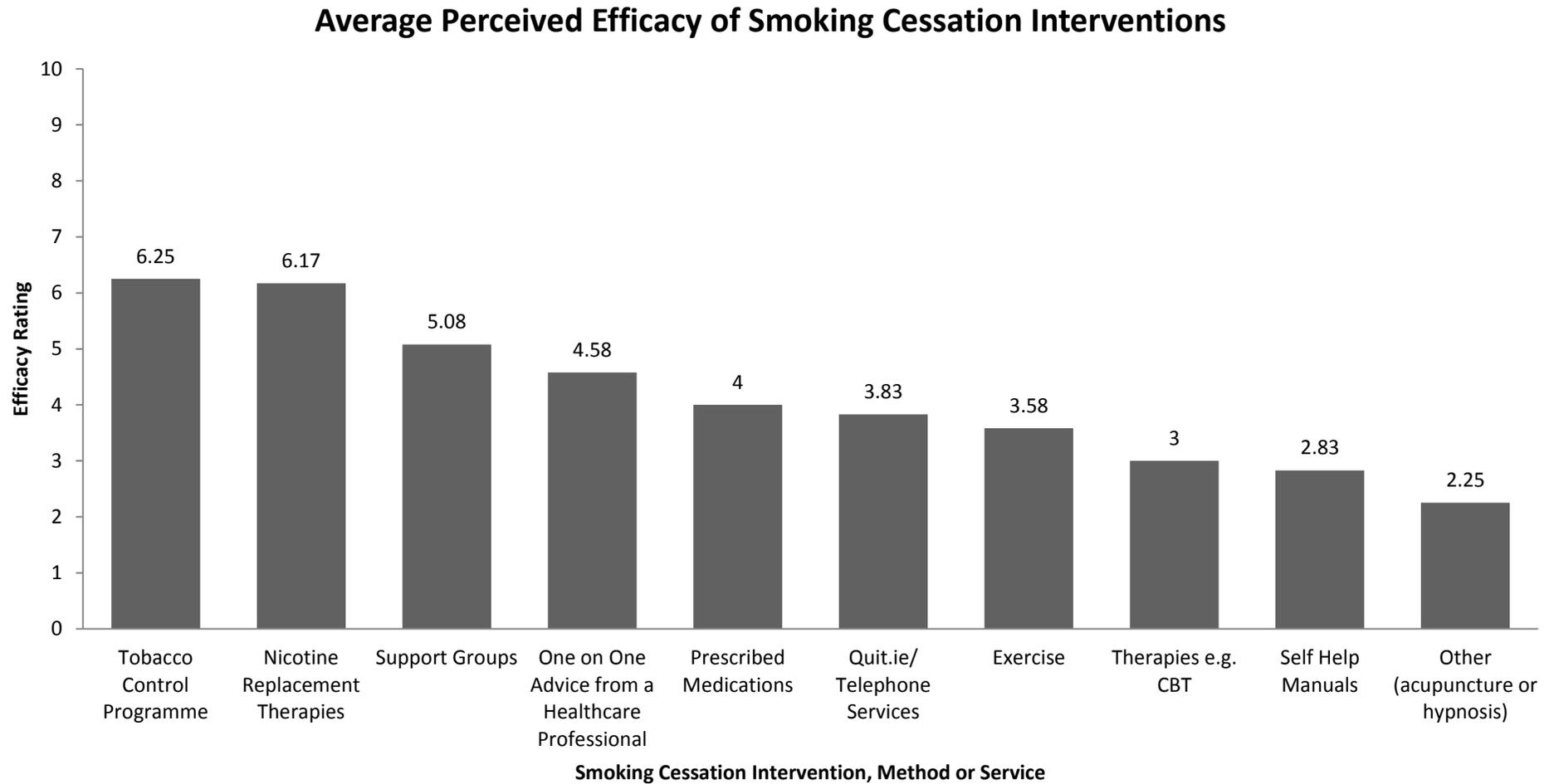
	10	9		7	6	5	4	3	2	1
Average Ranking	8.17	7.5	7.5	7.17	5.33	5	4.33	3.83	3.17	2.5
	NRT	TCP	HCP	SG	PM	QT	EX	T	SHM	O

Note: EX = Exercise; NRT = Nicotine Replacements; TCP = Tobacco Control Programme; SG = Support Groups (internet/face to face); HCP = Advice from a Healthcare Professional; SHM = Self Help Manuals; T = Therapies e.g. CBT; QT = Quit.ie/ Telephone Services; PM = Prescribed Medications; O = Other (acupuncture or hypnosis)

### Perceived Efficacy Ratings

The second card sorting task required participants to rate each of the ten interventions individually in terms of perceived efficacy. A score of 1 indicated low perceived efficacy and 10 indicated high perceived efficacy while a score of 0 indicated a perceived lack of efficacy. *Figure 1* (Appendix B) represents the individualised efficacy scores for as provided by the six participants. One participant, F3, indicated she did not perceive any of the interventions as effective cessation supports. Alternative methods such as hypnosis/acupuncture received the most completely ineffective scores.

For the most part, average individualised efficacy scores (*Figure 2*) echoed the average rankings of the interventions in relation to each other. Again, the ratings provide insight into perceived efficacy of the interventions for the six participants but should not be considered as a generalisable perception of efficacy without further research



*Figure 2: Average Perceived Efficacy of Smoking Cessation Interventions, Methods and Services as Established by the Six Participants of the Current Study*

## Qualitative Findings

Semantic level TA of the six participants' transcripts led to the development three super-ordinate themes: (1) smoking initiation and maintenance, (2) motivation and commitment and (3) cessation methods and intervention perceptions.

**Initiation and maintenance.** Participants perceived smoking as an addiction which is maintained even when the initial smoking experience was marked with disgust. Along with being perceived as an addiction, smoking was also associated with routine and self administration.

**Initiation.** All participants reported young initiation of smoking (<18 years) influenced to some extent by parental modelling, social norms or both. Most participants started smoking with a friend, to gain peer acceptance or develop interpersonal relationships. One participant highlighted this uptake of smoking due to social acceptance and conformity is a self perpetuating cycle with no real meaning or point:

It seems like such a strange arbitrary thing to have kind of come about really...I remember I was thinking like 'god, I mean really, why am I doing it' and it was because everybody else was doing it. Well, everybody's doing it because everybody else is doing it. It's kind of like Lemmings walking off a cliff. (M2).

Half the participants reported having parents who were smokers. Parental modelling was explicitly referred to by one participant who believed their uptake of smoking was influenced by their mothers' smoking behaviour:

I'd see my mam doing it and stuff.... at that age, you're almost like 'why would they do something that's so harmful to them'... I honestly do feel like my mom smoking

affected me...Because I was around it so much... if I'd never seen my mam or if she had been (smoking) outside... then I probably wouldn't have started smoking. (M1).

