Online Social Marketing:
Website Factors in Behavioural Change

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Parts of this thesis have been previously published while one portion is currently under peer review. Save for any express acknowledgements, references, and/or bibliographies cited in the work, I confirm that the intellectual content of the work is the result of my own efforts and of no other person.

Signature .....

Date .....

Abstract

A few scholars have argued that the Internet is a valuable channel for social marketing, and that practitioners need to rethink how they engage with target audiences online. However, there is little evidence that online social marketing interventions can significantly influence behaviours, while there are few evidence-based guidelines to aid online intervention design. This thesis assesses the efficacy of online interventions suitable for social marketing applications, presents a model to integrate behavioural change research, and examines psychological principles that may aid the design of online behavioural change interventions.

The primary research project used meta-analytical techniques to assess the impact of interventions targeting voluntary behaviours, and examined psychological design and adherence correlations. The study found that many online interventions demonstrated the capacity to help people achieve voluntary lifestyle changes. Compared to waitlist control conditions, the interventions demonstrated advantages, while compared to print materials they offered similar impacts, but with the advantages of lower costs and broader reach. A secondary research project surveyed users across an international public mobilization campaign and used structural equation modelling to assess the relationships between website credibility, active trust, and behavioural impacts. This study found that website credibility and active trust were factors in behavioural influence, while active trust mediated the effects of website credibility on behaviour.

The two research projects demonstrated that online interventions can influence an individual's offline behaviours. Effective interventions were primarily goal-orientated: they informed people about the consequences of their behaviour, encouraged them to set goals, offered skills-building support, and tracked their progress. People who received more exposure to interventions generally achieved greater behavioural outcomes. Many of these interventions could be incorporated into social marketing campaigns, and offer individually tailored support capable of scaling to massive public audiences. Communication theory was used to harmonize influence taxonomies and techniques; this proved to be an effective way to organize a diversity of persuasion, therapy, and behavioural change research. Additionally, website credibility and users' active trust could offer a way to mitigate the negative impacts of online risks and competition.

Publications from this Thesis

- Cugelman, B., Thelwall, M., & Dawes, P. (2009, under peer review) The Psychology of Online Behavioural Influence Interventions: a Meta-Analysis.

- Cugelman, B., Thelwall, M., & Dawes, P. (2009) Communication-Based Influence Components Model. Persuasive 2009. Claremont, ACM

- Cugelman, B., Thelwall, M., & Dawes, P. (2009) The Dimensions of Web Site Credibility and Their Relation to Active Trust and Behavioural Impact. Communications of the Association for Information Systems, 24, 455-472.

- Cugelman, B., Thelwall, M., & Dawes, P. (2008) Website Credibility, Active Trust and Behavioural Intent. In Oinas-Kukkonen, H. (Ed.) Persuasive 2008, LNCS 5033. Berlin, Heidelberg, Springer-Verlag.

- Cugelman, B. (2008) GCAP Websites Report. Johannesburg, South Africa, CIVICUS and Statistical Cybermetrics Research Group.

- Cugelman, B., Thelwall, M., & Dawes, P. (2007) Can Brotherhood be Sold Like Soap…Online? An Online Social Marketing and Advocacy Pilot Study Synopsis. Persuasive Technology. Stanford University, Springer.

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Glossary and Acronyms

Terms (acronyms)	Definition
Behavioural change technique (BCT)	Specific techniques that are theorized to influence behavioural determinants that are believed to influence behaviour.
Behavioural determinant	Psychological constructs believed to directly influence behaviour.
Communication-based Influence Components Model (CBICM)	A circular communication framework used to integrate influence systems, components, and packages.
High-involvement decision	Important decisions that consumers may invest considerable time thinking about.
Impersonal communication model (one-to-one)	An early one-way communication models that describes information flowing from a source to an audience.
Influence	Any approach aiming to change a person's psychological faculties (such as attitudes), behaviours, or both.
Influence component	Any particular technique or factor believed to influence a person's psychology or behaviour.
Influence package	Groups of influence components, such as those found in behavioural change theories and best practices.
Influence system	Any body of research that organizes multiple influence components believed to modify people's psychology and/or behaviour.
Interpersonal communication model (one-with-one)	A communication model that describes when two-way communication that takes place between two people who take turns as the source and audience, such as a discussion between two people.
Low-involvement decision	Unimportant decisions that consumers neither think about much nor consider important.
Macro-behaviours	The primary behaviour targeted by an online intervention.
Macrosuasion	The overall persuasive effect resulting from an influence attempts.
Mass-interpersonal communication model (one-with-many)	A communication model that describes when a single source engages in numerous two-way communication exchanges at the same time.
Mass-media communication model (one-to-many)	A communication model that describes one-way communication from a source to numerous audiences, traditionally through mass-media such as TV, radio, newspapers, and books.
Meta-analysis	A quantitative method for pooling effect sizes across studies.
Micro-behaviours	A routine behaviour that people perform online, and which is intended to lead to a macro-behaviour. Examples are clicking on links or signing-up for newsletters.
Microsuasion	Small persuasive tactics used to encourage the performance of minor online tasks, such as signing up for a newsletter or clicking on a hyperlink.
Online social marketing (OSM)	The online components of social marketing campaigns, whether they are conducted exclusively online or as part of a multi-channel intervention.
Return on Investment (ROI)	The ratio of money gained or lost relative to the amount of money invested.
Social Return on Investment (SROI)	The social value gained or lost relative to the amount of money invested.
Systematic review	A systematic and qualitative approach to amalgamating findings from a population of studies.
-to- (as in *one-to-one* or *one-to-many*)	A shorthand to describe one-way communication models where a source sends a message to one or many destinations.
-with- (as in *one-with-one* or *one-with-many*)	A shorthand to describe two-way communication models where a source enters an interactive exchange with another actor.

Statistical Symbol and Terms

Term	Definition
d	Standardized mean difference effect size. Also called Cohen's d.
r	Pearson's correlation coefficient
R^2	Coefficient of determination
CI	Confidence interval
k	Number of units (in the meta-analysis, this is the number of independent effect sizes)
df	Degrees of freedom
Q_b (p)	Between-group heterogeneity statistic and its p-value
Q_w (p)	Within-group heterogeneity statistic and its p-value
I^2	Percentage of variation in effect size due to due to heterogeneity rather than sampling error
N	Population size
n	Sample size
Effect size (ES)	In meta-analysis, the effect size is the outcome measure. There are numerous effect sizes
ANOVA	Analysis of variance
SEM	Structural equation modelling
Chi Squared (CHI)	Goodness of fit statistic
AVE	Average variance extracted

1. Introduction

> *"Getting a new idea adopted, even when it has obvious advantages, is difficult. Many innovations require a lengthy period of many years from the time when they become available to the time when they are widely adopted. Therefore, a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation."*
>
> Everett Rogers (2003)

Many factors are driving social marketers to conduct their work, at least in part, online. In some cases, online channels are displacing traditional media. With over 1.5 billion users worldwide, online channels offer affordable opportunities to reach large populations. Additionally, online campaigns can benefit from the persuasive features of interactive multi-media systems. A small number of researchers have called on social marketers to engage citizens though new media, but have also cautioned them to rethink their relationships with online audiences. Despite many advantages associated with online engagement, there is evidence that the social marketing field has neither fully realized the potential of online engagement nor developed the expertise required to carry out effective online social marketing campaigns**.**

When this investigation began in 2006, only a few publications addressed social marketing over the Internet. These few papers rarely discussed online opportunities. Instead, authors and practitioners focused on online threats and competition, such as successful pro-tobacco marketing or popular pro-anorexia websites. A few years later, case studies began to appear that highlighted online social marketing interventions. In general, these papers presented examples of how social marketers were using the Internet, but they did not present significant impact data, leaving readers unclear what these interventions had achieved. Given the current literature on online social marketing interventions, practitioners may reasonably ask: "What are the critical factors associated with successful online social marketing campaigns?"

To address these research limits and practitioner needs, this thesis presents two research questions, one regarding online intervention efficacy and the other, design. The literature review examines social marketing, online intervention efficacy, and intervention design. Two research projects are then presented: The first addresses

website credibility and trust; the second, online intervention efficacy and psychological design. Finally, the findings are discussed in light of contributions to theory, practice, and social marketing thinking. The conclusions highlight the thesis' primary implications and present a vision for the future of online social marketing.

Research Objectives

This thesis has two aims. The first is to assess the efficacy of online social marketing interventions. Second, to identify factors associated with successful online interventions.

Research has demonstrated that social marketing can influence citizens' behaviours. However, it is unclear whether social marketing approaches can operate in digitally mediated environments. As the primary goal of social marketing is behavioural change, it is important to know if online social marketing can influence behaviours, and if so, to what extent. Given a better understanding of online intervention efficacy, campaign planners will be better positioned to make informed decisions regarding social marketing campaigns that are conducted partially, or fully online. The first question asks:

Q1. Can online social marketing campaigns influence target audiences' behaviour?

Online, social marketers operate in a highly competitive environment. The Internet has provided opportunities for pro-smoking, pro-alcohol, and pro-anorexia websites to engage citizens and promote unhealthy lifestyles. In this highly competitive digital environment, the more social marketers understand online intervention success factors, the better their odds of outranking competition, engaging citizens, and promoting healthy lifestyles. In order to provide insight into online design factors that can increase the efficacy of online social marketing interventions, the second question asks:

Q2. What design factors are critical to online intervention success?

Scope

For the most part, literature from the social marketing field was not suitable to answer the questions in this thesis. Although social marketing researchers have begun discussing the importance of online interventions, their literature does not provided enough useful content to guide the development of online social marketing campaigns. In answering the two research questions, this investigation:

- Did not focus on marketing roots, but rather contemporary social marketing which has evolved into a transdisciplinary practice largely based on marketing principles;
- Focused on the persuasive technology research which examines how technology can influence users' attitudes and behaviours;
- Studied an advocacy campaign to research the relationships between website credibility, users' trust, and behavioural impacts in a non-profit context; and
- Drew from research papers, primarily on health behaviour-change websites, to assess their efficacy, psychological design, and users' adherence.

Thesis Structure

A conceptual map of this thesis is displayed in Figure 1-1. Solid boxes represent chapters, while dashed boxes represent conceptual groupings. The thesis is organized as follows:

- **Chapter 1 (introduction):** The introduction presents a broad overview, research objectives, scope, and structure of the thesis.
- **Chapters 2-4 (literature review):** The three literature review chapters introduce social marketing, then review research on the efficacy of online interventions, and finally discuss research on designing websites (and technology) to influence peoples' psychology and/or behaviour.
- **Chapter 5 (research questions and projects):** The research questions chapter reconsiders the conclusions of the literature review and assesses the evidence to answer the questions. The chapter outlines gaps in the literature and then proposes research to fill the gaps. It then provides a brief introduction to the subsequent research.
- **Chapters 6-9 (original research):** These four chapters present two original research projects.
    - Chapters 6-7 present the first research project. Chapter 6 describes the research project background and presents the two exploratory pilot studies. Chapter 7 presents the full website credibility study.
    - Chapters 8-9 present the second research project. Chapter 8 describes the *communication-based influence components model* (CBICM). Chapter 9 applies the model to a meta-analysis that analyses the psychological design of online interventions.
- **Chapter 10-11 (closing chapters):** The discussions chapter answers the two research questions with outcomes from the two research projects. It discusses

implications for theory, and implications both social marketing thinking and practice. It then assesses the study's generalizability and offers suggestions for follow-up research. Finally, the conclusions chapter summarizes the main findings, reviews research implications, and presents a vision for the future of online social marketing.

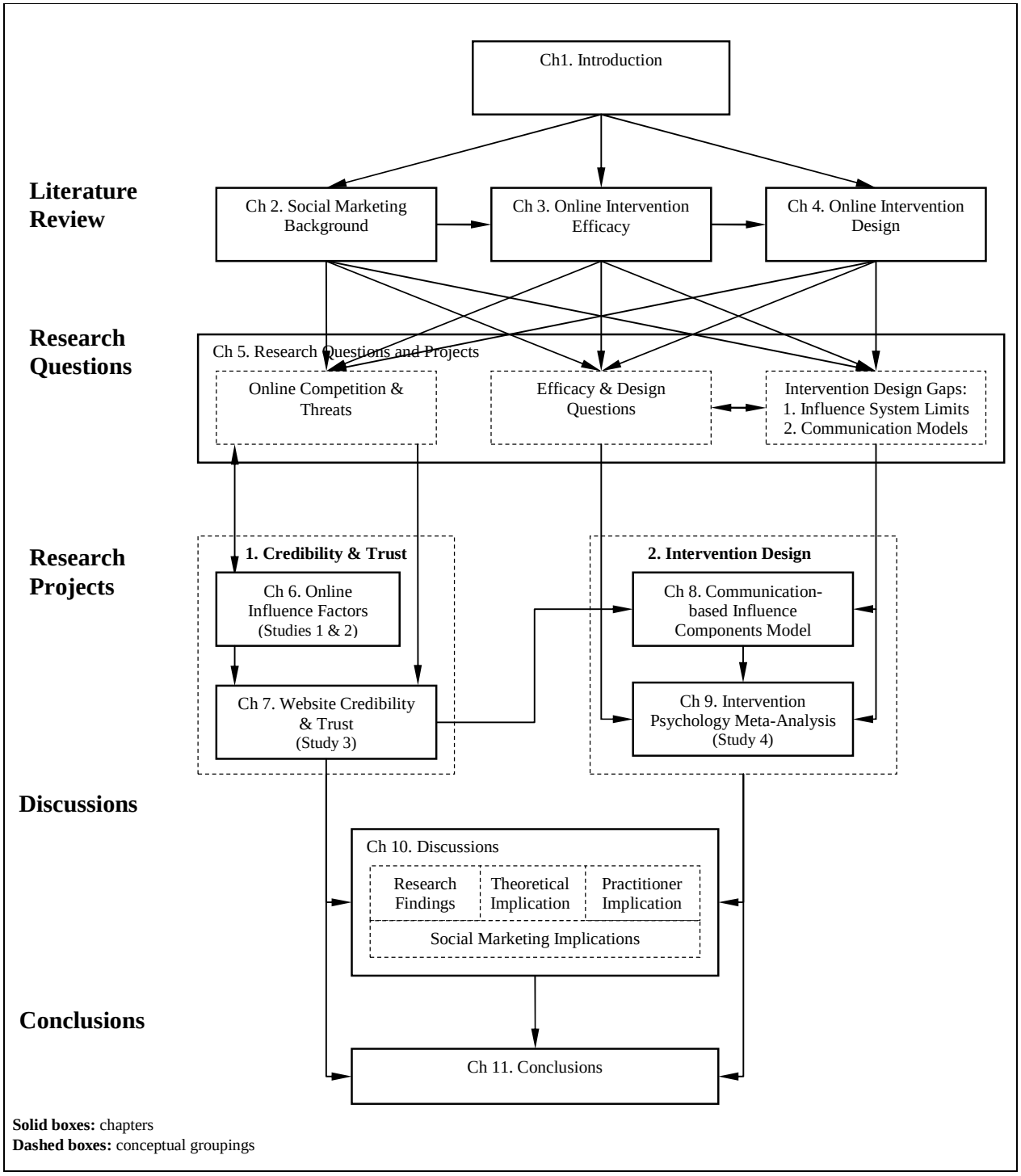


Figure 1-1: Thesis Structure

2. Social Marketing Background

"Societies are never perfect. Many are dramatically imperfect. Problems such as hunger, poverty, crime, and disease are found everywhere but especially in less developed parts of the world. (…) Societies are also constantly seeking change—seeking ways to overcome problems both grand and trivial and to make the lives of individuals and their environment significantly (or at least somewhat) better."

Alan Andreasen (2006)

Human behaviour is a key factor in personal wellbeing, the wellbeing of societies, and the wellbeing of our planet. In the case of smoking, this personal habit or addiction damages an individual's own health, and the health of others who are exposed to their second-hand smoke. In the case of carbon emissions, an individual's carbon footprint makes a small contribution to climate change, however, the collective carbon footprints of billions is contributing to what could be the greatest environmental threat to mankind.

The World Health Organization warns that tobacco use is one of the world's biggest public health threats, with over 1 billion smokers worldwide. Tobacco use kills 5.4 million people every year, and if unimpeded, by 2030, tobacco-related deaths will increase to over 8 million per year (WHO, 2009). However, tobacco related-deaths and illness can be prevented by individuals changing their behaviours. As an addictive drug, anti-tobacco interventions may require a combination of legislation alongside social marketing to influence individuals' smoking habits and wellbeing.

The Intergovernmental Panel on Climate Change has warned that, "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level" (IPCC, 2007). This global travesty is rooted in human behaviour. Some of these behaviours lay in practices of industry and the energy sector. However, vast quantities of greenhouse gas emissions are rooted in the lifestyle habits of citizens from industrialized nations. By changing lifestyle habits, individuals can reduce their carbon footprint, and thus reduce their contribution to global climate change.

As the paths into these problems are rooted in human behaviour, the paths out of them also lie in human behaviour. Social marketing offers an effective way to encourage individuals to change from unsustainable behaviours to sustainable behaviours.

This chapter provides an overview of social marketing, examines when it offers a viable approach to behavioural change, and discusses its application online. First, it provides background and reviews various ways to define the practice. Second, it discusses social marketing's primary goal, which is behavioural change, and examines evidence that the practice can achieve this end. Third, agenda-setting theory is used to describe how problems emerge to the point where societies may implement social marketing campaigns. Next, as an applied field, social marketing planning and research are discussed. Following this, the chapter looks at social marketing's theoretical roots and a brief historical account is presented. Finally, it discusses online social marketing.

2.1. Describing Social Marketing

To provide a description of social marketing, this section presents a general overview. It then reviews common definitions and benchmarking criteria, and contrasts social marketing against other behavioural change practices.

Social marketing is an approach to individual and social change that draws on concepts and techniques from commercial marketing. While commercial marketers encourage consumers to exchange money for products or services, social marketers encourage individuals to exchange unhealthy lifestyles for healthy ones (Kotler & Roberto, 1989). By applying commercial marketing principles, and other behavioural change theories, social marketers design campaigns that engage citizens in activities that promote public health, environmental protection, safety, and social development (Kotler et al., 2002). Social marketers target behavioural change through research, robust planning, message testing, media outreach, and the application of monitoring and evaluation to ensure campaign success.

For social marketers, public awareness and attitude change are not as important as behavioural impacts, which have been deemed social marketing's ultimate "bottom line" (Andreasen, 2002). Examples of social marketing campaigns include encouraging people to practice safe sex, bike to work, improve their diet, recycle, volunteer in their community, or stop smoking. Although social marketing campaigns aim to influence

societies, the campaigns target societal-level change through interventions aimed at individuals. Seeking to achieve large-scale behavioural change, social marketing campaigns are frequently tailored to specific populations that share common characteristics, and who are likely to adopt new behaviours through the use of incentives and removal of barriers (McKenzie-Mohr & Smith, 1999).

Social marketing is not a single theory; rather, it is a marketing approach that draws together knowledge from fields such as psychology, sociology, anthropology, and communications to influence behaviours (Gordon, et al., 2006). Although the practice draws together a wide range of theories, at its core, social marketing is the application of commercial marketing principles to social issues. This principle is summed up by G. D. Wiebe's (1951) question, "Why can't you sell brotherhood and rational thinking like you sell soap?" Perhaps the most popular framework used by social marketers is the 4Ps marketing mix (product, price, place, and promotion). The *product* they sell is healthy behaviour; the *price* required is time and energy; the *place* is where alternative behaviours are advocated or practiced; and *promotion* represents outreach to target audiences.

The previous paragraphs have offered a general description of social marketing. However, describing social marketing in precise terms can be challenging, as there are many definitions and criteria. While the field has evolved, researchers and practitioners have changed their views on what social marketing is, rendering any definition a moving target. Further complications come from laypersons who sometimes mislabel similar practices as social marketing, even though social marketers would likely protest. For instance, in the first decade of social marketing, the practice was constantly confused with social advertising (Fox & Kotler, 1980). To describe what constitutes social marketing, this section presents three perspectives: common definitions, benchmarking criteria, and comparisons with other behavioural change practices.

Definitions

There are many definitions of social marketing. Four popular definitions include:

> "Social marketing is the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research." (Kotler & Zaltman, 1971)

> "Social marketing is the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of their society." (Andreasen, 1995)

> "Social marketing is the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify, or abandon a behaviour for the benefit of individuals, groups, or society as a whole." (Kotler, et al., 2002)

> "Social marketing is the systematic application of marketing alongside other concepts and techniques to achieve specific behavioural goals, for social or public good." (National Social Marketing Centre, 2006)

These four definitions reflect some of the core principles and major changes that have transpired during the field's short history. Common among definitions, social marketing is rooted in commercial marketing. However, Kotler and Zaltman's (1971) definition did not include behavioural change, but by 2002, Kotler, Roberto, and Lee had introduced behavioural change as a core element and had described numerous ways behaviour could be changed. This shift was probably influenced by Andreasen's (1995) definition, which was considered to have helped the field better define itself by introducing social marketing's niche: changing behaviour. Then in 2006, the UK's National Social Marketing Centre defined social marketing by these two core elements: marketing and behaviour change. However, the phrase "other concepts and techniques" adds a new element, reflecting the practice of integrating thinking beyond commercial marketing into social marketing campaigns.

Criteria

A second way to define social marketing is to examine different criteria. There are frequent debates about what constitutes a social marketing campaign or who constitutes a social marketer. To resolve these issues, researchers have put forward a variety of criteria, which have changed over time. For example, Andreasen (2002) proposed that anyone who systematically employed his six criteria could legitimately claim to be following the social marketing approach (Andreasen, 2002). The six criteria are:

1. Behaviour-change is the benchmark used to design and evaluate interventions.
2. Projects consistently use audience research to (a) understand target audiences at the outset of interventions, (b) routinely pre-test interventions elements before they are implemented, and (c) monitor interventions as they are rolled out.
3. There is careful segmentation of target audiences to ensure maximum efficiency and effectiveness in the use of scarce resources.
4. The central element of any influence strategy is creating attractive and motivational exchanges with target audiences.
5. The strategy attempts to use all 4Ps of the traditional marketing mix.
6. Careful attention is paid to the competition faced by the desired behaviour.

Recognizing that many interventions include elements of social marketing, but do not claim to be social marketing interventions, researchers from the Institute for Social Marketing simplified Andreasen's (2002) criteria, and used them to conduct an audit of social marketing research. The researchers found it difficult to assess publications based on these criteria. Out of 200 articles, 27 met the social marketing criteria, though only four were labelled social marketing (McDermott, et al., 2005). The criteria are as follows:

1. Behaviour change,
2. Audience research,
3. Segmentation,
4. Exchange,
5. Marketing mix, and
6. Competition.

A recent adoption of Andreasen's (1995) criteria, from the UK's National Social Marketing Centre, has expanded the criteria to include a broader range of theories of influence (National Social Marketing Centre, 2007):

1. Customer orientation,
2. Behaviour and behavioural goals,
3. Theory-based and informed,
4. Insight-driven,
5. Exchange analysis,
6. Competition analysis,
7. Segmentation and targeting, and
8. Intervention and marketing mix.

Social Marketing versus Other Approaches

The third way to clarify what constitutes social marketing is to contrast the differences between three common approaches to behaviour change: education, marketing, and legislation (laws). These distinctions come from the work of Rothschild (1999). *Education* refers to messages intended to influence the target audience's behaviour, but which do not provide any direct rewards or punishment. Education can raise awareness, and describe benefits, but cannot deliver those benefits. *Marketing* refers to attempts to influence behaviour by offering reinforcing incentives and/or disincentives, within an environment where a voluntary exchange may occur. *Legislation* involves the use of coercion to influence behaviour in a non-voluntary way. However, it may also use financial incentives and/or disincentives to increase or decrease the likelihood of particular behaviours (Rothschild, 1999). Unlike education, marketing offers incentives and unlike legislation, marketing it is voluntary. Between the two, social marketing is based on influencing voluntary behaviour, often through incentives in the form of marketing offers targeted to particular social segments.

In consideration of the different definitions, benchmarking criteria, and contrasts between behavioural change approaches, a common definition is required. The 2006 definition from the UK's National Social Marketing Centre is adopted for this thesis. This definition highlights social marketing's marketing roots, leaves room for other practices, and defines behavioural goals that are targeted to influence social wellbeing. This definition appears to be a good reflection of contemporary practice, which is more eclectic and draws on a wide variety of theories and techniques.

2.2. Behavioural Influence

The types of behaviours social marketers seek to influence generally fit within the domains of health, safety, environmental protection, and community development (Kotler, et al., 2002). Social marketing aims to produce change at two levels: individual and population. By influencing the behaviours of individuals, social marketers work to influence sub-groups in order to achieve societal level change.

As an example of the types of behaviours targeted by social marketing campaigns, consider what the New Zealand Government asks its citizens to do: eat moderately, stub out cigarettes, apply sunscreen, have mammograms, teach children to read, immunize children, conserve water, understand mental health issues, use public transport, fasten ladders, be active, slow down cars, have safe sex, regulate alcohol intake, use recycling bins, save for retirement, prepare homes for earthquakes, install smoke alarms and conserve electricity (Varcoe, 2004).

When discussing behaviour change, note this one critical distinction. *Behaviour change* is regarded as a subcategory of a larger concept—*behavioural influence* (Andreasen, 1995). Social marketers do not always try to change behaviours. For example, campaigns that aim to prevent teens from starting to smoke are not about stopping smoking (changing), rather, they are about preventing change—not changing from a non-smoker to a smoker (Andreasen, 2006). This goal is similar to the maintenance stage in the transtheoretical approach (Prochaska, et al., 1995), which seeks to encourage maintaining a behaviour. Despite this distinction, social marketing literature frequently uses the term behavioural change, and as a result, the terms *behavioural change* and *influence* will be used interchangeably, though the term influence is more accurate.

Kotler, Roberto, and Lee (2002) proposed the following four types of behavioural influence: First, *accepting a new behaviour*, such as placing life vests on toddlers at the beach. Second, *rejecting a potential behaviour*, such as avoiding fertilizers with toxic chemicals. Third, *modifying a current behaviour*, such as drinking at least eight glasses of water per day. Fourth, *abandoning an old behaviour*, such as quitting smoking (Kotler, et al., 2002). Finally, there is a need to add *maintenance*, as many campaigns encourage audiences to resist change, as discussed previously, in the case of a campaign aiming to convince teens to continue not smoking.

When describing the types of behaviours targeted by social marketing campaigns, there is an important distinction between *low-involvement* and *high-involvement* purchase decisions. Low-involvement decisions are unimportant decisions that consumers neither think about nor consider important. Examples include selecting fast food or a movie. High-involvement decisions are important; consumers may invest considerable time thinking about the decision, consulting friends or conducting research. The types of behaviours social marketers target often require high-involvement decisions which are more difficult to influence than low-involvement decisions (Andreasen, 1995). Reflecting on links to the elaboration likelihood model (Petty & Cacioppo, 1986), Andreasen (1995) argued that low-involvement decisions are likely to be influenced by peripheral route processing, while high-involvement decisions are likely to be influenced by central route processing.

2.3. Efficacy and Effectiveness

Two reasons why many actors practice social marketing include the justifications that it works and that it is cost-effective. There have been many evaluations of social marketing interventions and a small number of systematic reviews. In one systematic review, the researchers criticized prior systematic reviews of social marketing for applying a loose definition of social marketing, and including interventions that may not qualify as social marketing. Thus, the researchers screened papers with an adaptation of Andreasen's (2002) social marketing criteria and identified 54 qualifying interventions.

The results showed that the majority of social marketing interventions had a positive impact across a range of issues: smoking prevention and cessation; alcohol prevention and harm minimisation; prevention of illicit drug use; psychological and physiological impacts of physical activity; and up-stream policy change. However, it was common for impacts to fade over time (Stead, et al., 2007). Another systematic review from the same research group also showed positive results across a range of behaviours, including nutrition, physical activity, and substance misuse (Gordon, et al., 2006).

To provide perspective on the efficacy of these interventions, data from Stead, Gordon, Angus, and McDermott (2007) were extracted and reprocessed. The results are presented in Figure 2-1. Only results from three behavioural categories were used: smoking prevention; alcohol prevention and harm minimization; and illicit drug

prevention. To explain this chart, consider the smoking studies. The review included 21 smoking prevention studies that reported outcomes for up to one year. Out of those 21 studies, 18 showed positive results, resulting in an 86 percent success ratio. For studies reporting results from one to two years, there were seven effective studies out of 11, resulting in a 64 percent success. Finally, for interventions lasting over two years, there were two positive interventions out of five, resulting in a 40 percent success ratio. Across the three behavioural domains, the chart demonstrates long-term trends, demonstrating the percentage of studies that have shown positive outcomes from social marketing interventions. Across all three behavioural groupings, the number of successful social marketing campaigns declined with time.

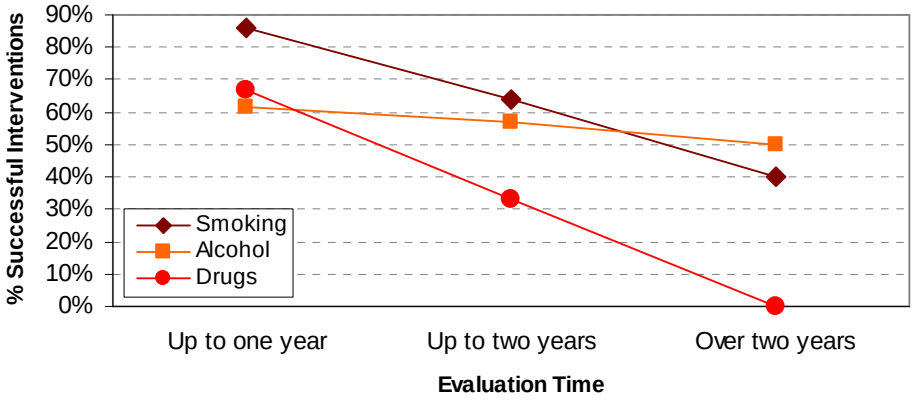


Figure 2-1: Social Marketing Efficacy by Time (data from Stead et al., 2007)

Although social marketing has been shown to work in various studies, this does not mean that it offers a cost-effective solution. It is one thing to know whether social marketing works, and another to know whether this approach offers a good return on investment, in terms of social outcomes.

One popular justification for social marketing is that it is more cost-effective to market healthy lifestyles, rather than treat health problems resulting from unhealthy lifestyles. Consequently, there have been a number of studies estimating how much money could be saved by marketing healthy lifestyles to citizens versus treating the medical consequences of their unhealthy lifestyles.

To assess the cost-effectiveness of social marketing, researchers have borrowed the concept of *return on investment* (ROI) and applied it to complex social situations. In the private sector, ROI is a key business indicator, statistically correlated with corporate stock returns, which also serves as a primary business performance indicator (Jacobson,

1987). Within organizations, ROI can be improved when marketers achieve greater efficiency and effectiveness (Kotler, 2003). Within e-marketing, ROI has been deemed to be a central measure (Peterson, 2005).

In the public sector, researchers describe the cost-effectiveness of social marketing campaigns in terms of *social return on investment* (SROI). This concept is much wider than ROI, as it includes numerous factors that benefit societies. One way to quantify the total SROI achieved by promoting healthy lifestyles is to measure the *quality adjusted life years* that society has saved because of marketing healthy lifestyles. Quality adjusted life years can translate into savings/benefits accrued to individuals and their families; public health expenditures; income to public services; income to employers; and the non-monetary price of values (Lister, et al., 2007).

The report "Cost effectiveness of interventions aimed at promoting health and reducing preventable illness" integrated international research on the cost savings resulting from preventative health interventions. Although there is no universal way to quantify SROI, the report integrated different cost estimates. For example, in the UK, researchers estimated that for every £1 spent on preventative health promotion, the state could save from £34 to over £200 in health spending. In the USA, researchers estimated that for each $1 invested in alcohol and substance abuse programmes, there is a reduced demand for health services that ranges in value from $2-20 over the lifetime of each participant. Moreover, in California, researchers concluded that for each $1 spent on anti-smoking programmes, the state avoids $3.62 in direct medical costs. Finally, researchers from Australia estimated that every $1 spent on anti-smoking programmes saves the state $2 in public expenditure (Lister, et al., 2007).

2.4. Roots of Social Marketing Problems

The majority of social marketing literature focuses on designing interventions for established social problems. However, many issues were not always regarded as problems; but only later came to be viewed as problems once they topped political agendas as high priority problems. Once an issue becomes an established problem, depending on its nature, social marketing may offer a viable solution.

Before a given social marketing intervention is justified, it needs to be seen as a solution to a social problem that is high on the social agenda (Andreasen, 2006). *Agenda-setting*

theory explains how issues raise public, media, and political agendas. This theory explains issue salience, the relative importance that actors place on an issue. It explains how issue salience rises and falls over time, and how different social segments influence each others' agendas (Soroka, 2002). Agenda-setting theory emerged from the finding that media agendas do not influence public opinion, but they do influence what people think and talk about. Given this, the agenda-setting role of news media is not their influence on public opinion, but their influence on the public's issue salience—what they consider as a worthwhile topic to hold an opinion about (McCombs, 2004).

Using an agenda-setting theory approach, Andreasen (2006) analysed how social problems climb social agendas to become established problems that require resolution. He proposed that issues are transformed into high-priority problems through eight stages:

1. **Inattention**: The problem exists, but has not yet become a widespread concern.
2. **Discovery**: the problem comes to citizens' attention and it may be examined in greater detail.
3. **Climbing the agenda**: Advocacy groups, politicians, and other actors raise the issue as a problem that needs to be addressed.
4. **Outlining the choices**: Actors debate how the problem may be addressed.
5. **Choosing courses of action**: Actors debate the costs (of action or inaction), victims and other relevant factors.
6. **Launching initial interventions**: Governments and organizations launch early pioneering efforts to address the problem.
7. **Reassessing and redirecting**: After interventions have been running for some time, actors assess interventions and adjust them.
8. **Success, failure, or neglect**: Outcomes occur after several years when solutions may or may not have been found for the problems, or when other issues have climbed up the agenda and shifted the initial problem to a lower priority.

Problems Suitable to Social Marketing Solutions

Social marketing is not suitable for all social problems. Consequently, the blind application of marketing principles to social issues without consideration of their suitability may result in ill-matched and potentially ineffective campaigns. Depending on the nature of a problem, there are cases where alternative behavioural change approaches may be more appropriate. Two frameworks offer a way to evaluate when social marketing may be suitable to a particular problem.

The first framework builds on the earlier distinctions between three influence approaches: education, marketing, and law. This framework presents a matrix composing three dimensions: audience members' *motivation*; external *opportunities* to act; and internal *ability* to act. The matrix contains eight situations where a social problem may be addressed by either social marketing, education, laws or any combination of the three approaches (Rothschild, 1999). For example, in the case of a social problem that people are motivated to address, have an opportunity to act upon, and are able to perform the behaviour, then all that is required is an educational intervention. In another case, citizens may be motivated, are not provided the opportunity to act, but have the internal ability. In this case, social marketing would be appropriate, as the intervention would compensate for the missing opportunity. Finally, a social problem where people are not motivated to act, but have the opportunity and ability, would be a case for legislation. This framework identifies when conditions are appropriate for social marketing versus other intervention approaches.

The second framework, building on the work of Rothschild (1999) and Andreasen (1995), proposes contexts when social marketing may be more or less appropriate. With this framework, the more a social problem resembles a commercial marketing opportunity, the greater the likelihood that social marketing may be a suitable approach to use. Conversely, the more a context resembles a non-marketing opportunity, the less likely social marketing would be appropriate (Peattie & Peattie, 2003). According to this framework, a situation resembles a marketing opportunity when:

1. **The intervention benefits the individual**; however, the situation becomes a non-marketing situation as the benefit extends out towards the family, community, and society.
2. **Benefits occur immediately**; however, the situation becomes a non-marketing situation as the benefits are delayed over longer time periods.
3. **Links between behaviour and benefits are obvious**; however, the situation becomes a non-marketing situation as the links become indirect or taken on trust.
4. **The issue is low sensitivity**; however, the situation becomes a non-marketing situation as the issue becomes more controversial.
5. **The degree of consensus is high**; however, the situation becomes a non-marketing situation as consensus depreciates.
6. **Customizability of the offering is high**; however, the situation becomes a non-marketing situation as the offer is not tailored to the customer.

2.5. Campaign Process (Research and Planning)

At its core, social marketing is an applied field. Although there is a strong academic community behind the social marketing field, the academic work exists to service real-world applications. Perhaps the central feature of applied social marketing is its campaign process, which is modelled on marketing planning frameworks and intertwined with extensive research. In order to discuss what social marketing is, one must appreciate how it is done. In this section, two critical dimensions of social marketing are discussed: the use of marketing research and the planning process.

Intervention Research

Research forms an essential part of social marketing, and occurs at each step in the intervention planning process. Often, these research phases are interconnected, as one campaign's final evaluation feeds into another's formative research (Roper, 1993). According to Andreasen (1995), the four types of research corresponded to the stages of the intervention design process. They are as follows:

1. **Formative research**: Pre-intervention analysis that provides insight into an issue and aids development of a campaign strategy.
2. **Pre-test research**: Conducted to test strategic thinking and intervention products before they are deployed. This normally includes pilot-testing campaign materials.
3. **Monitoring (during a campaign)**: Used to assess if the campaign is on track, so that corrective action can be taken should the campaign be off-target, or to fine-tune elements that work, but could be improved.
4. **Evaluation (after the intervention)**: Collecting insights on what worked or did not, in order to inform subsequent campaigns.

Intervention Planning Processes

An important part of social marketing practice is the intervention planning process, which is based on product marketing frameworks. As an applied field, social marketers build behavioural influence interventions by following the same steps that a commercial marketer would follow to develop a product campaign. There is no single correct planning process, but a multitude of competing frameworks. They range from simple four-step frameworks to detailed ten-step approaches. Some are full of sub-steps while others are broad and flexible. Some models may highlight particular elements that others have omitted, although in general, most design processes follow similar steps.

Table 2-1 presents a review of nine frameworks, and at the end, a generic framework is presented in order to demonstrate the common features.

Table 2-1: Social Marketing Planning Frameworks

Community-based social marketing (McKenzie-Mohr & Smith, 1999)
1. Identifying barriers and benefits
2. Designing strategies and interventions (based on behavioural change tools)
3. Pilot-testing
4. Implementing and evaluating

Total process planning model (National Social Marketing Centre, 2006)
1. Scope
2. Develop
3. Implement
4. Evaluate
5. Follow-up

Strategic marketing stages (Andreasen, 1995)
1. Listening
2. Planning
3. Structuring
4. Pre-testing
5. Implementing
6. Monitoring

The social marketing process (Andreasen, 2006)
1. Listening
2. Planning
3. Pre-testing
4. Implementing
5. Monitoring
6. Revising (Loop back to step 1 or 2)

The Six Phases of Social Marketing (Turning Point, 2008)
1. Describe the problem
2. Conduct the market research
3. Create the marketing strategy
4. Plan the intervention
5. Plan program monitoring and evaluation
6. Implement interventions and evaluation

Tools of change (Kassirer & McKenzie-Mohr, 1998)
1. Setting objectives
2. Developing partners
3. Getting informed
4. Targeting the audience
5. Choosing tools of change
6. Financing the program
7. Measuring achievements

Health Canada's Seven Steps to a Marketing Plan (Health Canada, 2005)
1. Defining the role of social marketing in a health promotion program
2. Audience analysis
3. Context for social marketing plan
4. Defining measurable objectives
5. Strategy and tactics
6. Monitoring and evaluation
7. Working out operational details

Strategic marketing planning process (Kotler, et al., 2002)
1. Analyse the environment
2. Select target audiences
3. Set objectives and goals
4. Deepen understanding of the target audiences and competition
5. Develop strategies
6. Develop a plan for evaluation and monitoring
7. Establish budgets and find funding sources
8. Complete an implementation plan and sustain behaviour

CDC framework for health communication (Roper, 1993)
1. Review background information
2. Set communication objectives
3. Analyse and segment target audiences
4. Identify message concepts and pre-test
5. Select communication channels
6. Create messages and materials and pre-test
7. Develop promotion plan
8. Implement communication strategies
9. Assess effect
10. Feedback (loop back to step 1)

Proposed generic framework

1. Pre-intervention rationale
   - Problem raises agendas
   - Rationale/justification
   - Goals and objectives
   - Determine if social marketing is appropriate to the problem
2. Intervention definition and formative research:
   - Objectives
   - Context
   - Institutional context and capacity
   - Partners
   - Competition
   - Audience (barriers and benefits)
3. Intervention design
   - Strategy
   - Intervention activities and products (including pre-testing and revision)
   - Monitoring and evaluation framework
   - Budgets and funding sources
4. Implement
   - Carry out the campaign
   - Monitor and adjust
5. Intervention closure
   - Evaluation
   - Follow-up activities
   - Sometimes, feed back into the project start

The generic social marketing framework presents a way to analyse the common stages. The generic model presents five stages and operates as follows:

1. **Pre-intervention rationale**: As discussed in the section on the roots of social marketing problems, issues raise social agendas before they are perceived as problems that require resolution. Once a problem is established, social marketing may be a suitable way to address it.
2. **Intervention definition and formative research**: Early formative research is undertaken to understand the situation and to start identifying intervention options. At this stage, audience segments will be identified, broad strategies and campaign solutions brainstormed, and by the end, there should be a number of viable options to consider.
3. **Intervention design**: Campaigns and intervention materials are planned, tested, refined, and finalized. Through market pre-testing, planners will determine the campaign's final shape and implementation plan.
4. **Implementation**: Interventions are implemented, monitored, and adjusted.
5. **Intervention closure**: After the intervention is complete, follow-up activities may include an evaluation and other tasks aimed at informing successive interventions.

Given the social marketing planning process and four types of research, campaigns often produce *targeted communications.* This term describes messages specifically tailored to a particular sub-population. In general, the formative research phase identifies sub-populations who are easy to move towards the target behaviour. Then the pre-test research phase is used to assess and refine particular communications, designed specifically for those sub-populations. Though social marketing is not frequently discussed as a means to achieve targeted communications, this outcome is important and will be discussed further in subsequent chapters.

2.6. Behavioural Change Principles

The theoretical basis for social marketing draws upon a number of practices and principles derived from commercial marketing. These include market segmentation, consumer research, product development and testing, direct communication, incentives, and exchange theory (Kotler & Roberto, 1989).

Although commercial marketing literature has moved beyond the *4Ps* (product, price, place, and promotion), these are still considered the key variables that social marketers can manipulate in order to increase or decrease demand for a given product or service (Kotler, et al., 2002). Within a social marketing context, the 4Ps take on a different meaning as compared to commercial marketing contexts. The *product* describes the behaviour that is being *sold*, or the offer designed to influence the target audience's behaviours. The product being sold could be an *idea* (comprising a belief, attitude, or value), a *practice* (comprising an act or behaviour) or a *tangible object* (Kotler & Roberto, 1989). Researchers and practitioners frequently hold different opinions over what constitutes the social marketing product (Peattie & Peattie, 2003). Perhaps to clarify the frequent confusion, researchers have divided the social marketing product into three distinct products. First, the *core product*, which describes the benefits audiences receive by performing the desired behaviour. Second, the *actual product*, which is the desired behaviour. Third, the *augmented product* that describes the tangible objects or services used to support behaviour change (Kotler, et al., 2002).

Price is more straightforward—it describes what the target audiences must give up in exchange for the product. In a commercial context, monetary costs are given up for a tangible object or service. Non-monetary costs include intangible costs associated with the time, effort and energy required to perform a behaviour; psychological risks and losses; and any physical discomfort associated with the behaviour. *Place* describes where and when target audiences perform the target behaviour or acquire any related tangible products or services. *Promotion* describes how the intervention message is expressed and distributed to the target audiences. This is where persuasive communications are employed: to highlight the product's benefits, pricing value, and convenient places (Kotler, et al., 2002).

Although many behavioural change theories appear within the social marketing literature, perhaps the most popular is *social exchange theory*, which is rooted in commercial marketing theory (Lefebvre, 2000). Social exchange theory takes a rational view of human behaviour. It argues that social exchanges occur between people and/or organizations who conduct transactions in order to maximize their rewards and minimize their costs. For example, a company may sell a product where money constitutes their reward, while the product's benefits comprise the customer's rewards (Bagozzi, 1974). Social exchange theory provides a model for influencing behaviour

through offering audiences beneficial exchanges. It may be the most important theory that social marketers borrow from commercial marketers. Social exchange theory underpins a number of frameworks used in social marketing: the 4Ps, BCOS factors, and tools of change. It also underpins relationship marketing.

Social exchange theory provides a theoretical explanation of why the 4Ps framework and BCOS factors work. Both *product/benefits* and *price/costs* comprise the social exchange theory components, where the product/benefits constitute the buyer's rewards and the price/costs constitute the costs that must be exchanged. Expressing a social exchange in the language of the 4Ps, a person is likely to partake in a behavioural exchange when the benefits of a product outweigh the price. In other words, social marketers can increase the target audience's probability of changing behaviour by increasing the product's benefits, while reducing associated costs. When the benefits outweigh the costs, action is more likely.

Relationship marketing defines customer loyalty as a form of repeat behaviour resulting from long-term beneficial exchanges (Ganesan, 1994). Relationship marketing is considered a paradigm shift away from thinking of markets in terms of competition, and towards seeing marketing as mutual interdependence and cooperation. Relationship capital has been defined as the knowledge, experience, and trust a company has with its customers, employees, suppliers, and distributors (Kotler, 2003). Researchers have argued that long-term customer relationships are founded on a commitment to the relationship and trust (Morgan & Hunt, 1994) or on a dependence relationship and trust (Ganesan, 1994). When examining relationship marketing and social exchange theory online, trust has been deemed the central concept for commercial relationships, with mistrust being designated the major impediment to e-commerce behaviour (Lou, 2002). Within a non-profit context, long-term relationships are based on trust and can be regarded as repeat user behaviour.

Although some have deemed exchange a core component of social marketing, others have criticized this as not fully applicable to numerous social circumstances. These criticisms date back to the first decade of social marketing, during the 1970s (Rothschild, 1979). In commercial marketing, payback form an exchange occurs in close relation to the buyer's behaviour. However, for public health or social issues, the

payback is often vague, uncertain, and may occur in the distant future (Rothschild, 1999).

An explanation for these criticisms is that social marketing's efficacy (through applying exchange theory) may be limited to contexts that share features in common with commercial marketing. Conversely, when a behaviour and context do not resemble marketing contexts, conceptualization of the 4Ps framework will be difficult, and this may explain some of the confusion over social marketing concepts. For instance, Andreasen (2002) cautioned that social marketing could be used in any context, although there are cases where it may not be the best approach. He made a distinction between *can* and *should*. He stressed that social marketing *can* be applied to any problem, but *should* only be applied to circumstances where the approach is suited. Peattie and Peattie (2003) offered criteria to assess when exchange-based interventions are suitable, or in other words, when a particular problem may resemble a marketing context. The framework is built on the premise that social marketing is more suitable to a problem that shares features in common with commercial marketing contexts. However, when problems diverge from commercial marketing contexts, social marketing may be inappropriate.

Additional Principles

In recent years, the list of theories associated with social marketing has expanded. There is much debate on the theories that comprise social marketing, and this debate demonstrates that the field is no longer regarded as the pure application of commercial marketing. Contemporary social marketing is an eclectic and evolving practice that also draws on a wide range of behavioural change theories and practices.

In practice, social marketing campaigns are rarely predicated on just the 4Ps marketing mix paradigm. They generally draw on a wide variety of behavioural influence theories. For example, the VERB Campaign, which aimed to motivate tweens (pre-teens) to be more physically active, drew on the following thinking: branding theory, message design theories, theory of planned behaviour, social cognitive theory, and information processing theory (Huhman, et al., 2004). As another example, one systematic review of social marketing interventions demonstrated the application of social influence theory, cognitive or social learning theory, the transtheoretical model, community organization and participation models, media advocacy, and risk-based models (Stead, et al., 2007). In 2000, one researcher claimed that social marketing campaigns drew from numerous

theories and models, but infrequently discussed this. Theories included the health belief model, social cognitive theory, the theory of reasoned action, the transtheoretical model, and diffusion of innovations (Lefebvre, 2000).

The wide blending of theories may explain why Peattie and Peattie (2003) described a debate among social marketers who argued whether or not social marketing had its own distinctive theoretical basis. They suggested that social marketing community might need to break its historical marketing roots and develop its own intellectual foundations. Such a proposal is controversial in the field. Some actors—Peattie and Peattie (2003) and the UK's National Social Marketing Centre—have promoted expanding social marketing theory. However, others—Kotler, Roberto, and Lee (2002) still promote the 4Ps as a comprehensive framework that can accommodate many factors considered important to campaign success.

This call to break with commercial marketing may be driven by social marketing's intellectual roots. Social marketing is not a theory in itself but an eclectic field predicated on marketing, which is also an eclectic field. It may also be influenced by the common practice of designing interventions that draw on a wide variety of theories and behavioural change models, sometimes without social marketing's central principle: exchange. This diversity is further complicated because there is little consensus on which theories are best suited to particular problems (Lefebvre, 2000).

Examples of additional social marketing frameworks include the BCOS factors: *benefits*, *costs*, *others*, and *self* (Andreasen, 2006). Within this framework, benefits drive a person towards action, while costs reduce their likelihood of action. Together, they comprise the exchange theory component. The two remaining factors include internal and external factors that may influence behaviour, and which can be found in social cognitive theory (Bandura, 1989) and the theory of planned behaviour (Ajzen, 1991).These include others that can motivate or demotivate target audiences, and self, self-assurance or self-efficacy, which describes a person's belief that they have the ability to carry out an action. Conceptually, the BCOS factors overlap with some of the 4Ps, with the benefits and costs equating to two of the 4Ps - product and price.