**Maintenance.** Factors which maintain smoking behaviour are arguably also the factors impeding cessation such as the positives of smoking, negative withdrawal effects and negative social support. Participants believed smoking was related positive outcomes such as increased focus and alertness, stress relief, enjoyment and facilitation of socialisation. These factors along with withdrawal effects such as coughing/phlegm, feeling faint, loss of focus, shaking, sweating and increased apatite/eating appeared increase the difficulty to commit to cessation. Negative social support such as reprimand off significant others for relapse: "... I felt the support wasn't there the second time. They weren't proud of me... They were like "well you shouldn't have gone back on them anyways". It's the hardest thing" (F2), and the temptation other smokers offering cigarettes also appeared increase the difficulty to successfully commit to cessation: "One of the hardest things for me...was kind of dealing with the temptation of somebody trying to get me to smoke..." (M2).

**Motivation and commitment.** Participants did not report extensive contemplation of cessation and most cited a "spur of the moment" decision to quit. This decision appeared to be associated with some sort of self set rule ranging from 'I have to completely stop smoking' (M2, M3), 'I need to/have to do this' (F3 & M1), or 'I have to at least try to quit' (F1, F2). Willpower was believed to be the force behind successful cessation and was referred to as self control, determination, mindset, wanting, seriousness and having energy/stamina to commit to the cessation decision: "I just think quitting smoking is about you'd have to want to in some sort of way do it. If you don't want to quit, then you won't" (F1).

When motivation was lacking or willpower was weak most participants highlighted they engaged in rationalising their behaviour and postponing their cessation. Self

rationalisations included believing just one more won't affect cessation, experienced health concerns such as having a cough wasn't related to smoking and the resignation to being a smoker.

**Factors promoting cessation.** Factors promoting cessation included the negative effects attributed to smoking and positive social support. Individualised reasons to quit also included anticipated regret, limited sports performance, modelling and shame.

The most widely cited reason to quit was cost ("Money. It was all about the money", F3) followed by experienced negative health consequences such as fatigue, shortness of breath, coughing and reduced stamina: "I started getting a little bit almost frightened of ... my health" (M1) as well as unappealing hygiene/cosmetic factors such as smell, taste and the yellowing of fingers: "... And then I stopped smoking cigarettes because I couldn't handle the smell and taste of it... it was revolting..." (M3).

Positive social influence and peer/family support also appeared to play a cessation promoting role. This included positive peer pressure, social influences/norms and positive support network:

...it was probably very helpful as well that I've got some good influences around me...

When you have people surrounding you who are a certain way, there is positive peer pressure... I feel that was one thing that really helped me. (M2).

**Process.** Smoking cessation was viewed as a process which progresses over time. Participants highlighted cessation was difficult and that there is no quick fix to help the process. From the data it appears cessation starts as an attempt ("...nobody really gives up the minute or the day they start. It takes time and courage...", F2), moves onto complete abstinence, with withdrawal effects and preoccupation with smoking subsiding over time:

Physically the hardest part was, yeah, for not a very long time... you start to feel better a lot quicker. There is just a little while where you kind of feel like shit.

...it's a high peak to climb and it's easy from then. (M2).

Participants appeared to believe remaining cognisant or even avoiding cues to smoke aided abstinence. Identified cues to smoke included: talking about smoking, being around smokers, smoking paraphernalia, holding a cigarette and the taste of peppermint.

**Cessation methods and intervention perceptions.** This super-ordinate theme is comprised of (1) cessation methods use by participants, (2) intervention perceptions, (3) suggestions for intervention development.

*Methods Used.* Participants reported using methods such as declaration of cessation, distraction and keeping reserve cigarettes. Less frequently discussed methods included setting a quit date, keeping a 'money-jar', weaning and quitting with someone else. Most participants used a declaration of cessation, that is, they did not want to be viewed as inconsistent or going back on their word (social desirability):

...in that moment when you really want a cigarette and you're only off them and hour you kind of say 'oh, I told everyone I was trying today'. So even if I just go for one day I can tell everyone 'I tried and it didn't work'. (F2).

Most participants also employed distraction through alternative behaviours such as eating (sweets, chewing gum), completing sudoku's and exercise to keep their mind off smoking. Additionally, two participants (F2, F3) believed having reserve cigarettes and not denying the choice of having a cigarette aided their cessation:

...I went and bought a full 20 packet. I put it in my bag to have it there so if I wanted it I could have it and not make myself that I can't have it ....Because, I find when you

know you can't have something you'd always want it more. So it was the security of having it there if I wanted it. (F3).

**Intervention perceptions.** Certain factors appeared to influence participant efficacy perceptions of the ten interventions included in the card sorting task. This included: the person using the intervention/method, perceived consistency of effects, transparency of evidence, effort required to engage in the method/service, personal likes and dislikes, source of information and support (never smoker vs. former smoker) and saliency of real person examples (success stories).

Along with these factors there was a strong opinion that cessation, just like smoking, is a subjective experience for the individual and interventions will work/not work based on the characteristics of that individual. This differentiation was not limited interpersonally but also a belief that multiple quit attempts by an individual can be experienced differently each time. Participants suggested that it's not just one thing that leads to cessation but the multiplication of many different cessation supports/interventions: "...see everybody's different and people react to different stimulus. You know. I think a little bit of everything, as dumb as it sounds, you know" (M2);

...it was a completely different experience giving it up the second time... and what worked the first time didn't work the second time. It's crazy. Same person, same brain, same body, same everything; just the mindset was completely different the second time.

... it's actually a combination of lots of things that help you give them up...it's not just one thing and it takes time. (F2).

Individual efficacy perceptions for the ten proposed interventions ranged from effective, potentially effective and ineffective. In some cases participants were divided in

terms on how effective they thought a particular interventions was. Notably one participant believed none of the ten interventions were helpful or effective in promoting or supporting cessation. The interventions which received most attention during the interviews were NR, TCP and advice from a healthcare professional.

*Tobacco control programme.* Although originally the TCP might have been met with resistance (“Ah, you hark at me now. Ten years ago now when the smoking ban came in I was wagging me finger at the government ‘how very dare you’”, F2), most participants focussed their discussion on the perceived merits of the TCP. Participants discussed their views on the smoking ban, the increasing of taxes and advertisement restrictions.

Most participants believed the smoking ban produced positive effects such as preventing chain smoking in the workplace or enjoying a smoke free night in the pub. However, some believed the ban could be more enforced in certain contexts with specific focus on smoking in cars with children:

I think it’s good... I think they can improve on it...I think they really should enforce the no smoking in cars with children. I think that should be stopped and they should enforce it as much as they are enforcing tax and insurance on a car. (F2).