Like the BCOS factors, the *tools of change* approach combines exchange theory with a wide range of influence research, across numerous fields. The approach begins with

steps to identify benefits and barriers (products and price), then moves on to design interventions through selection of the tools of change, which include a wide variety of factors shown to influence behaviour across fields such as the social sciences, psychology, persuasion, and communication research (Kassirer & McKenzie-Mohr, 1998).

Additionally, researchers and practitioners frequently discuss individual factors that can affect intervention efficacy. For example, commercial marketers have understood the value of "cool" as a factor that can aid product sales to particular segments. Consequently, there is great scope for social marketers to factor cool into campaign planning. This way they can design interventions that speak the language of particular audience segments (Bird & Tapp, 2008). Likewise, branding has been considered an important element of commercial marketing that can be factored into social marketing campaigns to help influence target audiences (Wood, 2008). The VERB campaign considered branding theory to be a key theoretical framework underpinning their intervention (Huhman, et al., 2004).

2.7. History

This section reviews the major events in the history of social marketing and notes a few key Internet developments. The roots of social marketing date back to the 1950s, when one psychologist argued that the more non-profit organizations communicated like for-profit marketers, the better their prospects for success. As will be discussed, during the 1960s, practitioners in developing countries and marketing academics set the stage for the emerging field. Social marketing was formally launched in the 1970s; searched for an identity in the 1980s; and had found a unique niche by the 1990s. By 2000, social marketing was considered an established field; it now continues to grow and evolve.

As an indication of the field's growth, Figure 2-2 shows the annual number of academic journal articles on social marketing since 1971. The chart demonstrates a rapid increase in the number of journal articles describing social marketing, with an exceptionally sharp rise at the beginning of the millennium. The methodology employed to produce this chart is available in Appendix 13.1. In brief, quick assessment was made of social marketing terms used in PubMed from the years 1971 to 2008. This resulted in a time series of 1,747 articles. After assessing titles and abstracts, 89% were assessed possibly to be about social marketing while 11% were evaluated to be irrelevant or non-

assessable. These results were assessed within a +/-10% margin of error at a 95% confidence level (Neuendorf, 2005).

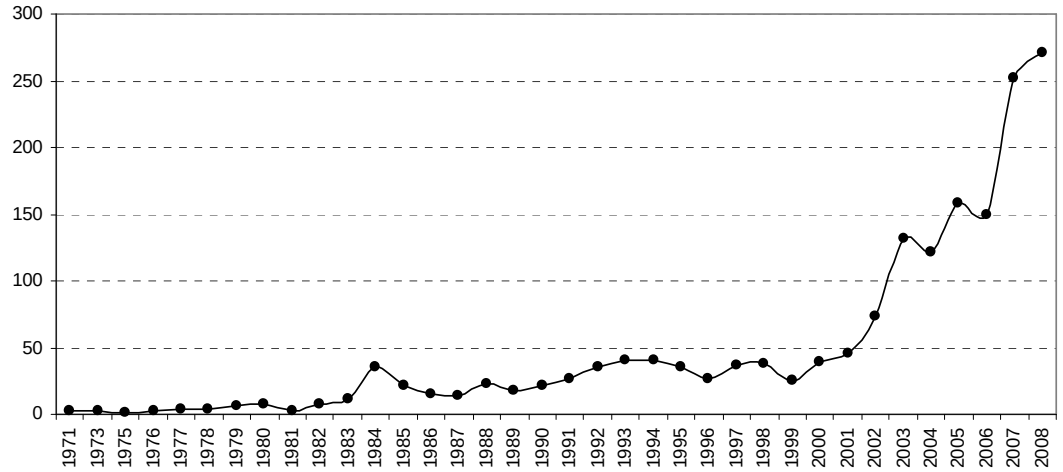


Figure 2-2: Social Marketing Journal Publications (1971-2008)

1950s

As previously mentioned, the roots of social marketing are attributed to the G. D. Wiebe who asked the question, "Why can't you sell brotherhood and rational thinking like you sell soap?" (Wiebe, 1951). He proposed that marketing could be used to solve social problems and that the more non-profit campaigns resembled commercial marketing campaigns, the better their prospects for success. Twenty years later, Wiebe's early thinking on the application of commercial marketing to social issues was prominently featured in Kotler and Zaltman's 1971 article that formally launched the social marketing field.

1960s

Though social marketing was not yet a formal concept in the 1960s, international development programmes and academic debates set the stage for the birth of the field one decade later. During this decade, international development agencies conducted family planning activities in developing countries through the distribution of contraceptive products, where marketing principles played a role in their dissemination (Andreasen, 2006). Similarly, commercial marketing was applied to health education campaigns, with some campaigns employing audience segmentation and customer-orientated approaches (MacFadyen, et al., 1999).

Social advertising, a common mass-media approach to social change, had been employed during this decade. Lacking marketing concepts, such as segmentation and

exchange, social advertising was considered a precursor to social marketing (Fox & Kotler, 1980). The success of these activities caught the attention of academics who were debating broadening the application of marketing to other fields (Andreasen, 2006). The practitioner successes and academic debates in the marketing community led to the development of social marketing.

During this decade, the cold war triggered the USA military to research decentralized communication networks that could operate in the face of possible nuclear attacks. This security concern prompted research and development that would eventually lead to the Internet (Ruthfield, 1995).

1970s

In 1971, the term social marketing was coined in the field's seminal article, "Social marketing: an approach to planned social change" (Kotler & Zaltman, 1971). The publication outlined how marketing practices could be used to address social issues. It defined social marketing by comparing Wiebe's (1951) framework to the 4Ps marketing mix.

At the time, Kotler and Zaltman's (1971) proposal was considered controversial. Some academics objected, arguing marketing should not be applied to other arenas (Andreasen, 2006). Some argued that replacing physical products with values would threaten the exchange concept. While others argued social marketing would be abused as propaganda (MacFadyen, et al., 1999). A review of the first ten years of social marketing showed that popular criticisms included the charge that social marketing was not real marketing, but was manipulative, self-serving, and threatened to damage the reputation of marketing (Fox & Kotler, 1980).

These debates did not stop communicators from applying social marketing principles. The practice was primarily applied in developing countries, and to a lesser extent in developed nations. Within developing countries, social marketing campaigns primarily addressed family planning while in America the focus was on healthy lifestyles linked to heart disease (Fox & Kotler, 1980).

During the 1970s, pro-social marketing academics continued debating the practice and advancing thinking. Internal criticism focused on the challenges faced when trying to

apply commercial marketing principles to social situations where the concepts did not quite fit (Rothschild, 1979). Additional ambiguities emerged, as it was not always clear what distinguished social marketing from other social change practices. Consequently, the ten year review of social marketing discussed practical problems in applying the field's concepts while striving to contrast it with other social influence practices (Fox & Kotler, 1980).

ARPAnet, the precursor to the Internet, was publicly displayed for the first time in the USA at the *International Conference on Computers and Communications* in 1972 (Ruthfield, 1995). Another important technical innovation this decade was the development of computer-based health risk assessments, which took patient data and provided personal risk assessments (Kreuter, et al., 2000).

1980s

The 1980s has been described as the time when the field searched for an identity among other social influence practices (Andreasen, 2006). During this decade, the academic debate shifted from the question "*Should* marketing be applied to social issues?" to the question "*How* can marketing be applied to social issues?" At the same time, the health community began embracing the practice (MacFadyen, et al., 1999). The first social marketing textbook was distributed in 1989 (Kotler & Roberto, 1989).

1990s

By the 1990s, the field had overcome many of the earlier conceptual ambiguities and started to better define itself. A major advancement in the field came when researchers clarified social marketing's niche as the change of behaviours. This shift helped contrast social marketing against other social influence practices. The newly defined niche also provided space to integrate other behavioural change fields into social marketing. Finally, it helped define the field's limits (Andreasen, 2006). This focus helped to clarify when social marketing was appropriate to a particular problem, as opposed to other practices.

In this decade, notable contributions to the field included launching the Social Marketing Quarterly academic journal in 1994. One year later, Andreasen's (1995) textbook, which integrated stages of change thinking into the social marketing process,

is considered to have made a significant contribution to advancing the field (Kotler, et al., 2002)**.**

Building on top of the Internet, which was primarily used to network educational and research institutions, the World Wide Web was invented in 1993. It was developed by Tim Berners-Lee, who was seeking a solution to decentralized knowledge management problems at the CERN particle accelerator research centre in Switzerland (Berners-Lee, 2000). Since this time, the web has been fuelling the rapid expansion of the Internet around the planet.

2000

Since the term social marketing was coined in 1971, the field has grown and diffused across the planet. Social marketing is now seen as an effective way of improving public health, safety, the environment and community development (Kotler, et al., 2002).

The field has produced several books, chapters within books, its own academic journal (Social Marketing Quarterly), and numerous conferences. The first World Social Marketing Conference occurred in 2008. Then in 2009, an initiative was launched to develop a global social marketing institute. Social marketing is practiced by numerous United Nations agencies, USA Government agencies, consulting and communication firms (Andreasen, 2006).

Social marketing is well established in North America and has a long tradition with international development agencies (Andreasen, 2006). It is slowly penetrating into Europe where, for example, in 2006 the UK Government called for a National Social Marketing Strategy for Health (National Consumer Council, 2006). One systematic review of social marketing interventions showed the majority of reported interventions came from North America, with a small number from Australia, the Netherlands, Finland, and one from Brazil (Stead, et al., 2007).

Although the field is established to some degree, academic debates continue. At the beginning of the millennium, one major debate included advocates who argued that the field needed to focus on up-stream change, to influence policy makers, as well as down-stream change, to influence citizens (Andreasen, 2006). Another debate raged about

whether social marketing needed to cut its marketing roots and develop its own distinctive intellectual basis (Peattie & Peattie, 2003).

The World Wide Web popularized the Internet in the 1990s. However, it was not until around 2005 when social marketing academics began seriously discussing the potential of this new media. Additionally, the successful 2008 election of USA President Barack Obama drew heavily on grassroots campaigning linked by social media. This successful Web 2.0 campaign appears to have delivered a wake-up call to campaigners who had previously disregarded the value of online engagement.

2.8. Online Social Marketing

The term *online social marketing* is used to describe the online components of social marketing campaigns, whether they are conducted exclusively online or as part of a multi-channel intervention. An example of an online social marketing intervention is the One-Tonne Challenge Program which called on Canadians to reduce their greenhouse gas emissions to help achieve Canada's climate change objectives (Tremblay, et al., 2006). Part of the intervention included an interactive website that encouraged citizens to reduce their carbon footprint. The website asked people to enter information about their lifestyle; it calculated their carbon footprint; and then encouraged them to reduce their carbon emissions. It provided advice on reducing greenhouse gas expenditure by using energy-efficient light bulbs, biking to work, or changing lifestyle habits. Unlike the commercial website Amazon.com, which persuades users to buy products, the One-Tonne Challenge website tried to persuade users to change their lifestyles, to reduce greenhouse gases emissions, and to help mitigate the impacts of global climate change.

Social marketers generally select the mix of communication channels most suitable to their target audiences. Consequently, interventions are often conveyed through multiple channels, such as posters, television, billboards, public events, and the Internet (Kotler, et al., 2002). For groups that are easily reached online, such as teenagers, the Internet offers a valuable channel to engage them, alone or as part of a larger multi-channel campaign (Peattie, 2007).

In recent years, there has been a rapid transformation of the media landscape, largely shaped by the Internet and other new media, including mobile phone technology. The social marketing community seems to have adapted to this changing landscape later

than many other fields. There were few discussions on the value of the Internet in the first few years of the millennium. This was surprising as at that time the private sector was reaping the benefits of the Internet. For example, Silicon Valley saw the dot-com boom and bust; then soon after, social networking websites had become the dominant online spaces. During this major media revolution, one paper described an online anti-drug campaign, as an exception to the norm, and focused on the links between online and offline behaviour change while discussing the merits of testing behaviour online before offline adoption (King, 2004).

While social marketing researchers at the time demonstrated little interest in how the Internet could increase campaign efficacy, the promoters of unhealthy lifestyles seemed to have taken full advantage of the Internet. This trend may have prompted some early online social marketing papers to feature Internet threats rather than opportunities. For instance, one early paper demonstrated how widespread and sophisticated online pro-tobacco marketers were, and called for a social marketing response (Ribisl, 2003). A few years later, another assessment of online tobacco prevention messages argued that, "As the tobacco industry continues to saturate the youth market with unprecedented levels of advertising and marketing campaigns, the need to enhance understanding of effective online social marketing campaigns is greater than ever" (Lin & Hullman, 2005). Perhaps recognizing the private sector's online successes, and the social marketing community's lukewarm ventures online, one researcher argued that the Internet was a valuable communication tool with a potential of which social marketers had not yet taken full advantage (Peattie, 2007).

During the early 2000s a major transformation was taking place online. By 2004, the term *Web 2.0* was coined to describe interactive Internet applications and businesses that were emerging from the participatory web, including blogs, wikis, social networking sites, and other user generated online applications. Many Web 2.0 applications quickly became the world's most popular websites, as indicated by the rapid growth of Wikipedia and social networking sites (Madden & Fox, 2006).

Perhaps in response to the Web 2.0 transformation, by around 2005, the few articles on online social marketing advocated the benefits of online technology and argued that new media meant rethinking the way that audiences are conceived and engaged. They argued that a radical transformation was taking place, where marketers were seeing audiences

as partners, rather than passive targets. This transformation is expressed by the idea of inviting people to join the debate and become active participants, rather than passive audience members (Peattie, 2007). This new view has been expressed by calling target audiences the "people formerly known as the audience." In other words, the audience decides what they look at and listen to, and if they don't like what a campaign has to offer, they will find other content or do their own things (Lefebvre, 2007).

This new view on engaging audiences accords well with the precepts of relationship marketing, which views relationships as meaningful exchanges over time. One way of engaging audience as partners is with interactive online campaigns generated by the audience/partners themselves. A good example is the "Own Your-C" campaign website where the homepage presents a single survey question, related to personal choice, and the next page presents an interactive interface full of user-generated content (Conrad, et al., 2009). On this intervention website, the target audience can contribute content that shapes the intervention for successive audiences. The social marketers were in charge of setting-up the intervention framework and managing it, but the audience/participants were responsible for shaping its content.

2.9. Summary

Defining social marketing

The definition of social marketing has changed many times since 1971. At its core, it is the application of commercial marketing to social causes. Later this definition was expanded to focus on voluntary behaviour change. At present, some actors are proposing that the field encompasses both commercial marketing principles and also other behavioural influence practices.

Social marketing is an applied field. To a large degree, the practice is based on the product marketing planning framework that includes extensive research before, during, and after implementing interventions. These stages can be broken down into roughly five generic categories: (1) pre-intervention rationale, (2) intervention definition and formative research, (3) intervention design, (4) implementation, and (5) Intervention closure.

The theoretical basis for social marketing draws from commercial marketing and a number of other fields. As part of the marketing mix, the 4Ps model (product, price,

place, and promotion) is still the most prominent behavioural change model used by social marketers. It is underpinned by social exchange theory, which takes a rational view of human behaviour where people conduct transactions in order to maximize their rewards and minimize their costs.

The roots of social marketing date back to the 1950s, when a psychologist questioned whether marketing could be used to promote social causes. During the 1960s, practitioners in developing countries and marketing academics set the stage for the emerging field. Social marketing was formally launched in the 1970s, searched for an identity in the 1980s, and found a unique niche in the 1990s. By the year 2000, it was an established field, and now continues adapting to changing circumstances.

Social Marketing efficacy and suitability

Social marketing is an effective way of influencing individual behaviours; a number of primary studies have demonstrated its efficacy. Two systematic reviews of the literature have found evidence that the majority of social marketing interventions achieved a positive impact across a range of behaviours, including nutrition, physical activity, and substance misuse. However, the number of successful interventions appears to decline over time, suggesting that campaign efficacy may decrease over time.

Researchers also argue that social marketing is a cost-effective way to address public health. The outcomes of healthy lifestyle in terms of quality adjusted life years, can translate into savings/benefits accrued to individuals and their families, public health expenditures, income to public services, income to employers, and the non-monetary price of values. For example, in the UK, researchers estimate that for every £1 spent on preventative health promotion, the state can save between £34 and over £200 in health spending.

Social marketing should not be applied to all social problems, as the practice is only considered viable in particular circumstances. When problems emerge within a context that resembles a marketing situation, there is a better chance that social marketing will be suitable. There are cases when simply disseminating information or implementing legislation is more appropriate.

Online social marketing

Some time before 2005, the primary online social marketing papers addressed Internet threats from successful tobacco industry ventures. With at least one exception, these works offered little advice on how social marketers could effectively respond online. Some time after 2005, social marketers started advocating the use of the Internet as a powerful communication tool.

As social marketers began realizing the potential and nature of the Internet, there were calls to change the traditional paradigm of public communications, particularly viewing target audiences as partners rather than passive targets. This transformation is expressed by the idea of empowering people through providing opportunities to join the debate instead of being passive recipients of information.

3. Online Intervention Efficacy

"It has been estimated that there are between 17,000 and 45,000 health-related sites on the Internet. Results presented here suggest that many health-related sites do not include the basics of health behaviour change, and those that do need improvements made in many of the areas believed to be important for the quality of health behaviour change programs on the Internet. There is a strong need for more rapid dissemination of the web of science of individualized and interactive tailored communications."

Evers et al. (2003)

Numerous factors are driving individuals, businesses, police, institutions, nations, and intergovernmental organizations online. As more consumers go online, business are financially motivated to keep pace. As more individuals and businesses conduct e-commerce transactions, more online fraud and crime occurs, which has motivated the rapid development of e-police units. As more people of faith go online, spiritual institutions trail close behind. As more citizens go online, nations are implementing e-governance solutions, while the intergovernmental agencies are implementing online services to better facilitate intergovernmental processes. Similarly, in nations with high Internet penetration and some audiences who are easily reached online, social marketers are forced to adapt their practice to the changing media landscape.

Many actors are motivated (or being pressured) to conduct online outreach for numerous reasons, however it is not always clear how Internet communication compares to other channels, in terms of influencing attitudes and behaviours. Moreover, it is less clear which online design factors are most important in terms of engaging and influencing people.

This chapter examines motives to innovate online interventions and examines evidence of intervention efficacy. It discusses individualization as a way of conceiving the differences between types of online interventions and examines different types of behavioural goals. Finally, it looks across three types of research to evaluate whether Internet engagement can influence individuals' behaviours.

3.1. Motives to Develop Online Interventions

There are at least five factors that may explain motives to innovate online interventions: First, in some countries online channels are displacing traditional media, such as television and newspapers. This trend varies by audience segment, with some groups, such as teenagers, spending more time online than any other age group (Peattie, 2007). In the USA, a 2008 public opinion poll (N=1,013), showed that citizens' primary source of national and international news came from the Internet (40%), newspapers (35%), and television (70%). This year marked the first time the Internet surpassed newspapers as citizens' primary news source. In addition, people younger than 30 years obtained national and international news online 59 percent of the time, which was identical to the percentage of news they obtained from television (Pew Research, 2008).

Second, the primary rationale for developing online interventions comes from research that shows online interventions can match, and occasionally outperform, traditional interventions, in terms of influencing people's behaviours. A number of synthesis studies (discussed in detail below) demonstrate the efficacy of online intervention. These include one meta-analysis showing that online interventions could significantly increase participants' knowledge and health-related behaviour (Wantland, et al., 2004). Another meta-analysis of 75 computer-delivered health and risk focused interventions showed that computer-delivered interventions significantly improved participants' knowledge, attitudes, and behaviours in comparison to other methods (Portnoy, et al., 2008). Finally, two systematic reviews showed modest positive impacts resulting from online interventions (Norman, et al., 2007; Vandelanotte, et al., 2007).

Third, online channels offer new opportunities for individual and community engagement through multi-media, interactivity, and automation. Unlike earlier media, features such as tailoring, interactivity, and combined mass and interpersonal communication, offer new opportunities to influence behaviours (Neuhauser & Kreps, 2003). Additionally, automation, personalization, and interactivity can make online engagement more effective than traditional communication channels. Internet applications can sometimes be more persuasive than humans because they provide users with anonymity, they are persistent, draw from vast amounts of information, can present issues in multiple ways, and can meet increasing user demand (Fogg, 2003).

Fourth, the Internet offers social marketers new opportunities to reach large populations through online campaigns. In 2006, the worldwide number of Internet users surpassed 1 billion (Computer Industry Almanac, 2006). Then in 2008, the number surpassed 1.5 billion, with an estimated 2 billion Internet users by 2011 or 2012 (Computer Industry Almanac, 2008). At the same time, research shows that people are turning to the Internet for health advice on a massive scale (Fox, 2006). For target audiences who avoid the Internet or may not have access, online engagement is not appropriate. However, in many countries there are large populations who readily use the Internet and are easily reached online. Furthermore, given the wide penetration of the Internet in many countries, small shifts in behaviour attributed to online interventions can translate into a large population health effect (Norman, 2007).

Fifth, public online health interventions offer significant cost savings in the face of rising healthcare costs. This is set against a context of Governments realizing that it is more cost-effective to market healthy lifestyles than to pay to treat the consequences of unhealthy lifestyles. The UK's Department of Health announced that the Government spends £187 billion per year treating preventable ill health, money which could be better spent by marketing healthy lifestyles (National Consumer Council, 2006). In the US, increasing healthcare costs and new online engagement opportunities are driving the search for e-health solutions, including behavioural change, prevention and self-management tools (Baur & Kanaan, 2006). Beyond public savings, costs to the private sector from staff illness and productivity losses can be significant while interactive health systems can be used to manage staff health and reduce productivity losses (Riedel, 2007).

As an example of the lower costs associated with some online interventions, one Internet-based headache treatment was deemed twelve times as cost-effective as traditional clinical treatments (Strom, et al., 2000). In another case, it was estimated that smoking cessation tele-counselling interventions cost $150-$250 per smoker, while tailored print interventions ranged from $5-$40 per smoker and, depending on the size of the population, tailored online smoking cessation interventions could cost less than $1 per smoker (Strecher, et al., 2005).

3.2. Interventions and Individualization

Across research and case studies, there appear to two broad categories of online interventions. These categories do not have fixed borders, and appear to reflect differences in communication theory and individualization. For instance, many online interventions appear to be modelled on the one-to-many mass-media model. These types of interventions disseminate information, pushing content to audiences in one direction. Alternatively, there are interventions modelled on a one-with-one interpersonal model, where much of the focus is on fostering interactive relationships. These types of interventions reflect circular communication models, with audience feedback serving as the basis for intervention messaging. This section discusses distinctions between mass-media and interpersonal based campaigns, and then discusses how these differences relate to targeted and tailored interventions.

Mass-media and Interpersonal Communications

Table 3-1 presents a conceptual description of the types of attributes associated with mass-media and interpersonal-based campaigns. The first category describes online interventions modelled on the mass-media (one-to-many) communication model. The second category describes individualised interventions, modelled on interpersonal (one-with-one) communication.

Table 3-1: Conceptual Description of Intervention Categories

Group Campaigns (mass-media)	Individualized Interventions (interpersonal)
Population focused	Individual focused
Population-level promotion	Individual-level assessment
More one-way	More two-way
Targeting groups	Tailored to individuals
Broad scope	Narrow focus
Offer much irrelevant content	Offer some relevant content
Information provision	Service facilitation
Blunt instrument	Sharp instrument

This distinction—between group and individual level campaigns—is further reflected by describing interventions along a continuum of individualization, which ranges from generic communications to highly personalized engagement. To express this idea, Figure 3-1 displays an intervention's level of assessment on the x-axis, and the level of individualization on the y-axis. On the diagonal are five communication approaches that range from generic to interpersonal (Kreuter, et al., 2000). The chart has been modified by adding two groupings, which are called *group campaigns (mass-media)* and *individualized interventions (interpersonal).* Between both groups is what will be

referred to as the *mass/interpersonal gap*, which describes the difference between these two approach categories.

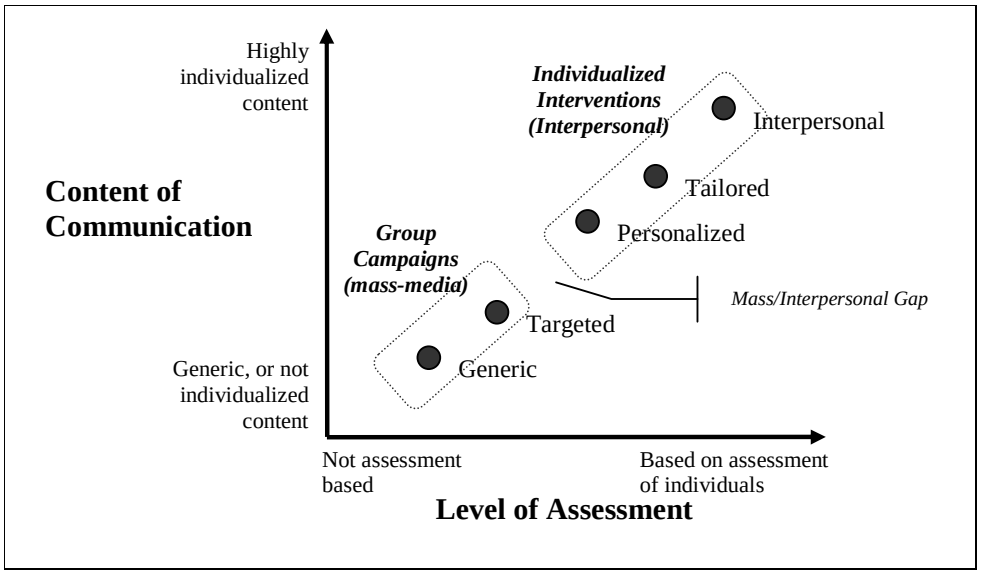


Figure 3-1: Individualization and the Mass/Interpersonal Gap (adapted from Kreuter et al., 2000)

The group campaigns (mass-media) category includes both generic and targeted communication. *Generic communication* expresses content with a lot of information within a single communication, without considering consumers' characteristics. This is a "one size fits all" approach where communication materials try to be "all things to all people". Individuals sometimes need to sift through vast quantities of irrelevant information to find the parts relevant to them. Highly motivated people are more likely to invest the effort to find the information they are after. *Targeted communication* is aimed at subgroups, often based on particular demographic characteristics. This approach assumes that small groups are similar enough to justify one communication message. This is based on the principle of market segmentation, which aims to find the right customers for a particular product or service (Kreuter, et al., 2000).

The individualized interventions (interpersonal) category includes interventions that share features in common with human, person-with-person communication. *Personalized communication* describes the process of integrating personal information into a message. This may include using a person's name to draw attention to a message. *Tailored communication* is content specifically designed for a particular individual. It generally requires two steps: First, a person provides information; second, they receive an individually constructed communication. The person generally receives feedback

based on their expressed needs, interests, or concerns. *Interpersonal communication* describes the interactive, and immediate communication process that takes place between people (Kreuter, et al., 2000).

Targeted and Tailored Interventions

In the 1970s, when organizations began using marketing approaches to design targeted public campaigns, health researchers had begun to experiment with computer-technology to design tailored interventions. Both approaches can be regarded as a form of tailoring, but at different levels. Social marketing interventions are tailored to the sub-group level, basing messages on attributes common to groups. Health risk assessments are tailored at the individual level, basing messages on attributes particular to an individual. Both practices, targeting for populations and tailoring for individuals, began at roughly the same time. However, over the last four decades, they have advanced in parallel across different fields.

The innovation of social marketing introduced a bundle of activities to communications, offering advantages over prior social change practices. Some of these new activities included product planning, market research, segmentation, and exchange. One critical outcome of these approaches is the production of targeted communications. To explain why this was such a communication innovation, consider two early social marketing papers that explicitly contrasted social advertising against social marketing (Fox & Kotler, 1980; Kotler & Zaltman, 1971). They reserved the term social advertising to describe campaigns that disseminate broad generic messages to a large population in the hopes of influencing their thinking or behaviour.

This shift in thinking, from social advertising to social marketing, is reflected in the difference between generic and targeted communication, presented in Figure 3-1. Social advertising would qualify as generic communication. It conveys a generic, one-size-fits-all message to broad populations without much consideration for their needs. Social marketing would qualify as targeted communication, as it disseminates messages that are relevant to sub-populations who share common characteristics. In this regard, part of the efficacy improvement of social marketing over social advertising could be explained by its greater individualization.

Similar advances were taking place in the health field. Health risk appraisals, individualized risk assessments based on patient information, were developed in the

1970s. By 1986, as many as 15 million Americans had received health risk appraisals. These systems provided tailored risk information to patients, but they were not considered effective at influencing behaviour (Kreuter, et al., 2000). Their inability to influence behaviour may be explained in part, by their reliance on information provision, combined with a lack of motivational and efficacy support.

Despite the ineffectiveness of health risk appraisals, evidence from ten years of research has demonstrated that tailoring can influence psychological and behavioural outcomes (Kreuter, et al., 2000). Early research on tailoring, along with *stages of change* research, provided numerous insights into designing effective interventions. These discoveries led to early expert systems designed to help people achieve healthy lifestyle outcomes. One noteworthy early study, published the year the web was invented, described a smoking cessation expert system. The expert system was based on a two-way interpersonal communication model and used the transtheoretical model (Velicer, et al., 1993). The researchers envisioned deploying the intervention to mass public audiences. However, at this time, expert systems were expensive and the web had just been invented, thus the vision of mass public deployment was not yet feasible. However, a few years later, a practical smoking cessation expert system was developed which used the stages of change approach to tailor intervention messages. It reported impressive outcomes, with cessation rages between 22 and 26 percent (Velicer & Prochaska, 1999).

Given these parallel tracks (social marketing mass-media approaches and interpersonal health interventions), it is conceivable that campaigns could be deployed on a massive scale, offering citizens individually tailored interaction. Thus, social marketing could use Internet communications to move beyond targeted communication and offer tailored interaction. In other words, campaigners could develop mass-interpersonal campaigns capable of reaching large segments and offering automated interpersonal relationships.

3.3. Macro and Micro Behaviours

Just as the ultimate bottom line of social marketing is behavioural change, the ultimate goal of online social marketing is also behavioural change. However, in online environments there are at least two levels of behaviour that need to be influenced for a campaign to achieve its intended effect. In interactive campaigns, interventionists frequently engage audiences in online behaviours designed to influence offline behaviours. One way to conceive these two different behaviours is through the

distinction between *macrosuasion* and *microsuasion*. Macrosuasion describes the overall persuasive effect of a product. Microsuasion describes small persuasive tactics used to encourage the performance of minor online tasks, such as signing up for a newsletter or clicking on a hyperlink (Fogg, 2003). Two other definitions are offered. *Macro-behaviours* describe the primary behaviour targeted by an online intervention; and *micro-behaviour* describes a routine behaviour that people perform online, intended to lead to the macro-behaviour. For example, a micro-behaviour would describe when a person registered for a weight-loss intervention, while the macro-behaviour would be dieting. Similarly, the psychological tactics used to encourage people to register for the programme would constitute microsuasion while the overall effect of the intervention would be described as the macrosuasion effect.

Before an online intervention can affect the attitudes and behaviours of target audiences, individuals must first perform small micro-behaviours. With this principle, online composting campaigns may focus on encouraging participants to compost (the macro-behavioural objective). However, to influence this behaviour, the intervention is likely to focus on online micro-behaviour goals such as encouraging users to visit the site, opting-in to newsletters, and asking them to make a digital commitment to recycling. One study showed a statistical association between the number of online features in an intervention and the behavioural outcomes. In the study of a physical activity intervention, the number of intervention elements and user interactions was the only factor associated with efficacious outcomes. Interventions with more than five communication options demonstrated more positive changes (Vandelanotte, et al., 2007).

From this perspective, achieving online behaviour outcomes can be seen as a process that includes a small number of online activities that may lead to significant impacts later on. The importance of these micro-behaviours has prompted researchers to examine the role of visit frequency or loyalty as key measures of website retention (Peterson, 2004), or enticing users to opt-in to newsletters or register on websites as a preliminary step towards permission-based marketing campaigns (Tezinde, et al., 2002). Given the critical link between these micro and macro behaviours, e-commerce tools, such as behavioural funnels that track online sales processes, can be used to track users' progress through persuasive behavioural chains (Fogg & Eckles, 2007) that guide audiences through a series of steps toward particular behavioural goals. Many of the

online social marketing case studies report micro-behaviours, such as visits to websites, rather than the macro-behavioural outcomes, such as practicing safe sex, having mammograms, or recycling.

3.4. Online Intervention Efficacy Studies

When examining evidence for the efficacy of online interventions relevant to social marketing, there are perhaps three broad types of research: *literature-based research, real-world research,* and *real-world case studies.* These are not fully distinctive categories, but rather offer a way of dividing the research into useful groupings. Research reflecting literature-based research comes from meta-analyses and systematic reviews. The majority of studies included in these synthesis papers are experiments that provide outcome estimates. These studies offer the strongest evidence of intervention efficacy. Real-world research comes from studies that survey existing online behavioural change interventions that are publicly available on the web. These types of studies could be compared to field studies where the researchers visit the web to study their subjects in their natural setting. These studies provide interesting insights, but their efficacy findings are less reliable as they draw conclusions without access to impact data. Finally, real-world case studies provide interesting examples of online interventions, but rarely offer valuable research insights.

3.4.1. Literature-based Research

This type of research includes synthesis studies that draw from academic literature and reports. These studies are more likely to reflect papers employing experimental methods, and sometimes correlative approaches, to assess intervention efficacy.

Since the mid 1990s, the number of published reports on online interventions has rapidly expanded (Wantland, et al., 2004). Many of these interventions are designed to influence one or a few behaviours. Studies are frequently evaluated in clinical and real world contexts. Many use control groups (for example comparing web versus paper, or comparing against a waitlist control group); a few report quasi-experimental methods; and some draw on correlative approaches. There are a handful of meta-analyses and systematic reviews that provide a broad perspective on literature-based research.

The types of online interventions reported in this research group include programmes designed to improve an individual's quality of life. These include websites that encourage youth to reduce binge drinking (Chiauzzi, et al., 2005); smokers to stop

smoking (Strecher, et al., 2005); overweight persons to reduce weight (McConnon, et al., 2007); and citizens to increase their physical activity (Marshall, et al., 2003). For example, one online intervention, lasting two-months, aimed to prevent adolescent girls from developing eating disorders. It was implemented in conjunction with a parent-targeted intervention designed to influence parental attitudes and behaviours towards their daughters (Bruning Brown, et al., 2004). One brief online intervention encouraged students to develop appropriate drinking, eating, and exercise behaviours (Kypri & McAnally, 2005). Still another web and therapist-based intervention was designed for individuals with type-2 diabetes, and aimed to increase their physical activity levels to achieve glycaemic control (Kim & Kang, 2006).

Efficacy

Meta-analysis is a statistical approach that allows researchers to pool the statistical outcomes from different studies and then quantify the overall trend. Of the two meta-analyses of online interventions, the first included 22 studies that compared web-based against non-web-based interventions. Targeted behaviours included physical activity, psychological disorders, weight loss, and disease management. Across studies, interventions ranged from a standardized mean difference effect size d=-.01 to .75. Due to high variability, they did not calculate an overall effect size. Sub-comparisons between five web-based and non-web-based interventions produced effect sizes on knowledge and behaviour from d=-.24 to .44. The researchers concluded that web-based interventions showed improvements in knowledge and behavioural outcomes, when compared to non-web-based interventions (Wantland, et al., 2004). Overall, the analysis demonstrated that online interventions could influence behaviours.

The second meta-analysis included 75 computer-delivered interventions, many of which were Internet-based. The study demonstrated that these interventions could influence health-related knowledge, attitudes, intentions, and behaviours. These interventions operated across a range of topics: diet, tobacco use, disease management, substance use, safe sex, binge/purging behaviours, and health maintenance. However, there were some health behaviours to which the interventions did not appear well suited; these included physical activity, weight loss, and diabetes self management (Portnoy, et al., 2008). The researchers concluded that computer-delivered interventions could improve behavioural health outcomes. However, they had only assessed the first post-intervention outcome period and called for studies to assess the potential long-term impacts of interventions.

Systematic review is a structured approach to assessing the general trends across a population of similar studies. In some cases, researchers have counted the number of positive outcomes. This provides some empirical evidence for outcome trends, but is not as reliable as meta-analysis. Of the systematic reviews, the first systematic review examined online physical activity interventions. The study identified 15 interventions in academic databases that met their criteria. Of the theories used to design interventions, the most common were social cognitive theory, the transtheoretical model, and the theory of planned behaviour. Interventions targeted a range of outcomes including physical activity, diabetes self-management, nutrition, weight-loss, smoking, and drinking. Positive results were found in eight out of 15 studies (53%). Assessing the long-term impacts, after an intervention had ended, the researchers assessed follow-up impacts. Of the short-term impacts (≤3 months), six out of ten (60%) were positive. For medium-term impacts (4-6 months), four out of eight (50%) were positive. For long-term impacts (> 6 months), two out of five (40%) were positive. The intervention found modest evidence for online intervention efficacy, with just over half showing positive results (Vandelanotte, et al., 2007).

The second systematic review focused on e-health for physical activity. Forty-nine publications met the researchers' inclusion criteria. The interventions were primarily websites, e-mail, and websites with e-mail; there was one CD ROM and one other used a telephone system. The majority cited a theoretical basis, primarily the transtheoretical model and social cognitive theory. Goal-setting was frequently used. This systematic review extracted effect sizes, but did not undertake a meta-analysis. Of the studies, 13 were on physical activity; 16 on diet; and 20 combined weight loss or physical activity and diet. The physical activity interventions' effect size ranged from a Pearsons r=-.03 to .43; the dietary fat interventions r=.06 to .28; the fruit and vegetable from r=.05 to .29; and weight loss from r=-.31 to .29. The researchers concluded the effects were mixed, and called for further research to assess the potential interactive technologies to impact health behavioural change (Norman, et al., 2007). This systematic review describes interventions generally targeting voluntary behavioural change, but it was not a meta-analysis. Thus, the results provide good evidence that voluntary behaviours can be influenced through online interventions, but it is perhaps not as convincing as a meta-analysis would be.

The third systematic review identified 30 online health interventions reported in academic journals and examined their tailoring mechanisms. Behaviours targeted included nutrition, diet, eating disorders, smoking, alcoholism, and physical activity. Tailoring was argued to be a critical factor in health behavioural change interventions, with the Internet offering an ideal environment to implement tailored interventions. They did not provide impact data, but surveyed tailoring approaches, demonstrating a wide variety of uses across interventions. The researchers called for outcome studies to better understand the conditions under which tailoring can lead to health outcomes (Lustria, et al., 2008).

Conclusions

Both the meta-analyses and systematic reviews that reflect literature-based research show that online interventions can match and sometimes outperform traditional intervention approaches. They provide impact data on the target macro-behaviours of interventions. The meta-analyses show that online interventions can match and sometimes outperform interventions distributed over traditional media, such as print publications. However, the two meta-analyses included behaviours not suitable to social marketing applications. Similarly, systematic reviews show mixed results, with slightly more than half showing positive impacts. One systematic review blended behaviours not suitable to social marketing; another focused on voluntary behaviours suitable to social marketing applications; and the last blended suitable but unsuitable behaviours, and did not provide impact data.

3.4.2. Real-World Research

In contrast to the previous type of research that reflects more experimental approaches, the term real-world research describes investigations that are more focused on the "field" than the "lab", and more concerned with practical insights than statistical significance (Robson, 2002). The term real-world research describes studies that assess online interventions found through Internet search engines. The strength of these studies is that they can provide detailed descriptions of applied online interventions, such as public health or physical activity websites. A key limitation is their lack of impact data. Consequently, they can describe how online interventions are designed, and infer how they might influence users' behaviours, but without empirical data they cannot offer causal evidence on the relationships between intervention design and behavioural impacts.

To gain perspective on the types of interventions reflected in real-world evaluation, Cummins et al., (2003) classified health websites as follows: speciality single behaviour (16), health portals (14), pharmaceutical companies (3), business-to-business (4), employers (4), and sites selling health products (1). The health issues addressed by these sites included smoking (12), diet (10), exercise (6), diabetes (7), asthma (1), and depression (1).

Efficacy

One large-scale evaluation identified 273 health websites through Internet search engines, journals, articles, and advertisements; then examined 37 of them in-detail. The websites covered smoking, diet, exercise, diabetes, asthma, and depression. To overcome the gap between describing interventions and assessing their impact, a set of criteria were developed that were deemed to describe what is required for an intervention to influence behaviour (Cummins, et al., 2003). Based on the criteria, the researchers concluded that many of the health behavioural change websites did not include the basics requirements to influence health behaviours (Evers, et al., 2003).

One study identified 24 physical activity websites through search engines. To assess these sites, the researchers registered two fictional accounts in each site. To overcome the gap between site features and behavioural impacts, the researchers built their study around theories believed to influence behaviours, and then linked the theories to behavioural influence strategies employed on websites. The theories used across interventions were primarily the health belief model, theory of planned behaviour, transtheoretical, and social cognitive theory. Most sites provided little to no assessment, feedback or individually tailored assistance. Surprisingly, interventions that assessed users' stage of change did not use the stage assessment to tailor the intervention. The researchers called for more randomized controlled trials to assess long-term impacts (Doshi, et al., 2003).

An evaluation of 32 UK-based environmental charity websites coded site features associated with online marketing effectiveness recommendations. The researcher found that sites only reflected a few of these recommendations; they used basic segmentation but not personalization. The researchers tried to overcome the gap between site features and impact assessments by comparing site features with annual income, though they did not find a statistical correlation (Wenham, et al., 2003).

Another evaluation identified 35 web-assisted tobacco interventions through academic literature and search engines. The researchers classified interventions into three groups. *First-order* stand–alone interventions described self-contained sites that provide all the resources participants needed to aid their quit efforts. These interventions were considered simple, required little skill to access, but offered limited professional support. They were primarily limited to the Internet as a means of distribution. *Second-order* complementary resources sites described interventions designed to work in conjunction with another resource, such as a telephone helpline or clinical treatment. Finally, *third-order* integrated interventions described a small addition to a larger programme containing numerous components. The second- and third-order interventions offered the advantages of additional resources and higher intensity programmes (Norman, 2007). As an external evaluation, pros and cons were discussed, but no efficacy evaluation was offered.

Finally, an assessment of 100 anti-smoking websites classified them according to the type of site operator and assessed the strength of their messaging approach in terms of potential persuasiveness. Medical organizations' websites primarily offered scientific information, which was not highly persuasive. Government sites were like clearinghouses of anti-tobacco information, which were not highly persuasive either. However, grassroots sites offered advocacy capacity, and potentially more persuasive anti-smoking messages (Lin & Hullman, 2005).

Conclusions

These studies assess websites that can be found through search engines and manually assessed by coding site features. Using external theories or criteria, the researchers generally concluded that some online interventions and campaigns have the features required to achieve behavioural impacts, though the majority are not designed in a way that can influence behaviour.

3.4.3. Real-World Case Studies

Most of the literature on online social marketing takes the form of intervention case studies and evaluations. They rarely report behavioural impacts, making it difficult to judge the value of online social marketing efforts. Moreover, even if impact data was provided, unlike the literature-based research, online social marketing activities are normally a small part of a larger campaign, making it difficult to know which factors may have influenced the campaign's efficacy. As a result, reports on online social

marketing generally focus on processes (what was done) as opposed to impacts (what was achieved).

An example of a real-world case study is the *Own Your C* campaign report. The Colorado-based campaign promoted healthy lifestyles and smoking prevention. Building on extensive formative research, the campaign focused on empowering teens to make informed choices. The campaign was promoted through multiple channels such as TV, a promotion truck, merchandise, and online advertising. They developed a highly interactive central website that engaged many teens and followed the principle of relinquishing the message to the audience. In other words, the website offered a framework for the audience to shape the intervention's content (Conrad, et al., 2009). This real-world case study is highly insightful, and offers many qualitative insights into intervention design, but it does not offer evidence that online components contributed to behavioural outcomes.

Efficacy

Within the social marketing literature, there are a handful of case studies on new media applications. In general, these reports are descriptive, focused on outreach, and rarely describe impact resulting from online social marketing activities. Many of these case studies described complex interventions where online activities comprised just one of many campaign elements. Consequently, if behavioural impacts had been systematically reported, it would have been difficult to draw conclusions as numerous possible causal factors could be attributed. For instance, an early paper on new media and public service advertising provided case studies of seven online interventions. The online interventions were described in detail, with traffic volume, but little behavioural impact data (Kaiser Family Foundation, 2006).

In a special edition on *cases studies in public heath communication and marketing*, researchers considered a number of online social marketing activities successful, in terms of outreach, but recognized that the lack of behavioural impacts was a problem that required addressing (Abroms, et al., 2008). This special edition, described the *Verb Campaign*, a US-based social marketing interventions promoting active living among 9-13 year olds over five years. The Verb campaign's new media report provided information on participant awareness from the web, site visits, conversions, and online activities. It also provided an interesting discussion about problems and solutions faced during the campaign (Huhman, 2008). However, within a complex mix of numerous

campaign activities, their new media report is more a descriptive statement of what happened. It was difficult to judge what the online activities contributed to offline impacts.

Another paper from this special edition described an interactive partnership with MTV to educate youths about the impact of HIV/AIDS. The campaign reported online and telephone volume data, but no impact data (Hoff, et al., 2008). Still another described a recycling campaign that used multiple social media channels to reach citizens. Again, online traffic was reported, not behavioural impacts (Hamilton, et al., 2008). One year later, this social marketing case study series presented one exposition of a web and mobile texting services to help people quit smoking (Li, 2009). Again, both studies only described outreach volume, not behavioural impacts.

Although most of the social marketing case studies provided descriptions without impact data, two papers offered impact data at the population level. The first case study described the tobacco prevention campaign (discussed previously as Own Your-C) that offered a highly interactive online and offline campaign (Conrad, et al., 2009). Like similar studies, this report presented website traffic data; but also it showed that teen smoking had decreased in the region, suggesting that the campaign had been a factor. The second intervention was a youth anti-drug campaign that was disseminated through print, television, radio, partners and the Internet. The online campaigns were highly interactive and engaged numerous youth. During the campaign timeframe, the amount of regional youth drug-use decreased (King, 2004).

Given the numerous factors that could affect trends at the population level and the lack of control conditions, the results of these studies need to be interpreted cautiously. As these were complex multi-channel campaigns in complex social environments, if significant behavioural impacts had been reported, it would have been difficult to attribute confidently, what online features were associated with offline behavioural impacts.

Conclusions

In the social marketing literature, it is common for online campaign efficacy to be described in terms of website visits, page views, or other measures of content viewing and online engagement (micro-behaviours). It is rare to describe campaign efficacy in terms of behavioural impacts (macro-behaviours). Though some papers report

population-level impacts, these evaluations lacked control conditions and may have reported impacts that could be explained by other social factors. As a result, reports on online social marketing efforts generally focus on processes (what was done) as opposed to impacts (what was achieved).

Nonetheless, this category of research offers interesting qualitative insights into intervention design, though it is not possible to judge whether those insights are associated with demonstrated outcomes. Although the social marketing field defines itself by its specialism in behaviour change (as distinct from social advertising), online social marketing papers rarely address behaviour change in a significant way. As a result, it is difficult to judge the efficacy of online interventions from social marketing literature.

3.5. Trends across Research Types

The three types of research (literature-based research, real-world research, and real-world case studies) appear to offer more than just different research methods. They appear to reflect different samples of online interventions. Their different efficacy conclusions may reflect different samples of studies. In this section, the differences across these three research types are examined in terms of their efficacy conclusions; levels of individualization; generalizability to population level; mistrust and competition; and building interventions.

Efficacy Conclusions

The three categories of research present different efficacy conclusions. The literature-based research group provides the strongest evidence that online interventions can influence psychological and behavioural outcomes. Real-world research provides a different set of conclusions, suggesting many online interventions are ill suited to influence behaviour. As their conclusions are not derived from participant data, but rather theorized impact, their conclusions should be treated cautiously. The real-world case studies provide details about the online component of social marketing campaigns, but do not offer enough information to judge intervention efficacy.

Only two research categories offered efficacy conclusions: literature-based research and real-world evaluation. However, these categories appear to present two contrasting perspectives. Literature-based research suggests that interventions can work. Real-world research suggests that many online interventions are ill equipped to achieve behavioural

impacts. An explanation for this difference is that real-world researchers frequently study websites that are found in search engines, and which can be analysed externally. As real-world research frequently relies on external criteria or analytical frameworks, these studies can offer insights into the range of techniques used by online interventions, but little indication of which approaches work. To overcome this gap, there is a need to conduct synthesis research that codes both intervention features and impact data. Through a combined approach, it would be possible to examine intervention features associated with greater or lesser impacts.

Individualization Varies across Research Types

There appears to be a general trend for the level of individualization to vary across the three research types. Table 3-2 presents a matrix that compares the three research types by the two individualization categories. It also presents the evidence for making this generalization.

Table 3-2: Level of Individualization across Research Categories

Research Category	Group Campaigns (mass-media)	Individualized Interventions (interpersonal)
	Generic & Targeted	**Tailored**
Literature-based research		(Meta-analysis study)
Real-world research	(Cummins, et al., 2003)	
Real-world case studies	(Literature review)	

From the literature review, meta-analysis, and one large-scale evaluation, there appears to be a trend where real-world evaluations and real-world case studies reflect online interventions modelled on mass-media campaigns. However, the literature-based research is more often based on interpersonal-type interventions. In the literature-based research, while conducting the meta-analysis presented in Chapter 9, the publications from two other meta-analysis (Portnoy, et al., 2008; Wantland, et al., 2004) were harvested and reviewed. From those studies and the meta-analysis presented in this thesis, it appeared that many of the interventions were highly tailored. In the real-world research, one comprehensive study (Cummins, et al., 2003) stated that most online interventions did not contain the requirements to influence behaviour and needed to move to tailored communications. This provided evidence that many online interventions are not based on interpersonal approaches, but rather, the group campaign model. In real-world case studies, the literature review previously discussed demonstrated a large number of targeted online campaigns, and few examples of tailored communications.

Generalizability to Population Level

There appears to be a research gap between interventions evaluated in controlled experimental conditions, and those evaluated in real-world conditions. This difference contributes to a generalizability problem, where knowledge of what works in controlled conditions may not fully apply to large-scale population level campaigns.

Social marketers often aim to influence populations by encouraging citizens to adopt healthy or sustainable behaviours (Kotler & Roberto, 1989). These campaigns generally target voluntary behaviours. However, prior meta-analyses and systematic reviews of online interventions have blended voluntary interventions with mandatory interventions that are linked to a person's well being, such as chronic disease management or with therapy to treat psychological disorders. This means that the conclusions and insights may not be fully generalizable to interventions targeting voluntary behaviours suitable to many social marketing applications. For example, both Wantland, Portillo, Holzemer, Slaughter, and McGhee (2004) and Portnoy, Scott-Sheldon, Johnson, and Carey (2008) blended healthy-eating programmes that are voluntary and suitable to population-wide campaigns with disease management behaviours that are mandatory and suitable to medical contexts. Studies of behaviours associated with participants' survival are unlikely to generalize to mass-outreach health campaigns, where compliance is voluntary. In longitudinal studies of interventions that are neither mandatory nor critical to participants' well-being, one can expect significant attrition (Eysenbach, 2005). Thus, interventions that blend mandatory behaviours with voluntary behaviours are likely to have greater adherence (due to the mandatory behaviours) and are thus more likely to overestimate impacts.

There are numerous examples of individual online interventions—such as anti-smoking (Lenert et al., 2004, Severson et al., 2008) or exercise/weight control (Tate et al., 2001, Dunton and Robertson, 2008)—that have been evaluated through experimental or quasi-experimental methods, and which provide insights into a particular intervention's success factors. However, there have not been investigations into how such interventions can be scaled to a mass population level. In other words, how online behavioural change interventions can be applied to broad public outreach campaigns. To increase understanding of interventions relevant to population level engagement, there is a need to conduct meta-analyses that target more voluntary behaviours, rather than mandatory ones.

Competition and Mistrust

Online competition and mistrust are two critical factors that may affect intervention efficacy. However, they appear to exist in literature-based research and real-world case studies in different proportions. These differences may account for different research conclusions.

Declining trust is rooted in growing threats from online crime, misinformation, and other online abuses. For example, one study of online scams found that 90 percent of participants (including technical experts) could not differentiate between legitimate and criminal websites (Dhamija, et al., 2006). This may explain why, in 2007, USA citizens lost $239 million to online crime (Internet Crime Complaint Center, 2007), while in Canada and the USA, merchants lost $3.6 billion to e-fraud (Cybersource, 2008). In addition, Internet users may mistrust companies because of privacy and spam concerns (Lou, 2002). Other online threats include racist organizations, which spread hate ideologies and misinformation in the form of benevolent grassroots campaigning, even targeting youth and children (Bostdorff, 2004); and the recent rise of anti-Semitism on social networking websites (Oboler, 2008). It is likely that these growing threats are contributing to perceptions that the Internet is a high-risk, low-trust environment where widespread threats can be expected to raise the costs of believing or acting on the advice of social campaigns, thus potentially forming resistance to online engagement.

Competition is a core principle of social marketing, though it can be interpreted in different ways. Online campaigns are increasingly operating in highly competitive environments. In some cases, competition describes alternative behaviours competing for an individuals' attention, in other cases it describes the organizations that campaigners are competing against, such as tobacco companies. Traditionally, social marketers compete against alternative behaviours that may be promoted by individuals, organizations, or even entire industries (Andreasen, 2006). For instance, when social marketers advocate a particular behaviour—such as quitting smoking—they can expect the other actors to promote the opposite: smoking. Similarly, medical websites promoting public health advice may have their efforts undermined by misinformation and urban legends.

Online, competition may be tougher than in other traditional media. Some health researchers view the Internet as a battleground where pro-smoking and tobacco control

advocates are fighting a fierce battle, with the pro-smoking companies winning (Ribisl, 2003). Others argue that within this highly competitive environment, it can be difficult for campaigns to achieve "brand recognition" (Lin & Hullman, 2005). For example, researchers in 2005 revealed that the USA Government restricted pro-smoking advertising in traditional media. However, the tobacco industry continued advertising online, and even crossed ethical lines by developing interactive games and contests aimed at engaging youth (Lin & Hullman, 2005). It seems that many people act on information, but infrequently verify the source of their information. In 2006, roughly 80 percent of Americans searched for online health information with 55 percent acting on their findings. Surprisingly, 75 percent of these persons verified the source and date of content sometimes, hardly ever, or never (Fox, 2006).

These online risks and competition may account for differences between literature-based research and real-world research. The literature-based research generally offers higher level trust environments where participants may interact face-to-face with the researchers, and due to informed consent requirements, will be informed about the study objectives. Conversely, in the real-world research and case studies, unless users have a valid reason to trust a particular intervention, there will be some level of implied mistrust and potential temptation to follow the advice of alternative information sources. Thus, online competition and risks are more likely to be relevant to real-world studies and case studies than experimental studies that offer a higher-trust and lower-competition environment.

Building Effective Interventions

Although prior meta-analyses provide numerous insights into the efficacy of online interventions, and have provided valuable insights into a few psychological design factors, they have not identified a broad range of factors that may explain intervention efficacy. As a result, these studies do not offer valuable insight into designing interventions.

Real-world research has coded a wide range of intervention features that are believed to influence behaviour. Some of these papers present frameworks on designing interventions and suggest that the systems are associated with behavioural influence. However, these studies present influence systems that have not been evaluated. They describe how interventions are designed, but do not compare design features with impact data, leaving room to treat these systems with scepticism until they are

evaluated. Similarly, the real-world case studies offer many examples of online social marketing campaigns. Occasionally website usage statistics provide some insight into which features were popular, but do not offer any strong evidence of which features are associated with behavioural impacts. At this point, there is a need to move beyond current knowledge, by comparing design factors with impact data, so that persuasive design features may be assessed.

3.6. Summary

Motives to innovate online interventions

Various actors are investing in online interventions for many reasons. First, online channels are displacing traditional media. Second, research shows that online interventions work. Third, online interactivity offers advantages over other communication channels. Fourth, with over 1.5 billion users worldwide, online channels offer opportunities to reach large populations. Fifth, online interventions are affordable in the face of rising healthcare costs.

Interventions categorized by individualization

Across the literature, there appears to be two broad categories of interventions: *group campaigns (mass-media)* and *individualized interventions (interpersonal)*. The first category, group campaigns (mass-media), includes two types of interventions that offer lower-individualization communication. *Generic communication* is the "one size fits all" approach where messages provide as much information as possible within a single communication. *Targeted communication* is intended to reach subgroups, often based on particular demographic characteristics. This is the level of individualisation offered by social marketing. The second category is *Individualized Interventions (interpersonal)* which includes three types of higher-individualization communication. *Personalized communication* integrates personal information into a message, such as a person's name. *Tailored communication* is targeted to an individual and first requires the person to provide input before the system provides feedback. *Interpersonal communication* describes the communication that takes place between people.

Macro and micro behaviour

Just as the ultimate bottom line of social marketing is behavioural change, the ultimate goal of online social marketing is also behavioural change. Generally, online campaigns target two types of behaviour. Before an online intervention can affect target audiences' attitudes or behaviours, individuals must first perform small online behaviours that may

lead to more profound offline behaviours. *Macro-behaviours* describe the primary behaviour targeted by an online intervention. *Micro-behaviour* describes a routine behaviour that people perform online, which is intended to lead to the macro behaviour.

Trends across efficacy studies: Efficacy

The three categories of research present different efficacy conclusions. *Literature-based research*, drawing from meta-analyses and systematic reviews provide the strongest evidence that online interventions can influence psychological and behavioural outcomes. They show that online interventions can match and sometimes outperform interventions distributed over traditional media. One limitation is that these review studies (with one exception) tend to include interventions that are not necessarily applicable to social marketing campaigns.

Real-world research provides a different set of conclusions, suggesting many online interventions are ill suited to influence behaviour. Their conclusions are not based on participant data, but rather theorized impact. Although some of these studies provide intervention design criteria, they lack impact data, which renders their impact conclusions indicative at best.

The *real-world case studies* provided details about the online component of social marketing campaigns, though they do not provide enough information to judge intervention efficacy in terms of reliable behavioural impacts. It is more common for outcomes to be described in terms of micro-behaviours: website visits, page views, or other measures of content viewing. Though some papers report population-level impacts, these evaluations lack control conditions and have failed to rule out alternative causal factors. As a result, reports on online social marketing efforts generally focus on processes (what was done) as opposed to impacts (what was achieved).

Trends across efficacy studies: Individualization

In general, the level of individualization appears to vary across the three types of research. The literature-based research appears to include more interventions modelled on interpersonal-type interventions. Conversely, real-world evaluations and real-world case studies tend to include interventions modelled on mass-media campaigns.

Trends across efficacy studies: Generalizability to population level

There appears to be a research gap between interventions evaluated in experimental control conditions, and those evaluated in real-world conditions. This difference contributes to a generalizability problem, where knowledge of what works in controlled conditions may not fully generalize to population level campaigns. Social marketing campaigns generally target voluntary behaviours. However, prior meta-analyses and systematic reviews have primarily blended voluntary interventions with mandatory interventions that are linked to a person's well being (such as managing a chronic disease) or treating psychological disorders. This means that the conclusions may not fully generalize to interventions targeting voluntary behaviours, suitable to social marketing applications.

Trends across efficacy studies: Mistrust and growing competition

In real-world interventions, two trends are working against social change campaigners: declining trust and growing competition. Declining trust is rooted in growing threats from online crime, misinformation, and other online abuses. Online, the ability for anyone to publish or advertise without restriction is creating a highly competitive environment, where social marketers can be at a disadvantage. These online risks and competition may account for differences between literature-based research and real-world research. The literature-based research generally reflect studies where participants were offered higher-trust environments as participants would have frequently interacted face-to-face with the researchers, and have received information about the study objectives. Conversely, in the real-world research and case studies, these studies not only lacked impact data, but also they were evaluated in real-world contexts where participants were unlikely to be exposed to the organizations operating the intervention. Thus, they were unlikely to foster the level of trust that may be an artefact of conducting controlled experiments.

Trends across efficacy studies: building effective interventions

Literature-based research provides good efficacy conclusions, but only offers modest insight into intervention design. Real-world research has coded a wide range of intervention features that are believed to influence behaviour. However, these studies present influence systems that have not been evaluated. Similarly, the real-world case studies offer many examples of online campaigns and occasionally micro-behavioural data but do not offer any strong evidence of which features are associated with behavioural impacts.

4. Online Intervention Design

"Today computers are taking on a variety of roles as persuaders, including roles of influence that traditionally were filled by teachers, coaches, clergy, therapists, doctors, and salespeople, among others. We have entered an era of persuasive technology, of interactive computing systems designed to change people's attitudes and behaviours."

BJ Fogg (2003)

Although there are strong motives to develop online interventions, the psychological approaches employed by these systems are not fully understood. With numerous competing schools of thought, theory-based design can be confusing. When designing theory-based interventions, designers need to understand the comparative differences between influence frameworks, the way they group techniques, and how each theory operates and relates to others. They need to know which theories and psychological constructs are best represented by particular theoretical frameworks. Frequently, it is not always clear which techniques "belong" to which theories, as there is considerable overlap, such as the case of *self-efficacy*, which is included in many theories. Additionally, they need to consider numerous practical considerations not addressed by these frameworks, such as graphic design, target audience traits, social trends, and institutional politics.

This chapter is organized as follows. First, it presents a number of persuasive online design factors that are related to psychological and/or behavioural influence. These include source credibility, trust, reputation, visual appeal, usability, sequential requests, tailoring, and intervention dose (adherence). Second, it reviews behavioural influence systems. Third, it discusses literature that shows that people interact with technology in a similar way to how they relate with other people. Finally, it reviews online communication models and discusses situations when particular models may be more or less suited to particular purposes.

4.1. Designing Real-world Interventions

Designing and analysing theory-based interventions can be challenging. The lack of insight into intervention design may have prompted one researcher to argue that, "the healthcare sector is still unclear on how to adequately and effectively use technology as an intervention medium and unsure about what evidence exists to guide program delivery." (Norman, 2007). Nonetheless, when designing real-world online interventions, practitioners rarely seem confined by fixed theoretical frameworks. They apparently blend theory-based constructs and techniques with practical, financial, and political considerations. For instance, one review of the major theories used by behaviour change practitioners included the health belief model, stages of change, theory of planned behaviour, the precaution adoption process model, social cognitive theory, community organization, diffusion of innovations, and communications theory. The researchers advised health campaigners to conduct research on their audiences and behavioural goals, then pick the theory or blend of theories that seem most suitable (Glanz, et al., 2005). Likewise, social marketing interventions normally progress through early thinking, concept testing, revisions, pilot-testing, and further revisions before considering deployment. Once mature, an intervention is thus likely to contain elements of various theories, techniques, and considerations.

When trying to identify the theoretical basis for interventions regarded as successful, there can be serious challenges. Though online interventions are occasionally analysed as a homogenous group, from a psychological point of view, they may be radically different. For example, some interventions may be highly interactive, reflecting influence theories well suited to their target audiences. They may be designed by experienced researchers who have deployed sophisticated and tested tailoring algorithms. In contrast, other interventions may be static websites with no interactivity, bland content, and packaged with unappealing graphic design. Although both qualify as online interventions, in terms of their potential to influence audiences, there are large psychological differences. Unlike visual design, which can be observed, psychological design is conceptual, reflecting the extent to which an online intervention deploys psychological principles.

4.2. Persuasive Online Design

This section describes a number of factors that have been empirically demonstrated to relate with website users' psychology and/or behaviour. They include source credibility, trust, reputation, visual appeal, usability, sequential requests, tailoring, and dose.

Source Credibility

To overcome poor perceptions of marketing efforts, source credibility and trust are traditionally factored into social marketing campaigns. In offline contexts, McKenzie-Mohr and Smith (1999) argued that campaigns could stand a better chance of influencing citizens when they were designed around credible persons who held the public's trust. This approach is based on evidence that that source credibility of organizations or individuals operating interventions can impact on the likelihood that target audiences adopt alternative behaviours (Kotler & Roberto, 1989). In online contexts, superficial website features can be used as a basis for user evaluations of source credibility (Fogg, 2003). Likewise, the e-commerce literature suggests that trust in a company is a key factor behind online purchasing behaviour (Jarvenpaa, et al., 2000). Although mistrust and competition can undermine online intervention efficacy, the literature suggests that website credibility and trust can negate these negative impacts, and possibly increase prospects for influencing behaviour. Additionally, sponsor congruency may have an impact on audiences' trust perception. Sponsors that are incongruent with an online campaign (such as a tobacco company funding an anti-tobacco campaign) can cause people to question the campaigners' motives and possibly generate negative attitudes (Rodgers & Bae, 2007).

Across academic and professional literature, the terms credibility and trust are sometimes used incorrectly and synonymously. This confusion may be because these terms hold related, but different meanings. Trust defines a positive belief about the perceived reliability or dependability of a person, object, or process. For one to bungee jump, they require trust in the cord, beliefs about its dependability (Fogg, 2003). Credibility does not apply, though the credibility of the bungee cord company may influence one's trust that the cord is dependable.

The computer credibility framework has four types of credibility evaluations: *presumed*, *surface*, *reputed*, and *experienced* credibility. Within this framework, presumed credibility describes prejudices users may have about a particular website, which can be modified by visual attractiveness and design motifs. Reputed credibility is based on

third-party endorsements and reputation. Surface credibility is derived from quick interactions with a website, and is influenced by usability and visual attractiveness. Then *experienced credibility* comes from long-term firsthand experience with a website, and can be influenced by intentions to act on the advice of a website, or the length and frequency of website interaction (Fogg & Tseng, 1999).

To explain why source credibility may influence behaviour, the elaboration likelihood model is useful. According to the elaboration likelihood model, individuals are influenced by particular appeals as a result of central or peripheral route processing. *Central route processing* describes the process of elaborating on an appeal by paying attention to an argument and evaluating it. *Peripheral route processing* describes the process of drawing conclusions from rules of thumb or reliance on heuristic cues without much regard toward the actual merits of an argument (O'Keefe, 2002; Petty & Cacioppo, 1986).

For audiences who are neither motivated nor capable of assessing the merits of an appeal, peripheral route processes, such as reliance on source credibility, may determine whether or not people accept propositions (O'Keefe, 2002). Consequently, behavioural impacts associated with website source credibility are likely to be relevant to low-involvement individuals who rely on rules of thumb and who may be influenced by unconscious assumptions about what constitutes a credible source. Applied to persuasive technology, source credibility is perceived differently according to a person's interest and familiarity with a particular subject. Accordingly, people with low interests/familiarity perceive credibility as a binary value, as either credible or not; people with medium interests/familiarity perceive credibility above or below a variable threshold; and people with high interests/familiarity perceive a continuum from little to high credibility (Fogg & Tseng, 1999).

Trust

Research suggests there is a strong link between trust and behaviour. People who trust their fellow citizens are more likely to volunteer, contribute to charities, participate in politics, give blood, fulfil their tax obligations, and hold more tolerant views of minorities (Putnam, 2000). In an online context, trust has been deemed the primary intermediary between perceptions and customers' willingness to make online purchases (Jarvenpaa, et al., 2000). There are three categories of online transaction risks: financial, product, and time/convenience. Within the financial risk category, the top specific fear

is mistrusting an online company (Forsythe, et al., 2006). Online trust plays an intermediary role between a website's physical characteristics and users' behavioural intentions. The mediating role of trust varies across different types of websites depending on the risks and costs associated them (Bart, et al., 2005). Trust has also been associated with users' loyalty towards a website (Flavian, et al., 2004).

The link between trust and behaviour is not just manifest within specific online behavioural acts, but shows an association with widespread Internet adoption. Based on data from the UK's 2005 Oxford Internet Survey, researchers defined "cyber-trust" as a confident expectation—the belief that online actions can frequently be taken without additional safeguards. The more years a person spent on the Internet, the more their cyber-trust grew. The researchers concluded that the Internet was an "experience technology" where cyber-trust increased in relation to the number of years a person spent online and their proximity to Internet technology. Education was also shown to be associated with cyber-trust (Dutton & Shepherd, 2006).

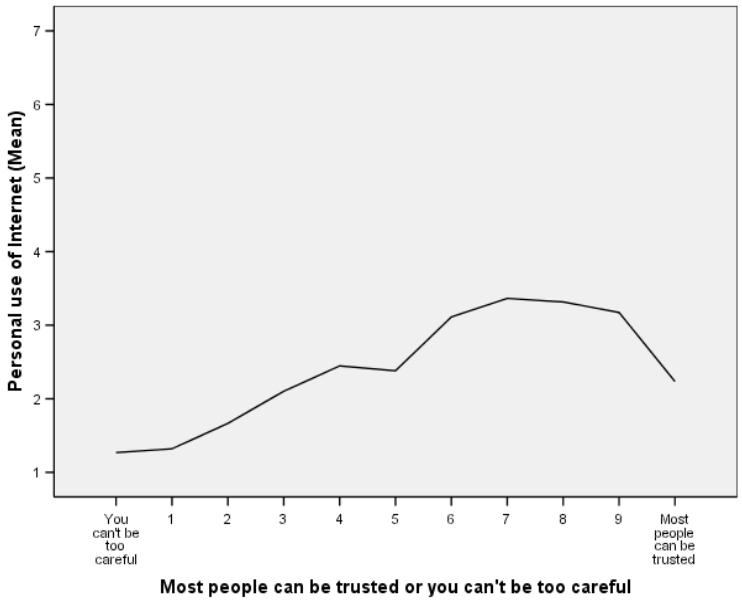


Figure 4-1: Generalized Trust and Internet Use (ESS 2004 Data)

Given this association, an exploratory analysis was undertaken to see if this same relationship between Internet use and trust existed in other nations. The European Social Survey (ESS) is a Europe-wide survey coordinated by a number of academic institutions. Using data from the 2004 ESS study, a regression analysis was run between the variables for *generalized trust* and *personal use of the Internet, web, and e-mail*. The

results, presented in Figure 4-1, showed a significant association ($r=.232$, $N=45,414$, $p<0.01$, one-tailed). Together, these findings suggest that trust is not just associated with specific online behaviours, but also, broader Internet use in general.

A distinction needs to be made between *passive trust* that requires psychological believability, and *active trust* that requires physical action. For example, take a website user who perceives a particular website to be trustworthy and credible for a particular purpose. Given passive trust, they may feel confident that website staff will deliver on promises or that the outcomes of the website's advice will be positive. Given active trust, the website user would be confident enough to commit a physical action such as purchasing a product or taking a recommended health supplement. This action places the website user in a dependency relationship with some level of risk that the order will not be fulfilled or the recommended health supplement may be powerless or potentially harmful. Hence, passive trust requires psychological credibility judgements that carry no risk; active trust requires a physical act (intended or carried out) that implies dependence and risk. From another perspective, trust can start passively with confidence and end actively with action. Active trust moves a person from safe psychological judgements into risky physical acts, and by doing so, bridges psychology, and behaviour.

Social cognitive theory can help explain why trust may be associated with behaviour. The theory explains how individuals acquire new skills and behaviours through an interactive process between their internal volition and external social determinants (Bandura, 1989). A key sequence within this theory is the relationship between a person, their behaviour, and a behavioural outcome. Within social cognitive theory, to influence behaviour, a person requires an outcome expectation such that he or she believes a particular behaviour will lead to a desired outcome. Also, people require self-efficacy which describes their belief that they are capable of performing given behaviours; and the more they believe they can perform tasks, the more likely they are to perform them (Bandura, 1982). In other words, for a person to act, he or she requires a motivating outcome expectation and self-efficacy that he or she can perform the required behaviours.

To explain social cognitive theory in the context of online campaigns, consider the structure of behavioural appeals as statements that follow the logic "If you perform this

behaviour, then a good outcome will result" or negatively, "If you do not perform this behaviour, then a bad outcome will result." Formally, it reduces to "If X, then Y" or "If NOT X, then NOT Y." An example would be "If you donate, you can immunize a child and improve their wellbeing, but if you do not, they may become sick." When applying this logic to social cognitive theory, non-profit appeals can be regarded as outcome expectation claims. If audiences accept the causal link between behaviour X and outcome expectation Y, according to social cognitive theory they are more likely to perform the behaviour (provided they have sufficient motivation and self-efficacy). However, trust is a factor in this process because persons who do not believe the claim that behaviour X leads to outcome Y, are unlikely to act.

Within this framework, trust or mistrust in an organization can be seen as a factor that may influence whether a person believes that behaviour X leads to outcome expectancy Y. In other words, if an organization claims that donations will be used to immunize children in need, but target audiences mistrust the organization, then these audiences are unlikely to believe that donating (behaviour X) will immunize children (outcome expectation Y). Consequently, they are unlikely to act on the appeal of such an organization, as their efforts would not lead to the outcome expectation.

Reputation

Reputation has been defined as what is said or believed about a person's or thing's character (Jøsang, et al., 2007). Research suggests that online trust can be transferred from a trusted source to an unknown source, and thus constitute a reputation endorsement. Researchers argued that endorsements by trusted parties could increase a person's trust. In semantic networks, trust can be established through networks of trusted friends (Golbeck & Hendler, 2004). Online reputation systems store and disseminate information about an actor's past behaviour (Vasalou, et al., 2008). Reputation may be associated with website credibility, possibly indirectly affecting behaviour through credibility and active trust. For example, reputed credibility represents how much a person believes something due to the influence of a third party (Fogg & Tseng, 1999).

Website reputation can be influenced by endorsements, reports, awards, and referrals. There is good evidence that hyperlinks can convey reputation endorsements. On the web, hyperlinks to a website can also be perceived as endorsements (Fogg, 2003). While, out-links from a website to a non-credible website can negatively impact on

users' attitudes towards a website (Long & Chiagouris, 2006). Hyperlinks to universities are associated with the universities' academic assessment ratings (Thelwall, 2004). Furthermore, hyperlinks between websites are related to ideological similarity between organizations (Zhou, et al., 2005).

It has been stated that reputation is associated with trustworthiness (Jøsang, et al., 2007); and trustworthiness is treated as a dimension of credibility in this thesis. Moreover, it has been argued that Internet-based reputation systems can help users evaluate the trustworthiness of an unknown website (Vasalou, et al., 2008). Website users who perceive a company to be larger and more reputable are more likely to trust the associated websites (Jarvenpaa, et al., 2000).

Visual Appeal

Research suggests an association between a source's visual attractiveness and their credibility. Attractive communicators are more liked and can positively influence the products with which they are associated. In a commercial context, the relationship between a person's willingness to purchase a product for themselves and a product endorser's visual attractiveness is significant: $r=0.374$, $N=265$, $P<0.05$ one tailed. According to the source attractiveness model, the effectiveness of the message will depends on the endorser's likeability, similarity, and attractiveness (Ohanian, 1990).

Website visual appeal, sometimes called website design, is considered an important factor in persuasive campaigns, although it is not fully known why. Moreover, its relation to usability is often confounded. For instance, Long and Chiagouris (2006) concluded that website design might have a greater impact on consumers' attitudes towards websites then their offline perceptions of the organizations. Their study showed a significant association between website design and users attitudes towards a website, and three out of six dimensions were trust-based (Long & Chiagouris, 2006). One experiment further supports this assertion. One piece of text was shown to three groups: the first group had a photo of a high-credibility ranking doctor; the second, a low-credibility ranking doctor; the third, a control group with no photo. Even though all three groups received the same text, subjects believed that text adjacent the most credible looking doctor was the most credible; the text without a photo was second most credible; and the text with a low-credibility looking doctor photo was regarded least credible (Nguyen & Masthoff, 2007).

These studies demonstrate that visual design and photos can contribute to substantive judgements, and that superficial judgements can influence judgements considered to be the result of careful thinking. Research suggests that design can influence judgements and behaviour. It is proposed that this may operate through a relationship with credibility and trust. As a theoretical explanation for the link between design and credibility, Fogg and Tseng's (1999) four credibility factors (presumed, surface, reputed, and experienced), introduced above, offer an explanation for this link. Particularly, visual appeal may contribute to presumed and surface credibility.

The first impression that people form when visiting a visually attractive website has been shown to produce a *halo effect.* This effect creates a positive impression in users' minds that can persist even in the face of successive negative experiences. Surprisingly, this first impression can be formed in the first 50 milliseconds (Lindgaard, et al., 2006). One explanation for the halo effect is that emotions have been shown to influence customers' memories of products. It has been argued that site developers have striven to develop emotionally evocative websites because the research shows an association between emotionally evocative website design and the ability to influence users (Kim, et al., 2003). Additionally, largely on the basis of visual clues, even technology experts are sometimes unable to differentiate between a legitimate website and an online phishing scam (Dhamija, et al., 2006). It is possible that a visually attractive fraudulent website can engineer a first impression that causes users to overlook warning signs of impending threats.

Usability

One meta analysis of 180 usability studies argued that the ISO's *usability* definition—effectiveness, efficiency, and satisfaction—was widely used, with usability being context dependent and shaped by the interaction between the people, their problem, and the tools (Hornbaek, 2005). Although little research has examined the relationship between usability and credibility, a few quantitative investigations have indirectly addressed this association. For example, researchers have indirectly addressed the associations between usability and credibility while using definitions of trust that overlap with credibility. Moreover, usability was shown to relate to users' loyalty, trust, and satisfaction (Flavian, et al., 2004). In another study, the researchers blended definitions of credibility that include usability (Long & Chiagouris, 2006).

Generally, a website's visual appeal describes aesthetic design qualities, while its usability describes functional design qualities. Although visual attractiveness and usability are frequently discussed as separate topics, it is common for researchers to blend the two topics together, or to discuss their interactions. Although usability and visual appeal are distinct concepts, in practice it is difficult to make major changes to one without affecting the other, so that design modifications may influence usability, while usability changes influence design. This may explain why researchers frequently blend the two topics together. In one study, design and usability were merged together to describe website source credibility (Long & Chiagouris, 2006). In another study, it was noted that a website could be well regarded when it was visually appealing, even if possessing poor usability. This phenomena was accounted for by the first impression that attractive websites can form in users' minds (Lindgaard, et al., 2006). In other words, people who encounter visually attractive websites form a positive first impression that persists despite successively encountering poor quality content and low usability.

Sequential requests

There are a few influence principles that social marketers have been advised to use and that have been evaluated in online contexts. Primarily, these included sequential request techniques. The *foot-in-the-door technique* is frequently discussed in community-based social marketing (McKenzie-Mohr & Smith, 1999). In general, when people agree to a small request, they are much more likely to agree to a subsequent larger request, and one that they would have probably rejected if they had been asked initially. One experiment showed that the foot-in-the-door technique can operate by e-mail, where students were more willing to invest considerable time to help a fellow student who made a small prior request, rather than spend the same time to help a fellow student who made a large initial request (Gueguen, 2002). Using an experimental method, this study offered good efficacy evidence. Another study showed that the foot-in-the-door technique, combined with obtaining commitment, could operate by e-mail and increase people's environmental behaviour. Based on these techniques, when people agreed perform environmental behaviours in the future—such as checking their tyre pressure or purchasing green power—they were more likely to comply when the behaviour offered financial rewards and they had made prior commitments (Artz & Cooke, 2007). This study used a correlational approach, and the evidence appears convincing, but may not have controlled for possible confounders.

Building motivation over time is another popular technique from community-based social marketing (Kassirer & McKenzie-Mohr, 1998). It has been shown that a continual stream of e-mail reminders can increase participants' level of physical activity and the quality of people's eating habits (Franklin, et al., 2006).

Tailoring

Tailoring has been defined as a process for creating individualized communication by gathering and assessing personal data in order to determine the optimal way to inform a person about an issue or needs (Lustria, et al., 2008). In health promotion, tailoring begins with a user's input and has been described as any combination of information and behaviour change strategies for them, based on their unique characteristics, related to the outcome of interest (Kreuter, et al., 2000).

Evidence shows that tailoring can influence psychosocial and behaviour outcomes. When integrated into existing interventions, tailoring can potentially increase their effectiveness. Studies have compared tailoring to non-tailored interventions across various behaviour outcomes: diet, smoking cessation, physical activity, mammogram screening, weight control, cholesterol screening, and nutrition label reading (Kreuter, et al., 2000). Tailoring is considered more effective at influencing behaviour than generic information. It can increase the perceived personal relevance of messages; it can evoke favourable perceptions from individuals; and it presents information based on individuals' likes/dislikes, needs and current intentions (Lustria, et al., 2008). There is strong evidence that tailoring works, but it appears that the advantage of tailoring is small and influenced by many moderating factors. One meta-analysis of tailored versus non-tailored print interventions estimated the correlation effect size of 57 studies to be r=.074. This small effect size was moderated by the control condition, health behaviour, population demographics, nature of print material, number of intervention contacts, length of follow-up, number of theoretical concepts tailored on, and whether tailoring focused on demographics and/or behaviour variables (Noar, et al., 2007).

Typically, tailoring messages are based on four types of assessment. The first category comprises health behaviours, such as personal lifestyle behaviours. The second includes risk factors, such as unhealthy lifestyle behaviours. The third is stage matching based on the transtheoretical model. Fourth is information needs, primarily health concerns or interests (Lustria, et al., 2008) .

There are three types of tailoring mechanisms. First, *personalization* is the use of personal information, such as a person's name and age. Second, *feedback* is a recommendation based on an assessment of the individual's needs or characteristics related to the target behaviour. Third, *adoption/content matching* is the content style adapted to a particular target group (Lustria, et al., 2008).

The primary explanation for why tailoring works comes from the elaboration likelihood model (Petty & Cacioppo, 1986). Tailored messages are more likely to be elaborated on, and thus more likely to be remembered, leading to attitude change. The elaboration likelihood model explains that tailoring contributes many features that increase central route processing. Several studies show that tailored information is more attention-grabbing, readable, memorable, likely to be saved, discussed with others, perceived as interesting, considered relevant, and felt to have been written especially for the reader. Tailoring eliminates unnecessary information and the information presented is more personally relevant to the individual. People pay more attention to information believed to be personally relevant; information that is focused on is more likely to influence attitudes and behaviours; and compared to non-tailored information, relevant information is more likely to help a person make changes (Kreuter, et al., 2000).

One team of researchers has argued that the Internet offers an opportunity to deliver tailored messages and improve access to expert care and feedback (Lustria, et al., 2008). Another group has argued that Internet-based programmes have the potential to provide some of the best-tailored interventions in behavioural change at a relatively low cost (Cummins, et al., 2003). Still another research team has argued that websites that provide more features based on behaviour change theory are not necessarily higher quality interventions; instead, websites that provide fewer individually tailored interventions may be more effective in promoting and maintaining behaviour than sites that offer many poorly presented strategies (Doshi, et al., 2003). Nevertheless, an assessment of health interventions found that only 13.5 percent of the programs provided individually tailored feedback (Evers, et al., 2003). An inconclusive study of 15 physical activity websites assessed whether tailoring was associated with greater outcomes. Only four interventions used tailoring, and of those, only half showed positive outcomes. The researchers conceded that they did not have enough evidence to assess the question (Vandelanotte, et al., 2007). However, the balance of evidence

suggests that tailoring is an effective technique that can improve online intervention efficacy.

Dose

People who do not take a drug cannot expect to feel the benefits of that drug. Only the people who have taken the drug can expect to feel its effects. This basic principle applies to web-based interventions as much as physical drugs. The intensity of exposure that people receive when using an intervention is called *dose*. In general, the greater a person's dose (the more they use a motivational website), the greater their chance of achieving the goal.

Dose is considered a key factor in achieving behavioural outcomes. In one systematic review, the majority of participants failed to engage in more than half of the expected e-health activities, but the six interventions with high utilization showed better behavioural outcomes (Norman, et al., 2007). Similarly, high attrition in person-to-person health behavioural change programmes has prompted researchers to argue that online interventions need to make more effort to prevent dropouts in person-to-computer interventions (Evers, et al., 2003). This trend has prompted researchers to focus on strategies to increase adherence to online interventions (An, et al., 2006).

The concept of dose can be confusing as there are different ways of describing it, and online, there are numerous ways of measuring it. Dose is often described in terms of adherence to an intervention. The term *adherence* describes the proportion of participants who continue using an intervention. Negatively expressed, *attrition* describes the proportion of people who stop using an intervention over time.

There are two types of adherence. First, *intervention adherence* describes the proportion of participants who use an intervention over time. This is negatively called *non-usage attrition*. Second, *study adherence* describes the proportion of participants who stay in a study over time. It is negatively called *dropout attrition*, which describes participants who leave a study.

In experimental studies, it is possible that people adhere to a study but stop using the intervention. Conversely, people may adhere to the intervention, but dropout of the study. However, it has been proposed that study and intervention adherence are correlated and explained by a third variable: participant interest (Eysenbach, 2005). As

intervention adherence is critical to intervention efficacy, and study and intervention adherence may be related, there is a need to investigate these relationships further.

4.3. Influence Systems

This section reviews influence systems in order to assess guidelines that can be used to design online campaigns and interventions. This section discusses the complexity faced when designing real world intervention, provides a conceptual framework to aid describing systems, and then compares five influence systems.

Although there are many cases of effective online behavioural change interventions, it is not always clear why some online interventions have been demonstrated to work, while others have not. When considering possible explanations, across numerous web-based interventions, there seem to be few clear-cut examples of theory A, behavioural change technique B, or persuasive strategy C. Rather, interventions normally blend concepts from different theories, while merging numerous factors that may exert influence in complex ways. This may explain why meta-analyses of web-based behavioural change interventions have shown that interventions can work online (Portnoy, et al., 2008; Wantland, et al., 2004), but have not yet isolated the factors associated with successful and unsuccessful interventions.

Consider an interactive campaign website for groups at a high risk of contracting HIV/AIDS. The campaign could encourage people to take a brief survey, which then provides them with tailored feedback. Based on information entered about their lifestyle, this website may show users their risks, and then propose behaviours that could reduce their risks, such as practicing safe sex. Assuming this intervention was successful to some degree, the factors that account for its efficacy may be attributed to source credibility, the tailoring algorithms, argument quality, the vividness of imagery used, fear appeals, or how audiences relate to the communication style. All or some of these factors may account for the intervention's effectiveness or ineffectiveness. However, when trying to describe interventions, there is no comprehensive way of conceptualizing the many factors, nor a universal taxonomy of influence effects appropriate to the design of online behavioural change interventions.

One study of design guidelines targeting behavioural change argued that there are several guidelines to evaluate health on the Internet. However, there are no existing

guidelines specifically to evaluate health behaviour change programmes addressing disease management and prevention. Moreover, out of 20 health intervention guidelines, only two addressed outcomes (Cummins, et al., 2003).

Behavioural Influence Frameworks

Across different psychological and behavioural change frameworks, there exists a complex blend of different classification systems, from different perspectives, with competing theories and influence techniques. Some are concerned with covert persuasion and others with overt techniques. Some are concerned with psychological constructs and others only with behaviour. One review of 42 influence frameworks described how some systems included taxonomies of discrete influence tactics; others clustered them around core psychological constructs; and the organizing principles ranged from a one-dimensional system to a comprehensive list of 126 individual tactics (Rhoads, 2002).

The term *influence system* describes any research or taxonomy of factors that may influence a person's psychology and/or behaviour. Similarly, the term *influence component* describes a particular technique. The term *influence package* describes a group of influence components. For example, a checklist of behavioural change techniques would constitute an influence system, while the actual techniques, such as asking people to set goals, would be called influence components. Influence packages describe psychological constructs and behavioural change techniques that appear in popular theories and are often labelled "best practices". For example, an intervention could contain one influence component to increase a person's self-efficacy, another to influence their attitudes, and yet another to place normative pressure on them. Together, this would be the theory of planned behaviour, which is an influence package containing these three influence components.

Review of Influence Frameworks

In order to assess how the different influence frameworks could aid describing and building online interventions and campaigns, this section reviews five types of influence frameworks from different disciplines. The purpose is to examine their organizing principles and assumptions. Consequently, this brief review only addresses these systems as a whole, rather than their individual tactics.

Evidence-based behavioural medicine

Evidence-based behavioural medicine focuses on health promotion or disease prevention approaches for which there is evidence of clinical efficacy or effectiveness (Davidson, et al., 2003). It is argued that the strength of an intervention can be explained by the psychological factors built into it.

As behavioural medicine researchers are interested in the psychological factors that have been empirically shown to work, they have sought to identify the core influence components, regardless of the theoretical packaging. Within this field, one initiative has used coders to extract theory-based behavioural change techniques from numerous health interventions. This has resulted in a comprehensive taxonomy of 40 *behavioural change techniques* (BCTs) which are presented in Table 9-7. The BCTs are theorized to influence behavioural determinants, which are the psychological constructs believed to influence behaviour. An earlier project reviewed a number of behavioural change theories and reduced the behavioural determinants to just 12 constructs (Michie, et al., 2005). These constructs include *knowledge*; *motivation and goals (intention)*; *social influences (norms)*; *beliefs about consequences*; *skills*; *memory, attention and decision processes*; *behavioural regulation*; *emotion*; *nature of the behaviours*; *beliefs about capabilities (self-efficacy)*; *environmental context and resources*; and *social-professional role and identity*.

A subsequent research project relied on coders to remap techniques to the underlying psychological constructs associated with behaviour, called behavioural determinants (Michie, et al., 2008). Instead of focusing on groupings, this initiative presents discrete techniques in a check-list format (Abraham & Michie, 2008).

Cialdini's six principles

As a general system to describe influence, Cialdini argues that there are thousands of compliance tactics. However, all these tactics impact just six psychological principles: reciprocity, commitment and consistency, social proof, liking, authority, and scarcity (Cialdini, 2008). *Reciprocity* is the human desire to repay another person in-kind. *Consistency and commitment* describe a person's desire to be consistent with past behaviour, and how to leverage past commitments to influence future behaviour. *Social proof* describes peoples' tendency to take behavioural cues from their social context. *Liking* is the principle that people are more compliant with people they like. *Authority* describes how people are more likely to act on the advice of authority figures. Finally,

scarcity describes how people assign more value to things that are less available. Hence, Cialdini organizes influence factors by broad psychological constructs; and within each construct, he outlines relevant moderating factors and influence techniques.

Captology

The study of computers as persuasive technology is called *captology*. BJ Fogg's (2003) founding book on the subject, "Persuasive technology: using computers to change what we think and do", describes how technology can exert influence on users' psychology and behaviour. This system presents three broad groupings that describe how persuasive interaction may operate: as tools, media, or social actors. For example, people may be persuaded by technology while using it as a *tool* to complete tasks, such as receiving feedback or being guided through processes. Tool-based persuasive strategies include *reduction*, *tunnelling*, *tailoring*, *suggestion*, *self-monitoring*, *surveillance*, and *conditioning.* They can be persuaded when using technology as *media*, such as being shown the outcomes of their behaviour. Media-based persuasive strategies include *simulated cause-and-effect*, *simulated environments*, and *simulated objects.* Finally, as a *social actor*, technology can mimic attributes of human interaction; consequently, technology can express aspects of human influence. Social actor-based persuasive strategies can be expressed by *physical cues*, *psychological cues*, *language*, *social dynamics*, and *social roles* (Fogg, 2003). In summary, the captology system classifies influence tactics according to how people use and/or interact with technology.

Recently, researchers have extended this field by developing a taxonomy that aims to identify the discrete factors that may render technology persuasive. The researchers grouped influence components by primary task support, dialogue support, system credibility support and social support (Oinas-Kukkonen & Harjumaa, 2008).

Transtheoretical model

The *stages of change* approach, also called the *transtheoretical* model, takes the position that all psychology disciplines do the same thing: they encourage people to progress through stages—from *pre-contemplation*, to *contemplation*, to *intention to act*, to *action*, and finally, to *maintenance.* During this process, people continually relapse before making progress. In some cases, a final stage of *termination* is added, when the behaviour has become engrained into a person's life.

According to the transtheoretical model, all change happens according to ten processes, which are divided into two groups. The *experiential processes* include *consciousness-raising*, *dramatic relief*, *self-reevaluation*, *environmental reevaluation*, and *social liberation*. *Behavioural processes* include *self-liberation*, *helping relationships*, *counter-conditioning*, *reinforcement management*, and *stimulus control*. The factors that motivate people to move through stages are *self-efficacy* and *decision balance*, based on the pros and cons of the behavioural goal (Prochaska & Norcross, 2001; Prochaska, et al., 1995). This system is organized around a model of how people progress through stages that are influenced by ten processes, two drivers of change, and many techniques that may affect any of these constructs.

Community-based social marketing

In the field of social marketing, there are two approaches that most resemble influence frameworks. They both come from the area of community-based social marketing, which is generally applied to local environmental interventions. The first influence system comes from the *tools of change* approach. This system lists a number of specific techniques that can influence target audiences. These include *building motivation over time*, *using feedback with target groups*, *financial incentives/disincentives*, *norms appeals*, *obtaining commitments*, *overcoming barriers*, *prompts*, *vivid personalization*, and *word-of-mouth* (Kassirer & McKenzie-Mohr, 1998).

The second system builds on the work of the former. It begins with pre-campaign research aimed at discovering barriers and benefits associated with target behaviours. It then develops interventions and presents a framework of five techniques that have been proven to impact on behaviour: *obtaining commitments*, *using prompts*, *appealing to norms*, *using communication*, *and incentives*. However, across the five techniques, 31 further factors are presented that can impact on the implementation of the five (McKenzie-Mohr & Smith, 1999). This system is organized around a planning process that identifies and removes obstacles, develops incentives, and employs motivation techniques.

Each of these influence systems provides a different perspective on the world, with different assumptions, theoretical explanations, and ways of grouping influence components. Comparing the different influence frameworks, there are a number of noteworthy differences. Within the systems, influence techniques are arranged

according to psychological principles, how people use/interact with technology, stages and processes of change, intervention planning processes, or a simple shopping list of what works. The use of theory differs considerably across these frameworks. For instance, the transtheoretical approach is both a theory and compilation of techniques; the remaining frameworks mix a wide number of theories to explain phenomena; while behavioural medicine draws on approaches that have been empirically shown to work and places less emphasis on theory.

4.4. Technology as a Social Actor

When investigating online interventions, it is not always clear who or what target audiences attribute to be the source of the campaign. Online, source attributions can be difficult to identify. For example, users' perceptions of the source of an online intervention may be attributed to campaign spokespersons; authors of website content; the website's webmaster, graphic designer or editor; the intervention planners; the website in general; partner organizations; or the campaign in general. This ambiguity presents a serious challenge to researchers, as it is difficult to research the influence of the source of a communications campaign when it not always clear who or what users regard as the source.

To clarify this ambiguity, a growing body of literature suggests that people interact with media and technology as if the media itself constituted the social actor. For example, one researcher commented that, "in many respects, websites may be considered to be analogous to individuals or organizations as information sources whose characters engender greater or lesser credibility" (Flanagin & Metzger, 2007). Another researcher argued that websites could be designed to develop meaningful relationships with users (Kumar & Benbasat, 2002).

There are two bodies of work that explain why people interact with websites as social actors: the *media equation* and the *functional triad*. The media equation has amassed a large volume of studies that show concepts of human-to-human psychology also operate between people and media, such as television, computers, and websites. According to the media equation, findings from psychology and sociology that explain human-to-human psychology can be experimentally verified to assess if they also apply to human-computer interaction. Building on a decade of research, media equation research suggests that many principles of human psychology are relevant to human computer

interaction (Reeves & Nass, 2003). This theory applies principles of human psychology to interaction with computers and media. For example, one well cited set of experiments showed that people are more polite to the computers they're interacting with; they treat a computer with the same voices as a distinct social actor; they apply gender stereotypes to male and female computer voices; and they responded more favourably to computers that use first person text, such as "I" (Nass, et al., 1994). An explanation for this phenomenon is that humans evolved in a socially rich world where all physical objects were real. For this reason, people instinctively react to mediated materials as real. Furthermore, any trend from the social sciences that describes how people interact, can be experimentally tested to evaluate if it applies to human and computer interactions (Reeves & Nass, 2003).

The functional triad framework professes that people interact with technology in three distinct ways: as *tools*, as *media* and as *social actors*. As tools, people use technology to perform tasks. As a medium, they use it for entertainment and educational purposes. However, as a social actor, people respond to technology as a living being, and can form relationships with machines. This means that persuasive human factors such as source credibility, expressions of body language and positive reinforcement can all be leveraged when designing persuasive interventions (Fogg, 2003). Although the reason why people respond to technology as social actors or living beings is unknown, it is believed that social responses to living beings are hard wired into human psychology, which comes into play when people perceive social presences.

On the basis of the media equation and the functional triad, websites can be treated as units of analysis and, consequently, principles of human-to-human psychology can guide research on human-to-website psychology. For example, models of human-with-human credibility can be used to describe human-with-computer interaction and communication. Furthermore, as the source of an online intervention can be attributed to the website itself, consequently websites are treated as credibility sources that can comprise primary units of analysis. In this regard, a website that people easily trust may share attributes in common with trustable people: good-looking (design), articulate (well-written content), and referred by a trusted friend (linked from a credible online source).

4.5. Communication Model Applications

Online interventions may be conceived as a tool to foster individually tailored relationships, or as part of large outreach campaign. Consequently, there is a need to understand the comparative advantages of interpersonal versus mass-media communication models in regards to online intervention design.

Model Ambiguity

A recent paper on mass communication and behaviour change has argued that a communication revolution is occurring which is blurring the traditional distinctions between mass and interpersonal communication. As a result, campaigners need to rethink how they use media to promote public health (Abroms & Maibach, 2008). Online, the distinction between mass and interpersonal communication is far from clear. Moreover, within this ambiguous communication environment, there may be times when a single or combined communication model may make the difference between effective and ineffective online interventions.

In recent years, scholars have challenged the notion that mass and interpersonal communication models represent distinct categories. Recognizing that mass-media and interpersonal models are slippery concepts, especially when applied to online interaction and communication, some have called the distinction between interpersonal and mass-media a “false dichotomy” (Reardon & Rogers, 1988). Others have argued that Internet-based communication is neither explained by mass-media models nor interpersonal models (O'Sullivan, 1999). While trying to explain the reason for this false dichotomy, two leading communication scholars have argued that the distinction was not the result of different concepts, but the result of two separate research histories that were intensified by academic politics. Historically, psychologists have researched interpersonal communication, while social scientists have searched mass-communications. Over the years, these two academic groups rarely interacted and infrequently cited each others’ work (Reardon & Rogers, 1988).

Online, the distinction between mass-media and interpersonal communication is far from clear. The Internet may be considered a mass-media or interpersonal channel depending on how a particular application is designed, used, and analysed. However, a distinction needs to be made between online interventions that are primarily based on two-way interpersonal communication (one-with-one) versus those primarily based on

one-way, mass-media communication (one-to-many). See Figure 8-1 for the framework used to describe these different models.

Online interventions can be conceived as interpersonal when they reflect a two-way tailored exchange between a website and user, based on user input and individually tailored content and/or functionality. Alternatively, interventions can be conceived as mass-media when they use one-to-many channels such as banner advertising, bulk e-mail promotion, or when a website primarily disseminates information without providing space for feedback.