In contrast, some participants highlighted that smokers will endure any conditions if they really want to smoke: “It doesn’t make a difference... you don’t care that you have to stand in the rain or the snow. You’re going to do it” (F3) and there are ways around the smoking ban which diminishes its’ effectiveness, for example, smoking areas in pubs:

I don’t think it has deterred many people at all... You know, ‘oh you know I can’t smoke in a pub anymore’ but every pub has now built a nice little veranda that is essentially indoors where you can smoke. (M2).

Cost was the most widely cited reason to quit smoking. Participants believed tobacco tax elevation acts as a deterrent for the initiation of smoking but also makes it less economical to maintain the intake of cigarettes. This increase in cost was believed to affect students and individuals from lower SES more so than other demographics.

Although the cost of cigarettes was believed to have a major impact on smoking prevalence rates, some believed smokers will find a way to source cigarettes at a reduced cost: “I’d say like you’ll find like the likes of people going to Spain and getting sleeves for 20euro.... there’ll be like a big increase in bootleg cigarettes coming in I’d say” (M1).

Participants believed stark, fear appeal images were effective in encouraging cessation although none of the participants indicated these images influences their decision to quit. Unbranded cigarette packets with stark images were suggested to be the most effective advertisement restrictions implemented, though notably level of fear appeal differs across countries:

... the things you see on the cigarette packets, they don’t look cool. You know, and they’re worse in some countries and stuff. Actually, I do know one person who went abroad... she saw the cigarette packets there and they were a lot more heavy with their...‘this is what smoking does to you’. And she came back and she was shell shocked. And that was it. It made her stop. Dead almost. (M2).

*Nicotine replacements.* NR was met with competing beliefs and perceptions. Some believed it is the most effective cessation aid while others questioned its efficacy. Negative perceptions appeared to stem from using it and not liking it, a belief it’s not discreet enough (smell off gum), anecdotal evidence of it making people feel ill and, the most prominent opinion, using NR is not really cessation due to the maintenance of nicotine in the system:

I don't really agree with those because if you're going to quit and the reason that you're going to quit is to get away from nicotine and not have the addiction, so by putting the replacement patch on or the gum or whatever it is, you're still putting it into your body. So it doesn't really help. (F3).

Conversely, those who thought NR is, at the very least, somewhat effective believed it was helpful for individuals with high nicotine dependence and that it in some way reduces craving, withdrawal and preoccupation with smoking thoughts: "... I think they are absolutely brilliant... They take the edge off. And if you just keep busy the thought doesn't keep coming to you because obviously you're getting the nicotine..." (F2).

Most participants did not believe e-cigarette's were an effective cessation aid. The two participants who were using e-cigarettes at the time of the interviews were the most avid advocates of its use as a cessation tool. What came across in the data was that e-cigarette use is thought of as an addiction which requires quitting much the same as when smoking cigarettes: "But, I'm addicted to that now. You know. So now I have to get off this like" (F1).

Similar maintaining factors were associated with the e-cigarette as was with tobacco cigarettes which included the opportunity for self administration (control intake, strength, flavour, puff depth and hand to mouth intake), that it reduces craving and discontinued use is met with withdrawal effects. Continued use was also thought to be maintained by fewer barriers associated with e-cigarette use: "You can vape in your house and you can vape on the plane sneakily and nobody would be any of the wiser because it doesn't smell like anything" (F2).

Some participants believed the e-cigarette were less harmful than combustible tobacco. However, others still believed we don't know enough about the negative health effects associated with using e-cigarettes as they are unregulated and under researched.

*Advice from a Healthcare Professional.* Four out of the six participants believed healthcare professionals, especially doctors, are helpful in the cessation process. From the participants' perspective, doctors can increase awareness of the negative health consequences of smoking, guide and inform cessation, act as an access point to other intervention and are a source of reassurance/encouragement. It was suggested that in part the perceived positive effects of doctor support can be due to the proactive nature of seeking help from a doctor:

You're getting up, you're going to go and take care of it... if I was getting migraines I'd get up and I'd go to a doctor you know. It's kind of an awareness that you've got something that you need a professional to help you deal with. (M2).

This was echoed in the opinion that smokers will avoid seeing their doctor if they're not ready to quit in fear of a cessation conversation occurring. The conversation doctors have with their patient's was associated with fear, stress and as too generic by some participants. One participant felt that any healthcare professional offering cessation advice was not effective as they themselves probably have no experience with smoking and as such have no idea what their patients are going through:

That I don't feel is any help because half of the people don't even smoke so they don't even know what it's like when you quit...every person is different when they quit smoking and everybody's symptoms are different and I don't think the healthcare professionals understand that... you actually need a cigarette from the information that they are giving you. (F3).

Doctors also don't necessary use the opportunity to guide and support cessation even when smokers indicate that they want to or have tried to cease smoking.

*Prescribed Medication.* Half the participants were unfamiliar with prescribed medications, that is, they didn't know prescribe medications for smoking cessation existed or of anyone who used prescribed medications as a cessation aid. Although half believed medication may be useful when participants were informed about the prescribed medications there was still a sense of trepidation in relation to its efficacy. One participant had a dislike for medication and others believed it was still putting something in the body and again not really quitting. Medication was also believed to only be effective if the person "wants and wills them to work" (F2). One participants believed the proactive nature of getting up and going to the doctor to get the prescription "...is almost as effective as the medication that you're being prescribed" (M2).

The single participant who was aware of prescribed medication for smoking cessation believed it is a very effective cessation aid, especially due to its potential aversive side effects such as nausea: "...that health care professional will most probably prescribe certain medication that will make you vomit if you smoke or make you feel very bad. Which is helping in the process of stopping smoking" (M3).

*Support groups.* None of the participants used formal support groups to aide their cessation even though all were aware of the availability and purpose of the groups. While participants believed social support is an important factor contributing to successful cessation, their focus was more on immediate familial and peer support rather than formal support groups. In saying that, support from other smokers who have either successfully quit or are in the process of quitting was believed to be an additional motivator to continue abstinence over time. In general it seemed participants believed formal support groups could help maintain and bolster cessation with those who seek out formal group support, but for them, proximal social support was effective:

Well support groups I suppose would be healthy or good for some people but I kind of had the support at home with family and friends because when I gave up nobody could believe I gave them up and that was a good support to me (F2).

*Quit.ie/telephone services.* Some participants believed telephone support is helpful for guidance and advice from professionals and a viable option to seek out help when struggling. As with the two previous interventions, one participant believed quitline's merit lay with the fact that it requires proactive action. In contrast, most participants thought these services are somewhat distant and potentially outdated with a younger demographic.

... they're not going to be able to do anything over the phone because your temptation of smoking is still in your head and still kind of want a cigarette whether you talk to them or not. No matter what they say they can't take that away. (F3).