Selecting the Correct Model

Diffusion of innovations research has demonstrated that mass-media channels are better at informing people by increasing knowledge. Likewise, interpersonal channels are better at persuading people by influencing behaviour (Rogers, 2003). It has further been argued that the combined effectiveness of interpersonal communication and the reach of mass-media communication is required to change behaviour (Neuhauser & Kreps, 2003). One meta-analysis of HIV/AIDS interventions demonstrated that active interventions, which engaged people in activities, were far more effective than passive interventions that just provided information (Albarracin, et al., 2005).

The key difference between one-way (one-to-many) and two-way (one-with-one) models is feedback, which allows interactivity. In one-way models, there is no interactivity. In two-way models, feedback systems provide an opportunity for interaction, which opens the doors to greater relevance and the deployment of tailored communications. In the words of Fogg (2003), “As a general rule, persuasion techniques are most effective when they are interactive, when persuaders adjust their influence tactics as the situation evolves. Skilled salespeople know this and adjust their pitches according to feedback from the prospect.”

Consequently, online campaigns aiming to raise awareness are best modelled on the mass-media model (one-to-many). Campaigns aiming to persuade or facilitate change processes are best modelled on an interpersonal model (one-with-one). Research shows that joint interpersonal and mass-media campaigns are important for improving health behaviours, while interactive technologies have properties of both models (Reardon & Rogers, 1988). Likewise, Internet-based communication has been called a “hybrid channel” which combines the persuasive capabilities of interpersonal media with the

broad reach of mass-media (Neuhauser & Kreps, 2003). Consequently, when the objective is to engage a large population in a change process, another option is to formulate interventions on a mass-interpersonal model (one-with-many) which is discussed in a subsequent chapter.

One researcher has argued that new media have introduced a change that is shifting how social marketing campaigns should be carried out. The traditional linear communication model is inappropriate to the collaborative and dynamic communication that takes place online. Web 2.0 is not a place people visit, but rather a place where people go to do things. This means that individuals should no longer be regarded as the *audience* but rather, as collaborative *partners* (Lefebvre, 2007).

Selecting the Incorrect Model

Behavioural change interventions that are modelled on an ill-matched communication model may underperform when compared to interventions based on a better-matched communication model. Rogers' (2003) generalization, that mass-media is better at raising knowledge while interpersonal communication is better at influencing behaviour, has a direct application to the design of online interventions. By this generalization, mass-media-based (one-to-many) interventions aiming to influence behaviour are ill modelled to influence behaviours. However, interventions based on interpersonal communication (one-with-one), aiming to influence behaviours, are better modelled.

There is good evidence that numerous online interventions are modelled on ill-matched communication models. For example, an assessment of 294 health behavioural change websites showed that most websites did not meet the minimum requirements for behavioural change. It was argued that these interventions needed to move beyond providing information to supplying interactive services. Moreover, the researchers called to develop the science of individualization and interactive tailored communication (Evers, et al., 2003). This difference between supplying information and providing interactive tailored services is similar to the difference between one size fits all campaign approaches and interpersonal therapy.

Researchers and practitioners appear to build interventions from different communication models. For example, many online interventions described in literature-based research are two-way, where user feedback mechanisms were used by many

effective interventions. Conversely, social marketers frequently describe online campaigns based on one-way communication models, discussing online campaigning more in terms of outreach and less in terms of relationship building. Despite warnings that pure one-way outreach is inferior to combined outreach and engagement, social campaigners still frequently apply mass-media logic to online channels which can also be used as a two-way medium. For example, a recent social marketing journal special edition examined new media social marketing. In the overview paper, a number of online social marketing campaigns were primarily considered successful, in terms of dissemination of their campaign message (Abroms, et al., 2008). Fixations on pure one-to-many online outreach may have prompted one researcher to argue that many commercial and social marketers perpetuate the myth of the source-message-channel-receiver paradigm, rather than the dynamic communication models of new technology (Lefebvre, 2007).

4.6. Summary

Real-world online intervention design

When designing real-world online interventions, practitioners rarely seem confined by fixed theoretical frameworks. Rather, they blend theory-based constructs and techniques with practical, financial, and political considerations. Consequently, their interventions generally offer complex blends of various theories and factors that are not easily analysed or clearly described by one line of thought.

Persuasive design factors

Research shows that various online design factors may be associated with psychological and behavioural outcomes. Source credibility and trust are traditionally factored into social marketing campaigns, and are separate concepts that are sometimes confused. Literature suggests associations both between website credibility and behaviour, and between website trust and behaviour.

Generally, a website's visual appeal describes aesthetic qualities, while its usability describes functional qualities. However, it is common for researchers to blend the two topics together. Research suggests an association exists both between a source's visual attractiveness and its credibility and between its usability and credibility.

Reputation has been defined as what is said or believed about the character of a person or a thing. Research suggests that online trust can be transferred from a trusted source to an unknown source, and thus constitute a reputation endorsement. In other words, an endorsement constitutes the transferring trust from one party to another.

There are a few influence principles that social marketers use and which have been evaluated in online contexts. Both the foot-in-the-door and commitment-obtaining techniques have been evaluated and demonstrated to operate online.

Tailoring is a process for creating individualized communication based on an individual's input into a system, which is used to design an individually relevant communication. Evidence shows that tailoring can influence psychological and behaviour outcomes. When integrated into an existing intervention, tailoring can potentially increase its effectiveness.

The intensity of exposure that people receive when using an intervention is called *dose,* which is considered a key factor in achieving behavioural outcomes. The term *adherence* describes the proportion of participants who continue using an intervention over time (which represents the dose they receive). Negatively, this is called *attrition.* It has been proposed that *study adherence* and *intervention adherence* are correlated and explained by a third variable: participant interest.

Classification systems

Across psychological and behavioural change frameworks, there exists a complex blend of competing classification systems, from different perspectives, with alternative theories and influence techniques. In order to assess how the different influence frameworks could aid describing and building online interventions and campaigns, five types of influence frameworks were analysed and evaluated: evidence-based behavioural medicine, Cialdini's six principles, captology, transtheoretical model, and community-based social marketing. Each influence system provided a different perspective on the world, with different assumptions, theoretical explanations, and ways of grouping influence components.

Technology as social actor

It is not always clear who or what target audiences consider the source of a campaign. Two theories suggest that people interact with media and technology as a social actor or living being. The *media equation* shows that concepts of human-to-human psychology operate between people and media, such as television, computers, and websites. Thus, findings from psychology and sociology that explain human-to-human psychology can be tested experimentally to see if they also apply to human-computer interaction. The *functional triad* professes that people interact with technology in three distinct ways: as tools, as media, and as social actors. When interacting with a website as a social actor, persuasive human factors such as source credibility, expressions of body language, and positive reinforcement can be employed.

Communication models

The Internet may be considered a mass-media or interpersonal channel depending on how a particular application is designed, used, or analysed. However, a distinction needs to be made between online interventions that are primarily based on two-way interpersonal communication (one-with-one) versus those primarily based on one-way mass-media communication (one-to-many). Interventions modelled on an ill-matched communication model may underperform when compared with interventions based on a better-matched model. Diffusion of innovations research suggests that mass-media channels are better at informing people by increasing knowledge, while interpersonal channels are better at persuading people by influencing behaviour. Thus, online campaigns aiming to raise awareness are best modelled on one-to-many designs, while campaigns aiming to persuade are best modelled on the one-with-one model.

5. Research Questions and Projects

This chapter examines the two research questions in light of the literature review. The first research question is partially answered by existing literature. However a research project is put forward to provide a more reliable answer. To answer the second question, literature gaps are assessed, and two research projects are offered to fill those gaps.

5.1. Research Questions

Q1. Can online social marketing campaigns influence target audiences' behaviour?

The first research question is partially answered by the existing literature. The three types of research (literature-based research, real-world research, and real-world case studies) offer different insights into online intervention efficacy, and different perspectives on possible success factors. The following paragraphs assess how the three types of research can help answer the first research question.

Literature-based research provides good evidence of online intervention efficacy. However, prior meta-analyses (Portnoy, et al., 2008; Wantland, et al., 2004) have pooled studies targeting voluntary behavioural change with mandatory behavioural change (such as managing chronic disorders) and the treatment of psychological disorders (such as depression). These types of behaviours are different from the types of behaviours targeted by social marketing campaigns, which are generally voluntary. Although these studies offer the strongest evidence that online interaction can influence offline behaviours, they are not fully generalizable to social marketing applications. Similarly, systematic reviews show that slightly more than half of the assessed interventions offer positive impacts. In terms of their generalizability to social marketing applications, one systematic review blended behaviours unsuitable to social marketing (Vandelanotte, et al., 2007), while another blended unsuitable behaviours and omitted impact data (Lustria, et al., 2008). Nonetheless, one systematic review focused on voluntary behaviours suitable to social marketing applications and also provided impact data (Norman, et al., 2007). This study offered good evidence that online interventions can influence voluntary behaviours, though it lacked the statistical rigour offered by meta-analysis.

The second type of research, real-world research, provides a different set of conclusions. They generally suggest that many online interventions are ill suited to influence behaviour and, in some cases, offer design guidelines (relevant to research question two). Some of these studies concluded that many of the health behavioural change websites did not include the basic requirements to influence health behaviours (Evers, et al., 2003). While assessing strategies, it was argued that most sites provided little or no assessment, feedback, or individually tailored assistance (Doshi, et al., 2003). In another case, the researchers found that sites only reflected a few design recommendations, using basic segmentation without personalization (Wenham, et al., 2003). These studies provide useful details on how applied online interventions are designed, and they also make the case for how interventions should be designed, but they do not offer empirical evidence that online intervention design is associated with behavioural impacts. In other words, they offer descriptions of what is done, and arguments for what should be done, but no evidence of what works.

The third type of research, real-world case studies generally come from social marketing literature (Conrad, et al., 2009; Hamilton, et al., 2008; Hoff, et al., 2008; Huhman, 2008; Li, 2009). They provide in-depth discussions on particular interventions, but do not provide convincing evidence that interventions can influence offline behaviours. It is common for online campaign efficacy to be described in terms of website visits, page views, or other measures of content viewing and online engagement. However, these micro-behavioural measures do not provide insight into the campaign's macro-behavioural objectives: such as encouraging citizens to exercise more or adopt healthy diets. In summary, these studies offer many examples of what was done, but rarely demonstrate what was achieved. Consequently, it is difficult to judge the efficacy of online interventions from social marketing case studies.

Across these three types of research, there is good evidence that online interventions can influence people's behaviour and it is conceivable that these interventions could be integrated into social marketing campaigns. From the literature-based research category, the meta-analyses and systematic reviews provide good evidence that online interventions can match and sometimes outperform traditional offline interventions. The advantages appear to be small, but the Internet's lower communication costs and broad reach offer significant advantages. Only one systematic review showed that these interventions could influence voluntary behaviours, but it lacked the stronger empirical

evidence offered by meta-analysis. Although there is good evidence that online interventions can influence voluntary behaviours, this thesis presents stronger evidence in the form of a meta-analysis comprising interventions targeting voluntary behaviours. Additionally, the meta-analysis contributes to this thesis' second research question on intervention design.

Q2. What design factors are critical to online intervention success?

The second research question is quite broad, leaving many possible answers. During the literature review and exploratory pilot investigations, a number of intervention issues and design factors were identified. The first issue relates to the negative impacts of online mistrust and competition. To address this issue, the first research project examines design factors related to website credibility, users' trust, and behaviour impacts. The second issue relates to limited insight into the psychological constructs employed by online interventions. To address this gap, the second research project focuses on online intervention psychology and explores associations between psychological design and behavioural impacts. These issues and design factors are discussed in the following section, which outlines the two research projects.

5.2. Research Projects

Project 1: Website Credibility and Trust (Studies 1-3)

The focus on website credibility and trust emerged in response to two challenges social marketers face when conducting online campaigns. The first challenge relates to online competition, with campaigns dealing with competing actors (such as the tobacco industry) and with audiences deciding between competing behaviours, such as smoking or not smoking (Andreasen, 2006). Online competition presents serious challenges to social marketers. Some of the first online social marketing papers addressed the tobacco industry's online success and called for a social marketing response (Lin & Hullman, 2005; Ribisl, 2003). The second challenge stems from growing online fraud and risks that are breeding high levels of online mistrust. In social marketing terms, online threats are like price factors where mistrust can increase the cost of acting on the advice of a campaign, thus potentially undercutting intervention efficacy.

One possible way to counter the potentially negative impacts of online competition and mistrust is to harness intervention credibility and trust. Although the role of credibility and trust has been examined in the context of for-profit e-marketing, the first research

gap is that they have not been fully studied in an online non-profit context. For instance, in e-marketing literature, online credibility and trust have been associated with purchasing behaviour (Jarvenpaa, et al., 2000) and loyalty (Flavian, et al., 2004). Moreover, research shows that these variables can be influenced through visual design, which means that website graphic design can potentially, indirectly influence behaviour.

Another question emerged while trying to assess which of two credibility models applied to websites: the human or the computer credibility model. The media equation (Reeves & Nass, 2003) and functional triad (Fogg, 2003) suggest that people interact with websites and technology as social actors, where elements of human-human social psychology apply to human-computer interaction. Based on the media equation hypothesis, this investigation sought to answer a secondary question: should online interventions assess credibility design with a human or computer-based model?

An empirical investigation was undertaken on a global network of citizen engagement websites. Using a survey instrument in four languages, and structural equation modelling for the analysis, this investigation assessed relationships between website credibility dimensions, active trust, and behavioural impacts. During the process, it compared how the human versus computer credibility models fit the data.

Project 2: Intervention Psychology Meta-Analysis (Study 4)

The study of online intervention psychology emerged from a number of needs: First, the need to better assess the efficacy of online interventions targeting voluntary behaviours. Second, limited understanding of the factors associated with effective online interventions, and difficulty applying existing behavioural influence taxonomies. Third, the need to assess the role of intervention adherence empirically.

The three categories of studies (literature-based research, real-world research, and real-world case studies) provided insight into intervention efficacy, which provided some evidence for the first research questions. They also promised a range of insights into intervention design, relevant to the second research question, but could not offer significant evidence-based guidelines. For example, the studies that provided efficacy evidence, lacked significant design advice (Portnoy, et al., 2008; Wantland, et al., 2004). Conversely, the studies that offered design advice, lacked efficacy evidence (Evers, et al., 2003). The literature-based research offered the best empirical evidence of efficacy, but gave little insight into what features may have accounted for effects. The

real-world research offered design guidelines which were used to survey interventions, but they generally concluded that many of the interventions were not designed to influence behaviour (though it was not possible to verify these claims), rendering their design guidelines untested. Finally, the real-world case studies offered many ideas on building online interventions, but lacked useful impact data. Although each type of research offers different perspectives, taken together the literature does not provide intervention guidelines that have been empirically tested.

To identify the psychological factors associated with online intervention suitable to social marketing, a hybrid research method was devised. This approach integrates methods from literature-based research and real-world research into a single study. By using meta-analytical techniques and coding intervention design features from literature, this approach provides empirical evidence of intervention efficacy in association with the psychological factors used to design interventions.

Before it was possible to code online intervention psychology, it was first necessary to identify a taxonomy suitable to this goal. To achieve this, a number of influence systems were assessed. However, the overwhelming number of psychological approaches, influence taxonomies, and behavioural influence research rendered this step challenging. A variety of research on influence was assessed: evidence-based behavioural medicine (Abraham & Michie, 2008; Davidson, et al., 2003; Embry & Biglan, 2008; Michie, et al., 2008); captology and the media equation (Fogg, 2003; Oinas-Kukkonen & Harjumaa, 2009; Reeves & Nass, 2003); the transtheoretical model (Prochaska & Norcross, 2001; Prochaska, et al., 1995); community-based social marketing (Kassirer & McKenzie-Mohr, 1998; McKenzie-Mohr & Smith, 1999); Cialdini's six principles (Cialdini, 2008); and persuasive communication (Ajzen, 1992; O'Keefe, 2002).

However, none was suitable to coding online intervention psychology on their own. When trying to apply these systems by coding online interventions, no single influence systems offered broad coverage and easy application. For those that partially fit, they were either conceptually too broad, too narrow, or only covered a small portion of influence domains. Across all these systems, on their own, none was suitable to coding online interventions.

Without a comprehensive framework to describe online behavioural change interventions, researchers and developers face problems when analyzing existing interventions or planning new ones. To overcome the limitations of the existing influence systems, a theoretical model was developed. The model is called the *communication-based influence components model* (CBICM), and it was developed to integrate a number of influence systems and components into a coherent package suitable to describing online intervention psychology. Although this framework was developed for online interventions, it may have wider application to communication campaigns in general.

Dose (positively called adherence, negatively called attrition) is another critical factor that can affect intervention efficacy. Many studies report huge levels of participant attrition, which may explain their low efficacy, though the link between attrition and low efficacy is rarely addressed explicitly. Assessing the impact of online interventions that participants did not use is like testing the effects of a drug that participants did not take. Since many online interventions lead users through long-term processes, these programmes can only be as effective as users are willing and able to use them. Although intervention dosage has received considerable attention in academic literature, there is a need to better understand dose by assessing if it follows a systematic pattern, such as that proposed by the law of attrition (Eysenbach, 2005).

To assess the efficacy of interventions that could be applied to online social marketing contexts, the second research project is a meta-analysis of interventions targeting voluntary behaviour change. It assesses intervention psychological design features and the role of dose.

Research Exposition Overview

The next four chapters present the two research projects. Project 1 is presented in Chapters 6-7. Chapter 6 describes the background to the first research project and presents two preliminary exploratory studies. Chapter 7 presents the full website credibility and trust study. Project 2 is presented in Chapters 8-9. Chapter 8 presents the CBICM, which is used to analyse online intervention psychology. Chapter 9 applies the model to a meta-analysis on the psychological design of online interventions.

6. Online Influence Factors (Exploratory Studies 1 and 2)

Although there are many online intervention design guidelines, they can be conceptually challenging and difficult to apply. When looking to social marketing literature for guidance on designing online interventions, there are many cases studies of online interventions. However, they generally demonstrate what online social marketing campaigns do, rather than what they achieve. These limits may leave intervention planners unclear what are the critical design factors associated with online interventions.

This chapter provides an overview of the first research project that aimed to identify website factors associated behavioural change, suitable to social marketing applications. It provides the social and research background to this investigation. It demonstrates the nature of the research context, partnership, and methodology. Additionally, this chapter presents two exploratory studies that lead to the final study, presented in the following chapter. The first exploratory study is a statistical pilot study; the second, a qualitative investigation; and the third and final study, an assessment of the relationships between website credulity, active trust, and behavioural impacts. Findings from the two exploratory studies informed the third study, but do not contribute to the thesis' findings or conclusions.

This and the following chapter are intrinsically linked, but have been conceptually divided. Whilst this chapter is more reflective and exploratory, the third study in the following chapter is fixed and highly technical. This chapter presents details about the research context, while the subsequent chapter is abstract and theoretical.

This chapter is organized as follows. It provides an overview of the research project, encompassing all three studies. It then presents the first exploratory pilot study, and afterwards, the qualitative study. Finally, conclusions are drawn, which contribute to the subsequent chapter.

6.1. Research Project Overview

Research Objectives

This research project sought to identify online factors associated with offline behavioural impacts, which could inform the design of online social marketing interventions. This study began with a literature review and exploratory research.

This research project's three studies were conducted with different methodologies, at different points in time, and with different research objectives. The first investigation was an exploratory pilot study that focused on two goals: to explore factors in online behavioural change, and to assess these factors within Wiebe's (1951) framework. The second, qualitative investigations aimed to offer this research project a "reality check" by venturing into the field and testing many of the investigator's assumptions at the time. The third study aimed to evaluate the final research model that was put forward, and which is described in the next chapter.

Campaign Overview

A citizen mobilization campaign, with a large online network offered an environment to study online behavioural influence factors. To this ends, the campaign was not conceived as a case study. Rather, the campaign's online network was treated as a non-profit context where generic online influence factors could be evaluated. No case study methodologies were employed.

The campaign existed in over 100 countries and aimed to engage citizens in activities that were used by the organizers to influence anti-poverty policy. The campaign's online network comprised a global network of websites with a common mandate, identity, and mobilization goals. However, the websites were drastically different in terms of design, staff expertise, organizational reputation, infrastructure, online marketing, and users' access to Internet technology. The number of websites grew rapidly during the study period. In 2006, when the first study occurred, there were 48 coalition websites. In 2007, when the list of websites was first updated, there were 54 websites; then by the time the full study was being implemented, there were 74 websites.

Ethics

To address the needs and interests of stakeholders and participants, a memorandum of understanding (Appendix 13.2.3) outlined several issues, such as mutual support, ethics,

and notifications. The ethical guidelines addressed the interests of survey participants, campaign staff, and the researcher. In general, coordinators consented to participate in this research project; and the research agreed to fulfil a number of obligations, including the provision of evaluation feedback. The agreement outlined data protection and ownership, along with the protection of participant's identity. Furthermore, it addressed informed consent, by clearly stating that all research products would state that the research was designed to support the campaign, while at the same time, contributing to scholarly research about non-profit online campaigning. Covering the period from 2007 onwards, the University of Wolverhampton granted ethical approval to conduct this study.

Risk Mitigation and Communication Plan

The research project memorandum of understanding was also designed to reduce risks. The opportunity to research this network came with many challenges and risks. To manage and reduce threats to the research project, the agreement ensured that all parties understood their obligation and commitments. However, there was no guarantee that national coordinators or webmasters would be willing to participate in the study. To maximize participation, the research project was incentivized and this was stated in the memorandum of understanding.

To increase campaign staff's incentives to participate, considerable effort was exerted to engage national coordinators, which included inviting them to participate in a needs assessment. The needs assessment served to start building relationships with national website operators, and to obtain feedback that was used to design an evaluation report for staff (as an incentive to participate). This trade-off, of blending campaigners' needs with the needs of this research project, was a necessary step that ensures the study was perceived as a valuable venture by all parties.

Research Project Methods by Time

The research project was conducted over several months. This section provides an overview of the research project and the three studies. Key steps in the process are discussed, with many of the materials available in the appendices. Following this overview, the two exploratory research projects are presented.

January to March 2006: Investigative pilot study

The first exploratory pilot study was conducted in 2006. It assessed relationships between a number of website factors and behavioural influence. The study used Wiebe's (1951) criteria as a framework. The final analysis included 196 user responses from 23 of 48 campaign websites. The outcomes of this study informed the subsequent research and qualitative investigation.

February 2007: Formalization of research project

The research project was formalized in February through participation at a meeting of campaign webmasters in South Africa. Participants were e-campaigners from coalitions in Argentina, Bangladesh, Brazil, England, France, India, Kenya, Lebanon, South Africa, Tanzania, United Arab Emirates, and Uruguay. By the end of this meeting, the research project and upcoming survey had been formally established within the campaigns core planning documents and the memorandum of understanding had been signed.

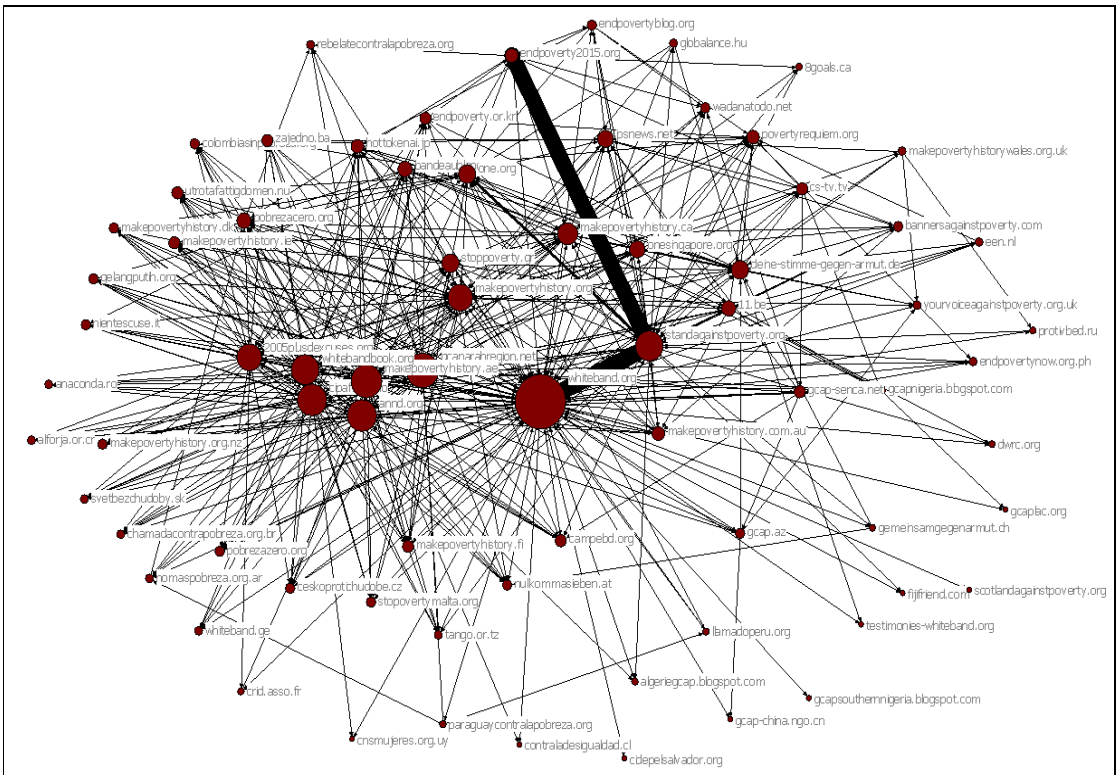
March: Update list of campaign websites

The campaign's list of coalition websites had not been updated since 2006; it contained numerous errors and omissions. During March, campaign staff helped to identify all campaign websites and responsible staff. By the end of this process, there were 54 websites. This task resulted in a reliable list of websites that could be used to collect descriptive statistics, and to begin engaging website operators. During the study, the number of campaign websites continued growing, thus the process of interacting with campaign staff to update the list continued until the final study had begun.

May 2007: Audit campaign websites

Starting in May 2007, a comprehensive audit of the campaign websites was undertaken. It was necessary to collect descriptive statistics on campaign websites in order understand the scope of the network, and tailor the study accordingly. The study needed to consider the range of languages, differences between large and small websites, and adjust the research methodology to the nature of the campaign's online network. Two approaches were used systematically to collect descriptive statistics about the campaign. The first approach was a manual audit of each website based on a checklist of criteria. This provided a type of "sample frame" and offered insight into the online network. These descriptive statistics were used to select which websites that qualified for

inclusion in the final study. The second approach relied on the collection of hyperlink data, to paint a picture of the online network and better understand the relationships between sites.



Line weights: represent the number of direct links between sites

Node size: represents in-link counts

Figure 6-1: Online Network (January 2008)
(A larger version is available in Appendix 13.2.1)

For the first approach, after verifying the list of websites with campaign staff, each website was audited with the criteria presented in Appendix 13.2.2. The term *width* describes websites that are either *horizontal*, which are broad sites containing a wide variety of content, where the campaign comprised just a small sub-section. The *vertical* sites describe websites that are exclusively focused on the campaign. The *query notes* field describes methods of obtaining link and site size data in for problematic sites (such as horizontal sections or forwarding URLs). The *branding/affiliation* section describes whether the core campaign branding visuals are in place. The field, *weak campaign link* highlights sites without a recognizable brand connection to the campaign. These criteria were used in the final selection process, which is discussed in Chapter 7.

For the second approach, to better appreciate the relationships between campaign websites and understand their relative sizes, hyperlink data was collected. The Yahoo API was used to obtain hyperlink data. Although Yahoo does not index as much of the Internet as Google, it is the second largest search engine; allows queries where self referential links can be excluded; and allows automated data collection through their API. The LexiURL Searcher (Thelwall, http://lexiurl.wlv.ac.uk) was used to collect three types of hyperlinks: *in-links* (links to campaign websites), *direct links* (links from one campaign website to another), and *co-links* (links from a third website to two campaign websites).

The hyperlink data was used for insight proposes, to offer insight into website relationships and relative differences. Although link data was initially collected in May 2007, the online network rapidly changed during the research project. The initial list of 54 websites had expanded to 74 by the time the final study was being conducted. To provide an overview of the final online network, Figure 6-1 presents a visualization of the online network in January 2008, when the online survey was being conducted.

June 2007: Qualitative investigation

At the beginning of June, a qualitative study was conducted to test many of the research hypotheses at the time, and provide space for target audiences to inform the study. On 2 June 2007, the researcher attended a campaign event in London and interviewed randomly selected participants. This event presented one of the few opportunities to meet the study participants face-to-face. The outcomes of this qualitative study shaped the final quantitative study.

August to September 2007: Engagement and needs assessment

During August 2007, information about the research project was publicized to campaign staff by placing research partnership information on the websites of the campaign and the Statistical Cybermetrics Research Group. Further, background information to the research project and descriptive statistics were published and promoted through the campaign's e-mail newsletter, and internal email lists.

In September 2007, the webmasters' needs assessment was set up, promoted to all website operators, and announced in the campaign's central newsletter. After one week, all website operators that had not responded were send a follow-up reminder e-mail and

were contacted by phone to verify if they wished to participate in the study. A copy of the webmasters' needs assessment is located in Appendix 13.2.5. In total, 25 website operators had expressed 71 needs that were grouped into nine key research areas. The research areas, ordered from the most to least popular, were: user demographics, user interests/themes, user motivations, user participation with the campaign, online marketing, e-advocacy, website quality and usability, content quality, and user's campaigning background. By the end of the month, the results were e-mailed to the network of website operators, and to increase motives for participation, it was expressed, again, that these needs would be addressed in the upcoming study.

November to February 2007: Full website credibility study

While continuing the literature review, and reflecting on findings from the two investigative studies, the final study (presented in Chapter 7) focused on website credibility, active trust, and behaviour impact. A self-administered online survey—in English, Spanish, French, and Portuguese—ran from 6 November 2007 to 8 February 2008.

To increase prospects that website operators would post the survey, outreach efforts included, promoting the survey on the campaign's central website; announcing it in the campaign's newsletter; sending letters to website operators, national focal points, and members of the campaign's political bodies. Website operators received generic announcements they could place on their website to promote the online survey to their users. It was distributed in all four languages, including a long and short version. Website operators who did not advertise the study received two reminder emails, spaced a week apart. They were called by phone if they did not respond to these reminders. Many of these communication products were based on participant engagement templates by (Dillman, 2007). Examples of these outreach materials are available in Appendix 13.2.5.

6.2. Wiebe's (1951) Criteria (Pilot Study 1)

The first investigation was an exploratory pilot study that focused on three objectives. First, to explore factors in online behavioural change; second, to assess these factors within Wiebe's (1951) framework; and third, to provide direction for successive research on online social marketing.

6.2.1. Research Model Development

Over 50 years ago, the psychologist G. D. Wiebe proposed that organizations that successfully *sell* intangible social objects—such as goodwill, respect for the environment or community development—would be more successful if they sold their social objects the way marketers sell sports cars or mouth wash. To test this notion, Wiebe developed a set of five criteria (Table 6-1) which he used to evaluate how social campaigns compared to commercial marketing practices. After evaluating four social campaigns by his five criteria, Wiebe concluded that the more social campaigns resembled commercial marketing practices, the better their chance of success (Wiebe, 1951).

Table 6-1: Wiebe's (1951) Criteria for Campaign Success

Wiebe's (1951) criteria	Online Application
Force: The intensity of a person's motivation (both before and after experiencing campaign messages) towards a campaigns goal	A person's disposition towards a social issue is the same online or offline
Direction: Knowledge of how and where to respond to a campaign's message; or in other words, how to reach the social mechanism	The clarity of an e-mail, hyperlink, site design or web advertisements that direct people to a website (social mechanism)
Distance: An individual's estimate of the time, energy and cost required to engage the social mechanism or achieve the behavioural goal	The amount of time, energy and hassle required to find a website and complete an online task
Social mechanism: The agency or place that enables people to translate motivations into actions	A website or online application where users can interact to complete behavioural goals
Adequacy: Ability and effectiveness of the social mechanism to help people act out the campaign's behavioural goal	The degree of credibility, and intuitiveness of a website's social mechanism

Wiebe's criteria have been deemed success factors for non-profit campaigns by Philip Kotler (Kotler & Roberto, 1989) who also compared them to the 4Ps (Kotler & Zaltman, 1971). Although Wiebe's criteria are more than 50 years old, they still stand as success criteria for social campaigns and with their conceptual relationship to the 4Ps—which are the primary behavioural exchange model used for social marketing—they provide a tested and relevant framework. In many ways, the criteria appeared to offer a framework that was relevant to online engagement. Wiebe's criteria were compared to online applications; they are presented in Table 6-1 under the column *online application.*

6.2.2. Methods

An online survey—in English, French and Spanish—ran from January to May 2006, obtaining 196 user responses from 23 of the 48 websites. The independent variables were derived from questions inspired by Wiebe's criteria—or with clear conceptual linkages. The dependent variable was derived from the question, "As a result of this website have you noticed a change in your willingness to take action?"

While fitting the linear regression model (Table 6-2), multiple regression was used within each of Wiebe's conceptual groupings, and ANOVA was used to assess conceptual fit. Correlation and linear regression were used to examine the associations between each of Wiebe's five criteria and the dependent variable. As an exploratory study, all strong associations were highlighted while some insignificant relations were removed from the model, but are discussed.

There are a number of limitations. First, this pilot study used data intended for a broad review with face-value questions. Second, the grouping of some questions by Wiebe's criteria could be challenged because of ambiguous conceptual fits. Third, the study was conducted while the campaign was in a dormant state and respondents were likely to represent loyal users. Fourth, the three survey languages may have contributed a degree of bias. For these reasons, this study only claims to be an exploratory pilot study.

6.2.3. Findings

The final model is presented in Table 6-2. When examining the relationships between Wiebe's five criteria and the dependent variable, standard demographics—such as sex, age, occupation, nationality, or the way users accessed the Internet—showed no significant associations.

As an exploration, the study also considered two alternative dependent variables: the total number of reported actions taken, and users' visit frequency. Combined with the dependent variable these three behavioural variables had a Cronbach's Alpha of 0.62, which shows acceptable consistency among the survey's three separate behavioural measures. Online marketing literature provides a basis for explaining the association between visits and behaviour. Termed *loyalty*, online marketing consider visit frequency a precursor to two behavioural objective: opting-in to newsletters and buying products (Flavian, et al., 2004).

Table 6-2: Regression Models for Each Criteria Group

Criteria	Adj. R^2	ANOVA±	Variables	B	SE (B)	r
Force	.194	F(3,154)=12.365	Motivated by site information	.427	.155	.214**
			Motivated by national issues	.445	.130	.254***
			Number of topical interests	.034	.016	.161*
Direction	.142	F(2,156)= 14.125	Finding information on the site	.198	.089	.205*
			Website's layout & design	.198	.078	.233*
Distance	.077	F(1,143)= 13.096	Time & energy demanded	.206	.057	.290***
Mechanism	.208	F(2,155)= 21.587	Social networking options	.186	.065	.242**
			Activism options	.226	.066	.289***
Adequacy	.246	F(2,148)= 25.491	Helpful to studies or interests	.215	.065	.280***
			Content & information quality	.235	.068	.295***

**P<.05, **P<.01, ***P<.001, ±all ANOVA at P<.0005*

The strong *force* variables showed that target audiences who did the most, visited the site frequently, and considered themselves campaign supporters. However, these variables were highly correlated with the other independent variables and were removed. The most active users were motivated by national issues in their home country and were interested in a broad number of social causes. Additionally, website information was also important motivational factor.

The *direction* variables showed that better designed and more usable websites were more persuasive. Users were more active on sites with higher rated layout, design, and findability.

The *social mechanism* variables showed that sites with more online advocacy mechanisms (such as e-petitions) and opportunities for interaction contributed larger impacts on user's willingness to take action.

The *adequacy* variables showed that the online social mechanism's quality related to mobilization success. Content, information quality, and a site's helpfulness were important factors. Users' website credibility rating proved to be a central variable that was highly correlated with many other independent variables and the dependent variable. As a highly correlated variable, credibility emerged as a key variable in terms of behavioural influence, but was removed from the model to balance among competing variables that better fit within Wiebe's framework.

The *distance* variables showed a correlation between users' willingness to expend time and energy on a website, and their willingness to be involved in the campaign. Social marketing literature advocates that people are unlikely to act if behavioural objectives

are too inconvenient, unpleasant, or costly (McKenzie-Mohr, 1995). This difference, and whether or not users consider themselves supporters, may mark key delimiters between populations that are receptive to advocacy versus social marketing appeals.

6.2.4. Conclusions and Research Implications

The findings from this study lead to the following conclusions and research implication to the thesis investigation. First, regarding factors associated with online behavioural change, source credibility demonstrated numerous strong correlations with other independent variables and the dependent variable. The correlation with the dependent variable explained more variance than many other variables. To prevent the credibility variable from dominating the model fitting exercise, it was removed. However, website source credibility emerged as a central variable in the successive investigations. Additionally, user's initial motivation and the potential relationship to website content appeared to be important. In addition, superficial design factors further appear to be associated with greater participation.

Second, Wiebe's five criteria proved to be a useful broad framework to arrange numerous online campaigning attributes. However, his concepts did not fully match contemporary literature about online behavioural change. Furthermore, conceptual overlap and statistical pressure to arrange the variables in different ways lead to the conclusion that each of Wiebe's five criteria offer a good basic "health check" for effective online campaigns, but together, they cannot serve as an overall framework applicable to online attitude and behavioural change.

6.3. Qualitative Investigation (Study 2)

It has been proposed that Internet interactions take place within social contexts, which makes it important to understand the offline context where online interactions occur. Consequently, online research should have an offline component (Orgad, 2005). Following this principle, the second study used qualitative face-to-face interviews to test this research project's assumptions and investigate one of the offline contexts linked to the online network.

The objective of this qualitative study was to learn from informants whose campaign participation depended to some degree, on online interaction. To advance the thesis, this pilot-study was to refine the research model that was under development at the time. This qualitative study provided an on-the-ground reality check of the assumptions at the time, and shaped the overall research project.

On 2 June 2007, interviews were conducted with participants at a G8 rally in London, England. As a follow-up to the 2005 Make Poverty History coalition, in 2007, approximately 100 organizations rebranded their efforts under the banner "The World Can't Wait". The event occurred from 11:00 to 4:30, in six locations, in downtown London. The main public stunts occurred around the Thames River at 2:00. Organizers used this event to send messages to delegates attending the G8 Summit in Germany. The messages called on world leaders to address debt cancellation; more and better aid; trade justice; health care, education, water and sanitation for all; and climate change.

It is difficult to judge the number of people who attended. The organizers' website (www.yourvoiceagainstpoverty.org.uk) claimed that 10,000 people attended the event, and that over half a million people endorsed their message to G8 delegates. However, evidence suggests the turnout was much smaller. Event locations were much larger than the volume of people who attended. At the first location, in Archbishops Park, it appeared that there were more campaigners than there were participants. At the River Thames event, there were huge blocks of empty space. Contrary to the organizer's claim that 10,000 people attended, the police estimated that 2,000 people attended.

6.3.1. Research Model and Interview Schedule

Table 6-3 outlines the early research model that had been developed at the time. It drew from the previous pilot study and literature review that was in progress at the time. This

model was used as the basis for an interview schedule, in the form of closed and open-ended questions. The interview schedule contained two sections, as shown in Appendix 13.2.4. The first section contained closed-ended questions used to screen informants and help improve taxonomies for the final quantitative study. The second part contained open-ended questions that explored the primary research themes under investigation.

Table 6-3: Early Research Model

Participants' Characteristics (Independent Variables)	Perceptions of Websites (Independent Variables)	Participant Impacts (Dependent Variable)
• Role within campaign • Degree of campaign involvement • Length of time involved in the campaign • Degree of willingness to call oneself a campaign supporter • Attitudes towards the cause	• Trust/credibility • Usability/site architectures • Visual appeal/attractiveness • Content quality/relevance • Interactivity/functionality	• Behavioural: Sum of campaign actions • Attitudinal: Degree of willingness to take action

A recording device was used to capture open-ended responses. The survey was formatted on two pages, with space for responses to be written down in cases where participants may not have been comfortable being recorded. Before starting each survey, data was collected about gender and about whether participants were displaying campaign symbols.

While carrying out the interviews, the researcher carried a binder system with all needed survey tools. It contained a map of the zones and times for each sample area; a refusal form; screen shots of the three websites; a copy of research partnership; business cards; a compass; a watch; and dice. A minidisk recorder and Sony microphone were used. To ensure the researcher was easily identifiable, a University of Wolverhampton lanyard and nametag were worn, which displayed campaign and university logos.

6.3.2. Informant Selection

Full random selection of informants was not feasible for the following reasons: logistics information lacked enough detail to pre-assess each sample zones fully; the six locations were spread out (sometimes more than 30 minutes walk apart); there was only one researcher carrying out this project; and with in-depth interviews, time was limited. Moreover, the event agenda indicated that each of the six gatherings would have a distinct dynamic, such as open markets with people moving around; staged gatherings with people orientated towards an activity; and one mass stunt with people circling the Thames River. All these complexities contributed to a challenging research environment.

The challenges were overcome by designing a highly structured plan that contained optional sampling methods, which could be applied to different possible scenarios. The informant selection method first divided the event gatherings into a matrix of time and space (Appendix 13.2.4). Then this matrix was used to pre-select sample zones. Given different possible dynamics at each gathering (such as open markets, enclosed buildings, or speeches at podiums), approaches from the zone-sector and mall intercept sampling methods were prepared.

As there are different ways of describing complex social activities, the following definitions are use. A *gathering* describes homogeneity of people who are partaking in common actions. Two or more gatherings compose an *event*. And two or more events compose a *campaign* (Schweingruber & McPhail, 1999). According to these definitions, the 2 June event was composed of several gatherings (at the different sample zones); and over the course of this year, all events comprised the campaign.

The first sample method is the *zone-sector sampling method*. This approach subdivides the gatherings into spatial and temporal units, and then applies a sample selection method in each unit. A good zone-sector survey means that each potential informant stands an equal chance of being selected in the different locations at the different times (Seidler, et al., 1976). The second sample selection method is the *mall intercept sampling method*. As a convenience sample, this approach randomly selects sample locations (centralized locations where populations frequently gather). Then at each location, a random sampling method is used that considers traffic flow at each location and the time of day (Sudman, 1980).

Selection Methodology

Table 6-4 outlines the framework developed to classify possible gathering scenarios, and the pre-determined sample selection that would be used in each. The two types of event dynamics are defined as *focal-point gatherings*, such as gatherings where the audience is oriented towards a podium or stage; and *non-focal-point gatherings*, such as information markets or art exhibits where people walk around freely. The two types of entrance scenarios are, first, *limited entrances* where there may be a front entrance, doors, or a walkway that people use enter and exit sample zones. Second, there are *unlimited entrances* such as open markets or concerts in fields where people can come from multiple access points. Depending on the combination of event dynamics and

entrance scenarios, three possible informant selection methods were pre-planned. These included the mall intercept, zone-sector and a hybrid approach called open event approach.

Table 6-4: Gathering Scenarios and Informant Selection Methods

		Gathering Dynamics	
		Focal-point Gathering	**Non-focal-point Gathering**
Entrance Scenarios	**Limited Entrances**	Mall intercept sampling	Mall intercept sampling
	Unlimited Entrances	Zone-sector sampling	Open event sampling

Mall intercept sampling

The mall intercept method is a convenience sample that is carried out where target audiences are known to congregate. This approach is considered convenient and cost-effective. It provides a few advantages over telephone interviewing, such as obtaining less socially desirable responses, and fewer distorted responses to questions about socially undesirable behaviour (Bush & Hair, 1985). The method provides an effective way to conduct a sample, sometimes engaging hard to reach segments in a way that can be triangulated with other data. However, the mall intercept methods is a type of convenience sample where candidates are not necessarily randomly selected, which has implications for the generalizability of this approach (Rice & Hancock, 2005).

An unbiased sample requires that all entrances to a location have the same probability of being selected, as different groups of people may access the location through different entrances at different times. At each entrance, the researcher should draw an imaginary line or zone and then select persons who cross the line. Furthermore, they should have a method to select candidates in the case of two or more people qualifying at the same time (Sudman, 1980).

Following this method, at the event, each zone was initially surveyed by walking through it and drawing a rough overhead sketch. Entrances were selected and time allocated to each sample location. An imaginary line was drawn, and every fifth person was selected. In the case of ties, the most north-eastern person was selected. In cases where the north-eastern position would not work, an alternative direction was randomly determined with a four-sided dice.

Zone-sector sampling

To sample persons at public gatherings with a focal-point, such as a podium, the area should be sectioned off into concentric rings and zones that radiate out from the focal-point. Research indicates a moderate correlation showing the most dedicated audience members are closest to the podium, while moving out towards the outer fringes, less involved participants will assemble. Furthermore, the time of the event will influence audience members' survey responses, as they may be impacted by the event (Seidler, et al., 1976). It may be convenient to divide the area into sections based on obvious landmarks—such as sidewalks, trees, stages, speakers, buildings—and then produce a map of the area with these landmarks (Schweingruber & McPhail, 1999).

Open gathering sampling

It was envisioned that some gatherings were held in open spaces that did not have limited entrances or a focal-point. To address gatherings unsuitable to the two prior sample methods, a hybrid approach was devised. The method provided a systematic way of sampling at gatherings with an unlimited number of entrances and no fixed focal-point. Borrowing concepts from the zone-sector and mall intercept methods, the researcher would assess the sample zone to determine how many locations could be subdivided from the most to least dense, and the number of surveys possible per density area. For sample selection, an imaginary line would be marked in key sample locations, and then informants would be selected on the basis of crossing the line.

Employed Sampling Methods

Based on available information, three sample zones were pre-selected on the basis of location, time, and event dynamics (see Appendix 13.2.4 for an overview of zones). However, as information was limited, each sample zone was assessed early in the morning on the day of the event to determine which of the three sample methods would be used. Table 6-5 outlines three pre-selected sample zones and the event dynamics that were encountered, including the sample selection methods, comments about each selection zone, and the number of interviews. Though sample selection was based on random methods, some exceptions were practical and necessary. Excluded groups included those who were eating; too young (appeared to be children with a guardian); heavily engaged in conversation; or appeared to be working adjacent to selected sampling areas.

The first gathering, took place in Archbishops Park with all booths and activities positioned in a central area, and three walkways leading into the sample zone. Using a mall intercept approach, approximately, 45 minutes were allocated to each of the three entrances, with a minimum quota of two surveys. At each entrance, an imaginary line was drawn and the fifth person, in the most north eastern position was asked if they were attending the event and if so, they were asked to participate in the study.

Table 6-5: Sample Zone and Informant Interviews

Zone	Zone Dynamics	Selection Method	Comments	Informant Interviews
1	Non-focal point Limited entrances	Mall intercept sampling	At Archbishops Park, interviews were conducted at the three access points	Accepted: 8 Declined: 8 Acceptance ratio: 50%
2	Non-focal point Unlimited entrance	Open gathering sampling	At this large open event, one access point was drawn, and informants were interviewed	Accepted: 2 Declined: 2 Acceptance ratio: 50%
3	Non-focal point Limited entrances	Mall intercept sampling	At this building, the entrance was used as the single access point for sampling	Accepted: 3 Declined: 2 Acceptance ratio: 60%

The second survey zone was the southern bank of the River Thames, where people assembled for the main stunt when people let their alarm clocks ring-out in unison. Originally, the plan was to sample in four pre-selected areas. However, due to the noise, it was not possible to sample in the crowds, especially on the bridge where the critical mass was dense and space was limited. Using the open gathering sampling approach, one walkway, on the southern bank, was selected and the same sample selection was used on this entrance to the River Thames walkway.

The third zone was the Emmanuel Centre, a building that housed many activities while serving as a primary focal point for logistics, housing staff and volunteers. As each location in the building appeared to be used by different groups—such as staff, volunteers, booth operators, kitchen workers, participants—it would not be possible to get a representative sample by interviewing within the building given the limited time. Consequently, the mall intercept approach was used and the single front entrance was selected and the location to select informants.

6.3.3. Analysis and Findings

In total, 25 people were approached with 13 accepting and 12 declining or not answering because they were not associated with the event. Table 6-5 outlines three

sample zones and their dynamics, and the number of persons who agreed and declined participation.

To manage the text, a database was developed to hold all close-ended questions and transcriptions of the open-ended interviews. All closed-ended responses were tabulated and used in the open-coding. All open-ended questions were transcribed, entered into a database, and then mail-merged into a word-processing file. They were then exported in a format suitable to NVivo, a software package that supports qualitative analysis through text coding.

The analysis of the interviews followed a ground theory approach where the coding paradigm aimed to capture issues from the point of view of participants. Open-coding was conducted till clear themes started to emerge; and axial coding was used to tighten up the emergent themes (Strauss, 1987).

The next two sub-sections present the findings. The first findings (core answers) section describes discoveries that were close to the core questions behind this study. The second findings (emergent themes) section presents the issues that were not previously considered, and which emerged during the process.

Findings (Core Answers)

Trusting online information

Most informants said that trust was their primary basis for participating at the event. In other words, if participants did not trust the organizers, they would not have attended. In many cases, people trusted that organizations were acting in the best interest of social causes or disadvantaged groups. However, for participants who attended the event for motives outside the event objectives, trust in the organization's motives was not important for event participation—as they were driven to participate out of a desire for professional networking or to fulfil a voluntary obligation.

People placed trust in particular organizations or the campaign for a number of reasons. The few persons, estimated to be over 45 years old, had long-term relationships with the organizations, and these informants did not question the honesty of the organizations. Persons aged from about teen years to less than 40 years, expressed shared values as a basis for trust. When people perceived that an organization reflected their values, they used this perceived value-similarity as the basis for trust. Some informants had direct

experience with the issues, such as living in developing countries and seeing third world poverty firsthand. The match between their direct experience and the opinions of the organizations served as a basis for trust. For people without direct experience, third party endorsements, such as statistics or reports from credible organizations served as a basis for building trust.

It seemed that organizational or campaign trust extended to the information they distributed or posted on their website. Thus, content communicated in the context of the campaign was deemed more trustworthy because of previous trust in the source. In other words, people trusted content distributed by trusted organizations, even though that content may have been drafted by a source they did not know.

Campaigners acting in participants' best interest

Depending on interviewee's motives for participation, they expressed a range of views on whether the campaigners were acting in their best interest, and how important this was. The responses grouped into three categories: first, placing the cause before the participants; second, placing participants before the cause; and third, just serving themselves. First, informants who placed the cause before their participation agreed that it was not important for campaigners to act in participant's best interest, but rather, the best interest of the cause. Participants who attended with a voluntary spirit felt that they were not there for self-serving motives, but rather, to have a positive impact on the world. Therefore, the organizations should be serving the best interests of the cause, not the participants. Second, persons who placed their participation before the cause generally attended for obligatory reasons. They felt that organizations should act in their best interest, by offering activities that would satisfy their interests or values. Third, for personal whose motives were unrelated to the campaign (such as looking for work or joining friends), these people were taking care of their own best interests, and so the campaigners' responsibility was not perceived as important. These people had nothing to gain or lose whether the campaigners were honest or dishonest, or whoever's interest they were acting in.

Motivations to being more active in the campaign

Many of the participants seemed to be driven by common values and personal interest. At the same time, a number of people were involved for professional reasons. Contributing to the event objectives was a clear motivator, and one that seemed to drive

many people. However, it was not always obvious how participation was linked to tangible campaign outcomes. Nonetheless, some participants appeared driven by the desire to act out a fuzzy ethical concept of a "good thing". Competition for time was seen as a limiter to participation.

Event information and personal interests/values

Like trust, the match between campaign information and personal interests was essential for participation. In other words, people would not have attended if they were not interested. Informants quickly blurred the concept of *interests* into a blended concept that mixed intellectual interests with emotional values. For example, people did not have an intellectual interest in poverty issues, but rather, a set of values, attitudes, perspectives, opinions, and social ties with friends and organizations that were somehow linked to these issues. Within this domain, like trust, many people were motivated by shared values and personal interests.

Persuasiveness common to people, organizations, and websites

The questions focused on the persuasive elements of either people or websites revealed that the same principle applies to organizations. In other words, the same factors that render a person persuasive also render websites and organizations persuasive. This supported the notion that people can be influenced by online transactions in a way that is similar to the way they can be influence by interaction with other people.

Easily find information on the site, or communicate with people

Clear communication, whether online or in person, provided participants with information about the event. Having obtained clear information on event details, they would make their own decisions about participation. Clear communication was seen to increase participation by simplifying decision-making and facilitating participation at the event. Complex communication was seen to decrease participation by rendering transactions more difficult. Whether participants had voluntary, obligatory, or mandatory commitments to the event, clear communication was essential to participation.

Visual attractiveness

There was a consensus that the content of messages was more important than the visual attractiveness. However, this question was only asked in a few cases (for reasons of

time and priorities). These few responses contradicted the research that suggests visual attractiveness is associated with credibility and good feelings.

Findings (Emergent Themes)

Ambiguous cause and role

It was often difficult to classify peoples' roles at the event because each informant had a different idea about what the event was, and an unclear idea about their role in it. Many people considered themselves supporters of a larger cause, rather than part of any particular organization or campaign. Nonetheless, many informants struggled to describe what the cause was about, though poverty emerged as the dominant theme. In describing what the event was, there seemed to be room to describe the event as a broad social cause, a specific campaign, the different mandates of the various organization, or a collection of physical events. Some people seemed to view the event as a broad gathering, like some sort of moral tribe—the “ethical us” versus the “immoral them”.

Paid staff and volunteers had a clear idea about their role at the event: “I’m working”, or “I’m just a volunteer”. However, for non-staff, with all their different views on what the event was, they often struggled to describe their role within the event. Many public participants seemed satisfied to label themselves as “supporters”, but what and who they were supporting was frequently radically different, and occasionally a fuzzy concept.

Drivers and the driven

Overall, people driven to participate by organizations did not seem to be as motivated to attend the event as people were motivated by the “cause”. For the *drivers*, the people who were driven by the cause considered themselves to be in charge of their relationship with organizations. Consequently, organizational information was not a motivator for participation (as these people were already motivated), but rather, the information was used by participants to decide their own involvement. Often, these highly motivated people picked the organizations they belonged to, and felt that they controlled the relationship.

For the *driven*, these participants seemed more driven by the organization than the cause. They were motivated to participate by organizations or social contacts, were often attending with friends or family, and they may have been asked to commit to volunteering. These groups seemed more passive and influenced by organizations and their social contacts.

Some of the interviews happened with groups, and this showed that it was common for groups to be comprised of both highly motivated and passive participants. In these groups, some people seemed to be drivers who brought friends or volunteers along, while other informants were clearly brought along. Whether driving or driven, social interaction and peer pressure seemed to be a dominant force behind participation, often stronger than the direct efforts of the event organizers.

Social relationships and the web

The impact of social relationships appeared to be much larger than originally expected. Social relationships were a powerful driver of participation, and online information and interactivity were frequently part of the pre-event planning between participants. Before attending, many participants distributed and/or received electronic information about the event and conducted their planning online. In many ways, online information seemed to operate as a node within an existing social network. In many cases, the websites were just information sources used by friends and colleagues. In some sense, they were like a third person in the relationship—the one with the details and ideas. Participation at the rally was often seen as a social act—something that people attended with friends, while having an exciting day out and feeling they were contributing to a good cause.

Free will and the web

The degree of free will seemed to be a primary determinant of motivation and website interaction. For example, people driven to attend because of organizational commitments did not have as much to say about the websites (as they primarily communicate with organizational staff directly). Furthermore, they did not seem as committed as those driven by values and dedication to the cause. The people attending because of commitments appeared to depend more on one-with-one communications. Conversely, people attending through voluntary motives appeared to rely more on one-to-many communications.

There seemed to be an association between a participant's role, their degree of obligation to attend the event, and the relevance of online content/interaction. Table 6-6 shows participant's various roles, motivations, degree of obligation, how they communicated, and their communication mode.

Table 6-6: Participant's Roles, Degrees of Obligation, and Communication

Role	Obligation Type	Personal Comm.	Website Comm.	Comm. Mode
Coordinator	Mandatory	✓		1 with 1
Staff	Mandatory	✓		1 with 1
Volunteers(Driven by others)	Obligatory	✓		1 with 1
Participant(Driven by others)	Obligatory	✓		1 with 1
Volunteers(Driven by self)	Voluntary		✓	1 to many
Participant(Driven by self)	Voluntary		✓	1 to many

Both paid staff and obliged-volunteers were not able to speak about the persuasive attributes of the websites, perhaps because their attendance was based on prior commitments to the organizers. For example, people who attended the event because of professional obligations were not able to answer the open-ended survey questions about the websites. Volunteers, who had prior commitments to support organizations, were not able to say much about online or personal mobilization either. For these obliged persons, trust, information, and communication quality did not seem to make much of an impact on their participation, except perhaps for logistics. Since the voluntary participants used event information to determine their participation, and interacted through one-to-many communication, the voluntary participants should be the focus of successive work.

6.3.4. Methodological Lessons Learned

Target participants for successive studies

The people whose participation is not based on formalized obligations are the ideal target audiences for successive studies. People who attend the event because of pre-arranged obligations or social commitments are unlikely to be influenced by online communications directly, as their participation depends on their social network. For successive surveys, with limited surveying time, it is advised to pinpoint persons who attended the event due to online interaction, while excluding persons who attended because of obligations to organizations or individuals. It is important to reach the voluntary decision makers.

Research methodology

The selection methods produced random selections. However, it was time consuming and frequently meant spending time engaging with people whom were not ideal informants. For the next survey, the method should start with screening questions such as "Excuse me, are you attending this event?" If yes, "Are you working at this event? Or are you volunteering?" If working, then thank them and note the response. If

volunteering or not working, then ask them for an interview. The first few questions would then disqualify obliged persons. Additionally, to identify whether people are actors or reactors in the campaign, it may be useful to ask, “Did you invite others to attend today? Were you invited by someone else to attend? Or both?”

The open-ended interviews seemed to be successful. The high-quality audio recording equipment (Sony Minidisk and stereo condenser microphone) effectively captured participant’s comments, even in noisy environments. However, when the microphone was pulled out, some participants responded as if they were being interviewed for a talk show. In a few cases, their vocal tone and posture changed when they spoke into the microphone. It is possible that the professional looking audio equipment constantly reminded participants that they were being recorded. This may have increased their likelihood of providing socially desirable responses, which may have contributed to biased responses. For this reason, in the future, it is advised to use audio equipment that does not look professional and which informants can easily forgot.

When singling out one person in a small group to be interviewed, the non-selected persons normally jumped into the interview during the process. At first this seemed to be a problem (which was resisted to some degree), but it soon became apparent that that the other people were involved in the interviewee’s decision to participate at the event, and that the initial concept of pure website-to-constituent interactions was unrealistic. This accidental discovery showed a more complex social transaction was at play, often with two or more actors in the process, such as website-friends-interviewee, interviewee-organization-website, or friends-website-interviewee. For this reason, successive interviews should prepare to interview persons either alone or in groups.

6.3.5. Conclusions and Research Implications

The findings from this study lead to the following conclusions and research implication to the thesis investigation. Trust was a powerful cost factor, and determinant of participation. Persons who cared about the event’s outcomes said they would not have attended if they did not trust the organizations to carry out their mandates.

Informants could be classified into two groups: drivers and driven. The drivers, people who were motivated by the cause, considered themselves to be in charge of their

relationship with organizations. These people seemed to be motivated by common values and personal interest. Additionally, they appeared to be the driving force in motivating other less engaged persons. The driven—people who were motivated to participate by social contacts or organizations—were often attending with friends, family, or as volunteers. These individuals seemed more passive and influenced by organizations and their social contacts. The match between event information and personal values/interests proved to be essential, and appeared to relate with motivation. However, the drivers appeared to use online event information to determine their participation and influence the participation of others.

The same factors that render a person persuasive also appear to render websites and organizations persuasive. The visual attractiveness of websites/promotional material was not considered important. However, clear communications, whether by people or websites, appears to operate as a convenience factor, with easy communications reducing costs, and complex communications driving up costs.

6.4. Conclusions and Research Implications

This chapter presented an overview of three research studies that sought to understand online factors associated with behavioural influence, and which could be applied to designing online social marketing interventions. The first investigation was an exploratory pilot study that evaluated website factors associated with behavioural change within an adaptation of Wiebe's (1951) criteria. The second study was a qualitative investigation. The third study focused on relationships between website credibility, trust, and behaviour and it is presented in the next chapter.

The outcomes of the two exploratory studies contribute to this thesis by identifying website factors associated with behavioural influence. The findings and conclusions from this chapter do not contribute to the findings or conclusions of the thesis. Rather, the outcomes informed the development of a theoretical model that was better evaluated through the final study, which offered a more robust research method.

The preliminary conclusions from the two exploratory studies are as follows. Participants who were internally motivated to contribute voluntarily were more likely to be influenced by website factors. Both credibility and trust emerged as key factors in behavioural change. In the pilot study, credibility accounted for more variance than any

other variable and proved to be the most powerful covariate with behavioural intentions, including a number of other independent variables. In the qualitative investigation, trust emerged as a key variable, with participation dependent on it. Informants endorsed the hypothesis that the persuasive human factors applied to websites as well as organizations. Across both studies, usability and clear communication were demonstrated to be important aids for people to find information. The pilot study showed that visual design was associated with behaviours; while in the qualitative investigation, informants denied that design had any influence on their participation. Social relationships proved to be critical, with many people motivated to participate by obligations to family, friends, or staff from the core organizations.

7. Website Credibility and Trust (Study 3)

Two trends may threaten to undermine the efficacy of online social marketing interventions: mistrust and competition. As social marketers move online, risks can constitute hidden prices/costs that may reduce the impact of web-based campaigns. Similarly, online competition means that target audiences sometimes encounter numerous mixed messages and may not always be able to discriminate between credible and bogus information sources. In a high-risk and highly competitive environment, website credibility and active trust may help increase the odds that online social marketing campaigns effectively engage citizens.

E-marketing researchers regard online credibility and trust to be critical factors that can affect online sales. During this research project's two exploratory studies, online credibility and trust emerged as key factors that could influence campaign participation. Although online credibility and trust have received much attention in for-profit literature, they have received little attention within non-profit literature. At the same time, with two possible models of online credibility, there was a need to assess which model was most appropriate to website credibility.

Findings from the two exploratory studies (in the previous chapter) and the literature review suggested there was a relationship between *website credibility*, users' *active trust*, and *behavioural impacts*. Additionally, *usability* and *reputation* were believed to be covariates, associated with website credibility. Originally, usability and reputation were treated as exogenous variables believed to influence credibility. However, due to poor fitting constructs resulting from measurement error, hypotheses regarding these variables were untestable with structural equation modelling. Thus, it was impossible to evaluate whether they contributed any impact or not. As exogenous variables, they could be removed from the model without affecting hypotheses regarding other variables.

Out of a research project that comprised three studies, this chapter presents the third and final study. This chapter is organized as follows. First, it presents the research model, defines variables, and justifies hypotheses. Second, it reviews the development of the survey instrument. Third, it presents results for the measurement and structural models. Fourth, it shows findings and discusses the implications for theory and practice. Fifth, it presents the conclusions.

7.1. Research Model Development

This investigation examines the relationships between *website credibility*, *active trust*, and *behavioural impact*. In doing so, two models are presented in Figure 7-1 and subsequently evaluated. The difference between the two models is their treatment of a website's *visual appeal*. As discussed following, the two-dimensional credibility model represents a widely used computer credibility framework; in this model, *visual appeal* is not regarded as a core component of credibility, and consequently, it is treated as an exogenous variable. In this model, *visual appeal* exerts influence on the two credibility dimensions, which are themselves interrelated. The three-dimensional credibility model is based on Ohanian's (1990) celebrity-endorser credibility model where *visual appeal* acts as a credibility dimension. In this model, *visual appeal* is treated as a credibility dimension where all variables correlate with one another. In other words, a comparison is made between the two-dimensional computer credibility model and the three-dimensional human credibility model.

We define the dependent variable, *behavioural impact*, as a change in users' campaign activity and future willingness to support the campaign, because of using the website. *Website credibility* describes users' perceptions of website *expertise*, and *trustworthiness*. Theoretically, the two *website credibility* variables should correlate as they represent two components of a larger construct. *Visual appeal* describes a person's judgement of a site's aesthetic design quality. *Active trust* describes whether a user feels confident or unconfident acting on the advice of the website.

Across both models, a clear distinction exists between *website credibility*, *active trust*, and *behavioural impact. Website credibility* represents a psychological judgement that a website's content is believable. *Active trust* defines a person's confidence in acting on the advice of the website. When moving from *website credibility* to *active trust*, a user would transition from psychological judgements of the source, to an assessment of their confidence in acting on the advice of that source. *Behavioural impact* represents a person's actions and willingness to act in the future. Although *active trust* is related to *behavioural impact*, it differs in that *active trust* describes the confidence in acting, while *behavioural impact* represents the action and future willingness. These definitions will be further defined in the subsequent section.

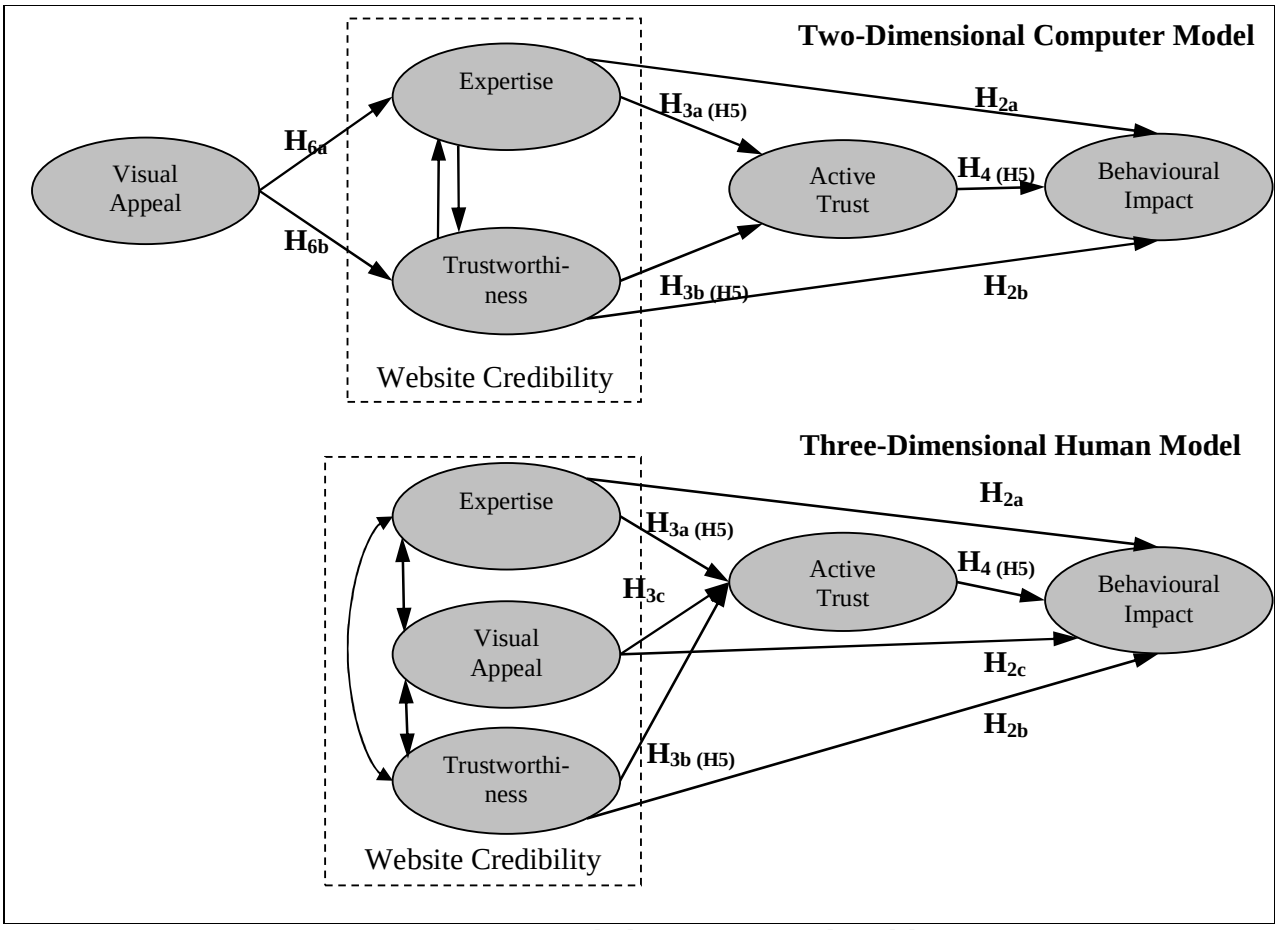


Figure 7-1: Two- and Three-Dimensional Models

Within this model, trust mediates the impact of *website credibility* on *behavioural impact*. In a prior analysis, support was found for a bi-directional relationship between *website credibility* and *behavioural intent* (Cugelman, et al., 2008). However, to reduce complexity in this analysis, only one-way relationships are explored. Moreover, in this study, a larger data set is used and the dimensions of *website credibility* are examined.

Variables and Hypotheses

Behavioural Impact (Dependent Variable)

Although behaviour is the "bottom line" of social marketing, it is very difficult to observe behaviours resulting from online campaign interactions directly. An alternative measure, behavioural intent, has been shown to be a strong predictor of behaviour across numerous empirical studies. This association is well documented and explained by the theory of reasoned action (Sheppard, et al., 1988) and the subsequently updated theory of planned behaviour (Armitage & Conner, 2001). For example, one meta-analysis showed that both these theories could effectively predict condom use across a large number of public health interventions (Albarracin, et al., 2001). Another popular

behavioural change theory, the trans-theoretical approach, also called stages of change, demonstrated the impact of *behavioural intent* across numerous studies. For example, people who intended to change their behaviour—to adopt a virtue or drop a vice—were statistically much more likely behave in accordance with these intentions than others who had no intentions (Prochaska, et al., 1995).

Although behavioural intent is a common proxy measure of behaviour, it is distinct from behavioural expectations and willingness. Intention describes a person's plan to act out a given behaviour; behavioural expectations describe how someone believes they will probably behave, while willingness describes their readiness to act should an opportunity present itself. Research has shown behavioural expectations, willingness, and past behaviours are also strong proxy indicators of behavioural outcomes (Gibbons, et al., 1998). In this study, *behavioural impact* describes a blended measure that cuts across these concepts by assessing past behaviour and future expectations about behavioural willingness because of using a particular website.

Website Source Credibility (Model Comparisons)

Across the literature, researchers generally propose that source credibility is composed of different dimensions. However, two similar frameworks include the three-dimensional human celebrity endorsers' model and the two-dimensional computer model. In developing the three-dimensional model, Ohanian (1990) reviewed a number of instruments before empirically developing and evaluating a credibility scale composed of trustworthiness, expertise, and attractiveness. For the two-dimensional model, Fogg and Tseng (1999) presented a simplified model, reducing a range of credibility factors to just two dimensions: trustworthiness and expertise. One key difference between these two models is how they treat visual attractiveness. In Ohanian's work, attractiveness is deemed a factor that composes credibility, while in Fogg and Tseng's work visual attractiveness seems closest to the concept of a surface credibility assessment and would consequently be treated as a way of experiencing credibility, not a core dimension. Given these different ways of treating visual attractiveness in relation to credibility, this study tests the conventional notion of computer credibility, which composes perceived *trustworthiness* and *expertise*. Adopting the conventional computer credibility model, it is proposed that:

H1: Website credibility is a two-dimensional construct (trustworthiness, expertise) and will fit the data better than the three-dimensional construct (trustworthiness, expertise, visual appeal).

Website Source Credibility (Independent Variable)

Aristotle argued that persuasive rhetoric was influenced by three factors: the character of the speaker, the disposition of the audience, and the speech itself. Persuasion by character happened—Aristotle argued—when a speaker's personal characteristics rendered credence to an argument (Aristotle, trans. 1992). Today, definitions of source credibility are remarkably similar: a communicator's positive characteristics that affect receivers' acceptance of a message (Ohanian, 1990), or in a computer credibility context, a perceived quality that one person has in another which results in believability (Fogg & Tseng, 1999).

Researchers have discussed and empirically measured the association between source credibility and behaviour. Presumably, high credibility sources can positively impact on behaviour, whereas low credibility sources are less likely to contribute a *behavioural impact* (Hassan, et al., 2007). Empirically, during the development of a scale to measure a celebrity endorser's credibility, a significant association was shown between celebrity endorsers' credibility and participants' purchase intentions (Ohanian, 1990). It is thus proposed that:

H2: Website credibility increases behavioural impact.

Little research addresses the relationship between credibility and trust. Perhaps this is due to academic and professional researchers who sometimes use the terms credibility and trust synonymously, even though they refer to different concepts (Fogg, 2003). Despite occasional conceptual blending, the distinction between the two concepts is found among social marketing literature, which advises campaigners to build their campaigns around credible persons who hold the public's trust (McKenzie-Mohr & Smith, 1999). While in regards to online behaviour, trust has been deemed the primary intermediary between customers' perceptions and their willingness to conduct Internet purchases (Jarvenpaa, et al., 2000). Credibility can be regarded as a psychological judgment of believability, while *active trust* represents a behavioural confidence in acting on the advice of a source. The hypothesis is put forward that:

H3: Website credibility increases active trust.

Active Trust (Independent Variable)

Trust is widely deemed an essential component of social and personal relationships. Researchers have described it as a core component of the social capital which bind societies together (Putnam, 2000) and as the basis for quick and effective business transactions (Covey & Merrill, 2006). Across the literature, trust has been described as a factor that relates to behaviour directly and also through mediation. As already described previously, trust has been deemed the primary intermediary between customers' perceptions and their willingness to conduct online purchases; but also, by increasing trust, business can increase the willingness of prospective customers to shop online (Jarvenpaa, et al., 2000). Likewise, online trust has been considered a psychological intermediary between a website's physical characteristics and users' behavioural intentions (Bart, et al., 2005). Apart from purchase behaviours, trust is also associated with user's loyalty (Flavian, et al., 2004), which can be regarded as long-term repeat behaviour and a key component of relationship marketing.

When trying to define trust, there are a number of competing definitions and characterizations. However, one model of trust, put forward by Deutsch, accommodates a number of other trust characterizations, while providing a precise definition (Deutsch, 1962). Applied to online environments, this definition has been used as a model for trust in social networks (Golbeck & Hendler, 2004) and as a core aspect of online trust (Corritore, et al., 2003).

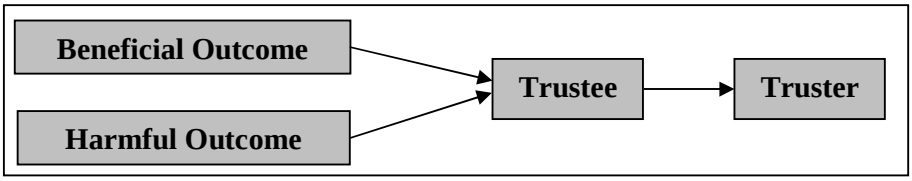


Figure 7-2: Visualization of Deutsch's (1962) Trust Model

According to Deutsche's trust model, illustrated in Figure 7-2, the source that is trusted (the trustee), plays a brokerage role between an actor (the truster) and an object of motivational relevance (the beneficial outcome). The arrows show how the outcomes are delivered by the trustee to the truster. To follow this definition, first start with the truster who encounters a situation with two possible outcomes: beneficial or harmful. Second, to achieve the beneficial outcome—while avoiding the harmful one—the truster must depend on the trustee to deliver the desired outcome. Third, when the truster depends on the trustee to deliver the outcome, the truster enters a risky

undertaking, where the harmful outcome may occur. At this point, the truster has made a trusting choice. If they avoid this course of action, they have made a mistrustful choice. However, if they have much to gain and little to lose, then this would be called gambling and would not qualify as a trusting choice (Deutsch, 1962). By this definition, when the truster possess enough confidence to predict the behaviour of the trustee, they feel they can confidently predict the outcome of the venture, and take a trusting action that implies risk (Deutsch, 1958). Online, the definition of *active trust* is a subject's confidence in acting on the advice of a website. It is consequently proposed that:

H4: Active trust increases behavioural impact.

H5: Active trust mediates the impact of website credibility on behavioural impact.

Visual Appeal (Independent Variable)

Surface judgements occur when a person believes something to be credible based on a superficial inspection, such as judging a website to be credible because of its design. This process has been likened to judging a book by its cover (Fogg & Tseng, 1999). On the basis of design alone, users who are unfamiliar with a website's operator can judge that website to be as credible as one they are familiar with (Flanagin & Metzger, 2007). One study of website visual attractiveness found that, on the basis of design, users formed impressions of websites in just 50 milliseconds, and their first impressions contributed to a halo effect which could prevent them from observing successive threats (Lindgaard, et al., 2006). V*isual appeal* is defined as a website's superficial aesthetic attractiveness.

Examining the relationship between website *visual attractiveness* and credibility, researchers who blended design and credibility variables in an online investigation concluded that website design may have a greater impact on consumers' attitudes towards websites then their offline perceptions of the organizations (Long & Chiagouris, 2006). Moreover, it has been shown that design is a large factor in explaining why users can be tricked into believing criminal websites are legitimate (Dhamija, et al., 2006). One experiment showed that the perceived credibility of photos impacts on the perceived credibility of associated text (Nguyen & Masthoff, 2007). When visual appeal is treated as an exogenous variable (in the two-dimensional model), it is hypothesized that:

H6: Visual appeal increases website credibility.

7.2. Questionnaire Development

To evaluate the theoretical construct proposed in Figure 7-1 empirically, an online survey was advertised across the family of anti-poverty campaign websites. By the end of 2007, the campaign encompassed an online network of 74 websites, though a smaller number opted into this study. The population defined in this project composed users of all participating campaign websites during the study timeframe. Without a pre-existing list of users, random allocation was not possible, resulting in a convenience sample of website users. As a theoretical paper, this investigation is based upon a non-experimental fixed design appropriate for cross sectional correlational studies (Robson, 2002).

As part of the agreement with campaign coordinators, the online survey composed questions for this research project, as well as questions of interest to campaign staff. After blending questions, the online survey was pilot-tested, refined, and then finalized. Due to competition over survey space, during the pilot-testing phase, multi-item constructs were reduced to the fewest, strongest measures.

Where possible, the survey items were based on components of empirically validated survey instruments but *active trust* and *behavioural impact* were self-generated. The questions and relevant instruments are listed in Table 7-1. Internal consistency of survey items are presented in Table 7-2. Primarily, the survey used 7-point Likert-type questions and followed a number of empirical guidelines on the design of online surveys, such as presenting questions in order from easy to complex; numbering questions; providing a progress bar; using yes/no columns rather than select all; and randomizing categorical options (Dillman, 2007). Furthermore, only core questions were made mandatory.

Afterwards, the English survey was translated by professional translators into Spanish, Portuguese, and French. To ensure the surveys captured the same meanings across languages, considerable effort was undertaken to ensure conceptual comparability. Translators were asked to make conceptual, rather than literal translations. Effort went into ensuring that Likert-type categorical terms matched, so that absolute terms, such as “completely” were grammatically superlatives, representing the maximum category, while terms such as “very” represented the relative quantity. An effort was made to use short and common words while avoiding confusing expressions such as double

negatives. Finally, each of the four language questionnaires were placed in one document so comparisons could be made. Discussions ensued with the translators to ensure conceptual comparability between translations. Finally, a single person proficient in all four languages ensured that the translations were conceptually comparable. In the next step, the four questionnaires were built into an online survey tool. The professional survey service, Survey Monkey (www.surveymonkey.com), was used and to ensure data protection, their encryption service was purchased. A copy of the survey, before it was posted, is available in Appendix 13.2.6.

Table 7-1: Survey Questions and Item Codes

Construct	Item Code	Item Statements	Source
Visual Appeal	VIS1 VIS2	• This website's visual appearance is: (Very Unattractive-Very Attractive) • This website looks professionally designed. (Agree-Disagree)	(Lindgaard, et al., 2006) (Long & Chiagouris, 2006)
Website Credibility (Trustworthy)	CRE-TW1 CRE-TW2	• Information on this website seems: (Untrustworthy-Trustworthy) • Also, information on this website seems: (Unreliable-Reliable)	(Ohanian, 1990)
Website Credibility (Expertise)	CRE-EX1 CRE-EX2	• Content on this website reflects authors who are: (Not Experts-Experts) • Also, content on this website reflects authors who are: (Unknowledgeable-Knowledgeable)	(Ohanian, 1990)
Active Trust	TRST1	• If I were to act on the advice of this website, I would feel: (Unconfident-Confident)	Self designed
Behavioural impact	BEH1 BEH2	• Because of this website, I am more willing to support this campaign in the future. (Agree-Disagree) • This website has inspired me to do more for the White Band Campaign. (Agree-Disagree)	Self designed

To encourage campaign website staff to promote the survey, each web focal point was e-mailed an announcement and provided text to promote the study in the four languages. Moreover, the study was further promoted in the campaign's central e-newsletter and website. Additionally, the survey was further promoted with a DHTML pop-up banner on the campaign's central website. After one week, if the survey has not been posted on national websites, a second reminder e-mail was sent. After another week, web focal points were called. The survey ran from 6 November 2007 to 8 February 2008.

7.3. Analysis

Although all website operators were invited to participate in this survey, not all websites met the inclusion criteria. Thus, a smaller subset of websites qualified. Horizontal websites, representing larger portals with a campaign sub-section, were excluded. In these websites, users could easily confuse the survey statements with other activities or non-campaign content. Only websites that were exclusively focused on the campaign qualified. Some websites were excluded because of weak connections to the campaign, as indicated by no brand connection. For example, 13 websites did not display a single campaign image. Though these websites may have addressed the campaign's core issues, their ambiguous connection to the campaign itself rendered some survey questions unclear. In the end, 41 campaign websites qualified for this study.

To prepare the data, a Little's Missing Completely At Random test was run on the full 469 survey responses, resulting in (Chi=770.260, df=738, p=.199). This statistically insignificant result indicated that unanswered survey questions did not follow any systematic patterns, and consequently, incomplete records could be deleted without biasing the data (Tabachnick & Fidell, 2007). Furthermore, survey responses with less than the 10 core questions were omitted.

Afterwards, Mahalanobis distance (critical value=34.528, df=13, p<.001) and multivariate plots were used to identify multivariate outliers for removal (Tabachnick & Fidell, 2007). Further, a manual check was undertaken to remove potentially bogus responses. Afterwards, the data set composed 237 complete records representing 41 campaign websites.

The measurement and structural models were assessed with Structural Equation Modelling (SEM), using AMOS 7.0. Maximum likelihood was selected as the estimation method best suited to the data, as it requires multivariate normality and is commonly used with Likert-type scales (Byrne, 2001). For this analysis, the two-step approach was used; it starts by assessing, and if necessary, correcting problems with the measurement model, before the second step, assessing the structural model and its relationships (Anderson & Gerbing, 1988; Blunch, 2008).

Measurement Model

The measurement model was assessed through a confirmatory factor analysis and an assessment of each variable's construct validity. During this phase, two variables

(reputation and usability) did not meet the standard tests for convergent and discriminant validity. The Average Variance Extracted (AVE) of each construct was below the recommended .5 threshold (Bagozzi & Yi, 1988; Fornell & Larcker, 1981). Consequently, they were removed from this investigation, as the hypothesis regarding these constructs was not testable. As exogenous variables, their removal allowed us to evaluate the remaining hypothesis.

After removal, a second confirmatory factor analysis and assessment of the variables' construct validity was conducted; the results are shown in Table 7-2. To assess the convergent validity of each construct, the standardized factor loadings of each item, for their respective constructs, were above the recommended .4 (Blunch, 2008) and .5 threshold (Bagozzi & Yi, 1988). Moreover, the AVE of each construct was above the recommended .5 threshold (Bagozzi & Yi, 1988; Fornell & Larcker, 1981), while all composite reliability scores surpassed the recommended .6 threshold (Bagozzi & Yi, 1988).

Table 7-2: Measurement Model

Construct	Item Code	Standardized Factor Loading	AVE	Composite Reliability
Visual Appeal	VIS1 VIS2	0.784 0.874	0.689	0.816
Website Credibility (Trustworthy)	CRE-TW1 CRE-TW2	0.928 0.959	0.890	0.942
Website Credibility (Expertise)	CRE-EX1 CRE-EX2	0.85 0.937	0.800	0.889
Behavioural Impact	BEH1 BEH2	0.795 0.951	0.768	0.868

All multi-item constructs, excluding the one-item measure (TRST1).

To establish discriminant validity, it is recommended that the AVE of each construct should be larger than the squared correlations between each construct (Fornell & Larcker, 1981). All constructs met these criteria. Overall, the remaining variables achieved a good level of convergent and discriminant validity. However, given that the *active trust* construct was measured on just one item, an alternative method was used to assess the validity of this single item construct. For face validity, the *active trust* was initially assessed as a sound measure. To assess discriminant validity, it has been recommended that modification indexes should be less than 3.84 (Bagozzi & Yi, 1988), and for this single-item construct, the modification indexes did not suggest any cross loadings. After this process, the final confirmatory factor analysis model obtained statistically significant fit measures (Chi=28.3, df=18, p=.058). With a sound measurement model, the structural model could be assessed.

Structural Model

When specifying the structural models, for the two-dimensional model, the two credibility variables were both fixed to the same freely estimated value. The stability index of this non-recursive model was .055, which is well below the value 1, indicating that this was a stable and quantifiable model (Arbuckle, 2005). For the three-dimensional model, all credibility variables were allowed to correlate freely, as this reflects their structure in the original paper (Ohanian, 1990).

To assess the models, a range of goodness of fit measures are presented in Table 7-3, grouped by absolute fit, relative fit, non-central chi-square test, and parsimony fit measures.

Table 7-3: Goodness of Fit Measures for the Two Models

Models	Absolute Fit		Relative Fit	Non-central Chi	Parsimony
Two-Dimensional	CHI=54.190 df=20, p<.001	GFI=.952	CFI=.978	RMSEA=.085 p=.018	PRATO=.556
Three-Dimensional	CHI=28.305 df= 18 , p= .058	GFI=.974	CFI=.993	RMSEA=.049 p=.476	PRATO=.500

For the absolute fit measures, the chi-square test on the two-dimensional model was significant, indicating a poor fit; the three-dimensional model was insignificant, indicating a better fit with the data. When comparing the two chi-square tests, the statistical difference between models (Chi=25.885, df=2) was significantly different at p=.001, indicating that the three-dimensional model fit the data significantly better. However, the chi-square test is known to be sensitive to sample size, and is best used in conjunction with other measures (Bagozzi & Yi, 1988). For the GFI and CFI tests, both models surpassed the .9 thresholds, indicating good fit (Bagozzi & Yi, 1988; Blunch, 2008). For the non-central chi-square test, the two-dimensional model's RMSEA score was within the range of acceptance, while the three-dimensional was much closer to the ideal score (Blunch, 2008). Finally, for the parsimony measure, both models were below the .6 threshold for acceptance, with the two-dimensional model showing a better parsimony fit (Blunch, 2008). The chi-square test indicated a better fit for the three-dimensional model, while across the other fit measures, the three-dimensional model performed marginally better.

7.4. Findings (Hypothesis Testing)

Using SEM, the regression weights and covariances for both models are presented in Figure 7-3. Across both models, all relationships showed significant effects, with one exception. The correlation between *expertise* and *behavioural impact* was the weakest of all relations and statistically insignificant.

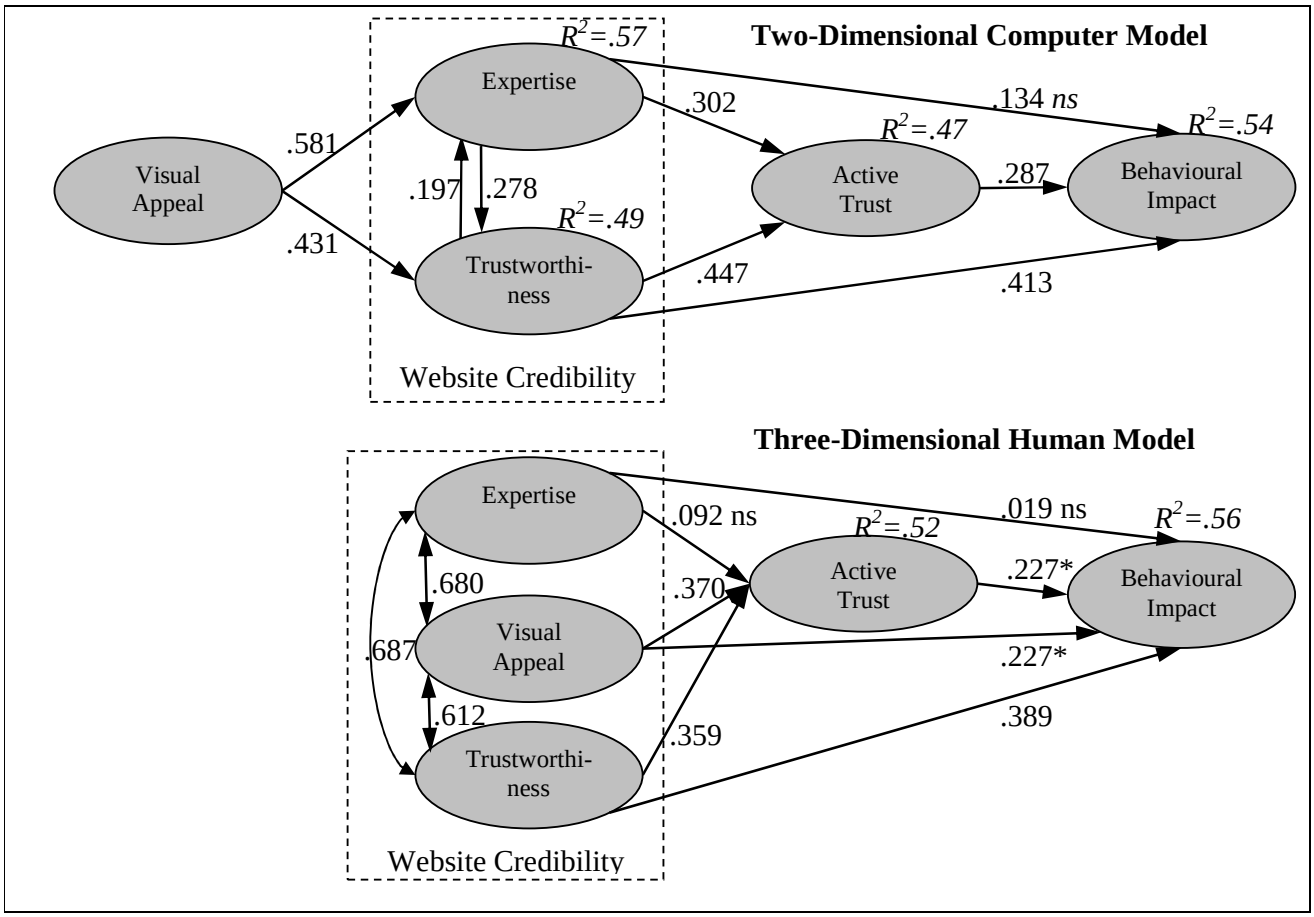


Figure 7-3: SEM Regression Weights and Covariance Estimates for Both Models
*All correlations significant at p<.001 except *p<.01, **p<.05, ns=not significant*

Across both models, the correlations demonstrate that perceived *trustworthiness* is more important that *expertise*, in regards to *behavioural impact*. In the three-dimensional model, *visual appeal* held a stronger correlation than *expertise* in relation to *active trust* and *behavioural impact*. This may reflect the nature of this campaign, which placed more emphasis on emotional appeals, such as celebrity endorsements, graphic design, and calls to action; rather than cognitive appeals, such as the dissemination of in-depth analytical papers. Consequently, the nature of this campaign has implications for the generalizability of the findings, which will be discussed in the limitations.

To assess mediation, calculations of indirect effects were conducted on the two models with all regression weights between *website credibility* variables fixed to zero. Elimination of inter-credibility correlations was conducted to simplify the model, thus rendering *active trust* the only possible mediator between the *website credibility* variables and *behavioural impact*. *Visual appeal* was not assessed in the two-dimensional model for the sake of only examining direct mediation. Table 7-4 displays the standardized indirect effects, which shows the effect of the credibility variables mediated through active trust onto behavioural impact. They were calculated using 2,000 bootstrap samples to estimate 90 percent confidence interval with a maximum likelihood bootstrap estimate using a two-tailed p value test.

Table 7-4: Standardized Indirect Effects (Constrained Credibility Variables)

Construct	Model	Behavioural impact (Constrained)	Behavioural impact (Unconstrained)
Expertise	Two-dimensional	.086, p<.01	P=.001
	Three-dimensional	.039 , p<.05	Not significant
Trustworthiness	Two-dimensional	.127, p<.01	P=.001
	Three-dimensional	.451, p<.05	p<.05
Visual Appeal	Two-dimensional	---	--
	Three-dimensional	.085, p<.05	p<.05

Examining the mediation, across the constrained models, *active trust* mediated a small, but statistically significant indirect effect on *behavioural impact*. The strongest mediated effect was from *trustworthiness*, with *expertise* showing a marginal mediated effect (though not statistically significant on the unconstrained model). These results indicate that *active trust* partially mediates the effect of *website credibility* on *behavioural impact*.

Table 7-5: Hypothesis Conclusions

No.	Hypothesis	Outcome
H_1	Website credibility is a two-dimensional construct (trustworthiness, expertise) and will fit the data better than the three-dimensional construct (trustworthiness, expertise, visual appeal)	Not supported. The three-dimensional model fit the data better, which supports the alternative hypothesis
H_{2a-c}	Website credibility increases behavioural impact	Supported across both models. However, the primary effect was through trustworthiness with expertise proving insignificant in the three-dimensional model
H_{3a-c}	Website credibility increases active trust	Supported, but with the primary effect is through trustworthiness and visual appeal being relevant in the three-dimensional model
H_4	Active trust increases behavioural impact	Supported across both models
H_5	Active trust mediates the impact of website credibility on behavioural impact	Somewhat supported. Active trust contributes a partial mediating effect
H_{6a-b}	Visual appeal increases website credibility	Supported in the two-dimensional model, but not a valid hypothesis for the three-dimensional model

After examining the measurement model, structural model regression weights, and indirect effects, Table 7-5 presents an assessment of each hypothesis.

These results are subject to a number of limitations. For the web survey, it was not possible to draw a random selection and self-selection may have introduced bias. Although efforts were made to ensure cross language comparability among the four surveys, different translations may have introduced some distortions. The *active trust* construct was measured with a single item, but would have benefited from a multi-item measure. The constituents of advocacy campaign websites may differ from the constituents targeted by other campaigns, and generalizability may be limited to participants of this type of campaign, rather than the audiences of other initiatives, such as public health or safety campaigns. As a correlational study, this research can only indicate relationships between variables, but not cause and effect relationships that are better assessed with experimental methods.

7.4.1. Theoretical Implications

In this investigation, the three-dimensional model of human credibility better fit the data than the computer credibility model. Theoretically, these finding may be explained by the media equation (Reeves & Nass, 2003) and the functional triad (Fogg, 2003), which propose people interact with computers and media in ways similar to how they interact with people. Examining website interaction from the perspective of human credibility may explain other online phenomenon. For instance, many people can be fooled into believing that bogus (criminal) websites are trustworthy, to a large extent on the basis of visual clues (Dhamija, et al., 2006). Additionally, people change their judgement of text credibility on the basis of how they judge the credibility of associated photographs (Nguyen & Masthoff, 2007).

Given the partial mediating role of *active trust*, it is proposed that the models in this study have application to social exchange theory. For example, online, these frameworks can account for the hidden risk-based costs associated with Internet transactions. Expressing this notion in the language of social marketing, if hidden risk-based costs are ignored, then the price of participation may inflate to levels that citizens consider too expensive. Lower *website credibility* may decrease *active trust* and *behavioural impact* by introducing added barriers, prices, obstacles, or risk-based costs. Conversely, higher credibility websites could represent lower-risk options, where

advocated behaviours are perceived as more reliable, thus lower-cost. Moreover, from the point of view of relationship marketing, where long-term repeat user behaviour is influenced by trust, *website credibility* can be seen as a key factor in the formation of user trust and potential long-term behavioural maintenance.

The level of risk is likely to moderate the impact of *website credibility* on *active trust* and *behavioural impact*, where higher-risk transactions (such as making a financial donation) may require more trust than lower-risk transactions (such as signing an online petition). Online risk is associated with online trust (Corritore, et al., 2005), willingness to buy from an online store (Jarvenpaa, et al., 2000) and behavioural intent, with different website categories holding different types of risks (Bart, et al., 2005). Consequently, depending on the type and level of risk (such as financial, confidentiality, or information risks), it is likely that trust will be more or less relevant to online engagement.

7.4.2. Practitioner Implications

For social marketers, pre-campaign research is called formative research; this is the point where problems are identified, target audiences are considered, solutions are examined and intervention materials are tested. These findings suggest that *website credibility* and *active trust* factors should be addressed during the early campaign planning phases to increase the probability that target audiences find the campaign's messages believable, safe, and motivating. The following suggestions show how the findings in this study may be applied to online social marketing campaigns.

First, since website users may conceptualize campaign websites (in part or whole) as the credible source, it may be useful to conceptualize websites in human terms and model online campaign interactions on human-like relationships. For example, a healthy-eating campaign may provide facts and diet tools, but it may also model these features on relationships between the target audiences and a health specialist, ideally one who is a good match for that target audience. Likewise, an active living website may consider adopting the disposition of a motivating and charismatic coach.

Second, during the formative research phase, investigators can use the three dimensions of credibility (trustworthiness, expertise, and visual appeal) as a simple framework to guide research on online credibility. As credibility is regarded as a perceived quality, it should shift according to each target audience and campaigning context. Consequently,

for each intervention, target audiences should be the ultimate judges of what constitutes a credible and trustable online campaign.

Third, when designing interventions, online content should, where appropriate, demonstrate the campaign's *expertise* and *trustworthiness*. At the same time, these factors must be conveyed through a visual language relevant to the target audiences. Given two campaigns of equal substance, this research suggests the better-packaged online campaign would outperform its uglier rival. Thus, *visual appeal* should not be underestimated, but rather, used as a vehicle to express a campaign's core messages, credentials, and other motivational factors.

Fourth, study paper has not discussed specific design factors that are associated with *website credibility* (such as colour, layout, editorial style, etc…). Nonetheless, detailed credibility factors should be addressed during the formative research phase by consulting existing literature on the subject and seeking feedback directly from target audiences through market testing.

Fifth, the correlations in this study do not show that *website credibility* and *active trust* cause *behavioural impact*, but rather, that there is an association between these variables. Research on this topic suggests that *website credibility* and *active trust* can only have an impact on the effect of an already existing motivational appeal. Clearly, *website credibility* and *active trust* should not be misinterpreted as motivational appeals; but rather, they should be treated as factors that may modify motivational appeals. For example, a credible source that makes no motivational appeal cannot have any impact on any audience, while the impact of a motivational appeal may be modified by the credibility of the source. Consequently, credibility factors alone should not be seen as a substitute for sound campaign appeals.