*Exercise.* Exercise was the only intervention/method for which males and females held differing efficacy perceptions. Males, especially the two younger participants (M1, M2), held positive perception of exercise as a cessation tool. Both still actively participated in sport and enjoyed exercise. The effects smoking had on their sport performance was the major precipitating factors for cessation. This suggests exercise, along with its associated positive health effects, can both encourage and maintain cessation: "...as I said like the short breaths that I started feeling were like the main thing... why I stopped... I would almost train more to... tell myself, like how it was affecting me" (M1).

I found exercise really helped me... I kind of became addicted to that. I really wanted to see how far I could go...I was just jogging one day and I was like 'wow I'm breathing really easily' and then I realised I took breathing for granted. (M2).

In contrast, female participants disliked exercise and did not think it would be helpful in encouraging and maintaining cessation: "...exercise, I don't know how that's going to help you" (F1) and "...to me, exercise would drive me to smoking" (F2). One of the reasons exercise may not be as effective as other cessation intervention/method could be that it's perceived as requiring a high level of effort: "Have a smoke or run around the block – what would you pick? You'd pick a smoke over exercise" (F3).

*Therapies.* Three of the six participants were unfamiliar to differing degrees with the use of therapies as a cessation intervention. Based on their general perception of therapy's effectiveness in everyday life, those who were unaware of using therapies to aid cessation believed it could possibly be helpful: "...I don't really know a lot about it. But I would imagine that it's pretty sound" (M2).

F3, who believed no intervention is helpful in cessation, believed therapy is "*not going to do anything*" to help with cessation while another participant believed it's ineffective as they don't believe in therapy at all, even equating it with acupuncture which had a resounding negative perception attached to it as a cessation intervention: "...I don't believe in it. I don't think it works. It's like, yeah, it's like doing acupuncture on you, it helps for three days and then you're back to wanting to smoke again" (M3).

*Self help manuals.* Almost all participants believed self help manuals are not a helpful cessation tool. Opinions ranged from: it is a means through which one can pretend to be serious about quitting, it's a money making scheme and that the manuals are written by non smokers who don't know firsthand what it's like to abstain from smoking:

...(it's) the kind of think that somebody is like 'right I'm going to quit smoking, I'm going to go to Eason's and I'm going to buy a book' and then the book sits there collecting dust under their ashtray forever..." (M2).

It's important to note all participants considered self help manuals to be the books one would get in the pop psychology self help section in a book shop, not the cessation material obtained through doctors or telephone services. At most shelf help manuals were believed to be an information collecting starting point for cessation.

*Alternative methods.* Participants discussed their efficacy perceptions of both acupuncture and hypnosis. In both cases efficacy perceptions tended to be considerably more negative than positive. Acupuncture was perceived as an ineffective intervention with some remaining sceptical regarding its use for any application or circumstance. Of the six participants one had tried acupuncture and found it completely ineffective: "I tried acupuncture and I was only 17... I walked out and the first thing I said was 'give us a cigarette'" (F2).

Hypnosis was met with similar scepticism, questionable efficacy and a general perception of inconsistent effects: "... it's like that one wonder story that everyone like one person that they'd know they did it and that it worked and then everyone else tries it and it just doesn't so" (M1). The one participant who dissented from this negative perception based her belief on anecdotal evidence from her immediate social network: "My mam's friend quit with that Alan Carr thing. And she hasn't smoked since. Like 3 years. So that might actually be good" (F1).

*Suggestions.* Participants also made suggestions for future intervention improvements they believed would aid and support cessation. This included improving awareness and accessibility of interventions, matching interventions to individual characteristics, providing 'test-runs' of interventions, a coupon system, smoker community support groups and a more advanced TCP.

Most participants were unfamiliar with at least one of the cessation interventions included in the card sorting task. Some participants believed a greater effort should be made to increase awareness, accessibility and affordability of cessation aids and services:

I think, like there should be... big leaflets on where to go... I think it needs to be more like public to everybody. And everybody can access it, like you don't have to like pay 3million euro just to go talk to someone about it. (F1).

Participants believed advancing the TCP by increasing the legal age, banning smoking in the homestead, developing designated smoking areas (instead of having areas where you can't smoke have specific areas where you can smoke), ban cigarettes entirely and increasing the cost significantly would reduce smoking prevalence rates. Participants were aware there are problems and barriers associated with the implementation with the majority of these suggestions but believed in an ideal world these actions would have the desired effect of reducing smoking in society.

Although most participants did not make use of formal support groups, half believed developing informal smoker community networks would aid cessation. This included suggestions similar to the format of existing support groups as well as the development of activity groups i.e. groups actively engaging in social experiences such as hiking, mountain biking or going bowling.

One participant highlighted interventions should be tailored to an individuals' characteristics and their motives for smoking. He was aware there are shortcomings associated with this suggestion as it is not cost effective and would be difficult to roll out at society level. Nevertheless, he proposed developing questionnaires which can identify similar smoker profiles which can be matched with intervention programmes which have shown to be effective for that subgroup:

I feel like a programme should be tailor made like. 'cause not everyone is reasoning and someone might be smoking for different reasons and at different times. And have different bodies and stuff like. So I'd feel like trying to make a programme for everyone that smokes is not the right idea whatsoever....

... Individual programmes - and obviously that's difficult to do, but even if you setup a survey you could match peoples interests and how many and how often they had one just into groups then. I feel like that would be a better way.(M1).

Another novel suggestion was the development of a coupon system to regulate access and distribution of cigarettes. MR3 believed this method would limit the potential uptake of cigarettes and increase the levels of effort a person must engage in in order to gain access to cigarettes:

...cigarettes must go on a, like a, voucher system that you have got to go and buy docketts to be able to buy cigarettes or tobacco... (and) you have to go to a certain government institution or something to buy your coupons to buy cigarettes...a lot of people will stop, because having access to those points where you got to buy your coupons and... you'll have full control from keeping kids from starting to smoke... (M3).

## Discussion

This study reveals motivations for smoking uptake; maintenance of smoking behaviour; motivation and commitment to cessation; and intervention perceptions and suggestions.

Findings relating to smoking initiation and maintenance, and motivation and commitment to cessation were for the most part supportive of previous research. For example, findings from the current study suggest smoking uptake is influenced by parental modelling and peer acceptance (de Vries et al., 2003; Tjora et al., 2011) and that motives such as increased focus and alertness, stress relief, enjoyment, facilitation of socialisation as well as avoidance of withdrawal effects such as coughing/phlegm, feeling faint and loss of focus maintain smoker status and increase the difficulty of cessation (Hughes et al., 1991; Hughes, 1992; Fidler & West, 2009). Again in line with previous research (e.g. Buczkowski, Marcinowicz, Czachowski & Piszczek, 2014, cost, negative health effects (fatigue, shortness of breath, sluggishness and coughing) and unappealing hygiene/cosmetic factors (smell, taste, yellow fingers) were identified as factors encouraging cessation, with positive social influences such as positive peer pressure, health influences/norms and positive support network also playing a part in encouraging and maintaining cessation efforts.