Sixth, to outperform online competition and competing behaviours, it is possible to stand out by having a more credible and trustable online campaign than the competitors. Conversely, the same factors used to design credible appearing campaigns can be leveraged to undermine the credibility of competitors' campaigns. While some social marketing campaigns have focused on undermining the credibility of competitors, such as Florida's Truth Campaign (discussed in the conclusion), this research did not address third-party portrayals. Although the three dimensions could be used to design discrediting attacks, this study has not examined third-party effects of discrediting.

7.5. Conclusions and Research Implications

Online risks and competition reduce campaign impacts, but website credibility and active trust can offer a remedy. This research presented and evaluated two models of website credibility. The findings suggested that website credibility, which is traditionally based on the two-dimensional (expertise, trustworthiness) model of computer credibility may not be as appropriate to campaign websites as the three-dimensional (expertise, trustworthiness, visual appeal) model. The findings also suggest the active trust partially mediates the effect of website credibility on behavioural impact, while website credibility also holds a significant direct effect on behavioural impact. This suggests that website credibility is a key component in online behavioural change interventions.

The results suggest that, just as campaigners seek credible persons who hold the public's trust as a way of boosting campaign performance, and e-commerce websites seek to develop trustable websites to boost online sales, more credible websites can help campaigners achieve greater engagement. Moreover, as trust is a core component of social exchange theory which manifests in the 4Ps, online campaigns should consider risk-based costs as hidden price factors, and leverage website credibility to increase trust formation.

This study did not examine the potential impact of counter-credibility campaigns. For example, Florida's Truth Campaign was unique among campaigns for its aggression against the tobacco industry, charging them with misinforming the public for commercial gain. For future research, it would be interesting to assess whether online counter-credibility campaigns could reduce behaviours such as mistrust in the tobacco industry resulting in less smoking, or whether medical doctors debunking the claims of pro-anorexia websites would have an impact on anorexic behaviour. Another avenue of research would be to explore the relationships between website credibility, active trust, and behavioural impact in experimental settings where the correlations could be better assessed. Finally, since many social marketing campaigns aspire to achieve long-term behavioural impacts, there is scope to explore how website credibility and trust could contribute to forming long-term relationships and supporting behavioural maintenance.

This study contributes to the thesis by providing answers to research question two. It demonstrates website factors associated with behavioural influence. Additionally, the finding that website credibility is better conceived in human terms provides empirical evidence that supports the CBICM presented in the following chapter.

8. Communication-based Influence Components Model (CBICM)

"These new media signal a shift in thinking about how we communicate with our audiences. Even more alarming, in using these new media many marketers – commercial and social – continue to perpetuate the myth of the source-message-channel-receiver paradigm rather than embrace the collaborative and dynamic communication models these new technologies embody."

Craig Lefebvre (2007)

Although authors are calling on social campaigners to take full advantage of interactive media (Lefebvre, 2007; Neuhauser & Kreps, 2003), there may be no online intervention design guidelines that are both comprehensive and easy to apply. While planning the meta-analysis presented in Chapter 9, a number of influence systems were reviewed and pilot-tested to assess whether they were capable of describing online intervention psychology. None of the systems covered the full range of influence factors listed in the literature. For example, behavioural medicine offered the best influence taxonomies relevant to therapy which were easy to apply, but they excluded many aspects from persuasion literature. Conceptually, some systems were quite broad and encompassed numerous smaller factors, while others were discrete and only listed a few detailed factors. In addition, the type of communication model employed by interventions proved to be an important factor in determining the types of influence components that an intervention could convey. For example, it is impossible to use tailoring techniques in a one-way, "point and shoot" style communication campaign. However, in a two-way interactive campaign, it is possible to provide users with tailored feedback on their progress towards goals.

The lack of a suitable influence system created an obstacle to the primary goal of the meta-analysis: to describe psychological influence factors employed by behavioural change websites. To overcome this obstacle, and allow the psychology of online interventions to be coded, a theoretical model was developed to integrate influence components across a range of fields. Once this model was developed, the meta-analyses could be conducted. The model is called the *communication-based influence components model* (CBICM). Although this framework was developed for online

interventions, the model is generic and could have wider application to communications campaigns in general.

This chapter describes the CBICM. Then in the following chapter, the model is applied. This chapter is organized as follows. First, it presents the model's theoretical foundations: technology as a social actor, mass-interpersonal communication, and influence components arranged within a communication framework. Second, it reviews communication models. Third, it describes influence components approaches. Finally, it shows how the model was produced and describes its operation.

8.1. Theoretical Foundations

The CBICM is based on the following ideas. First, the CBICM uses a model of human-computer interaction based on human-human interaction, where people can relate to technology as a social actor. In other words, it treats online interactions, between a user and website, as roughly analogous to the interpersonal relationship between an individual and their friend, doctor, or fitness trainer. This follows research that treats interaction with technology and media as similar to human-human interaction (Fogg, 2003; Reeves & Nass, 2003). See Section 4.4 for a discussion of this topic.

Second, online communication and interaction may be one-way or two-way depending on how a particular interaction is conceived and used. Further, one-way mass-media communication is better suited to informing people, while two-way interpersonal communication is better at persuading them (Rogers, 2003). Consequently, effective online campaigns aiming to influence behaviour are best modelled on a two-way model of human communication. Based on this model, two-way human communication (Schramm, 1955), existing within a persuasive communication context (Ajzen, 1992; O'Keefe, 2002) provides a broad framework suitable to describing online communication/interaction, while also unifying influence taxonomies across a wide range of fields.

Third, the model adopts the influence components approach. Evidence-based behavioural medicine asserts that the effect of an intervention results from the psychological factors that comprise that intervention. In other words, the strength of an intervention is a function of the psychological components within that intervention that exert influence (Abraham & Michie, 2008; Embry & Biglan, 2008; Michie, et al., 2005;

Michie, et al., 2008). Moreover, these influence components exist within different parts of the communication process and consequently, separate influence components can exert their effects simultaneously.

8.2. Communication Models

Figure 8-1 presents a conceptual model of four communication models. For the sake of describing models with or without feedback, the shorthand *to* is used to describe one-way models. The term *with* is used to describe two-way models, that include feedback. Using this shorthand, the four models presented in Figure 8-1 describe three traditional communication models, and the *mass-interpersonal model*.

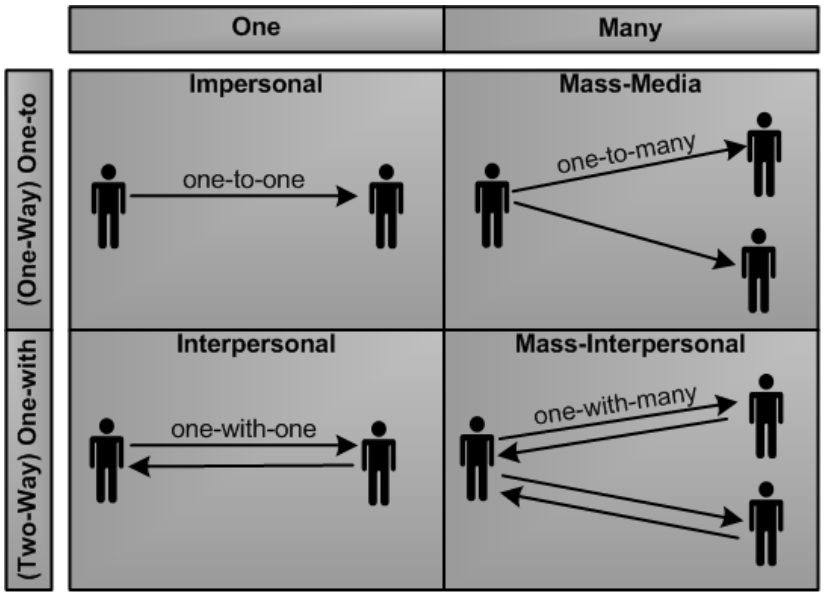


Figure 8-1: Four Types of Communication Models

The *impersonal model* (one-to-one) describes the early one-way models that assumed information and influence flowed from source to audience. Applying this model to mass communications, the *mass-media model* (one-to-many) describes tradition mass-media such as TV, radio, newspapers, and books. The *interpersonal model* (one-with-one) describes two-way communication between a source and audience, such as a discussion between two people or a small group. The *mass-interpersonal model* (one-with-many) is discussed below.

Depending on a given perspective, online communication may be described by a variety of models. The Internet is a network of computers where different communication applications operate, such as the World Wide Web, e-mail, newsgroups, or IRC.

Depending on how applications are used, different communication models may be applied. From a macro perspective, the entire e-mail system can be described as a many-with-many technology; from the viewpoint of an individual, it is one-with-many; and when looking at a particular transaction, it is one-with-one technology. However, if that person is a spammer (sending unidirectional material), then their transaction could also be called one-to-many.

Figure 8-1 presents four models, from the viewpoint of a single source communicating with individuals or groups. Consequently, it omits four other models that are relevant to online communication. Had a comprehensive model been developed, it would have also included *many-to-one*, *many-to-many*, *many-with-one*, and *many-with-many*. For example, the many-to-one model could describe a distributed denial of service attacks, where numerous computers simultaneously ping one server, to overload and shut it down. It can also describe online petitions, where numerous persons send messages to a single organization. The many-with-many model describes two-way group communication from a macro perspective, such as email, peer-to-peer, and most social media. The many-to-many model describes one-way group communications to other groups. Finally, the many-with-one model describes the mass-interpersonal model from the point of view of the audience. Although there is scope for including these four other models, the simple four-model matrix presents those models most suitable to describing a single source intervention, which is the focus of this research.

One-Way and Two-Way Communication Models

Early *one-way models* divided the communication process into a series of steps, where a source sends a message, through a medium, to reach a recipient and exert influence upon them. Presented in Figure 8-1, when targeting a single audience member this type of one-way model is called the *impersonal* model, also described as *one-to-one*. When applied to mass audiences, this is called the *mass-media* model, also described as one-to-many (Hoffman & Novak, 1996; O'Sullivan, 1999). In general, one-way models are used to describe linear mass-media relationships, such as TV or newspapers where one source sends a message to many persons (Reardon & Rogers, 1988).

Perhaps the first description of a one-way model was over 2,000 years ago in Aristotle's work on rhetoric, when he stated that communication was composed of a sender, message, and recipient (Aristotle, trans. 1992). Likewise, communication has been described as "Who, Says what, In which channel, To whom, With what effect"

(Lasswell, 1948). This framework was used by Carl Hovland who laid much of the groundwork for studying persuasive mass communication (Griffin, 2008). Applied to communications technology, the Shannon-Weaver model added a channel, signal, transmitter, receiver and noise (Shannon & Weaver, 1948). Initially designed to describe signal to noise aspects of telecommunications, the Shannon-Weaver model inspired numerous models of human communication and brought standard terminology to communication studies. However, it also reinforced the tradition of one-way communication models (Reardon & Rogers, 1988).

By the mid 1950s, one-way models had been modified to incorporate two aspects of communication that were previously ignored. The first was feedback; the second was a focus on meaning and the problems associated with transferring meaning as opposed to just messages (McQuail & Windahl, 1993). Applied to interpersonal communication, feedback accounts for two-way models that have been called one-to-one (Hoffman & Novak, 1996; O'Sullivan, 1999) or one-to-few (Reardon & Rogers, 1988), but are described here as one-with-one to capture two-way communications or interaction.

A major criticism of one-way models was their disregard for individuals, their opinions, background, unique needs, and capacities as intelligent autonomous beings. The adoption of one-way models has been cited as the reason why early research on mass persuasion produced so few findings (Ajzen, 1992). Within the area of influence, perhaps one key difference between one and two-way models is the assumption that, in one-way transactions, a source sends a message to an audience that is influenced, while the two-way model describes an interactive process where the source and audience enter a bi-directional influence relationship.

Mass-interpersonal Communication

The ecological model of behavioural change accounts for influence at numerous levels, such as the mass media, institutions, and interpersonal interactions (McLeroy, et al., 1988). For example, interpersonal influence can include one-with-one practices such as therapy, personal coaching, or support services such as suicide hotlines. At the mass-media level, therapy is sometimes applied to entire populations, such as national anti-smoking campaigns based on the stages of change approach (Prochaska, et al., 1995).

The distinction between mass and interpersonal communication has been called a false dichotomy that is not based on significant differences, but is the result of separate

research histories and institutional politics (Reardon & Rogers, 1988). During the historical development of communication studies, mass and interpersonal communication developed separately by two academic groups that rarely interacted. Interpersonal communication emerged by psychologists and social psychologists in the 1930s. Mass communication was taken up by sociologists and political scientists interested in mass influence (propaganda). In the 1980s, computer-based communication was cited as an example of communication that could not be classified as either mass or interpersonal (Reardon & Rogers, 1988). Then in the 1990s, the Internet prompted researchers to argue that neither interpersonal nor mass-media models explained Internet-based communication (O'Sullivan, 1999). Today, this same lack of conceptual fit may explain why researchers argue that the Internet has blurred the distinctions between mass and interpersonal communication (Abroms & Maibach, 2008).

Many online interventions conduct interpersonal communication with large numbers of users, resulting in communication that can be described from the micro-level as interpersonal, and from the macro-level as mass communication; however, when combined, as shown in Figure 8-1, this relationship is labelled *mass-interpersonal* (one-with-many). This model offers a way of conceiving online interventions designed to engage populations in personalized change processes through relations with automated systems. This model was described by evaluators of a healthy-eating website who argued that counselling provided highly personal feedback, but could not reach large groups, whereas mass-media interventions could reach large groups, but with minimal personalization. They considered their web-based interventions to exist between the two extremes (Oenema & Brug, 2003).

A traditional example of mass-interpersonal communication comes from direct marketing, where a marketing department may engage large populations in personalized relations based on two-way communication through the exchange of print materials by mail. As an online example, once a large group of individuals have opted to join an online intervention, such as a quit smoking website, the sum of all interpersonal relationships equals a mass-interpersonal engagement. Online, perhaps the most common way to build mass-interpersonal engagement is through a two-step approach that starts with mass-media outreach to initiate mass-interpersonal engagement. For example, a campaign may first conduct mass-media outreach to try to get people to visit

a website and register for an intervention service; then after registration, the systems engage them with interpersonal interaction. This sequential mass-media then interpersonal communication approach is common. For example, one study of online interventions conducted a 15-month long pre-study campaign which included news releases, paid online and print advertising, linking from various websites, direct mailings to individuals and relevant medical networks (Severson, et al., 2008).

8.3. Influence Components

Traditional behavioural change theories hypothesise that BCTs (influencers) can influence psychological constructs (behavioural determinant), which in turn may influence behavioural outcomes. Figure 8-2 presents this three-stage model, which is common across numerous behavioural change theories, and was derived from a model in behavioural medicine (Michie, et al., 2008).

Figure 8-2: Three-stage Model of Behavioural Change
(*See Figure 8-3 for an extended model*)

As an example of this model, consider social cognitive theory which is built from the strong correlation between a person's self-efficacy and their ability to achieve a behavioural goal (Bandura, 1982). With this approach, a therapist helping a person quit smoking may use BCTs that help the smoker build confidence that they can quit smoking (influencer); this is designed to boost their self-efficacy (behavioural determinant), which would help them increase their odds of quitting smoking (behavioural outcome). For a second example, the theory of planned behaviour posits that numerous techniques (influencers) can be deployed to influence three behavioural determinants: attitudes, perceived social norms, and self-efficacy, which impact on behavioural intent, that can motivate behaviour (Ajzen, 1991).

One meta-analysis used moderation analysis to show the effect sizes associated with particular BCTs, determinants and behavioural outcomes. The study demonstrated the statistical associations between attitudinal arguments (BCT), attitude change (determinants), and condom use (behavioural outcomes). They also demonstrated correlations between self-management training (BCT), behavioural skills (determinants), and condom use which is a behavioural outcome (Albarracin, et al.,

2005). Having broken theory down to influence components, this meta-analysis allowed the researchers to go beyond showing that a given HIV/AIDS intervention could work. Instead, it provided insights into how they worked by showing relationships between influencers, behavioural determinants and both psychological and behavioural outcomes. Moreover, this investigation showed which packages of techniques and determinants were more or less effective.

Influence Components Approaches

Although the three-stage model appears clear-cut, practitioners and researchers frequently focus on influencers and behavioural determinants, regardless of the theories involved. It is common to base interventions on behavioural determinants that cut across numerous psychological theories. For example, in one investigation of physical activity websites, 19 health promotion experts were unable to agree on which BCTs belonged to which theories; consequently, the researchers were forced to code each theory and technique separately (Doshi, et al., 2003).

Instead of focusing on the behavioural determinants associated within the major theories, some researchers prefer to extract the key constructs across numerous theories. In other words, instead of asking what is theorized to work, they prefer to ask which behavioural determinants and influencers have been shown to work. For the sake of convenience, these initiatives are called *influence components approaches*. The following passages review three influence components approaches.

First, the *Behavior Change Consortium* brought together 15 USA health behavioural change programs to assess the effectiveness of public wellbeing interventions. One of their efforts examined mediator variables (behavioural determinants) associated with successful behavioural change interventions (Ory, et al., 2002).

Second, *evidence-based behavioural medicine* seeks to synthesize and extract core building blocks of influence across numerous theories and real-world interventions. As discussed previously, one initiative following this approach has developed a BCT taxonomy based on numerous real-world interventions (Abraham & Michie, 2008). This initiative also engaged numerous health professionals and researchers to synthesize key psychological constructs associated with behavioural influence. Similar to the Behavioural Change Consortium approach above, this initiative extracted 128 influence constructs from 33 theories and reduced them to 12 core behavioural determinants

(Michie, et al., 2005). Successive work has used coders to reassociate BCTs with their respective behavioural determinants (Michie, et al., 2008).

Third, the *evidence-based behavioural kernels* approach seeks to identify the key components of behavioural change interventions. Allegorically expressed, behavioural kernels are like the "active ingredients" in medications that are proven to work. By blending the correct mix of ingredients, a drug may be more effective, and after removing those ingredients, the drug would become inert. Formally expressed, kernels have two defining features: they have been empirically proven to exert a reliable effect on one or more behaviours; and they are the fundamental units of influence, in that the removal of kernels from an intervention would render it unable to exert influence (Embry & Biglan, 2008).

A chief limitation of these influence components approaches is that they do not go far enough to recognize the complex blends of influence components that co-exist in real-world interventions. As a result, no system captures the full range of influence components that are commonly present in interventions. For example, real-world interventions may be confounded or enhanced by the social context, media, source perceptions, message encoding choices, audience traits, user feedback or competing campaigns. Source credibility can affect a social campaign's behavioural impact (Kotler & Zaltman, 1971), and can moderate and audience's personal relevance towards an issue (O'Keefe, 2002). Encoding an intervention through time, as a single or sequential intervention, using foot-in-the-door or door-in-the-face techniques can also influence the strength of an intervention (Fern, et al., 1986).

Complex Interactions in Real-World Interventions

Although influence components approaches can simplify the analysis and design of interventions, these approaches also face considerable challenges. The ways in which complex influence packages interact is not always known. Evidence-based behavioural medicine recognizes that interventions are normally composed of distinct techniques. However, planners may not always understand which combinations enhance effectiveness (Abraham & Michie, 2008). Conceptualization of how components interact is further complicated by the fact that depending on how planners regard relations between variables, each influence component may be described as an independent, mediator, or moderator variable (Frazier, et al., 2004).

Popular behavioural change theories (such as the theory of planned behaviour or social cognitive theory) package psychological constructs and techniques that have been shown to operate well together. However, when psychological constructs are divorced from their theoretical grouping, it is possible that contradictory combinations could produce weaker rather than stronger effects.

Influence Components Model

As already discussed, real-world interventions are normally based on complex blends of different theories and techniques. When considering how the three-stage model may be formulated in real-world interventions, Figure 8-3 presents a conceptual model of how the different influence components (presented in Figure 8-2) may interact. In this model, all interventions can be described according to the behavioural outcome, determinants and influencers, with popular groupings called packages.

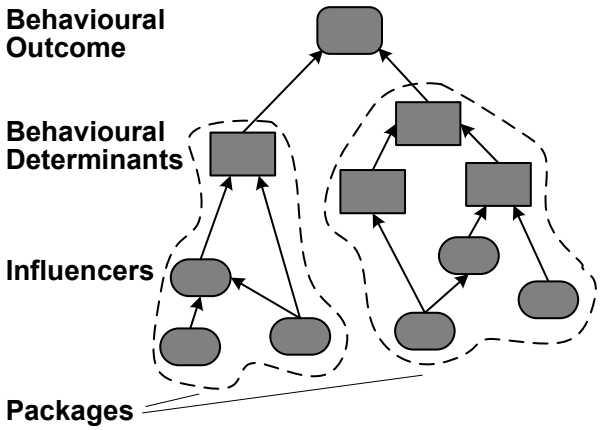


Figure 8-3: Conceptualization of Influence Components Model

The first two components describe target audiences' psychology and behaviour. In this model, *behavioural outcome* describes the behaviour targeted by an intervention. *Behavioural determinants* describe the psychological constructs that are theorized to influence behaviour.

The next two components represent the building blocks of the intervention: *influencers* and *packages*. Influencers describe components that have been empirically shown influence behaviour, and which are theorized to operate through behavioural determinants. As a broad term, influences describe overt and covert influence techniques and can apply to traditional behavioural change techniques, persuasion, arguments, or appeals. Within the communication process (described below), influence co-exists at several points along the communication process.

Packages are complex groupings that are commonly found across numerous interventions. Packages are likely to represent examples of “best practices” or standard approaches where given components are frequently grouped together. For example, McKenzie-Mohr and Smith (1999) do not just advocate obtaining a commitment, but packaging commitments by making them public (social norm determinant) or helping audiences see themselves as environmentally concerned (self-identity determinant).

8.4. A New Model: the CBICM

There is no single published behavioural change or influence taxonomy comprehensive enough to describe the psychology of online interventions. Many systems provide good groupings of influence approaches. However, none is discrete enough to code interventions without excessive conceptual over- or under-fitting.

As discussed previously, the review covered the following literature: persuasive technology which included the media equation (Reeves & Nass, 2003), captology (Fogg, 2003) and a recent persuasive technology taxonomy (Oinas-Kukkonen & Harjumaa, 2009). Examining persuasion research, a review was made of work by Cialdini (Cialdini, 2008), with a focus on persuasive communication by Ajzen (1992) and O’Keefe (2002). From clinical practice, a detailed examination was made of evidence-based behavioural medicine (Abraham & Michie, 2008; Davidson, et al., 2003; Embry & Biglan, 2008; Michie, et al., 2008) and stages of change (Prochaska & Norcross, 2001; Prochaska, et al., 1995). For population-wide campaigning, two taxonomies from community-based social marketing were evaluated (Kassirer & McKenzie-Mohr, 1998; McKenzie-Mohr & Smith, 1999). During this process, many of these taxonomies were compared with each other.

After assessing numerous influence taxonomies, research from a range of fields appeared suitable to describe online interventions: evidence-based behavioural medicine, persuasive technology, and a range of smaller influence research. However, having drawn on a wide range of literature and having abstracted a number of individual influence components, there was a need to reorganize these separate taxonomies and individual influence components. A second challenge was finding a comprehensive framework.

As a solution, communication theory promised a suitable framework to analyse online interventions, while also providing a coherent package to structure influence taxonomies. However, it was not clear which communication model was most suitable. Researchers are still debating whether the Internet qualifies as a mass or interpersonal communication media, and depending on how one describes online media, there is a wide variety of communication models from which to choose. Consequently, a model was selected which could explain online interventions, whether they take a mass-media, interpersonal, or combined mass-interpersonal communication approach.

Reviewing Communication Models

In 1993, the year that Tim Berners-Lee invented the World Wide Web, researchers used communication theory as a conceptual framework to design expert systems intended to influence people's health behaviours. Based on a circular model, the researchers adapted Berlo's (1960) model to a human-computer relationship. The model highlighted the source, message, channel, receiver, effect, and feedback channel (Velicer, et al., 1993). Building upon this model, a subsequent paper on expert systems applied the same communication model, while discussing the possibility of using the Internet to extend the reach to mass audiences (Velicer & Prochaska, 1999).

In seeking a model that could meet these criteria, an assessment was made of one and two-way communication models by *Aristotle* (Aristotle, trans. 1992), *Lasswell (1948)* (Lasswell, 1948), *Shannon-Weaver (1948)* (Shannon & Weaver, 1948), *Osgood and Schramm (1954)* (Schramm, 1955), *Berlo (1960)* (as cited in Kaminski, 2002), *DeFleur (1970)* and *McQuail and Windahl (1981)* (as cited in McQuail & Windahl, 1993). In addition, this review examined synthesis works on persuasive communication by Ajzen (1992) and O'Keefe (2002), which introduced context factors that are not common among the prior models. Both works grouped persuasive impacts by social context, source, media channel, message, and receiver.

Table 8-1 compares these communication models and shows their common elements. When models are circular, this is expressed in the audience cluster. All the communication models reviewed contain a source, message, and receiver. Most models included a media channel used to transmit the message. Some models include the process of encoding and decoding messages. A few included feedback in the form of two-way, circular models.

Table 8-1: Comparison of Communication Models

		Medium (Signal/Message)			
	Source	**Encode**	**Message**	**Decode**	**Audience**
Aristotle	Speaker		Speech		Audience
Lasswell (1948)	Who		In Which Channel (Says What)		To Whom (With What Effect?)
Shannon-Weaver (1948)	Source (message)	Transmits	(Signal/noise)	Receives	Destination (message)
Osgood and Schramm (1954)	Interpreter A	Encoder	(Message)	Decoder	Interpreter B *(Feedback to source through same process)*
Berlo's S-M-C-R (1960)	Source	Encodes	Channel (Message)	Decodes	Receiver
DeFleur (1970)	Source (message)	Transmits	(Signal/noise)	Receives	Destination (message) *(Feedback to source)*
McQuail and Windahl (1981)	Organization (Feedback from audience and other sources)		Sends many identical messages	Each receiver decodes Each receiver decodes in the context of a social group	Audience *(Feedback to source)*
O'Keefe (2002)	Source		Medium (message)		Receiver (Context)
Azjen (1992)	Source		Channel (message)		Receiver (Situation)

After evaluating the criteria discussed below, the Osgood and Schramm (1954) model was adapted and placed within the context of persuasive effects described by Ajzen (1992) and O'Keefe (2002). In brief, this model was adopted to reflect one- and two-way communication from the point of view of a source engaging a target audience within a particular social and media context. The model is applicable to interpersonal, mass-media, and mass-interpersonal communication models. Combined with the influence components model, Figure 8-4 presents the CBICM.

The reasons for selecting and modifying this model are as follows. First, the Osgood and Schramm (1954) model accounts for one- and two-way communication, which is essential for personalization and tailoring. Second, it describes interpersonal communication, but has also been applied to mass-media communication (Schramm, 1955).

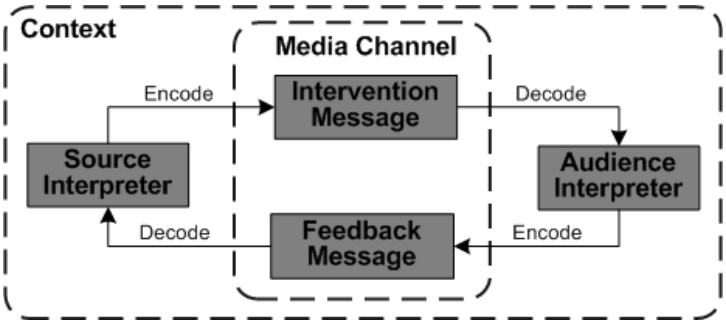


Figure 8-4: Communication-based Influence Components Model (CBICM)

Third, the model describes discrete actors in the communication process. The model has been criticized for giving equal weight to interacting actors because communication is often weighted in favour of one party (McQuail & Windahl, 1993). However, this criticism can be addressed while adapting the model to the viewpoint of the intervention planner by relabelling the actors as the source and audience. By this distinction, the source sends the intervention message to the audience who sends a feedback message back to the source.

Fourth, the original model describes how the communication may work by showing that each actor decodes, interprets, and encodes messages. Although useful for explaining communication, these elements have been deemphasized in this model to stress encoding which is used to group influence factors and explain interaction. Finally, the social context and media channels are added from work by Ajzen (1992) and O'Keefe (2002) which explain influence components that may operate within these domains.

8.5. An Overview of the CBICM

The CBICM is a circular communication model described from the point of view of a website intervention designed to interact with many users. Within each part of the communication process there are a variety of factors that contribute to an intervention's persuasiveness and psychological strength. To describe the model, an example is presented and then each cluster described.

What follows is a summary of the CBICM, in Figure 8-4. The *context* describes the social and environmental components that can influence an intervention's effectiveness. *Media channel* describes the channel used to distribute an intervention. *Feedback message* describes information that *audiences* send to the *source*, which is used as a basis to design tailored and personalized *intervention messages*. *Source interpreter*

describes influence components that are based on *audience's* perceptions of the source, either the organizations operating the intervention or the website itself. *Source encoding* describes how an intervention is expressed. *Intervention message* represents the overt communication designed to impact *audience* psychology and/or behaviour. This is where behaviour change techniques are deployed. *Audience interpreter* describes the individual or population targeted to perform or adopt behavioural outcomes. This is where behavioural determinants are targeted. In the following paragraphs, each cluster is described in detail.

Context describes social and environmental components that can influence an intervention's effectiveness. Persuasive communication is considered more effective when it relates to people's social or life context (Neuhauser & Kreps, 2003). Understanding a persuasive context requires insight into the information processing events occurring between the source, audience, message, channel, and larger context (Oinas-Kukkonen & Harjumaa, 2009). Context influencers include competition from alternative behaviours or sources, and social pressure to act or not act (Andreasen, 2006). In the meta-analysis, only social context factors were coded. These include the following contexts: individual, family and friends, group (e.g. club, organization), institution, and geographic.

Source (and pseudo-source) interpreter defines the actor or system that decodes and interprets feedback messages from the audience before encoding an intervention message that is sent to the audience. It also describes influence components that are based on users' perceptions of the source, either the organizations operating the website or the website itself as the source (Cugelman, et al., 2009). In computer mediated environments, audiences frequently treat interactive systems as social actors (Fogg, 2003; Fogg & Tseng, 1999; Reeves & Nass, 2003), consequently, the term *pseudo-source* represents source factors that are misattributed to a computer system rather than the people/organization responsible for that system. One experiment showed that an online intervention designed with significantly more personalized source factors outperformed an intervention with fewer source factors (Strecher, et al., 2008). An example would be attributing source credibility to a website because it looks credible (Cugelman, et al., 2008) regardless of who operates it. Sources influence components include credibility, attractiveness, likeability, and similarity (O'Keefe, 2002); with additional influencers including reciprocation, commitments, and authority (Cialdini,

2008). Pseudo-source influencers may also include persuasive components of human communication: physical cues, psychological cues, language, social dynamics, and social roles (Fogg, 2003). In the meta-analysis, the following source influence components were coded: credibility, attractiveness, similarity, and liking.

Media channel encompasses the various media used to convey the intervention; it encompasses the feedback and intervention messages. Persuasive communication research explains how online interventions may influence users. For example, Internet interventions can be built from various media, such as text, images, video, and audio. Across persuasion research, each of these different media has different pros and cons, in regards to their potential psychological impact. For example, video can impact credibility and likeability more than audio; while written material is better remembered than video or audio (O'Keefe, 2002).

Source encoding describes the way a given intervention may be expressed in time and space. Encoding describes the effects associated with how an intervention is expressed as distinct from its substance. This is based on the principle that *how something is said* is as important as *what is said*. Studies show that about 35 percent of communication is verbal, while 65 percent is non-verbal, and non-verbal expressions can reinforce, repeat, substitute, complement, accent, regulate, or contradict the verbal communications (Haig, 2008). Encoding represents the process of translating concepts into reality, and consequently, it crosses the threshold from the source, to the media channel, to the intervention message. For example, an intervention may be encoded into a single or sequence of messages. It may be visually represented in numerous ways. It may be expressed through numerous media. Influencers include sequential request techniques such as the foot-in-door or door-in-face techniques (Dillard, 1991) or how an intervention is experienced through tunnelling and reduction techniques (Fogg, 2003). In the meta-analysis, the following source encoding influence components were coded: single interaction, multiple interactions, sequential requests (foot-in-the door or door-in-the-face).

Intervention message represents the tangible communication containing overt influencers designed to impact behavioural determinant, and ultimately behaviour. Influencers include BCTs, arguments, and marketing offers. Factors which may modify intervention effectiveness include argument strength which is proposed to influence

intervention impact, and is moderated by argument novelty, strength, and relevance (Ajzen, 1992). Also, marketing offers can be expressed as messages associated with services or products that aim to reduce barriers and increase incentives towards a target behaviour (McKenzie-Mohr & Smith, 1999). For these influence components, an updated taxonomy of 40 behavioural change techniques from behavioural medicine was used (Abraham & Michie, 2008). These are listed in Table 9-7.

Audience interpreter describes the individual or population targeted to perform or adopt behavioural outcomes. For the communication cycle to continue, the audience must decode, interpret, and act on a message. The audience represents the intervention target person, within whom influence components from across the entire model may exert influence. In particular, this part of the model lists the psychological determinants of behaviour, which are those psychological constructs most associated with behavioural change. There could be hundreds of separate behavioural determinants. To make this list manageable, two research tracks that have conducted cross-theory syntheses to reduce the number of behavioural determinants to smaller and more manageable lists. The first is the Behavioural Change Consortium who examined the mediator variables used in successful behavioural change interventions (Ory, et al., 2002). The second research track brought together behavioural change experts who extracted 128 influence constructs from 33 theories and reduced them to 12 core behavioural determinants (Michie, et al., 2005). In the meta-analysis, the 12 behavioural determinants are used; they are listed in Table 9-8.

Audience encoding describes the process whereby the audience provides feedback. This does not describe the content of the feedback, but rather, the means by which it is conveyed. For online interventions, these are likely to be in the form of structured web forms or e-mail. In the case of mass campaigns, feedback may be communicated indirectly and identified through market research about audiences, rather than directly expressed by audiences themselves. The primary influencers are providing incentives to send feedback, and reducing barriers that prevent people from sending feedback (McKenzie-Mohr & Smith, 1999).

Feedback message describes information that audiences send to the source, which is used as a basis to design personally relevant interventions, and which serves as the basis for interactivity. Without the full communication cycle, through feedback, it would be

virtually impossible to design relevant or individually tailored interventions or engage persons in interactive relationships. Feedback within the communication cycle is a key component of numerous techniques and approaches to influence. For example, to reach goals, people require feedback that reveals progress towards their goals, which allows them to modify their effort in relation to feedback about a given task; this may be explained by control theory (Locke & Latham, 2002). Personally tailored information is regarded as more effective than generic messages; while interactivity is considered essential to persuasive communications, as it offers audiences participation in both the communication process and content (Neuhauser & Kreps, 2003). Stage matched interventions, based on the transtheoretical model, frequently begin with user assessment surveys to determine the appropriate intervention (Prochaska, et al., 1995). Kairos, the opportune time to communicate a persuasive message, requires feedback from a user and their context (Fogg, 2003). For mass campaigns, initial feedback (normally conducted through market research) is used to design behavioural proposals that are relevant, appealing and easy for target audiences to perform (McKenzie-Mohr & Smith, 1999).

Within the feedback category, a number of influence mechanism have been grouped that can only operate when feedback has been factored into the intervention design. These include *tailoring*, user input used as the basis for personally relevant messages. *Personalization*, the inclusion of personal information in an intervention, such as the users' name or age. *Adaptation/content matching*, is matching the content style to a user based on demographic variables, such as matching ethnicity in videos or using "cool language" for a youth intervention (Lustria, et al., 2008). *Self monitoring* keeps track of a person's performance to help them achieve a goal (Locke & Latham, 2002; Oinas-Kukkonen & Harjumaa, 2009). In the meta-analysis, the following feedback mechanisms were coded: tailoring, personalization, and adaptation/content matching.

An Example of How the CBICM Works

As an example, consider a weight loss website. The *context* of this intervention draws on the participant's family who are asked to provide support. The *media channel* describes the website and e-mail channels used to convey the interventions, and these include text, graphics, video, and audio. The starting point for most interventions is when the *audience* encodes a *feedback message* that is sent to the *source*, who *decodes* it. The *audience encodes* information about their diet and lifestyle into a web form that constitutes the *feedback message*. This is *decoded* by the *source* and then used as input

for the design of a tailored intervention. As this intervention is being conducted by a reputable university, *source* credibility may influence the *audience's* willingness to trust the intervention, and act on its advice. The *intervention message* is *encoded* as a long-term process with multiples messages based on stages of change. The *intervention message* contains behavioural change techniques, such as goal-setting and/or skill training, which are designed to influence the *audience's* psychology or behaviour. The intervention is then *decoded* by the *audience* member who may be influenced by various influence components expressed during the full communication cycle, which may result in psychological or behavioural impacts. Finally, the system tries engaging this person in a long-term relationship by encouraging them to provide more feedback, which continues the intervention cycle.

8.6. Conclusions and Research Implications

This chapter presented the CBICM, a new model to help describe the psychology of online interventions. It was developed for online interventions but is generic and could have application to interventions conveyed through other channels. This chapter discussed the limits of existing influence systems, the process of model development, theoretical foundations, and finally an exposition of its operation. The CBICM is a circular communication model described from the point of view of a website intervention that could be designed to interact with many users. Within each part of the communication process, various influence components may contribute to an intervention's persuasiveness and psychological strength.

The model contributes to this thesis by offering a research tool that enabled the meta-analysis (in the following chapter) to proceed. While this chapter focused on the theoretical thinking behind the model, the subsequent chapter applies it. As a result, no conclusions or implications are drawn on the model in this chapter. Rather, the model is discussed within the context of the meta-analysis, where its attributes are better evaluated in light of its application.

9. Intervention Psychology Meta-Analysis (Study 4)

Within the fields of e-health and persuasive technology, a growing body of research indicates that intervention websites can motivate people to adopt healthy behaviours, such as quitting smoking, exercising more, or eating healthier foods. Frequently, these online interventions are individually tailored programmes, resembling two-way interpersonal therapy. It is now conceivable that health campaigners can deploy mass-interpersonal campaigns, where online media are used to engage large populations in automated interactions that resemble relationships with doctors, councillors, trainers, or friends.

As discussed in Chapter 3, Wantland et al. (2004) showed that online interventions could outperform non web-based interventions, while Portnoy et al. (2008) showed that web and computer-based interventions could improve health-related knowledge, attitudes, behavioural intentions, and actions. These studies provided strong evidence that online interventions could be effective, but did not fully explain the range of psychology and design factors that may account for intervention success. Moreover, these meta-analyses included studies of mandatory behaviours and psychological conditions, such as chronic disease and depression management, which prevents the findings from fully generalizing to the types of voluntary behaviours that social marketers target.

This chapter describes a new meta-analysis that investigates psychological design factors that can explain the efficacy of online behavioural change interventions. It draws on interventions of voluntary studies, selected for their similarity to potential online social marketing applications. It examines relationships between behavioural outcomes, intervention design factors, and behavioural influence techniques. A secondary analysis examines relationships between study and intervention adherence, and associations with behavioural outcomes.

The structure of this chapter is based on the QUOROM statement of best practices for reporting meta-analyses (Moher, et al., 1999). This chapter is organized as follows. First, it reviews the methods, validity assessment, and data abstraction approaches.

Second, it describes the quantitative data synthesis and statistical approach. Third, results are presented for 30 interventions. Fourth, the psychological design section presents descriptive statistics by the CBICM. It then presents the results of meta-regression analysis on the relationships between psychological design and behavioural impacts. Fifth, the dose analysis is presented. Sixth, it discusses the overall findings, and the theoretical and practitioner implications. Finally, it presents the conclusions.

9.1. Methods

9.1.1. Searching

To identify qualifying studies for this meta-analysis, a three-step systematic review approach was used (Littell, et al., 2008). First, a pilot search was conducted to assess and finalize keywords and bibliographic databases. Second, these terms were used to identify and retrieve abstracts from relevant databases. Third, additional strategies were employed to identify potential studies from the grey literature.

After the pilot search, query terms were constructed from keyword combinations across three word categories, including spelling variations. As shown in Table 9-1, the first keyword group describes online media. The second group describes interventions in singular and plural form. Finally, the last group contains singular/plural variations of British and USA spellings. Based on these three categories, two combinations were formed. The first combined online media and intervention terms, the second, online media and outcome terms. In sum, there were 84 separate search term combinations.

To combine these word categories, the first query combined *online media* and *intervention* terms, the second, *online media* and *behavioural outcome* terms. The syntax was as follows: (word category 1 AND word category 2) OR (word category 1 AND word category 2) OR etc… These combinations produced 84 separate queries.

Table 9-1: Boolean Search Term Combinations

Online Media (14)	Intervention (2)	Outcome (4)
internet, online, on-line, web, website, webpage, web-based, www, cyber, cyberspace, hypertext, email, e mail, e-mail	intervention, interventions	behaviour, behaviour, behavioural, behavioral

Five bibliographic databases were selected. To cover the timeframe from 1999-2008, these databases were searched on 20 September 2008, and then on 16 Jan 2009 to cover 2008. The outcomes from both search sessions resulted in the following number of

potential studies: Web of Knowledge (652), PsycINFO (292), MEDLINE (244), PubMed (327), and the Cochrane Library (7).

Additional studies (59) were retrieved from the bibliographies of similar meta-analyses (Collins, et al., 2008; Portnoy, et al., 2008; Wantland, et al., 2004). Further, requests for suitable publications were sent to relevant online discussion forums. These included listservs for the Georgetown University social marketing group, Community Based Social Marketing, Association of Internet Researchers, and the Medicine 2.0 Conference discussion group. For grey literature, searches were undertaken in Google and Yahoo. These strategies produced a few additional papers (6).

9.1.2. Selection

Eligible studies for this meta-analysis included published or unpublished research and reports in English. Qualifying papers included experimental, quasi-experimental, and correlational studies, whether they used randomized and non-randomized allocation. The substantive criteria in Table 9-2 were used for screening studies.

Table 9-2: Inclusion and Exclusion Criteria

Area	Criteria
Timeframe	**Inclusion**: years 1999-2008
Age	**Inclusion**: Pre-teens to older persons **Exclusion**: Studies with persons nine years and younger
Behavioural domains	**Inclusion**: Health, safety, environmental behaviours, or community development **Borderline inclusion**: Subjects with ailments for which the behavioural was beneficial, but not critical; occupational groups for which the target behaviour was voluntary **Exclusion**: Compulsory behaviours; critical behavioural linked to chronic illness; and psychological disorders
Behavioural outcome (dependent variable)	**Inclusion**: A clear behavioural outcome **Borderline inclusion**: Interventions that blended change with maintenance objectives, such as interventions encouraging both weight loss and maintenance **Exclusion**: Behavioural maintenance or psychological outcomes
Intervention types	**Inclusion**: web-based or web and e-mail-based **Borderline inclusion**: Interventions stored on a CD ROM, USB stick or Intranet, provided they contained an intervention designed for Internet deployment; technology such as pedometers, provided both intervention and control groups received them, so the difference lay in the web-based intervention, not the additional treatment
Intervention mechanism	**Inclusion**: Primarily automated intervention (human-computer) **Borderline inclusion**: Interventions that were primarily human-computer, but included minor computer-mediated communication; cases where both the experimental and control groups receive similar human contact, so the difference lay with the online intervention; cases where human interaction was secondary, such as technical support, voluntary help lines, or minor councillor engagement **Exclusion**: Primarily computer-mediated communication (human-human)
Control treatments	**Inclusion**: Control group intervention comprising a print; web-based interventions; waitlist or placebos; and therapist **Exclusion**: Studies that contrasted different behavioural outcomes; when the difference between interventions was a non-web based factor, such as contrasting populations or administering a mobile phone to one group; studies where the difference between the two interventions was not clear

Figure 9-1 shows the intervention selection process. From all sources, 1,587 abstracts, references, and papers were reviewed, with 315 duplicates, resulting in a pool of 1,271 potentially qualifying papers. After manually reviewing titles, abstracts and full texts, 1,176 were judged irrelevant. For the remaining 95, the full text were obtained and evaluated in-depth. A further 64 were rejected for not meeting the inclusion criteria, not containing a qualifying behavioural outcome, or not being suitable for calculation.

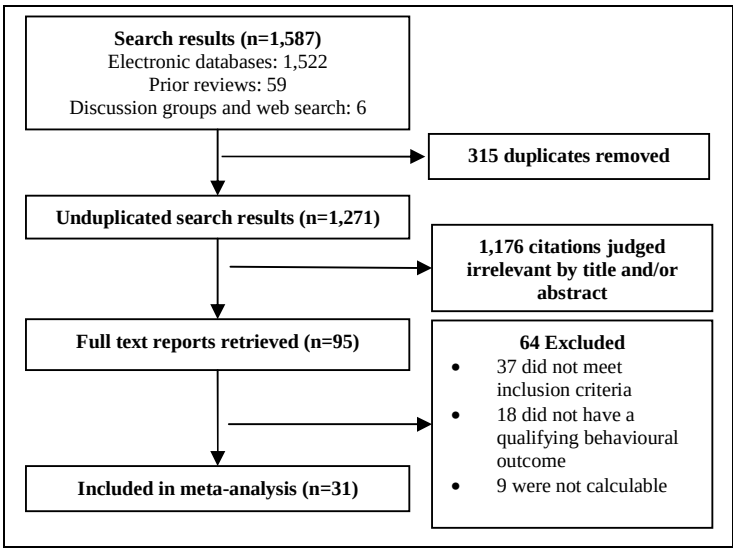


Figure 9-1: Selection Process Flow Chart

In total, 31 studies were included in this meta-analysis and coded. Two studies that met the inclusion criteria were removed from the overall analysis, but were included in the dose analysis. The first, Cullen and Thompson (2008) was the only correlational study that required separate analysis (Higgins & Green, 2008). The second, by Patten et al. (2006), was the single study that only reported a therapist control group (Patten, et al., 2006), which could not be included in the moderator analysis, as a single case.

9.2. Validity Assessment

As the inclusion criteria covered both experimental and correlational studies, a flexible research quality scoring system was used that assesses randomized and non-randomized studies. Research quality was assessed with the Downs and Black instrument for randomized and non-randomized studies (Downs & Black, 1998). This instrument has been used in a number of other studies, including at least two by the Cochrane Collaboration (Macpherson & Spinks, 2008; Marine, et al., 2008).

This assessment tool is a checklist of 27 items pertaining to reporting, external validity, internal validity, and selection bias. However, the one item on statistical power was removed, as this factor is addressed by the meta-analysis weighting. This assessment tool was highly rated in a review of research evaluation tools (Deeks, et al., 2003). No minimum research score was set, but research quality scores were used to evaluate publication bias and assess the overall results.

To assess publication bias, three methods were used: funnel plot, cumulative meta-analysis, and an assessment of research quality (Borenstein, et al., 2009). The funnel plot in Figure 9-2 displays interventions arranged with sample size on the y-axis and effect size on the x-axis. In the absence of publication bias, studies should spread out evenly around the combined effect (Egger, et al., 1997). To assess publication bias, a manual check was made; it found two issues. First, there is a significant discrepancy between large and small studies: four studies had sample sizes over 1,000, while the remainder were much smaller. Second, the study with the largest sample size does not line up as would be expected in an ideal funnel plot distribution. However, as discussed below, this study scored lowest for methodological quality. The funnel plot suggests the sample of studies may not be ideal, indicating some bias, but appears acceptable.

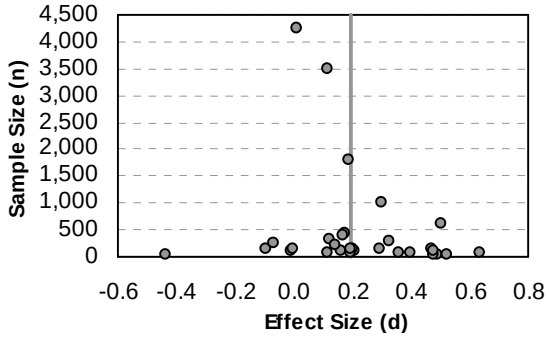


Figure 9-2: Funnel Plot of Intervention

A cumulative meta-analysis did not show that small studies were contributing a large impact on the final effect size. Thus the small studies are unlikely to be biasing the sample of studies (Borenstein, et al., 2009). A research quality assessment showed a small statistically insignificant positive correlation between research quality and effect size (r=.116, p=.553, k=30); this indicates that research quality is probably not correlated with effect size. One quasi experiment (Petersen, et al., 2008), scored lowest on the research quality assessment, but had the largest population.

Borenstein, Hedges, Higgins, and Rothstein (2009) recommends assessing publication bias according to three categories: *trivial*, which does not change the results; *modest*, where the results change, but the conclusions stay the same; or *substantial*, where the conclusions may be called into question. This analysis revealed two possible sources of bias: a non-ideal distribution of interventions (indicated by the funnel plot) and the impact of one study (with the largest population size and lowest research quality score). These possible sources of bias do not change the final statistical outcomes by more than a small margin. The small potential bias seems modest and unlikely to alter the conclusions.