Key findings of this study concern the practical intervention features and individual differences which appear to in some way influence intervention efficacy perceptions. Considering efficacy perceptions influence endorsement of, or engagement with any intervention, knowing what factors potentially contribute to personal perceptions and beliefs are of paramount importance in the revaluation and development of cessation interventions. Consistency and transparency of evidence, the source of intervention advice/information (former smoker vs. non smoker), the availability of real person examples, perceived effort level required, perceived distance of the intervention, personal characteristics, as well as

subjective interests and preferences appeared to play a role in how participants perceived intervention efficacies. Interventions were perceived as less effective when they were believed to be distant (Quitline), resulting in inconsistent effects (hypnosis, acupuncture, therapies), required too much effort (exercise) or lacked transparent evidence (NR). Advice and support from healthcare professionals and self help manual writers were less likely to be viewed as effective due to the belief that they may not actually know what it's like to be a smoker while, real person intervention success stories appeared to positively affect intervention efficacy perceptions e.g. although a participant disagreed with NR use, they believed it still might be effective as friends have used it and it has helped them to quit. This would suggest, without considering the individual differences which may affect efficacy perceptions, interventions should be immediate, have a clear and consistent real person evidence base, should not require a high level of effort on the part of the smoker and that cessation advice should come from former smokers who have experienced cessation (credible source).

Efficacy perceptions also require a level of familiarity with the cessation interventions. In the current study, a high level of unfamiliarity was associated with the use of prescribed medications and therapies to promote cessation. In a similar line, not knowing how an intervention might work (e.g. rationale of exercise as a cessation aid) or a misunderstanding of what an intervention entails (e.g. self help manuals as pop psychology self help books) limits possible positive perceptions. These findings fall in line with previous research which suggested smokers are either unaware of or sceptical about cessation methods/interventions (Hammond et al., 2004) which ultimately boils to shortcomings in the process of dissemination of research and communication service availability. It is fair to assume that interventions can't be used if smokers aren't aware of them, also, interventions might not be used if scepticism surrounds their efficacy.

From this it could be argued that focus should not necessarily be in the continual generation of new interventions through research but to focus on identifying how people interact with available interventions. This would require greater attempts to increasing public understanding of what interventions/services are available, how they work, how to access these interventions (i.e. where to go, who to see). In addition to increasing awareness of intervention availability and how to gain access services, findings from this study suggests associated cost of these services/interventions limits potential uptake due to fear of committing to something which might not work. It is worth while considering giving smokers the opportunity to 'sample' interventions before formally committing to them in addition to the reduction of associated costs.

Individual differences such as subjective preferences and interests, characteristics, smoker profile and personal background also appeared to influence intervention efficacy perceptions. For example, exercise was perceived as completely ineffective by participants who dislike exercise and NR was perceived as useful for individuals with high nicotine dependence. Most smoking cessation services and interventions are traditionally matched to the stage of change an individual is presumed to occupy (Prochaska & DiClemente, 1982; DiClemente et al., 1991). However, there may be merit in matching interventions to individual characteristics or profiles instead of theoretical stages of change.

This proposal stems from a reported belief that cessation is a subjective experience with intrapersonal factors influencing engagement with and perception of interventions to some degree. Although tailor made interventions may not be cost effective and difficult to roll out at a societal level, the suggestion was made that questionnaires can be used to identify and categorise smokers into similar profile/character groups and that each profile group should be matched to specific evidence based intervention programmes. That is, research needs to investigate how differing profiles/characteristic groups interact with

individual and clustered interventions to determine what combinations work best for the specific profile groups. Adapting and designing interventions in such a way does not disregard the importance of readiness and commitment to change, rather it proposes refocusing the intervention approach to the individual rather than exclusively focussing on theoretical cessation stage.

Participants described cessation as a process which occurs over time. Movement from smoker to former smoker status was reported as a slow, arduous process which appeared to start as a decision, followed by an attempt to quit which progresses towards total abstinence and occurs in conjunction with the reduction of withdrawal effects and preoccupation with smoking over time. Willpower, commitment and motivation are internal states, characteristics and driving forces believed, by smokers, to play an integral role in cessation especially when unassisted by formal services and interventions (Smith, Carter, Dunlop, Freeman & Chapman, 2015). From the current study, willpower was believed to be the force behind successful cessation and was referred to either directly or through concepts such as self control, determination, mindset, wanting, seriousness and having energy/stamina to commit to the cessation decision. Successful cessation can thus be conceptualised as something that comes from within the individual which may then be supported and enhanced by interventions.

Self quit methods which appear to be effective in movement towards cessation include declaration of cessation, setting a quit date, keeping a 'money-jar', weaning, quitting with someone else, distraction through alternative behaviours and not denying the choice of having a cigarette. All of these self quit methods which are believed to positively support cessation have a basis in psychology. Distraction by alternative behaviours (associative learning i.e. nicotine craving - chew gum, complete Sudoku, have a glass of water, exercise), keeping a 'money-jar' (subsequent purchase reinforces the desired abstinence from smoking)

and weaning (gradual extinction contingency) can all be considered to be behavioural strategies linked to reinforcements and extinction.

Setting a date and declaration of cessation are arguably related to implementation intentions (Gollwitzer, 1993). Implementation intentions are used to increase motivation, can be intensified with willpower and have been proposed to be an effective way to decrease the intention-behaviour gap by which the individual makes a commitment to a specific plan of action (what, when, where, how) when certain conditions are met, for example:

Pick a day in the future; say this is the day and try even to start a few days before. But let that- say the 13<sup>th</sup> of October is your day and on the tenth or eleventh say you'll try today and go with that. (F2).

Previous research has suggested explicitly stating one's identity-related intention to behave in a certain way to others (I am not going to smoke anymore, I don't want to be a smoker) is associated with a reduced likelihood of engaging in that behaviour as the potential premature identification with the self-goal makes the intention to act weaker (identify with non-smoker status) (Gollwitzer Sheeran, Michalski & Seifert, 2009). However, it appears declaration of cessation still retains some potential to assist commitment to cessation as it smokers may not want to be viewed as inconsistent or going back on their word (social desirability).

Denying the choice of having a cigarette places cigarettes may prompt perceptions of scarcity and desirability. Two participants in the current study believed keeping reserve cigarettes made it easier for them to abstain from smoking. Myrseth, Fishbach and Trope (2009) refer to this as counteractive self-control, that is, when the goal is to give up smoking, having cigarettes freely available (tempting stimulus) counteractive processes will make the cigarettes less attractive and the goal of quitting more attractive. Although this might explain

why keeping reserve cigarettes works for some, not all experienced this sense of resolve or comfort in the presence of temptations e.g. other smokers offering cigarettes when they know the individual has ceased smoking.

While on the topic of methods used to assist cessation, it is important to note that former smokers report a variety of combined cessation supports/interventions ultimately leads to cessation. That is, successful cessation occurs due a combination of events, methods, decisions, behavioural alterations, cognitions supports and derived from a variety of sources. For example, from this study participant F2's successful abstinence across two cessations included combinations of social support, motivation, money jar, NR – e-cigarette and patches, distraction through completion of Sudoku's, quit date, doctor support and pharmacy support. This would indicate multi-component cessation interventions, which have been used in formal cessation programmes, can maximise the potential for successful cessation (e.g. Cantera et al., 2015)

Efficacy perceptions for the ten proposed interventions ranged from effective, potentially effective and ineffective. A major focus of intervention discussion related to the relevance and efficacy of the TCP. Out of all the interventions TCP appeared to be the most familiar cessation intervention which can potentially be attributed to the well established nature of Governmental policies and procedures and it's direct influence on the behaviour and lives of smokers i.e. cost, bans and advertisements all have an effect on an individual level. Although the TCP in Ireland is one of the most comprehensive governmental cessation initiatives (Jossens & Raw, 2014) some shortcomings were highlighted in the current study.

As much as the regulations imposed by the TCP hinder smoking, there are many ways around its barriers. For example, using rolling tobacco as a cheaper alternative; purchasing cigarettes which were smuggled in from countries with lower cigarette taxation; the

availability of boxes of 23 cigarettes which is more cost effective when considering the cost per cigarette; or the development of ‘basically inside’ sheltered smoking areas in pubs. It was believed this may be improved by increasing barriers and imposing higher control over cigarette availability and consumption. Suggested ways the TCP can be improved upon included the development of designated smoking instead of trying to specify places people can’t smoke or a restrictive couponing system. Even with these suggestions there are associated loopholes, e.g. smuggling cigarettes, others acting as facilitators and getting coupons/cigarettes on your behalf and inability to control smoking in homesteads. The suggestions of increasing taxes, reducing the cost of NR, implementation of the ban on smoking in cars with children and introduction of plain packaging have already been put in motion (Tobacco Policy Review Group, 2013). Important to note is that the tobacco industry, referred to as “ probably one of the most, actually, more profitable than gold in the world” (M3), plays a role in the maintenance of smoking in society by hindering the implementation of more advanced aspects of the TCP.

Former smokers held opposing views regarding the efficacy of NR. Some view NR as an effective cessation facilitator as it reduces craving and withdrawal which in turn reduces the energy required to abstain from smoking. In opposition, from a more sceptical stance, stems the belief that NR does not meet the criteria of cessation as it maintains nicotine dependence even though it may be useful in instances of high dependence and a better alternative to cigarette smoking. As was indicated in previous research (Dugas et al., 2016), reported negative experiences with NR, aversion to its smell and taste, anecdotal reports of it making others feel ill along with the belief NR maintains addiction all contribute to negative efficacy perceptions which might in turn limit consideration of it as a viable cessation aid.

The use of electronic cigarettes for cessation appears to be controversial even in former smoker circles. There appears to be those who actively endorse the use of e-cigarettes

for cessation while others believe it's merely the maintenance of nicotine dependence through an alternative format. As with the findings of Etter & Bullen (2011) and Wadsworth et al. (2016), e-cigarettes were believed to be a helpful cessation aid, cheaper than cigarette smoking, associated with less barriers of use and as having less negative health consequences. Interestingly, companies such as VIP, EZSmoker and purplebox do not market e-cigarettes as a cessation tool. In fact, all of these suppliers have disclaimers regarding the use of its products which highlight 'this is not a nicotine replacement therapy', 'don't use if you're not already a smoker' and 'this is not a cessation aid' (ezSmoke, n.d.; VIP, n.d.; purplebox, n.d.). E-cigarettes are marketed as a contemporary alternative to combustible tobacco smoking. Although e-cigarettes can be used as a cessation aid (Goniewicz et al., 2014), the possibility remains that the individual can remain using it for an extensive period of time, much the same as with cigarette smoking.

Advice from healthcare professionals was mostly viewed as positive guidance support system and an access point to cessation info/services. Although seeking help from a doctor was viewed as a proactive and effective cessation strategy, cessation conversations were referred to with a sense of trepidation as they are perceived as stressful, fear inducing and usually too generic, especially if the patient/smoker is not ready to quit. In a sense it appears doctors' reticence to engage in a cessation conversation based on their appraisal of the receptiveness of their patient and their desire to preserve an amicable doctor-patient relationships may not be unfounded (Coleman, Murphy & Cheater, 2000; Champassak et al., 2014). However, it may be that this negative perception and avoidance may be more question of approach than the actual conversation. It might be adaptive, sensitive to the individual, conversations might meet a more positive reaction than if the conversation is perceived as a fear appeal 'you must do this' generic reprimand. It was believed smokers would avoid going to see their doctor for health concerns due to a fear of the doctor attempting to prompt them

to quit. This has a couple negative repercussions, first there will be limited opportunity for a doctor to initiate any cessation conversation, secondly, they're not just avoiding the conversation but also seeking out treatment for other health concerns. Finding a way to promote a positive anticipated cessation conversation with a healthcare professional appears to be an important issue to target.

Although social support was believed to be an important cessation supporting factor, the use of formal support groups were perceived as something 'separate' which other people might need if they were struggling. Direct familial and peer support appeared to be enough of a support system in the current study. However, when suggestions for intervention development were put forward, variations of support groups were proposed. For example, establishing a community support group where smokers share ideas and advice which was more in line with traditional support groups versus a smoker social group with associated outings i.e. instead of sitting in a room talking about quitting smokers in cessation engage in social activities such as hiking or bowling. Not counting family or close peer support, support from other former smokers was proposed to be important source experience based advice, encouragement and guidance, which may lead to a sense of shared experience, friendship and act as a monitoring system of behaviour when tempted to smoke.

In the current study males reported higher perceived efficacy than females with regard to exercise. Although it might be plausible that divergence in beliefs could be attributed to sex differences, more research is required to establish this assumption as the two male interviewees who believed exercise was the most effective cessation intervention enjoyed exercise and actively engaged in sport i.e. it was relevant in their lives. Perceived lack of efficacy from females stemmed from a dislike of exercise and the high level of effort it requires. The question is whether the same pattern of beliefs would have emerged if the female participants in this study enjoyed exercise and sport. It could thus be the dislike of

exercise rather than sex differences which contribute to the differences in efficacy perception. Further research is required.