9.3. Data Abstraction

Data was extracted from studies using calculations by Lipsey and Wilson (2001) and Borenstein et al. (2009). When the reported data was insufficient for coding, procedural work-arounds were used (Lipsey & Wilson, 2001). When it was impossible to code qualifying papers, a request for data was sent to the study authors. For each effect size, only one outcome measure was selected per independent intervention sample (Lipsey & Wilson, 2001). However, when more than one follow-up measure was reported, these were also coded for the longitudinal analysis, which was analysed separately to avoid dependence. Coding was carried out by a single researcher. To improve the reliability, each paper was coded on two occasions. The *code sheet* was used to guide data extraction from studies; it is presented in Appendix 13.3. The *code book* (Appendix 13.3.2) was used to guide the coding process by providing precise definitions for coded factors and guidance resolving ambiguities.

For the psychological analysis, the CBICM was used as a framework to code absolute influence components. However, the influence components from two behavioural medicine taxonomies (Abraham & Michie, 2008; Michie, et al., 2005), were also coded as relative components. First, *absolute coding* describes an intervention using an influence component, whether or not the control group received the same treatment. This coding is used for descriptive statistics and provides an answer to the question, "How many interventions used a particular influence component?" Second, *relative coding* records when a particular influence component was only administered to the experimental group. If an influence component was applied to both the experimental and control groups, then the component was not coded, as it could not explain the psychological difference between treatments. The relative coding influence components

are used to assess correlations between influence components and behavioural outcomes.

For the dose analysis, when coding the adherence variables, *study adherence* was measured as the percentage of participants in a study at a set time, compared to the baseline. The time varied across studies, but was coded for the first post-test and follow-up measures. Coding *intervention adherence* was more challenging, as it was conceived and reported in many ways. Across papers, this construct was reported as logins, visits, page views, core pages viewed, percent of required reading completed, and complex multi-item measures. Statistically, researchers reported it by the total number of users, averages per user or percentages over various time-units. In some cases, the data was continuous; in others, it was dichotomous; but more often, it was continuous data cut into arbitrary categories, such as high/low login groups. To deal with this diversity, two analyses were conducted. The first coded any reported intervention adherence construct, while the second approach only coded adherence when it could be converted into a percentage.

Papers varied in the extent to which they grouped results according to participant exposure. Some papers calculated outcomes based on an intention to treat analysis. Others calculated outcomes from participants who performed a minimum action, such as logging into a website, resulting in minimum exposure groups. Still others reported results from participants who had full exposure, having completed the full programme. This diversity of groupings presents serious methodological problems, as full intention to treat group may distort the results by including large number of participants who are not motivated enough to complete the intervention; while the fully exposed group are likely to represent the most motivated participants (Eysenbach, 2005). In aiming to keep subject groupings as comparable as possible, studies that report both intention to treat and full exposure groups were pooled to render effect size calculations more comparable with the majority of studies that did not employ these distinctions.

9.4. Quantitative Data Synthesis

Three analyses were conducted. The primary investigation focused on the overall effect size, including groupings by control conditions, time moderators, and participant demographics. The second analysis focused on psychological design factors, presenting

descriptive statistics and correlation estimates. The third analysis examined correlations between dose variables.

Analytically, the overall effect size estimates were carried out by standard meta-analytical approaches, using an analogue to ANOVA. The psychological design analysis utilized descriptive statistics and meta-regression. The dose analysis relied on a flexible correlational approach combined with meta-regression.

For the analysis, a distinction was made between the overall effect size estimates and the correlation estimates for psychological design and dose. Although it is common practice to select statistical models (such as fixed effect, mixed effects, or random effects) on the basis of heterogeneity analysis, some researchers caution against this approach. Rather, they argue that statistical models should be selected in advance, on the basis of substantive reasons (Borenstein, et al., 2009; Littell, et al., 2008). For this study, the online interventions may appear similar, as they are all web-based interventions. However, from a psychological point of view, they are radically different. Consequently, a random effects model was selected a priori.

To assess categories used to explain heterogeneity in the analogue to ANOVA, the between-group heterogeneity statistic (Q_b) is used to assess the strength of the categories; likewise, the within-group Q_w and I^2 statistics are used to assess the strength of categories (Borenstein, et al., 2009; Littell, et al., 2008).

When estimating correlation effect sizes, any two variables can be correlated, whether continuous, binary or mixed. Fischer's-Z correlational effect size is considered more robust than Pearson's r in regards to standard error calculations. For data reporting both continuous and dichotomized variables, Point Biseral and the standardized mean difference may be used. For data where both variables are dichotomized, Phi coefficient or the odds-ratio may be used (Borenstein, et al., 2009; Lipsey & Wilson, 2001). One consequence of this approach is that artificially dichotomized data can produce a downward bias in correlation estimates, and ultimately effect size estimates (Lipsey & Wilson, 2001). Some researchers advocate correcting potential statistical distortions, such as the lower effect size estimates resulting from artificially dichotomized variables. However, in this analysis, the variables were used without modification. Consequently, the correlational effect size outcomes are likely to be more conservative. To

accommodate comparison between two statistical methods (meta-regression and direct correlation estimates), Pearsons r was used for correlation effect sizes.

Intervention effect size estimates, standard error and inverse variance calculations drew on the data extraction spreadsheet of Lipsey and Wilson (2001). Overall effect sizes and analogue to ANOVA analyses were carried out in Comprehensive Meta-Analysis, while meta-regression was conducted with SPSS macros (Lipsey & Wilson, 2001).

9.4.1. Overall Effect Size Estimates

The primary investigation focused on behavioural outcomes resulting from online interventions. The majority of studies were randomized controlled trials, measured with continuous or dichotomous data, with pre and post measures and in some cases, just post measures. For group contrasts, between-subject studies, the *standardized mean difference* (d) was used as the primary effect size measure. To ensure comparability, studies reporting dichotomous outcomes were calculated using the *logged-odds ratio*, subject to an arcsine transformation. All *standard error* and inverse variance calculations were extracted based on the calculations by Lipsey and Wilson (2001).

For each effect size, only one outcome measure was selected per independent intervention sample (Lipsey & Wilson, 2001). However, when more than one follow-up measure was reported, these were also coded for the longitudinal analysis discussed below. When more than one behavioural outcome was reported, if they were dissimilar or measured on different scales, the most relevant outcome was selected. If a number of similar and relevant outcomes were reported and measured on the same scale, they were pooled. When interventions targeted multiple behaviours, a single behavioural outcome was selected that best reflected both behaviours. For example, weight loss would be selected for an intervention targeting both exercise and diet.

Across the studies, online interventions durations ranged from a brief single-session treatment to several months, with post-study measures ranging from same day measures to follow-up surveys occurring one year after the intervention ended. To accommodate this diversity, all mid-intervention measures were ignored, with the first post-intervention measure representing the primary outcome. Although is not permissible to include more than one effect size per calculation (Lipsey & Wilson, 2001), unless applying multi-level meta-analytical techniques, it is possible to run separate analysis

on the different post-intervention timeframes (Borenstein, et al., 2009). Consequently, beyond the post-treatment measure, four potential follow-up timeframes were coded.

9.4.2. Psychological Design

Given a large number of psychological design variables, and the modest number studies, the psychological design analysis draws on two coding and analytical approaches. First, the analysis presents overall descriptive statistics on the absolute distribution of influence components across interventions. In other words, it presents how often particular influence components were employed across interventions. Second, using meta-regression, it examines aggregate correlations between relative influence components and effect sizes. In particular, it exams statistical relationships between influence components and behavioural outcomes.

9.4.3. Dose Correlations

For the dose investigation, three variables were examined: study adherence, intervention adherence, and behavioural outcomes. To deal with the many ways adherence was conceived, reported and coded, two statistical methods were employed: a flexible correlation approach, and meta-regression.

Of the two statistical methods employed, the first correlation approach was highly flexible, in a conceptual and statistical sense. This method was employed to estimate two correlations: first, study adherence and intervention adherence; and second, intervention adherence and behavioural outcomes. For this analysis, any intervention adherence variable was extracted from a variety of data formats, though many were correlation coefficients. Although this analysis used a conceptually liberal approach (drawing on a wide variety of intervention adherence definitions and statistics), it is likely to be more accurate as it draws from data that is closer to the raw figures than the second analysis, which relies heavily on dichotomized data.

The second meta-regression analysis estimated intervention adherence through adherence percentages. It was used to estimate two correlations: first, intervention adherence and behavioural outcomes; second, study adherence and behavioural outcomes. The advantage of this approach was the reliance on standard measures. However, the disadvantage is that this data was highly dichotomized, which can lead to underestimates.

9.5. Results

9.5.1. Study Characteristics

Table 9-3 lists the 29 studies qualifying for the primary analysis. Bruning Brown, Winzelberg, Abascal, and Taylor (2004) contained two interventions, which are designated a and b. Across these studies, 17,524 participants were allocated to 30 interventions, with 14,895 participants completing post intervention surveys. Of the interventions, 24 used random assignment, one was non-random, and it was not possible to determine the type of assignment for five interventions.

Table 9-3 presents the pre and post number of subjects across the experimental and control groups. For the experimental group, Table 9-3 presents the mean age, the percentage of male participants, study, and intervention adherence (measured at first post-intervention measure). Finally, the research score is presented as a percentage.

Table 9-3: Interventions

Reference	Experimental & Control Groups		Experimental Group					Research score (%)
	Pre (n)	Post (n)	Participant Characteristics	Mean Age	Male (%)	Study Adher (%)	Intervention Adher (%)	
(Bersamin, et al., 2007)	139	139	Students (who drink alcohol)	18	18.0%	57.4%		73.1%
(Bewick, et al., 2008)	506	317	Students	21.3	21.3%	59%		73.1%
(Bruning Brown, et al., 2004) a	153	153	Students (female)	15.1	15.1%	66.7%		69.2%
(Bruning Brown, et al., 2004) b	69	69	Parents		0.0%	100.0%	50.0%	69.2%
(Celio, et al., 2000)	52	47	Students (female)	19.6	19.6%	96.3%	71.0%	92.3%
(Chiauzzi, et al., 2005)	265	215	Students (who are heavy drinkers)	20	20.0%	80.2%	86.0%	80.8%
(Dunton & Robertson, 2008)	155	128	Women	42.8	42.8%	78.6%		92.3%
(Gueguen & Jacob, 2001)	1008	1008	French citizens					61.5%
(Hunter, et al., 2008)	451	446	Military personnel	33.5	33.5%	85.0%		80.8%
(Jacobi, et al., 2007)	97	97	Students (female)	22.5	22.5%	100.0%	83.0%	80.8%
(Kim & Kang, 2006)	50	50	Diabetics	55.1	55.1%			73.1%
(Kosma, et al., 2005)	151	75	Disabled persons		0.0%	45.5%		84.6%
(Kypri, et al., 2004)	104	83	Students	19.9		82.4%	100.0 %	76.9%
(Kypri & McAnally, 2005)	146	122	Students	20.3	20.3%	82.0%	100.0 %	76.9%
(Lenert, et al., 2004)	485	144	Smokers	39	39.0%	26.0%		57.7%
(Marshall, et al., 2003)	655	258	University faculty and staff	43	43.0%	76.5%	26.0%	73.1%
(McConnon, et al., 2007)	221	131	Obese persons	45.8	45.8%	48.7%	53.0%	76.9%
(McKay, et al., 2001)	78	68	Diabetics	52.3	52.3%	92.1%		84.6%
(Moore, et al., 2005)	100	100	Students	21.7	21.7%	86.2%		65.4%
(Napolitano, et al., 2003)	65	52	Hospital staff	42.8	42.8%	70.0%		80.8%
(Oenema, et al., 2005)	521	384	Employees	42	42.0%	72.0%		69.2%
(Petersen, et al., 2008)	4254	4254	Employees			21.2%		38.5%
(Roberto, 2007)	378	103	Students (High school)	15.5	15.5%	84.8%	88.5%	53.8%
(Severson, et al., 2008)	2523	1801	Smokeless tobacco users	36.7	36.7%	44.1%	50.0%	57.7%
(Strecher, et al., 2005)	3501	3501	Smokers trying to quit with the nicotine patch	36.9	36.9%	46.6%		80.8%
(Strom, et al., 2000)	102	45	Headache sufferers	41.5	41.5%	39.2%		80.8%
(Swartz, et al., 2006)	351	274	Employees	40.9	40.9%	50.9%	70.2%	80.8%
(Tate, et al., 2001)	91	81	Overweight persons	40.6	40.6%	78.3%		96.2%
(Verheijden, et al., 2004)	146	130	Persons at risk of cardiovascular disease	62	62.0%	84.9%	32.9%	84.6%
(Winett, et al., 2007)	707	620	Church congregation	53.13	53.1%	88.5%	57.0%	57.7%

9.5.2. Overall Effect Size Estimates

Table 9-4 reports the overall and grouped effect sizes, while the overall forest plot is available in Figure 9-3. Query 1 used the first post-test effect size from all 30 interventions. Query 2 included all post-test effect sizes, resulting in 38 effect sizes across three timeframes.

Table 9-4 shows the overall effect size, which is small and statistically significant. However, the heterogeneity statistics indicates a marginal level of heterogeneity that cannot be explained by sampling error alone.

Table 9-4: Effect Size Estimates

Query	Groupings	k	d (95% CI)	p	Q_b (p)	Q_w (p)	I^2
1	**Overall effect size**	**30**			**N/A**		
	All interventions	30	.194 (.111 to .278)	<.001		64.125 (<.001)	54.776
1	**Control group**	**30**			**9.109(.011)**		
	Waitlist or placebo	18	.282 (.170 to .393)	<.001		55.163 (<.001)	69.183
	Website	8	.162 (.006 to .318)	.041		.650 (.999)	<.001
	Print	4	-.110 (-.343 to .123)	.353		1.623 (.654)	<.001
2	**Long-term impacts**	**38**			**N/A**		
	From 1 day to 1 month	24	.194 (.107 to .282)	<.001		39.329 (.018)	41.519
	Beyond 1 to 4 months	10	.226 (.089 to .363)	.001		7.139 (.623)	<.001
	Beyond 4 to 7 months	4	.157 (.002 to .312)	.048		15.261 (.002)	80.342
1	**Intervention duration**	**30**			**6.611(.158)**		
	One-time	4	.404 (.130 to .677)	.004		.367 (.947)	<.001
	From 2 days to 1 month	5	.205 (.026 to .383)	.024		4.511 (.341)	11.336
	Beyond 1 to 4 months	16	.220 (.116 to .324)	<.001		30.131 (.011)	50.218
	Beyond 4 to 7 months	3	.090 (-.077 to .258)	.290		3.235 (.198)	38.186
	Beyond 7 to 13 months	2	-.047 (-.337 to .243)	.752		.130 (.718)	<.001
1	**Age groups**	**30**			**1.248(.742)**		
	1 Younger (15.0-21.4)	8	.271 (.095 to .446)	.002		4.676 (.699)	<.001
	2 Middle (21.5-41.8)	9	.198 (.045 to .352)	.011		4.725 (.787)	<.001
	3 Older (41.9 +)	9	.141 (-.003 to .286)	.055		29.017 (<.001)	72.430
	Unknown	4	.190 (-.033 to .414)	.095		8.196 (.042)	63.397
1	**Gender groups**	**30**			**5.889(.117)**		
	More female (66.6-100%)	12	.307 (.187 to .427)	<.001		18.290 (.075)	39.857
	Mixed	12	.122 (.010 to .235)	.033		11.354 (.414)	3.116
	More male (66.6-100%)	2	.123 (-.111 to .357)	.303		.864 (.353)	<.001
	Unknown	4	.124 (-.049 to .297)	.161		5.685 (.128)	47.233

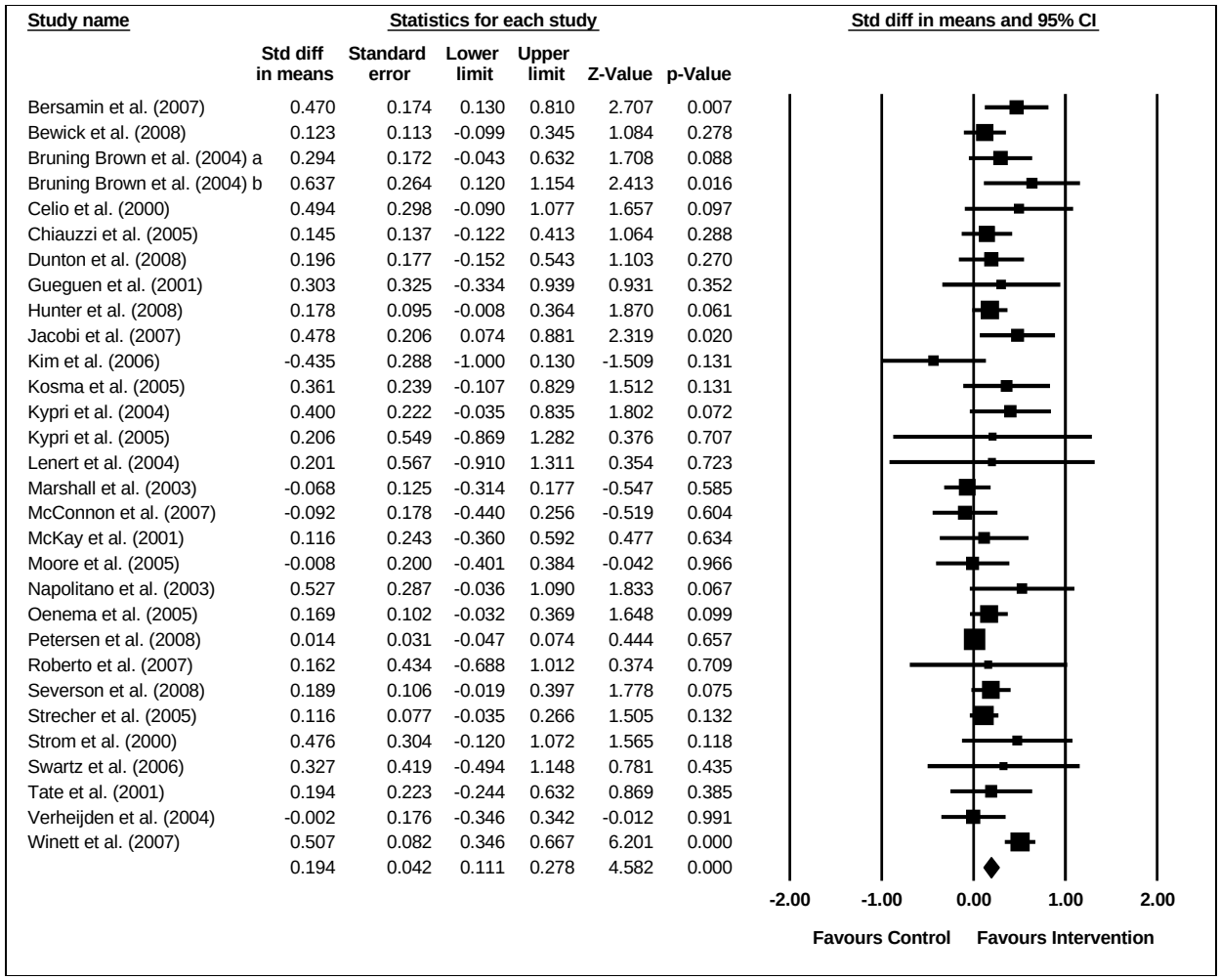


Figure 9-3: Overall Effect Size Forrest Plot

Examining the control group comparison, presented in Figure 9-4, the between-group random effects heterogeneity statistic $Q_b(p)$ was below .05, revealing a large difference between control group categories, which indicates that grouping by control condition explains much heterogeneity in effect sizes. In general, online interventions showed the largest effect size when compared against waitlists and placebos, a smaller effect when compared against lower-tech online interventions, and a negative insignificant effect size when compared against sophisticated print interventions.

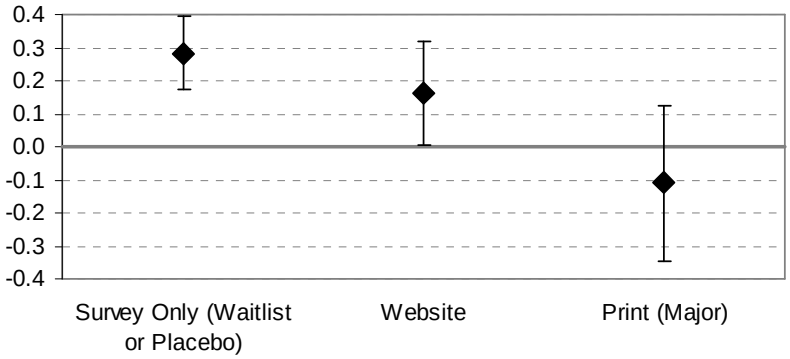


Figure 9-4: Effect Size by Control Group

Figure 9-5 shows the long-term impact, after an intervention ended; all post-intervention measures were grouped into three time categories. This resulted in the 38 distinct post-intervention measures; theses are referred to as Query 2 in Table 9-4. As it is only possible to include one measure per intervention sample per analysis, no between-group heterogeneity analysis was undertaken. In general, the long-term impact appears to last several months. The pooled effect size of the 24 interventions in the first timeframe is similar to the overall effect size. The effect sizes rise slightly from one to four months, then drops slightly for the final post-intervention measure, from four to seven months.

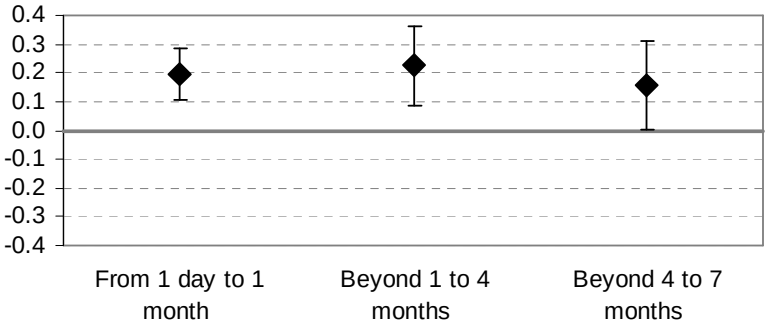


Figure 9-5: Long-term Effect Size Groupings

The figures for intervention duration are in Table 9-4 and Figure 9-6. The overall between-group heterogeneity statistics do not indicate a large difference between groups. In general, the results suggest that longer interventions have lower impacts. The strongest effect sizes resulted from the brief interventions. It appears that interventions lasting up to four months had an effect size close to the overall effect size. However, interventions beyond four months were statistically insignificant, demonstrating no significant impact.

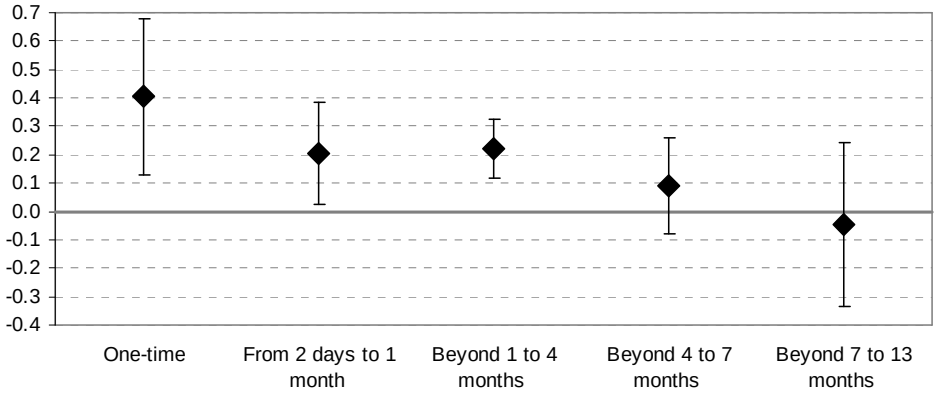


Figure 9-6: Effect Size by Intervention Duration

Table 9-5 gives demographics from experimental group participants across interventions; the figures have been weighted by pre-test experimental group totals. With demographic records for 8,813 pre-test participants, the average age was 34.7 and weighted average age was 36.5 (k=26, N=6,057). The age standard deviation was 6.6; the weighted average standard deviation was 9.0 (k=21, N=5,691). In general, the balance between genders was similar, with slightly more men. The majority were Caucasian and held a university degree.

To assess demographic moderators, participants' *age* and *gender* were grouped into three categories; then effect sizes were calculated for each group. Across both groupings, the overall between-group heterogeneity statistics $Q_b(p)$ was above .05, indicating that the categories are quite similar and do not explain the heterogeneity.

Table 9-5: Demographic Descriptives

Demographics	k	n	Percent
Gender	**26**	**6,028**	**100%**
Men		3,152	52.3%
Women		2,876	47.7%
Education	**15**	**2,341**	**100%**
BA		1,347	57.6%
MA		552	23.6%
Secondary		404	17.2%
Primary		38	1.6%
Descent	**19**	**2,957**	**100%**
Caucasian		2,475	83.7%
African		144	4.9%
Mixed		116	3.9%
Asian		82	2.8%
Latin American		74	2.5%
Aboriginal		33	1.1%
Unclassified		33	1.1%

Table 9-4 shows the age groupings. The cut points for age were determined by dividing the distribution of ages into three groups. Studies with younger participants (average

age 15-21.4 years) tended to achieve the largest outcomes, followed by middle aged (average age 21.5-41.8 years). Finally, the older participants, whose average age was above 41.9, achieved the lowest outcomes. However, the results were marginally statistically insignificant, with large heterogeneity: this indicates a wide diversity across studies. Looking at the gender groupings, the interventions with more women showed greater impact than the mixed or statistically insignificant male dominated groups.

9.6. Psychological Design

This section describes the psychological design employed by online interventions. Using absolute coding, the first section presents descriptive statistics about the distribution of influence components. Using relative coding, the second section examines relations between influence components and effect sizes.

Of the theories used across interventions, the transtheoretical approach was the most popular, being used across 47% of the interventions. The others were social cognitive (13%), cognitive behavioural therapy (13%), behavioural therapy (10%), extended parallel process model (7%), health belief model (7%), and the theory of reasoned action (7%).

9.6.1. Psychology Descriptives (Absolute Coding)

Using the CBICM as a framework to describe online psychological intervention design, Table 9-6 presents the *context*, *media channel*, *feedback message*, *source modifier* and *source encoding*; Table 9-7 presents the *intervention message*; and Table 9-8 presents the *audience interpreter*.

Starting in Table 9-6, the context describes the social and environmental components that can influence an intervention's effectiveness. The majority of interventions consisted of interaction between the system and participant, either directly or often within the context of an institutional setting.

The media channel describes the communication channels used to distribute an intervention. Interventions primarily combined websites and e-mail, while one third only used a website.

The feedback message describes information that audiences send to the source, which is used to design the intervention messages. It was common for interventions to deploy

multiple feedback mechanisms simultaneously. The most common was tailoring combined with personalization.

The source interpreter describes influence components that are based on audience's perceptions of the source, either the organizations operating the intervention or the website itself. Few interventions explicitly mentioned source factors.

Source encoding describes how an intervention is expressed. The vast majority of interventions were source encoded as processes that engaged users through multiple interactions over time.

Table 9-6: CBICM: Context, Media, Feedback, Source, and Encoding

CBICM Clusters	k	% Across 30 Interventions
Context		
Individual	14	46.7%
Institution	13	43.3%
Family & friend	2	6.7%
Geographic	1	3.3%
Media Channel		
Website & e-mail	20	66.7%
Website	10	33.3%
Feedback Message		
Tailoring	25	83.3%
Personalization	12	40.0%
Adaptation / content matching	2	6.7%
Source Modifier		
Attractiveness	5	16.7%
Similarity	3	10.0%
Credibility	1	3.3%
Source Encoding		
Multiple interactions	23	77%
Single interaction	3	10%
Sequential requests (foot-in-the-door)	1	3%

Table 9-7 presents the intervention message, which represents the overt communication designed to impact audience psychology and/or behaviour. This is where behaviour change techniques are deployed. The intervention message coding is based on behavioural change techniques from the taxonomy by Abraham and Michie (2008). Most of the intervention messages comprised behavioural change techniques that were outcome orientated, and stressed risks or benefits associated with particular behaviours. To encourage personal change, many of these interventions helped participants develop

healthy habits by motivating them to set goals, record their behaviour, learn new skills, and then use feedback to track progress.

Table 9-7: CBICM: Intervention Message (Behavioural Change Techniques)

Behavioural Change Techniques	k	% Across 30 Interventions
Provide information on consequences of behaviour in general	23	77%
Goal setting (behaviour)	21	70%
Provide feedback on performance	20	67%
Prompt self-monitoring of behaviour	19	63%
Provide instruction on how to perform the behaviour	18	60%
Action planning	17	57%
Provide normative information about others' behaviour	12	40%
Fear Arousal	12	40%
Barrier identification/Problem solving	10	33%
Set graded tasks	10	33%
Provide information on where and when to perform the behaviour	10	33%
Facilitate social comparison	9	30%
Plan social support/ social change	9	30%
Provide information on consequences of behaviour relevant to the individual	8	27%
Model/ Demonstrate the behaviour	8	27%
Prompt review of behavioural goals	7	23%
Environmental restructuring	7	23%
Prompt self-monitoring of behavioural outcome	5	17%
Agree behavioural contract	5	17%
Prompt identification as role model/ position advocate	5	17%
Stress management	4	13%
Time management	4	13%
Provide information about others' approval	3	10%
Goal setting (outcome)	3	10%
Provide rewards contingent on successful behaviour	3	10%
Shaping	3	10%
Use of follow up prompts	3	10%
Prompt Self talk	3	10%
Relapse prevention/ Coping planning	3	10%
Emotional control training	2	7%
General communication skills training	2	7%
Provide rewards contingent on effort or progress towards behaviour	1	3%
Prompting generalisation of a target behaviour	1	3%
Prompting focus on past success	1	3%
Teach to use prompts/ cues	1	3%
Prompt use of imagery	1	3%
Motivational interviewing	1	3%
Prompt review of outcome goals	0	0%
Prompt practice	0	0%
Prompt anticipated regret	0	0%

The audience interpreter describes the psychology of the individual or population targeted to adopt a target behaviour. This is where psychological behavioural determinants are targeted, which are theorized to influence behaviour. Table 9-8 shows the audience's behavioural determinants targeted by interventions. The coding is based

on the list of behavioural determinants by Michie et al (2005). Knowledge was used across all interventions. Consistent with the behavioural change techniques, most interventions targeted related behavioural determinants: motivation and goal-setting, beliefs about consequences, and skills. Other popular psychological determinants included appealing to social norms and reminding persons to stay focused on their goals. The least frequent behavioural determinant was an appeal to participant's social-professional role or identity, which was an exclusion criterion in this study.

Table 9-8: CBICM: Audience Interpreter (Behavioural Determinants)

Behavioural Determinants	k	% Across 30 Interventions
Knowledge	30	100%
Motivation and goals (intention)	26	87%
Social influences (norms)	22	73%
Beliefs about consequences	21	70%
Skills	19	63%
Memory, attention, and decision processes	18	60%
Behavioural regulation	17	57%
Emotion	10	33%
Nature of the behaviours	9	30%
Beliefs about capabilities (self-efficacy)	8	27%
Environmental context and resources	6	20%
Social-professional role and identity	3	10%

9.6.2. Psychology Analysis (Relative Coding)

The influence components in this section were relative coded. Thus, the analysis only examines influence components administered to the experimental group, but not the control group. Table 9-9 presents the three control groups, effect sizes, and two influence components clusters: average relative behavioural determinants, and average relative behavioural change techniques. Overall, the groupings with the largest number of influence components demonstrated the greatest effect size. For example, the interventions matched against waitlist or placebo control groups received the largest number of relative influence components; they achieved the highest effect size. Interventions compared to website control groups received fewer influence components; they attained a smaller, but significant effect size. Finally, interventions compared with the sophisticated print publication control groups were exposed to the fewest relative influence components; this group achieved a small and insignificant effect size.

Table 9-9: Relative Influence Components by Control Group

Control Group	Relative Influence Components		Effect Sizes		
	Behaviour Determinants (Avg.)	Behaviour Change Techniques (Avg.)	d	p	k
Print	2.0	3.0	-.110	.353	4
Website	4.4	8.3	.162	.041	8
Waitlist or placebo	5.7	8.6	.282	<.001	18

Assessing the correlations between the number of influence components and effect size, Table 9-10 reports two univariate meta-regression estimates of the two correlations. The results show that both meta-regression analyses resulted in moderate, but statistically insignificant correlations.

Table 9-10: Univariate Meta-Regression of Influence Components on ES (d)

Correlation Variables	k	Native Unit Beta (95% CI)	r	p	Equation
Behaviour change techniques & effect size (d)	30	.012 (-.009 to .033)	.219	.264	y=.0121x + .0897
Behavioural determinant & effect size (d)	30	.031 (-.005 to .067)	.327	.087	y=.0311x + .0217

Examining behavioural determinants and change techniques, Figure 9-7 compares effect sizes against the sum of relative influence components. The trend line is derived from the equation in the meta-regression. When examining the figures by the three control groups, print publications with the lowest effect size are clustered around the bottom left; while the survey only group is generally clustered in the top right. The website control group demonstrates no trend, spreading out horizontally.

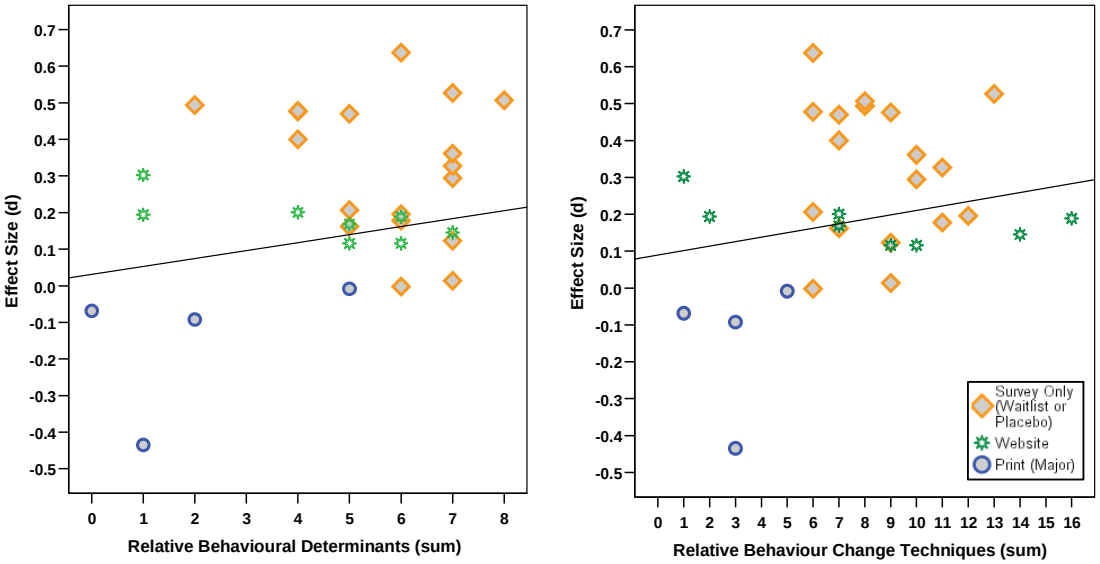


Figure 9-7: Sum of Influence Components by Effect Size (d)

The analyses carried out on relative influence components produced mixed results. Inspection of Table 9-9 and Figure 9-7 suggests there may be an association between the number of influence components and effect sizes. Across both figures, the number of behavioural determinants and change techniques appear to generally progress in an upward trend, with interventions employing the largest number of relative influence components generally offering larger effect sizes. However, the meta-regression analyses in Table 9-10 show moderate, but statistically insignificant relationships.

9.7. Dose (Adherence and Attrition)

To assess correlations between the three dose variables, two calculation methods were employed. The first correlation method includes the two papers that were excluded from the primary investigation, but which qualified for the dose analyses: (Cullen & Thompson, 2008) and (Patten, et al., 2006).

Table 9-11: Univariate Correlation Effect Size

Correlation Variables	k	r (95% CI)	p	Q (p)	I^2
Study & intervention adherence	5	.374 (.246 to .489)	<.001	10.575 (.032)	62.175
Intervention adherence & effect size (d)	9	.240 (.133 to .341)	<.001	48.209 (<.001)	83.406

Table 9-11 reports the correlation effect sizes; the forest plots are presented in Figure 9-8. Both correlation groups are highly heterogeneous, indicating a large discrepancy between studies. There were only five studies used to assess the relationship between study and intervention adherence. However, the association was strong and significant. Similarly, the relationship between intervention adherence and outcome was modest, yet significant.

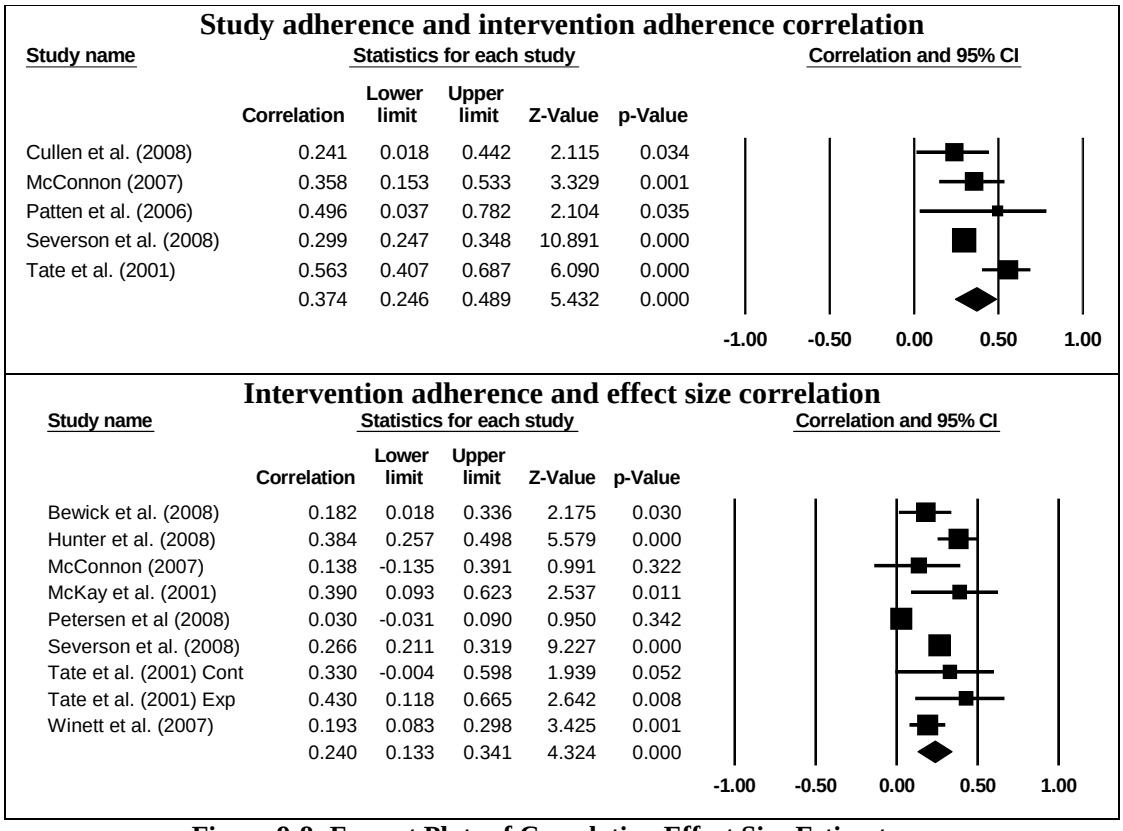


Figure 9-8: Forrest Plots of Correlation Effect Size Estimates

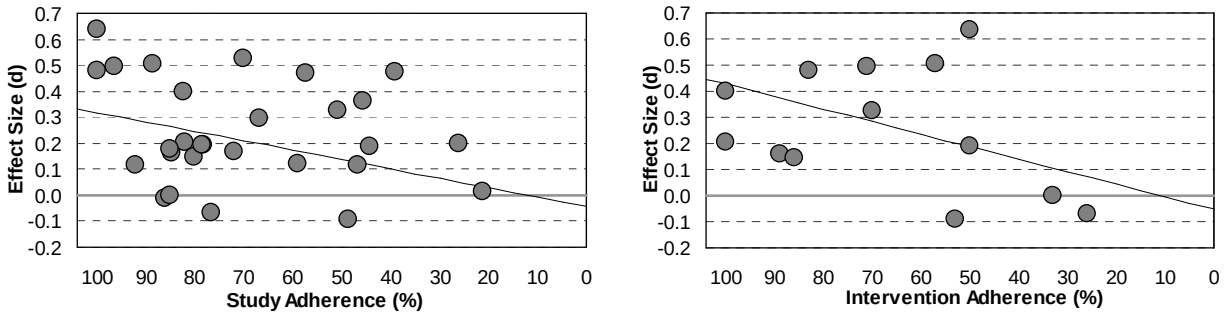
For the second meta-regression method, Table 9-12 shows the univariate meta-regression relationships between the percentage of intervention adherence on outcomes,

and study adherence on outcomes. This analysis showed a moderate and significant relationship between study adherence and behavioural outcomes. It also showed a moderate, but statistically insignificant association between intervention adherence and behavioural outcomes.

Table 9-12: Univariate Meta-Regression Correlation Effect Sizes

Correlation Variables	k	Native Unit Beta (95% CI)	r	p	Equations
Study adherence & effect size (d)	28	.004 (.001 to .006)	.481	.006	y=.0036x – .0422
Intervention adherence & effect size (d)	13	.005 (-.001 to .011)	.455	.109	y=.0048x – .0520

Figures 9-9 shows two graphs that demonstrate the relationship between study adherence and effect size; and between intervention adherence and effect size. Based on the meta-regression, trend lines were fitted. The two charts demonstrate a general trend where intervention impact on behaviour appears to decline in proportion to attrition.



Figures 9-9: Study and Intervention Adherence by Effect Size

By combining both calculation methods, correlations could be estimated across all three adherence variables. These combined correlations estimates are presented in Figure 9-10, where *COR* presents correlation effect sizes calculated from correlation data, and *MR* represents correlation effect sizes calculated by meta-regression. The analyses show a significant correlation between study and intervention adherence, and a significant correlation between study adherence and effect size. However, this approach produced one contradictory result, with one analysis showing the association between intervention adherence and outcome to be statistically significant, and the other, insignificant. Greater weight should be placed on the correlation estimates over the meta-regression, as it drew from statistics that are closer to the original data, which render them more reliable. Though the meta-regression analysis had more studies, the analysis was based on data that was heavily dichotomized which can under-estimate effect sizes (Lipsey &

Wilson, 2001). Given greater weight placed on the correlation estimates, there is some evidence that all three variables are related.

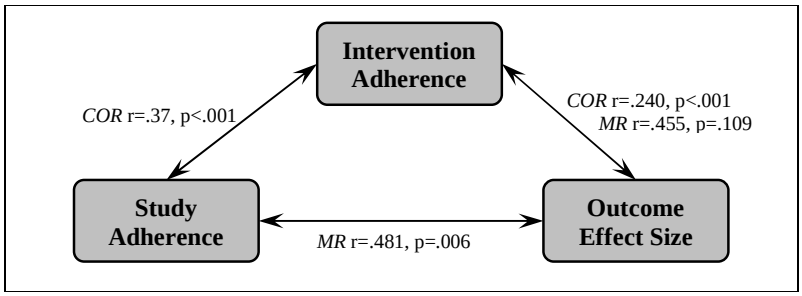


Figure 9-10: Adherence Variables and Correlation Effect Sizes

9.8. Findings

The overall effect size across the pool of online interventions is small, but statistically significant. However, the control conditions explain much of the variance across studies. This suggests that online intervention efficacy should be regarded as relative to particular intervention media. The evidence from this analysis suggests that the largest impact is from online interventions in comparison to waitlists and placebos; followed by lower-tech online interventions; and no significant difference when compared against sophisticated print interventions. In general, online interventions can influence behaviour, with high quality online interventions appearing to offer effects that are similar to sophisticated print interventions.

Time proved to be a critical factor. Intervention duration demonstrated a trend where shorter interventions achieved larger impacts, and as the length of an intervention increased, its impact decreased. After interventions ended, the impact appeared to increase from one to four months after the first post-test, and then decline afterwards.

Regarding demographics, younger audiences achieved the largest behavioural impacts, with impact strength decreasing for the older age groups. Female-dominated groups achieved larger behavioural outcomes in comparison to mixed gender and male-dominated groups.

When designing interventions, two thirds combined websites and e-mail, while just one third relied on a website only. For psychological design, the transtheoretical approach was the most popular, followed by social cognitive and cognitive behavioural therapy.

Many sites relied on feedback mechanisms, with 83 percent using tailoring and 40 percent including personalization.

Surprisingly, few papers reported source factors, with only 17% reporting attractiveness, 10% similarity, and most surprising, just one intervention noted source credibility even though this is considered a critical factor in persuasive communication. Interventions were primarily goal-orientated, deploying a number of behaviour change techniques that informed people of the consequences of their behaviour; helped them set goals and plans; and finally tracked their progress towards goals. The psychological behavioural determinants targeted by these interventions included knowledge, motivation and goals, and social norm appeals.

When assessing the relationship between the number of relative influence components and behavioural outcomes, the statistical analysis shows no significant relationship. However, the tabulated figures and charts suggest there may be an association. Perhaps the limited number of studies and noisy signal resulting from relative influence component coding explains the implied, but statistically insignificant correlation.

Assessing the relationships between dose variables—in light of one contradictory result—it appears that study adherence, intervention adherence, and behavioural outcomes are likely related. This relationship could possibly be explained by a third variable: motivation. Across studies, as the number of participants stopped using interventions and left the studies, the effect sizes tended to depreciate.

These findings are subject to many limitations. It would have been ideal for at least two coders to have assessed papers, from which inter-coder reliability calculations could be estimated. Second, it would have also been ideal to code influence components from the interventions rather then the research papers. This was only possible for a minority of studies, when the papers did not provide details and there was evidence that the available intervention had not changed since the paper's publication. Third, while coding influence components, particularly behavioural determinants and change techniques, some papers only provided vague descriptions. Control conditions were rarely described in enough detail to code relative influence components with full confidence. Fourth, as there are still too few studies of online interventions, it was necessary to combine effect sizes across behavioural domains. Fifth, the sample of

interventions revealed two possible sources of publication bias. However, these sources did not appear large enough to change the final statistical outcomes by more than a small margin. Thus, the sample contained a potentially trivial bias, though not enough to alter the conclusions.

9.8.1. Overall Heterogeneity Assessment

In meta-analysis, it customary to examine variance across studies in order to assess how much heterogeneity is due to the true effect size; possible unknown moderator variables; and measurement error, bias, or methodological limits (Borenstein, et al., 2009).

First, to assess the true effect size, numerous moderator variables were used to describe trends; however, the control condition explained the majority of variance. Consequently, the overall effect size is not likely to be a representative measure of online intervention effectiveness, but rather, a relative measure that varies with the control condition. For example, compared to sophisticated print publications, online interventions do not appear to offer any impact advantage; compared to static websites, they offer small advantages; and compared to waitlist/placebo treatments, online interventions offer modest advantages.

Second, to assess possible unknown moderators, in this analysis numerous moderators were used to explain heterogeneity: control conditions, intervention length, and demographic variables. There were too many influence components to undertake a full mediation analysis, but the sum of relative influence components suggested they could be an important factor. Further, authors frequently provided unclear descriptions of behavioural influence components and it is likely that many descriptions were incomplete. Consequently, there may be many psychological factors that could explain the variance, and given a larger sample of interventions along with better reporting, it could be possible to model the variance through psychological differences between interventions.

Finally, there may be methodological weaknesses and errors that could explain the variance. First, the correlation effect size estimates were based on direct (unmodified) statistics that are known to under-estimate effect sizes. Second, the inclusion of the study by Petersen et al. (2008) could be challenged because it scored the lowest methodological quality, but contributed the most weight as it had the largest

population—though the random effects model limited its impacts somewhat. This one study reduced overall results and rendered other results heterogeneous that would have otherwise been homogenous. However, the basic conclusions are unaffected.

9.8.2. Comparisons

To place the overall findings into perspective, this section provides comparable figures from prior meta-analyses, studies of self-quitters (persons who can quit without the aid of an intervention), and placebo effects. While extracting comparable figures, the standardized mean difference effect size was used when available; however, in some cases, these measures were recalculated.

Comparisons will be made with the meta-analysis's overall effect size outcome (d=.194). As a general guideline, effect size d can be considered small ≤ .2; medium = .5; and large ≥ .8. Likewise, correlation effect sizes r are small ≤ .1; medium = .25; and large ≥ .4 (Cohen, 1998 as cited in Lipsey & Wilson, 2001). Compared to these figures, the overall results of this study can be considered small.

When comparing the results of this study with other studies, Wantland et al. (2004) showed comparisons between five web-based and non-web-based interventions produced effect size on knowledge and behaviour from d=-.24 to .44, k=5. Further, Portony et al. (2008) showed effect sizes on intentions d=.18, k=23; physical activity d=.05, k=11; weight loss d=.10, k=8; tobacco use d=.33, k=11. Overall, the results from prior meta-analysis are somewhat consistent with the findings from this study.

Another way to examine the impact of online interventions is to compare their outcomes with *self-quitters*, people who successfully quit on their own. One synthesis paper examined smoking self quitters across 10 studies where individuals quit on their own, a median of 5% at 6 months and 4% at 12-month follow-up (Hughes, et al., 2004). There is no standard way to convert between a percentage and an effect size. This limitation can be explained by the fact that depending on how two percentages are compared, different effect size measures may be obtained. For example, when calculating an odds ratio effect size, a 5% difference can produce radically different effect sizes depending on the proportions. For example, the comparison between (50/100) and (55/100) produces a small effect size, while the compared between (7/100) and (2/100) produces a larger effect size; however, both ratios are just 5% different. To extract a conservative

effect size estimate from the self-quitters study, the percentage of self-quitters was converted into a logged odds ratio that would result in the most conservative standardized mean difference effect size estimate. By this conservative approach, 5% self-quitters at 6-months produces d=.110, while 4% at 12-months results in d=.088. Compared with these figures, the meta-analysis' overall effect sizes is larger than a conservative estimate of the impact of self-quitting. Additionally, as the meta-analysis primarily included randomized and quasi experiments, it can be assumed that potential self-quitters were equally represented across the experimental and control conditions, which would suggest that the impact is above that of self-quitters.