Most participants were unfamiliar with the use of prescribed medications and therapies for cessation. For prescribed medication a lack of awareness, dislike for medication and perception that it's still putting something in the body contributed to a negative efficacy perception. Although part of its potential efficacy was put down to associated side effects such as nausea it was proposed the prescribed medications' association with proactive help seeking with a healthcare professional might be the reason it could be effective. Therapies were met with a similar level of unfamiliarity which led to most stating a belief that therapies might be effective although some believed it is not effective at all which in part stemmed from a belief that therapies in general are not effective. Again, lack of awareness of interventions has major implications for perceived efficacy and potential endorsement.

Efficacy perceptions surrounding self help manuals were considerably negative in the current study. Self help manuals were viewed as a money making scheme, its use as a pretence for quitting and as written by non smokers who have no experience with cessation. Important to note is that when asked about self help manuals participants thought of the self help books which can be purchased in the pop psychology section of a book store. Although these books might have merit and contain information similar to that of formal cessation self help manuals, the fact that they're purchasable in bookstores in the pop psychology section might contribute to the negative perception associated with it ("It's like handbook for dummies", M3). Further research will be required to investigate perceptions of formal cessation self help manuals such as behaviour self quitting guides and motivational/quit tip guides (Orleans et al., 1991) although a review by Hartmann-Boyce, Lancaster and Stead (2014) propose the effect of self help printed materials is quite small.

Scepticism surrounding self help manuals was closely followed by scepticism surrounding the efficacy of hypnosis and acupuncture with both methods perceived as ineffective. Scepticism regarding their scientific basis appeared to be the main contributing factors to these perceptions.

### **Limitations**

Overall the study provides insights into the factors which potentially influence over all intervention efficacy perceptions. Specific efficacy perceptions were most comprehensive for TCP, NR and healthcare professional advice but less so for the other 7 interventions. The inclusion of 10 intervention evaluations in one study may have reduced the depth of analysis which could be engaged in due to both limited data collection and time restraints. Although the study provides insights into intervention perceptions among former Irish smokers, it may be that these insights are not as comprehensive as would be possible if each of the interventions were qualitatively evaluated in separate studies. As such, it may be more correct to propose the study provides a 'snap-shot' of some of the specific interventions' beliefs and perceptions with a focus more on broader intervention perceptions. Future evaluative research building on the current study's findings will benefit from individually investigating the ten interventions' efficacy perceptions in a sample of former Irish smokers.

The researcher is also a former Irish smoker and although efforts were made to objectively evaluate the data, the possibility remains that bias was introduced into the analysis without the awareness of the researcher. As such, the study would have benefitted from the inclusion of a second analyst in order to establish inter-rater agreement, which is not available for the study as it stands. Other potential sources of bias include sampling bias (sample of males and females from Dublin and within varying degrees of separation from the researcher) and recall bias as most participants had ceased smoking around 2 years prior to the interviews. Thus there was a notable gap between the time of the interviews and the

original cessation which might call into question the accuracy of participant recollections (i.e. potentially filling in memory gaps with preconceptions rather than experience based beliefs). The most comprehensive interview came from a participant who had ceased smoking 6 months prior to the interview and had more immediate cessation experience.

### **Conclusion and Recommendations**

Smoking cessation aids and services intend to promote cessation and maintain abstinence; however, efficacy perceptions can influence engagement with or endorsement of any of these services and aids. The study revealed smoking is maintained positive effects such as alertness, stress relief, enjoyment, the facilitation of socialisation, and avoidance of withdrawal effects. Cost, negative health consequences and cosmetic/hygiene factors are motivators to quit smoking. Positive social influences also playing a part in encouraging and maintaining cessation efforts.

Findings suggest intervention related characteristics such as consistency of effects, transparency of evidence, the source of intervention advice/information (former smoker vs. non smoker), the availability of real person examples, effort level required and perceived distance of the intervention play a role in perceived efficacy. Individual differences such as personal characteristics, interests and preferences also appeared to influence efficacy perceptions. This was reiterated by the belief that cessation is a subjective experience and every quit attempt is different even if the same person. Findings suggest successful cessation occurs due a combination of events, methods, decisions, behavioural alterations, cognitions supports and derived from a variety of sources. Possible intervention developments or improvements include: the development of adaptive/tailor made interventions, restricted access to cigarettes by means of advanced tobacco control e.g. coupon system, and informal community support networks.

Lack of intervention awareness and issues around accessibility of services need to be addressed. It's worthwhile to consider offering 'test-runs' of interventions or reducing cost of cessation aids as a means to promote the initiation of cessation.

### **Dissemination plan**

The current study is a preliminary evaluative piece identifying how interventions are perceived, the level of awareness of services available and gives some insight into intervention characteristics and influence likelihood of engagement or adoption formal or informal cessation interventions, services or aids. Dissemination of this research will be aimed at researchers and intervention developers as the research has implications for both the delivery of interventions and smoker engagement.

Dissemination will mainly occur through putting the paper forward for publication. Three possible journals to which the paper can be submitted include *BMC Public Health*, *Nicotine & Tobacco Research* and *Journal of Applied Psychology*. Out of the three journals the article will be submitted to the journal of *Nicotine & Tobacco Research* first as its focus is on nicotine and tobacco studies solely, accepts qualitative studies and publishes twelve times a year. Ideally the paper will be submission ready within the next six months.

The researcher also works for a corporate pharmaceutical retailer which stocks nicotine replacements and prescribed medications and also offers a short form intervention for smoking cessation. The findings of the current research can guide and inform development of this short intervention. Findings will be supplied to the company research centre in the form of a shortened report.

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## Appendices

### Appendix A

#### Opening

Before we start I would just like to ask you to read and fill out this consent form...

**(give participant consent form)... only start recording when consent form signed – copy for both participant and researcher**

**“I would just like to remind you that participation in the study is voluntary. You have the right to withdraw at any stage or to skip any questions you would not like to answer.”**

**“The recording of this interview will be transcribed and stored on a password protected computer, after which the recording will be destroyed.”**

**“The interview should take between 30-40minutes”**

During the interview I would like to discuss the following topics with you...

- decisions to quit
- experience of the smoking cessation process
- perceptions of cessation interventions/methods

Before we go into depth on these topics I would first like to ask you a few general questions..

**(Demographic questions)**

**(if respondent asks for more information)**

The objective of this study is to gain qualitative insight into

- Motivation for quitting
- The perceived barriers/facilitators to cessation
- Perceived benefits of quitting
- Awareness of cessation interventions
- Perceived efficacy of cessation interventions
- Possible improvements to cessation services/methods

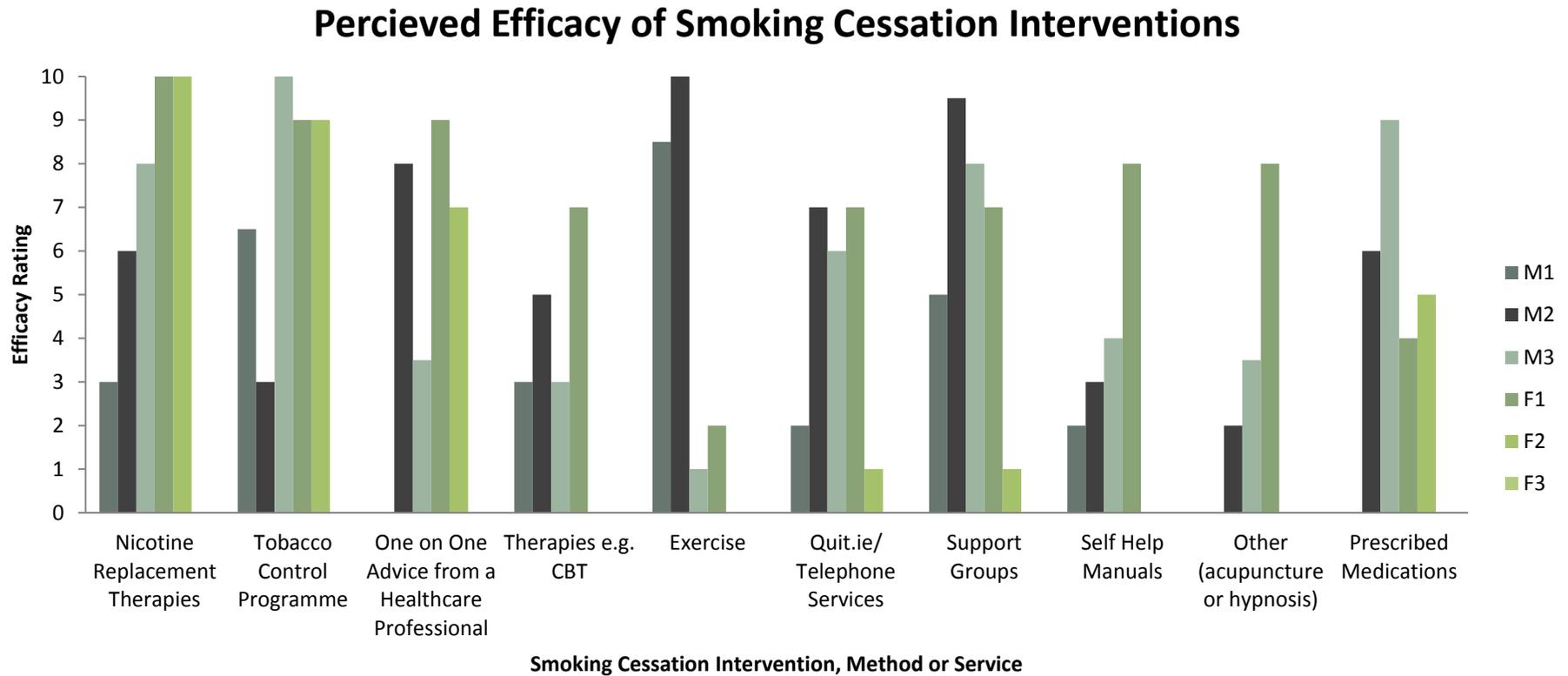
Domain	Topic	Probes / Additional questions	Clarifying questions
<i>Demographic</i>	<ul style="list-style-type: none"> <li>• What age are you?</li> <li>• When did you start smoking?</li> <li>• How long were you smoking for?</li> <li>• How long has it been since you quit?</li> <li>• When did you smoke most/least?</li> </ul>	Do you remember how you started?	
<i>Decision to Quit</i>	<ul style="list-style-type: none"> <li>• Were you thinking about quitting for long before you did?</li> <li>• Were there any specific reasons which influenced your decision to quit?</li> <li>• Did you actively look for information on how to quit?</li> <li>• Can you walk me through the behaviours you undertook to quit?</li> <li>• What do you think helped you most to quit smoking?</li> <li>• What was the most difficult part of quitting for you?</li> </ul>	<ul style="list-style-type: none"> <li>• Previous attempts?</li> <li>• Was it a spur of the moment decision or did you think about it for a long time?</li> <li>• Did you feel there were risks in continuing to smoke?</li> <li>• Or benefits in quitting?</li> <li>• Where?</li> <li>• What kind of information did you find?</li> <li>• How did you use this information?</li> <li>• How did you quit?</li> <li>• Seek out help?</li> <li>• Formal Services?</li> </ul>	<ul style="list-style-type: none"> <li>• Can you expand on this a little?</li> <li>• Can you tell me anything else?</li> <li>• Can you give me some examples?</li> </ul>

<p><i>Perceptions of available interventions /methods</i></p>	<p>(Card sorting task)</p> <p>→ Give participant 10 cards to sort in order of effectiveness</p> <p>cards include:</p> <ul style="list-style-type: none"> <li>• Nicotine Replacements</li> <li>• Prescribed medications</li> <li>• One-on-one advice from a healthcare professional</li> <li>• Support groups (internet/face to face)</li> <li>• Self help manuals</li> <li>• Quit.ie/telephone services</li> <li>• Exercise</li> <li>• Therapies e.g. CBT</li> <li>• Tobacco Control Programme</li> <li>• Other – Hypnosis, acupuncture</li> </ul> <p><b>"please indicate how you would rank the interventions in terms of effectiveness (1 ineffective - 10 completely effective)"</b></p> <p>1<sup>st</sup> – in relation to each other 2<sup>nd</sup> – how effective it is as an intervention in itself</p>	<ul style="list-style-type: none"> <li>• Can you walk me through your reasons for the rankings?</li> <li>• Were you aware of all these methods/ interventions available to help in the quitting process?</li> <li>• Did you use any of them? <ul style="list-style-type: none"> <li>• Why?</li> <li>• Why not?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Can you expand on this a little?</li> <li>• Can you tell me anything else?</li> <li>• Can you give me some examples?</li> </ul>
<p><i>Possible service improvements</i></p>	<ul style="list-style-type: none"> <li>• How do you think services can improve to help people quit?</li> <li>• If you were to develop programme to help people quit, what would it be/include?</li> <li>• If you were giving your best friend advice on how to quit, what would it be?</li> </ul>		<ul style="list-style-type: none"> <li>• Can you expand on this a little?</li> <li>• Can you tell me anything else?</li> <li>• Can you give me some examples?</li> </ul>

**Closing**

- Is there anything else you think is important in quitting smoking that we haven't talked about?
- Thank participant
- Answer any additional questions
- Give participant debrief sheet
- Provide participant with helpline information – Samaritans & Quitline

## Appendix B



*Figure 1:* Perceived Efficacy of Smoking Cessation Interventions, Methods and Services as Established by the Six Participants of the Current Study (1 = Ineffective, 10 = Most Effective; 0 = Complete Perceived Ineffectiveness)