Placebo effects have been shown to operate in bogus medicines, but also sham medical procedures. Consequently, one could argue that online interventions may contribute a digital placebo effect. One meta-analysis found no significant effects for placebo studies with dichotomous outcomes. However, for continuous outcomes, psychological and physical placebo effects are d=-.28, CI95% (-.38 to -.19) (Hrobjartsson & Gotzsche, 2001). These placebo effects are larger than many of the pooled online intervention effect sizes from this meta-analysis. Although many of the studies appear to have underperformed against the placebo effect, there is an explanation. In many of the studies, waitlist and placebo control groups made significant improvements despite not receiving any significant intervention. In a few cases, it seemed that completing baseline questionnaires exerted influence on control group participants. This effect may reflect a placebo effect resulting from study participation, or perhaps completing the questionnaire increased participant's elaboration by forcing them think about binge drinking or healthy eating. Although both experimental and control groups generally made progress, the experimental groups made more progress. This suggests that online interventions may have the capacity to exert a placebo effect. However, like the self-quitters, the experimental studies in the meta-analysis are likely to have already accounted for the placebo effect across both experimental and control groups, rendering the outcomes an effect that is beyond the placebo effect.

9.8.3. Theoretical Implications

Psychological Design

Influence components approaches, such as evidence-based behavioural medicine (Abraham & Michie, 2008) and behavioural kernels (Embry & Biglan, 2008), posit that the strength of an intervention is a function of its psychological components. The meta-analysis did not find statistical support for this position, but suggested that there could be a relationship between the psychological influence components and behavioural outcomes. The inconclusive findings may be due to three factors: coding limitations, the moderate number of studies, and a potentially non-linear relationship. First, accurate relative coding of influence components could only take place when researchers described the experimental and control groups in equal detail. When authors did not fully describe control conditions, this caused an over estimate of relative influence components. Second, the strong, but statistically insignificant correlations suggest that this relationship may require a larger pool of studies to overcome the impact of studies that do not fully report control conditions. Third, the relationship may not be linear, but rather resemble an inverted u-shaped. For example, too few influence components may not be enough to significantly impact behaviour, while too many could potentially overwhelm users with complex interventions. However, there is probably a middle ground where a small number of relevant (and mutually reinforcing) influence components are most effective. One researcher argued that websites which provide fewer individually tailored feature may be more effective in promoting and maintaining behaviour than ones that offers numerous poorly presented strategies (Doshi, et al., 2003).

The CBICM was iteratively developed for this investigation to help identify a broad range of psychological design factors. During the process, the CBICM proved to be comprehensive, robust, and flexible framework. This system proved to be comprehensive in the sense that the framework could accommodate large number of overt and covert influence factors across a range of fields. There are more influence that could have been included, and the model appears capable of extension should there be a need to develop larger taxonomies. The system proved to be robust, in that all clearly expressed intervention reports that were identified were easily analysed by the model. It was flexible, in that it could accommodate a large variety of interventions, whether they were targeting individuals or larger population, whether they were conceived as one-

way or two-way communication, or whether they were modelled on mass-media outreach or interpersonal interaction.

Dose (Law of Attrition)

The law of attrition posits two notions. First, study and intervention adherence follow a systematic pattern of decline over time, similar to an inversed S-shaped diffusion curve. Second, study and intervention adherence are probably correlated and impacted by a third variable: a participant's interest (Eysenbach, 2005).

The law of attrition's first hypotheses proposes that attrition follows a systematic pattern, declining over time, similar to an inverse S-shaped diffusion curve (Eysenbach, 2005). This same attrition pattern is found in the logarithmic shaped relapse curve of smokers who are trying to quit (Hughes, et al., 2004). In this meta-analysis, the relationship between time and attrition was not examined; however, interventions appeared to follow a downward trend, with effect sizes declining as intervention length increased. It is believed that attrition offers part of the explanation for this trend.

The law of attrition's second hypothesis posits that study and intervention adherence are likely to be correlated because they are impacted by a third variable: participant interest (Eysenbach, 2005). This assertion is somewhat supported by the results of the meta-analysis, with five studies showing a medium strengths significant correlation between the two adherence variables. Moreover, the analysis suggests that the relationship is likely to include three variables: study adherence, intervention adherence, and behavioural outcomes.

Instead of hypothesising that attrition is a function of participant's loss of interest, a slightly different proposal is that adherence is a function of participant's motivation, which is a construct generally comprised of two dimensions. The first is goal-commitment, and second, ability and/or efficacy. Across different research, motivation generally encompasses these two dimensions: goal-commitment and either self-efficacy or ability (Bandura, 1982; Fogg, 2009; Locke & Latham, 2002; Pintrich & De Groot, 1990; Prochaska, et al., 1995).

Adherence and Motivation

Motivation encompasses the concept of interest, but goes further to include a number of dimensions related to goal-attainment. By better understanding the components of

motivation, interventionists can design better interventions. Across a number of models, motivation generally contains two dimensions: goal-commitment and self-efficacy/ability. Additionally, for action to occur, a person sometimes requires a trigger. According to social cognitive theory, for a person to act, they require a motivating outcome expectation and self-efficacy, the belief that they can perform the required behaviours (Bandura, 1982). In the transtheoretical model, for a person to progress through stages of change, they require positive decision balance (the pros of change outweigh the cons) and self-efficacy (Prochaska, et al., 1995). The theory of goal-setting and task motivation states that goal-attainment is influenced by three factors: goal-commitment (composing goal-importance and self-efficacy), feedback, and task complexity (Locke & Latham, 2002). The expectancy-value model describes motivation by three dimensions: expectancy (self-efficacy), value (goals and motivation), and an affective dimension comprising emotions related to the task (Pintrich & De Groot, 1990). The Fogg Behavioural Model posits that short-term behaviour is influence by three factors: motivation, ability, and a behavioural trigger (Fogg, 2009).

Although goal-commitment has been identified as the first dimension of motivation, self-efficacy and ability have been grouped as the second dimension. This is because they are important constructs that shift from theory to theory. While ability describes a person's capacity to perform a task, self-efficacy describes a person's belief that they can perform that task. The reason why researchers seem to adopt either self-efficacy or ability could be that there is a relationship between these two variables, where behaviour is more likely when both are high. For example, assume that a person is highly committed to a goal and needs to perform a routine task to attain it. This person could be within four possible groupings of self-efficacy and ability, which may be either high or low. The person is more likely to act when he or she has high-self efficacy and high ability. The person is likely to act out of overconfidence (and possibly become frustrated later on) when he or she has high self-efficacy and low ability. This person is less likely to act when under-confident, due to low-self efficacy and high ability, though the person would likely stick to the task after realizing he or she possessed the ability. Finally, if the person honestly recognized his or her inability, with low self-efficacy reflecting low ability, this person would be in a position to accept the need to develop skills as a preliminary step towards reaching the goal. This relationship will be referred to as self-efficacy/ability.

Dopamine is commonly regarded as a biochemical explanation for motivation, though without any clear consensus, several theories explain how it may function. Perhaps the most popular explanation is that when people attain goals, dopamine triggers a pleasurable psychological state—this reinforces the link between activities and a psychological rewards. As a particular behavioural becomes associated with a dopamine induced psychological reward, this reinforces the development of drive-like motivation, where the person will seek to carry out particular activities that are associated with the dopamine rewards (Wise, 2004).

9.8.4. Practitioner Implications

Communication-based Influence Components Model

The CBICM can serve as a useful tool for analysing existing online interventions, and explaining their efficacy. The framework offers a comprehensive checklist of key factors and influence components that may be used to guide intervention development. Consequently, it may be used as a framework for the design and development of interventions, whether they adopt interpersonal or mass-media approaches, whether they use overt or covert tactics, and whether they are focused on human mediated communication or direct human computer interaction. In particular, the model can aid the design of social marketing campaigns that seek to engage citizens in mass-interpersonal campaigns aiming to achieve long-term, tailored, and personally engaging interaction.

One limitation of the model in its current form is its comprehensive nature. When designing specific interventions the CBICM is more like an index of ingredients, rather than a recipe that describes how to combine ingredients effectively. When designing interventions, it is advisable to stick to the common combinations of influence components that have been proven to work. However, the comprehensive nature of the model could be a problem, as it is unknown how all combinations may function, while some combinations may be counter-productive. Though in practice, the number of proven combinations is likely to be quite small, reflecting the common theories such as the theory of planned behaviour and social cognitive theory. Consequently, developers can use the model to remain aware of the range of possible influence components; however, the popular behavioural change theories are probably the best guides for selecting packages of influence components. Moreover, pre-testing and revision are essential to ensuring effective design regardless of the theory used develop it.

Dose

Analysing online interventions with different levels of adherence is similar to synthesizing medical studies, where some patients were under pressure to take their medicine, while for others, it was optional. In some cases, interventions did not explicitly employ measures to maximize participant adherence. In the worst case, one intervention attained a median of one visit in eight month (Verheijden, et al., 2004). These participants were exposed to such low levels of the intervention, that one could question the value in continuing the experiment. On the other hand, some interventions implemented sophisticated adherence systems that monitored usage, automatically engaged participants who were at risk of dropping-out, and in some cases, prompted staff to follow-up with potential dropouts. This has implications for practitioners who need to maximize dose to increase the efficacy of their interventions and for researchers who need to ensure participants receive a high enough dose that the impact of the intervention can be assessed.

Motivation Design

Motivation is a more likely explanation for the relationship between study adherence, intervention adherence, and behavioural outcomes. As an exogenous variable, intervention adherence can be influenced by intervention approaches that address participant's goal-commitment and ability/self-efficacy. Particularly, with goal-commitment and self-efficacy/ability as the critical variables, interventions can benefit by intentionally designing interventions around motivating goals (similar to the social marketing approach), but also help participant's to increase their ability and self-efficacy.

Intervention Length

Time proved to be a critical factor, with shorter interventions generally achieving the largest impact and intervention impact fading as the intervention length increased. This has implications for intervention designers who need to make interventions as short as possible, to cope with rapid attrition. Moreover, for some behaviour, highly tailored brief interventions produced the strongest effect sizes. This suggests that short and targeted interventions can be as effective, if not more effective, than some long and demanding ones. However, this is only applicable to particular behaviours.

9.9. Conclusions

Many of the online interventions reviewed in this study demonstrate their capacity to help people achieve voluntary lifestyle changes. Compared to waitlists they demonstrate reasonable efficacy, whereas compared to print materials they offer similar impacts, but with the advantages of lower costs and broader reach.

Psychological design appears relevant to intervention efficacy, though this analysis was inconclusive. The CBICM, developed for this study, appears to be a useful framework for harmonizing numerous influence systems into a coherent package suitable for describing online interventions.

Motivation may be the critical factor that drives study adherence, intervention adherence, and impact. Perhaps closely related, time appears to be a critical factor, with impacts and adherence fading over time, perhaps as motivation depreciates.

The studies in this meta-analysis demonstrate that online interventions targeting voluntary behaviours can work. This suggests that it is feasible to deploy online interventions that target individual-level behaviours that can be scaled to mass audiences, translating into population-level health benefits. Given the high reach and low cost of online technologies, the stage may be set for social marketing practitioners to increase the development of public health and environmental campaigns that blend mass-media outreach with interpersonal engagement. For example, this means more public health campaigns that do not just advocate quitting smoking, but offer personalized online support and guide people through the process of quitting.

There are many avenues to explore for follow-up research. First, with a large number of influence components and few studies, it was not possible to undertake significant mediation analysis. However, in the future, the number of studies will increase which will create an opportunity to undertake a full mediation analysis of influence components. Second, as many interventions draw on the transtheoretical approach, a similar analysis could examine the influence components used to move persons through stages of change. Third, during this meta-analysis, the CBICM proved to be a useful way of packaging influence components from a range of fields. Further work can focus on extending the model and improving upon it, in reflection of its application thus far.

This chapter contributes to the thesis by offering additional evidence to answer research question one, on intervention efficacy. It also contributes to question two, on factors associated with online intervention success.

10. Discussions

This chapter reflects on the literature review and research projects in order to answer the research questions. It then explores implications for theory and social marketing thinking and practice. This chapter is organized as follows. First, it answers the thesis' two research questions by reflecting on the findings from the two research projects. Second, it provides a synthesized summary of the theoretical implications of both studies. Third, it reflects on how the research relates to social marketing literature. Fourth, it examines practitioner implications. Fifth, it reviews the contributions, limitations, and proposals for future research.

10.1. Research Questions and Findings

Q1. Can online social marketing campaigns influence target audiences' behaviour?

As previously discussed, the prior meta-analyses have shown that online interventions can influence peoples' behaviours. However, these studies had combined different classes of behaviours: voluntary, mandatory, and the management of psychological problems. This limited their generalizability to social marketing applications. Given the results of the new meta-analysis presented in this thesis, which drew on interventions targeting voluntary behaviours, the results show that online interventions can influence behaviours suitable to social marketing applications. Across all studies, the overall effect size was d=.194, CI=.111 to .278, p<.001, k=30. As control conditions explained most of the variance in the statistical models, discussions of intervention efficacy should be described in comparison to different control conditions. Relative to waitlist/placebos there was a moderate impact (d=.282, CI=.170 to .393, p<.001, k=18). Relative to lower-tech websites there was a small impact (d=.162, CI=.006 to .318, p=.041, k=8). Relative to major print interventions, online interventions underperformed, though the effect size was statistically insignificant which indicates no difference (d=-.110, CI=-.343 to .123, p=.353, k=4).

These results are comparable to two prior and similar meta-analyses. Comparisons between five web-based and non-web-based interventions made by Wantland et al. (2004) produced effect sizes on knowledge and behaviour ranging from d=-.24 to .44,

k=5. Moreover, Portony et al. (2008) showed effect sizes on physical activity (d=.05, CI=-.05 to .15, k=11); weight loss (d=.10, CI=-.11 to .29, k=8); and tobacco use (d=.33, CI=.08 to .59, k=11).

Though the interventions in the meta-analysis were not from social marketing campaigns, they targeted behaviours that are similar to those targeted by social marketing campaigns: stopping smoking, reducing binge drinking, increasing exercise, and eating healthier. These types of interventions could easily be integrated into social marketing campaigns, and Section 10.3 presents criteria that show the meta-analysis interventions are highly suited to social marketing applications. This evidence leads to the conclusion that online social marketing campaigns, which integrate similar interventions, could influence individuals' behaviours.

Q2. What design factors are critical to online intervention success?

Across both research projects, a number of factors were identified that were shown to increase the efficacy of online behavioural change campaigns and interventions. The following paragraphs review these key design factors.

First, there is evidence that goal orientated interventions are capable of increasing behavioural outcomes. As the interventions in the meta-analysis were capable of influencing behaviours, the overall descriptive statistics offer insight into the psychological design factors associated with the overall outcomes. Most interventions were goal-orientated, offering skill building, and feedback mechanisms to aid goal-attainment. The top five behavioural change techniques employed are as follows: provide information on consequences of behaviour in general (77%); goal-setting (70%); provide feedback on performance (67%); prompt self-monitoring of behaviour (63%); and provide instruction on how to perform the behaviour (60%). The top two feedback mechanisms employed across interventions include tailoring (83%) and personalization (40%).

Second, there could be a trend (which was not statistically validated in the meta-analysis) where interventions that are more psychologically sophisticated can produce stronger results. This is called the influence components approach. The meta-regression correlation between the number of relative behaviour change techniques and effect size

(d) was as follows: r=.219, p=.264, k=30. The meta-regression correlation between the number of relative behavioural determinants and effect size (d) was r=.327, p=.087, k=30. Although the results are statistically insignificant, there are reasons to suspect intervention efficacy is a function of influence components. This is further discussed in the section on theoretical implications.

Third, intervention exposure (dose) proved to be critical. People who received more exposure to an intervention, or used it more often, generally achieved greater behavioural outcomes. Although there was one statistical contradiction between intervention adherence and behavioural outcomes, the balance of evidence suggest there is a statistical relationship between study adherence, intervention adherence, and behavioural outcomes. In this thesis, it is proposed that motivation is the driving force behind intervention adherence and behavioural outcomes. Additionally, across the research motivation is generally comprised of goal-commitment and self-efficacy/ability.

Fourth, time also proved to be a critical factor; this may be due to an association with exposure. In general, shorter interventions achieved larger impacts, while the longer an online intervention operated, the smaller its capacity to impact on users. This may be explained as an effect of intervention exposure, where people who were exposed to a brief 15-minute intervention could experience 100 percent of the intervention, while people in a three-month long intervention may, on average, only experience 25 percent of the intervention.

Fifth, the website credibility and trust study showed the importance of website source credibility, but surprisingly, just one out of the 30 interventions in the meta-analysis mentioned source credibility. In the website credibility study, participants were more likely to act on the advice of a website perceived to be credible. Additionally, website credibility and active trust showed a small mediation relationship, with active trust mediating a small, but statistically significant indirect effect of website credibility on behavioural impact. The strongest mediation relationship flowed from trustworthiness, to active trust, to behavioural impacts. Expertise showed a very small mediation effect that was insignificant in some assessments. Despite the statistical correlations, there are theoretical reasons to believe that website credibility does not motivate people to act, but rather reduces risks that can prevent motivated persons from acting. In other words,

website credibility and trust cannot increase a person's behaviour, but low credibility and trust can decrease their behaviour.

Sixth, visual appeal is generally regarded as an important part of intervention design; however, there is no consensus on why visual appeal is important. The results of the website credibility suggest visual appeal may be associated with behavioural influence due to its relationship with source credibility. The website study evaluated two source credibility models. One was the two-dimensional technology credibility model that comprised expertise, trustworthiness, and treated visual appeal as an external factor that can influence credibility. The other was the three-dimensional human source credibility model comprised expertise, trustworthiness, and visual appeal. The three-dimensional human model fits the data better, which is consistent with the media equation's hypothesis that people interact with mediated experiences in a human-like way (Reeves & Nass, 2003). However, regardless of the models used, visual appeal proved to be a critical factor in influencing credibility perceptions, and indirectly impacting behaviour.

10.2. Theoretical Implications

This section reflects on this thesis' research findings and explores their theoretical implications, in regards to social exchange theory, influence components approaches, the CBICM, and intervention dose. The subsequent sections discuss how these theoretical implications relate to social marketing theory and practice.

Social Exchange Theory

Findings from the website credibility and trust study are relevant to social exchange theory. This theory proposes that social exchanges occur between people and/or organizations who conduct transactions in order to maximize their rewards and minimize their costs. In a private sector commercial exchange, a product's benefits constitute the purchaser's reward, while the money paid is the company's reward (Bagozzi, 1974). Relationship marketing views relationships as long-term repeat exchanges based on commitment and trust (Morgan & Hunt, 1994). Cyberspace is risky and competitive—these attributes contribute hidden costs that are not necessarily emphasized by current literature on online engagement. If social marketers ignore risk-based costs, then the price of participation may inflate to levels that citizens consider too expensive.

The website credibility and trust study showed a correlation between website credibility, active trust, and behavioural impacts. Although the results show that website credibility and trust increase behaviour, an alternative explanation is that they decrease mistrust, which from a correlation viewpoint is statistically the same as increasing people's willingness to act on the advice of an online campaign. For example, a person who wishes to test for HIV/AIDS but remain anonymous is more likely to take the test from a trusted, rather than a mistrusted source. In this case, trust does not motivate the person, but rather presents a safe opportunity for them to act on their pre-existing motivation. In the language of social marketing, as a price factor, mistrust can decrease the likelihood that a person will act on a campaign appeal by increasing risk-based costs associated with an activity. Likewise, different levels of trust and mistrust in competing organizations may determine whether a person acts on the advice of one online source versus another.

Influence Components Approaches

Influence components approaches do not ask what has been theorized to influence behaviour, but rather what approaches have been demonstrated to work. A number of researchers discuss approaches to behavioural change where the strength of an intervention is a function of its psychological makeup. The term *influence components approaches* describes research that adopts this assumption. This principle was evaluated during the meta-analysis, but the analysis did not provide statistical support, although it suggests that there could be an undetected relationship. The p-values may have failed the tests, but other indicators suggest there is a relationship.

The reasons for asserting this relationship, in spite of the insignificant statistical results, are as follows. The absolute coded influence components showed no correlations (as was expected), but the relative coded influence components were correlated with many other variables. Additionally, one of the correlations was borderline insignificant. The inconclusive findings may be explained by three factors: coding limits, few studies, and a potentially non-linear relationship. The shape of the relationship could be semi-circular, like an inverted-U, where too few influence components are not enough to impact behaviour, while too many could overwhelm individuals, possibly resulting in counter-productive interventions.

CBICM

Literature on behavioural change and persuasion cuts across numerous fields and theories. The CBICM offers a way to organize diverse research into a simple and theoretically useful communication framework. The model was developed as an intellectual bridge that needed to be built before the meta-analysis could proceed. As the CBICM was developed as a means, not an end, it was not formally evaluated. Nonetheless, there are compelling reasons why the model constitutes a valuable contribution. Support for this model comes from three sources: theoretical justifications, empirical findings from the two research projects, and its performance in the meta-analysis.

First, theoretically, the model is grounded in relevant theory. For one thing, people interact with technology as social actors. Therefore, human-computer interaction can be modelled on human-human interaction. Furthermore, online communication and interaction may be one-way or two-way depending on how a particular interaction is conceived and used, though two-way interaction stands a better chance of influencing behaviours. At the same time, a circular two-way communication model provides a framework to describe when various aspects of persuasion or behavioural influence may be exerted. Finally, the model adopts the influence components approach, where the strength of an intervention is proportional to the influence components built into that intervention. Moreover, as these components exist at different points in the communication process, numerous effects can be exerted simultaneously, along different points in the communication cycle.

Second, the two research projects provided some limited evidence to support the CBICM. The website credibility study provided empirical support for the model's assumption that people interact with websites as social actors. The results of the structural equation modelling analysis demonstrated that the three-dimensional human credibility model better fit the data than the two-dimensional technology model. Furthermore, the meta-analysis did not specifically assess the efficacy of one-way versus two-way interventions; though there were some indications that two-way communication does offer advantages. Overall, the interventions in the meta-analysis showed a positive impact and the majority (83%) used tailoring which can only exist in two-way communication processes. Although there were many possible alternative explanations of intervention efficacy, this at least provides some circumstantial

evidence that the majority of interventions in the analysis were effective and based on two-way communication. This would also require further research to assess. Finally, the meta-analysis did not provide statistical support for the influence components approach; however, there are indications that a relationship may exists. This offers an indication that influence components approaches may be viable, though further investigation is required to reach stronger conclusions.

Third, evidence in support of the model also comes from its application. Over the course of the project, different influence systems were tested, modified, rejected, compared, and reconfigured. Before the model reached its final form, coding interventions was difficult. Once the model had reached its final form, coding became simple. During the meta-analysis, CBICM proved to be comprehensive, robust, and flexible framework. Comprehensively, it accommodated a large number of overt and covert influence factors across many fields. Robustly, it stood up to many types of interventions and was consistently viable. Flexibly, it could accommodate a wide variety of intervention types, whether they targeted individuals or groups; whether they were conceived as one- or two-way; or as mass or interpersonal interaction.

Dose

The law of attrition argues that study and intervention adherence follow a pattern where participants drop out of a study, similar to an inverse S-shaped diffusion curve. This particular proposal was not tested; however, interventions did appear to follow a downward trend, with effect sizes declining as intervention length increased. There was some support for this theoretical proposal, though the shape of the curve was not assessed.

Despite one contradictory result, the study found correlations between study adherence, intervention adherence, and behavioural outcomes. The one contradiction was between intervention adherence and behavioural outcomes. However, the significant correlation was based on a lower number of high quality effect size measures, while the insignificant outcome was based on a higher number of lower reliability effect size measures. Consequently, it is likely that there is a statistical relationship between study adherence, intervention adherence, and behavioural outcomes. The law of attrition posits that study adherence and intervention adherence are likely to be correlated, possibly through their relationship with a third variable: participant interest. The meta-analysis found support for this, that all three variables are probably correlated.

However, an alternative proposal is that this third variable is a related, but different construct: motivation. Research shows that motivation is generally composed of two dimensions: goal-commitment and ability/efficacy. It may also require a trigger to prompt action.

10.3. Social Marketing Implications

Reflecting on the findings and theoretical implications, this section describes how the results fit within, and contribute to, social marketing thinking. To place the two research projects of this thesis into a social marketing context, they are compared to the criteria of Peattie and Peattie (2003). The framework is based on the principle that the more a social problem resembles a commercial marketing opportunity, the greater the likelihood that social marketing is suitable. Conversely, the more a context resembles a non-marketing opportunity, the less likely social marketing would be appropriate. Perhaps one limitation of this model is that it does not reflect the new breed of activist-like youth social marketing campaigns, such as the Truth Campaign.

Table 10-1: Peattie and Peattie's (2003) Framework

Convergence with Commercial Marketing				**Divergence from Commercial Marketing**
<---------->				
Principle benefits accrue to	Individual	Family	Community	Society
Benefits accrue	Immediately	Delayed	Long-term	Only possibly
Link between benefits and behaviour	Obvious	Direct	Indirect	Taken on trust
Sensitivity of the issue	Low ----------> High			
Degree of consensus	High ----------> Low			
Customizability of the offering	High ----------> Low			

From the criteria in Table 10-1, the activist websites in the credibility and trust study share less in common with marketing contexts, while the online interventions in the meta-analysis share more in common. For the website credibility study, the benefits were generally targeted towards society, with benefits that were only possible and often taken on trust. Moreover, the sensitivity was possibly moderate, the degree of consensus on the solutions was low, and the customizability of the offers was generally quite low. This study did not share much in common with traditional social marketing contexts. However, it offered an opportunity to assess the psychological constructs that could be applied to social marketing applications.

The types of online interventions discussed in the meta-analysis share more in common with social marketing criteria. The benefits accrued to individuals, though the outcome could range from delayed to long-term. In many cases, the link was obvious and it was common for interventions to stress this link. The sensitivity of issues was generally low, with a high degree of consensus because many of the interventions were based on popular practice. Finally, the customizability was exceptionally high, with many highly tailored interventions. This provides a good basis to assert that the interventions in the meta-analysis are highly relevant to social marketing applications.

10.3.1. Social Exchange Theory and the 4Ps

The findings from both research projects are relevant to social exchange theory. In particular, they relate to the 4Ps' product and price. Figure 10-1 presents a conceptual model of how findings from the two research projects relate to marketing's product and price. In summary, conclusions from the website credibility project are relevant to price, as mistrust can constitute hidden costs that may prevent individuals from acting on a motivating appeal. The meta-analysis is more relevant to the augmented product.

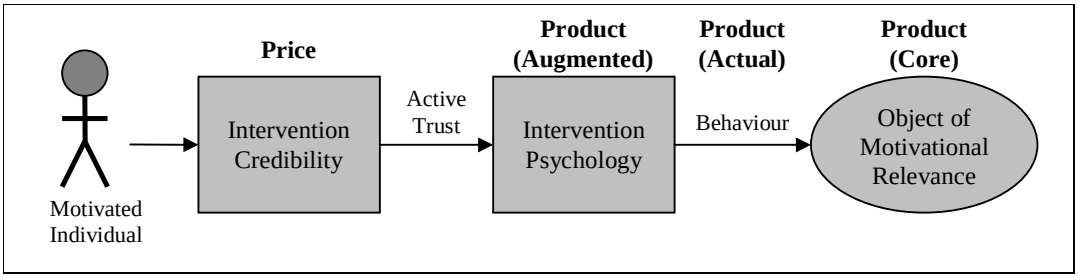


Figure 10-1: Unified Research Framework and the 4Ps

As presented in Figure 10-1, website credibility and active trust are relevant to the 4Ps' price, as they offer one way of addressing online mistrust and competition. Trust is the essential first step, as mistrust can prevent a person from acting, even if they are motivated. Trust is unlikely to increase motivation; rather, trust is likely to ensure a motivated person feels confident to act when provided an opportunity.

The meta-analysis is more relevant to the 4Ps' product. Using the framework by Kotler, Roberto, and Lee (2002), Figure 10-1 presents these three separate products. The *core product* describes the object that motivates the individual; this represents the benefits in which the person is interested. This describes the object of motivational relevance in the model. The *actual product* describes the behaviour targeted by the intervention, which the person must act out to achieve their object of motivational relevance. In this

research, this behaviour is normally an intervention's target behaviour. However, it was common for interventions to contrast these two products, such as in the case of interventions targeting diet and exercise behaviours to achieve a weight loss outcome. The *augmented product* describes the tangible object or service designed to facilitate behavioural change. Online interventions constitute the service.

10.3.2. Applications to Social Marketing

Andreasen (2002) asked two questions about social marketing applications: "When *can* social marketing be used?", and "When *should* social marketing be used?" To assess when online social marketing *should* be used, Rothschild's (1999) framework provides an overview of contexts when marketing offers a viable approach. The framework is presented in Table 10-2. The first two factors comprise psychological dimensions internal to individuals: motivation and ability/efficacy. The third includes an external factor: an opportunity to perform the behaviour. Rothschild argued that the solution to a *lack of motivation* is legislation that creates a favourable environment to encourage the behaviour. The solution to a *lack of ability/efficacy* is education, with support from marketing services. The solution to a *lack of opportunity*, is the marketing of products or services (Rothschild, 1999).

One critical distinction in this framework is the difference between motivated and unmotivated audiences. As the research in this thesis has only focused on interventions targeting motivated individuals, the discussion will focus on the motivational half of the model (Cells 1-4), and only briefly discuss online interventions targeting potential unmotivated audiences (Cells 5-8).

Table 10-2: Rothschild's (1999) Framework

Motivation	**Yes**		**No**	
Opportunity	**Yes**	**No**	**Yes**	**No**
Ability/Efficacy **Yes**	(1) Prone to behave **Education**	(2) Unable to behave **OSM (Service)**	(5) Resistant to behave **Law**	(6) Resistant to behave **Law, Services**
No	(3) Unable to behave **OSM (Education)**	(4) Unable to behave **OSM (Education & Service)**	(7) Resistant to behave **Law, Education, Services**	(8) Resistant to behave **Law, Education, Services**

Motivated audiences (Cells 1-4)

To explain how the model applies to online social marketing applications, consider a campaign that encourages citizens to undertake vigorous physical activity for at least 20

minutes a day, three times a week. In Cell 1, the group is *prone to behave* when they are motivated, have the ability, and an opportunity to act out the campaign's recommendations. For these people, all that is required is *education.* Thus, in an appropriate online social marketing intervention, all that is required is a simple one-to-many outreach campaign.

In Cell 2, the target group is *unable to behave*. They are motivated and have the ability to act, but not the opportunity. In this case, an online *service* would provide the missing opportunity or help audiences find an opportunity. For example, an online intervention could offer a service where people might type their postal code into a website and then be shown a list of exercise facilities in their community.

In Cell 3, the target is *unable to behave.* They are motivated, have an opportunity to behave, but lack the ability/efficacy. In this case, the system could offer online *education,* such as e-training or confidence building exercises. For example, an online intervention could aid people who lack ability by offering alternative opportunities and then encouraging them to seek exercise appropriate to their skill level and interests. It could offer a matching service, where people discuss their likes, dislikes and skills, and then the system could offer them a range of tailored options.

In Cell 4, the person is motivated but is *unable to behave* as they lack both the opportunity and the ability. In this case, a viable solution could combine features from the two prior *educational* and *service* components.

Unmotivated audiences (Cells 5-8)

The majority of social marketing literature focuses on motivated audiences. Likewise, the majority of online interventions evaluated in the meta-analysis appear to have engaged at least somewhat motivated individuals. Thus, the findings are unlikely to generalize to unmotivated audiences. Cells 5-8 demonstrate interventions designed to motivate unmotivated persons. Rothschild's (1999) solution was to introduce legislation alongside social marketing. Examples include launching social marketing campaigns alongside the outlawing of smoking in public spaces, or imposing fines on individuals who do not sort their garbage.

For unmotivated audiences, social marketing may be applied in conjunction with legal measures. However, in some cases the approaches employed are likely to start breaking from traditional social marketing. For example, Andreasen (2002) argued that social marketing could be used on politicians, to influence policy makers, to change policy, to influence citizen's behaviours (such as anti-smoking legislation). Additionally, this approach would quickly leave the domain of social marketing and enter that of political advocacy. In another case, it appeared that none of the online interventions in the meta-analysis focused on unmotivated audiences in the pre-contemplation stage. Although it is possible to implement interventions designed to move people from pre-contemplation to contemplation stages, this may be expensive and start to enter the domain of therapy. Social marketing campaigns are often designed for target audiences who are easily moved to adopt the behaviour. They tend to ignore difficult groups, such as unmotivated people in the pre-contemplation stage (such as alcoholics in denial), who may remain there for years. Clearly, the application of social marketing reaches its limits when discussing mandatory behaviours or unmotivated individuals. Likewise, online social marketing is subject to the same limitations.

10.3.3. Elaboration Likelihood Model

Although this thesis draws from many disciplines, there is one model that cuts across many of the major themes and findings: the elaboration likelihood model (Petty & Cacioppo, 1986). The model describes how attitudes can be formed and changed. The elaboration continuum ranges from low to high. When an audience receives a message, *low elaboration* (*peripheral route processing*) describes when people do not pay direct attention to a message, or lack the expertise required to understand it fully. In this case, people are more likely to evaluate a proposition without actually considering the merits of the proposal, relying instead on heuristics or rules of thumb to determine whether they accept a proposition. *High elaboration* (*central route processing*) describes when people pay attention to a message and possesses the expertise to comprehend it. In this case, a person is more likely to accept or reject an argument because of its substantive merits.

Andreasen (1995) argued that that *low-involvement decisions* (that people do not spend much time considering) are likely to be influenced by peripheral route processing. Conversely, *high-involvement decisions* (that people spend considerable time contemplating) are likely to be influenced by central route processing. As the types of

behaviours targeted by social marketers are high-involvement, this means that activities that can increase central route processing are likely to aid social marketing communications.

The following paragraphs discuss how the elaboration likelihood model may underpin many issues addressed in this thesis. Specifically, (1) source credibility may be processed peripherally; (2) trust can be processed centrally or peripherally depending on the level of risk; (3) tailoring increases central route processing; and (4) the CBICM contains influence components that include both central and peripheral route processing.

First, the website credibility study demonstrated an association between website credibility, active trust, and behavioural impacts. Researchers have discussed the impact of credibility on perception, in terms consistent with the elaboration likelihood model. The impact of source credibility appears to be associated with peripheral route processing. For instance, technology credibility assessments are perceived differently according to peoples' interest in, and familiarity with, a particular subject. People with low interests or familiarity are believed to perceive credibility as a binary value: either credible or not. While people with high interests or familiarity are better able to appreciate subtle differences, and perceive credibility along a continuum from low to high (Fogg & Tseng, 1999). It is possible that the behavioural impact associated with website source credibility reflects the impact of perceived credibility resulting from people who have little interest or familiarity with the issues, and who believe the campaigns to be trustable because of superficial surface evaluations. From this theoretical perspective, it is unlikely that website credibility would influence people who are highly interested and familiar with a given topic.

Second, trusting behaviours imply a certain level of risk. Thus, it is possible that risk levels may influence whether central or peripheral route processing is used. Higher-risk transactions may require more trust than lower-risk transactions. For instance, one researcher found that across different website categories, users required different levels of trust in proportion to different types of risks (Bart, et al., 2005). It is possible that as the risks increase, users start to perceive online campaign proposals as high-involvement decisions that require central route processing. Conversely, as risks decrease, campaign propositions are treated as low-involvement decisions where peripheral route processing is more likely.

Third, the vast majority of interventions in the meta-analysis used tailoring (83%), while many also used personalization (40%). Although intervention psychology and dose were offered as explanations for intervention efficacy, research shows that tailoring can influence behaviour. The elaboration likelihood model has been offered as the primary mechanism to explain the psychological contribution of tailoring. Kreuter et al. (2000) have argued that tailoring increases central route processing. Studies show that tailored information is more attention grabbing, readable, memorable, likely to be saved, discussed, perceived as interesting, considered relevant, and felt to have been written especially for the reader. Additionally, tailoring does not just offer personally relevant information, but also eliminates unnecessary information (Kreuter, et al., 2000).

Table 10-3: CBICM and the Elaboration Likelihood Model

Central Route Processing	Peripheral Route Processing
Intervention message	Source
Audience encoding	Source encoding
Feedback message	Media channel

Fourth, the CBICM can be broken down into clusters that are more relevant to central or peripheral route processing. Table 10-3 groups six of the CBICM clusters into the two processing routes. As factors that can increase elaboration, the central route processing category includes the intervention message, audience encoding, and the feedback message. As factors associated with low elaboration decision making, the peripheral route category includes the source, source encoding, and the media channel. The audience interpreter has been omitted from this model, as an individual's particular background and the particular issue will determine whether they employ central or peripheral route processing.

10.3.4. Mass-Interpersonal Campaigns

The psychologist Prochaska once remarked that therapy, which is normally carried out between a therapist and patient, could be scaled to the population level, through stage-based mass communication campaigns (Prochaska, et al., 1995). Reformulating this vision in the digital age, in the near future social marketing campaigns could routinely offer citizens levels of individualization that were previously only available through personal support.

Before Prochaska's vision can be realized, however, two questions need to be asked and answered. The first is "Where *does* online social marketing fit into the continuum of

individualization?" In answering this, targeting is a basic principle of social marketing, which means interventions are tailored on population level variables. Although some campaigns are conveyed through people, such as doctors or intervention staff personally engaging with target audiences, the level of individualization is generally at the group level.

The second question is, "Where *can* social marketing fit into the continuum of individualization?" In answer to this, for social marketing practice to advance in the digital age, it needs to design online interventions that jump from the one-way mass-media category to the two-way mass-interpersonal category. This would be similar to the evolution from social advertising to social marketing, or in other words, a shift from one-to-many to one-with-many. As social marketing evolved from social advertising, individualized mass-interpersonal social marketing can evolve from contemporary social marketing. In other words, mass-media campaigns can bridge the mass/interpersonal gap, and offer mass-interpersonal engagement. One way to achieve this vision is by designing social marketing campaigns that target sub-groups as the first step towards relevance, but then apply tailoring and personalization to achieve levels of individualization far beyond the capacity of current interventions.

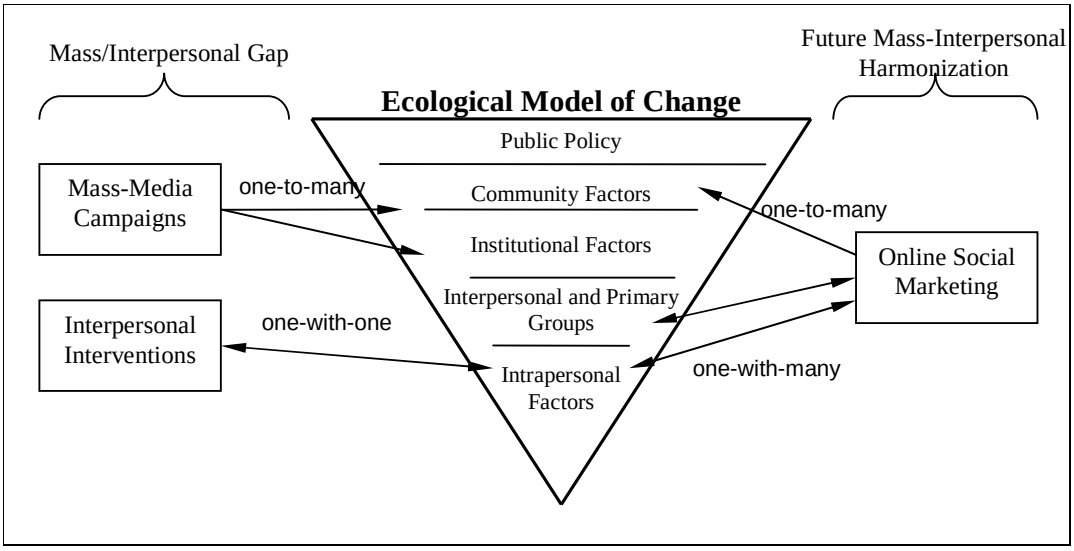


Figure 10-2: Vision of Mass-Interpersonal Social Marketing Campaigns

This vision is expressed in Figure 10-2. According to this, the future of social marketing could be to integrate its current mass-media approach with the benefits of interpersonal interaction. Building on the ecological model (McLeroy, et al., 1988), the vision of mass-interpersonal campaigns demonstrates how future interventions could conduct

one-way targeting to communities, then offer two-way personalized interventions that reach people at the sub-group and individual level. A similar vision was expressed by Glanz, Rimer, and Sharyn (2005) who argued that "Public health communications should represent an ecological perspective and foster multilevel strategies, such as tailored messages at the individual level, targeted messages at the group level, social marketing at the community level, media advocacy at the policy level, and mass media campaigns at the population level."

10.3.5. Practitioner Implications

Engineering Website Credibility

Given the relationships between website credibility, active trust, and behaviour, it is possible to improve an intervention's efficacy by designing more credible and trustable campaigns. Expressed from an exchange theory perspective, mistrust can undermine a campaign's potential impact; however, website credibility can be leveraged to increase trust and counter the potentially negative impacts of online risks and competition.

The following are different proposals on factoring website credibility into the social marketing planning process. First, as website users may conceptualize campaign websites as the credible source, campaigns should model interactivity and communications on human-like relationships. This means basing interventions on the types of interaction offered by a motivating and charismatic coach, doctor, or peer. Second, visual appeal is an important part of credibility. When designing interventions, materials should visually express the campaign's expertise and trustworthiness. Third, specific credibility design factors should be addressed during the formative research phase by consulting existing literature on the subject and obtaining feedback from target audiences during pre-testing. Fourth, during the formative research phase, investigators can use the three dimensions of credibility (trustworthiness, expertise, and visual appeal) as a framework to guide research on online credibility. Target audiences should be the ultimate judges of what constitutes a credible and trustable online campaign. Fifth, to outperform online competition and competing behaviours, credibility can be leveraged to gain a competitive advantage. Conversely, the same factors used to boost credibility could potentially be used to design campaigns that undermine the credibility of competitors.

Designing Interventions with the CBICM

The CBICM was developed as a comprehensive tool to describe online intervention psychology. However, the psychology behind the model is generic and could equally describe many types of interventions, not just online. In its current form, the model's comprehensive nature offers both pros and cons.

The model's pros include its comprehensive nature, offering a theoretically based synthesis of evidence-based influence systems, and influence components that may be used to guide intervention development. Consequently, it may be used as a framework to develop new interventions, by offering a list of key categories from which intervention design features could draw. It could also be used as an analytical tool to audit interventions and gain insight into why they may work, or if they are ineffective, help understand what may be missing.

The cons are a consequence of the model's scope, which may be too comprehensive and disaggregated to guide intervention design. In its current form, the CBICM is more like an index of ingredients, rather than a recipe for how best to combine them. When designing interventions it is advisable to use combinations of influence components that have been proven to work. However, random combinations of influence components could result in unknown effects, with some combinations possibly proving counter-productive. In its current form, the CBICM can be a checklist of key factors in an intervention, but the model would have to be further developed if it were to offer evidence-based guidance on how to combine influence components.

Addressing Motivation Upfront

It was not always clear that the interventions in the meta-analysis explicitly addressed users' motivation. Conversely, the identification of audience's motivation is a defining feature of social marketing intervention research. This is achieved while researching how to frame campaign messages to offer audiences beneficial exchanges. By explicitly addressing motivation, online interventions could potentially increase their prospects of achieving greater adherence and better outcomes. To achieve this, intervention designers need to spend time during pre-testing to uncover the factors that drive audiences' goal-commitments and ability/self-efficacy.

When looking at the integration of online interventions into social marketing campaigns, there is a potential to fuse the formative research (identifying easily

motivated audiences) with intervention design (producing the motivational products). The social marketing planning process offers an effective way to identify and frame interventions around motivational appeals. This presents an opportunity to design campaigns based on motivational appeals targeting particular sub-groups, which can be further aggregated to motivational appeals targeting sub-groups of sub-groups and, ultimately, individuals.

Increasing Efficacy with Brief Interventions

Brief interventions are not unique to the Internet. One researcher argued that, "Single-session therapy is as old as psychotherapy." (Talmon, 1990). The meta-analysis demonstrated that shorter interventions achieved larger impact, while intervention impact faded as the intervention length increased. This suggests that some behaviours can be influenced to some degree by brief interventions. For example, papers have demonstrated that brief interventions can reduce binge drinking, sometimes in as short as 15 minutes for one intervention (Kypri, et al., 2004) and three hours for another (Bersamin, et al., 2007). It is likely that several behaviours can be addressed through brief and highly tailored interventions. In the meta-analysis, short interventions targeting behaviours such as binge drinking, showed large impacts.

Of course, many behaviours are unlikely to benefit from brief interventions. It is unlikely that people will be stop smoking after receiving feedback from a 15-minute online intervention. Even though these behaviours cannot be impacted in one session, brief interventions can serve as the first step towards forging long-term relationships. Some brief interventions can deliver a "wake up call" to people exposed to a variety of risks. For instance, a brief online screener could potentially motivate individuals to take the next step down a long-term process of change, such as showing a person their stroke and heart attack risk, and if it is high, encouraging them to join a healthy living programme.

Although brief interventions may appear simple, highly tailored interventions require considerable formative research, theory, and effort to develop. Additionally, a two to five page online intervention may actually draw on a database containing hundreds of individually crafted messages (Kreuter, et al., 2000). Although the effort to produce this type of intervention is demanding, the results of this meta-analysis suggest that brief online interventions can offer significant advantages when targeting suitable behaviours.

Increasing Doses with Adherence Systems

While brief interventions do not suffer from attrition, process-orientated interventions suffer from high drop out. However, the more people use interventions, the more likely they are to achieve the outcome goals. This has implications for intervention design, where it may be just as important to focus on the micro-motivations for using an intervention, as the macro-motivations for achieving an outcome goal.

Some of the interventions in the meta-analysis did not exert a strong effort to encourage system usage, while others implemented sophisticated adherence systems. To increase intervention efficacy, adherence systems can be built in. For example, an adherence system would detect when a user appeared to be dropping-out of a programme; then automatically try to engage him or her by e-mail, text messages, or other means. If the user still did not reply, the system would follow-up with more e-mails, and eventually a councillor would be asked to telephone the user and offer support or motivation.

10.4. Contributions

Both research projects have contributed to the academic literature. Whereas many papers blur the concepts of credibility and trust, the website credibility study presented a theoretical model that contrasted these variables and examined their interrelationship. It applied concepts from commercial e-marketing sales behaviour to a non-profit contexts and provided arguments to suggest extensions of social exchange theory online. Finally, it provided evidence that website credibility may be perceived in a human-like way.

The meta-analysis was the first to consider online interventions exclusively targeting voluntary behaviours suitable to social marketing applications. It provided an indication, but not conclusive empirical evidence, that the strength of an intervention is a function of its influence components. It also provided insight into the ongoing debate on the role of dose, and expanded this debate by exploring relations with behaviour. Moreover, it offered a theoretical explanation that motivation lay behind these relationships. Finally, the CBICM offers a harmonization of previously separate influence studies into a unified package suitable for online interventions, and there is scope to apply this model to other communication media.

10.5. Limitations

The two research projects are subject to a number of limitations. For the first research project on website credibility study, it was not possible to draw a random selection in the web survey. Consequently, self-selection may have introduced bias. Efforts were made to ensure cross-language comparability among the four surveys; however, the different translations may have introduced some distortions. The active trust construct was measured with a single item, and would have benefited from a multi-item measure. As a correlational approach, structural equation modelling could only indicate relationships between variables, but not cause and effect relationships. As a standard practice, theory was relied upon to justify the direction of causal relationships.

Peattie and Peattie's (2003) criteria demonstrated that websites in the website credibility and trust study did not share much in common with traditional social marketing contexts. See Section 10.3 for the analysis. The study sought to identify generic factors in online influence suitable to non-profit behaviours. However, the generalizability may be limited to participants of citizen mobilization campaigns, rather than the audiences of interventions such as public health or safety campaigns. Nonetheless, there are some compelling reasons why these findings may generalize, at least to some types of social marketing campaigns. Specifically, there is a new breed of social marketing campaign that can be difficult to distinguish from advocacy campaigns. Examples include Verb, Truth, and Own Your-C. Clearly, these are not advocacy campaigns, but they do share features in common with citizen-mobilization advocacy campaigns. Perhaps Truth was the most controversial, as it mobilized Florida youth to rally against tobacco companies, charging them with intentionally misleading the public. Perhaps the website credibility study will be more generalizable to social marketing campaigns that share features in common with advocacy campaigns.

For the second research project, the meta-analysis, it would have been ideal to have at least two coders from which inter-coder reliability calculations could be calculated. Additionally, it would have also been ideal to code influence components from the actual interventions, as opposed to reliance on research papers. In some cases this was possible, but for the majority it was not. Next, while coding influence components, particularly behavioural determinants and change techniques, some papers provided detailed descriptions while others provided vague descriptions. Control conditions were rarely described in enough detail to code relative influence components with full

confidence. Finally, as there are still too few empirical studies of online interventions, it was necessary to combine effect sizes across behavioural domains.

Peattie and Peattie's (2003) criteria demonstrated that websites in the meta-analysis share many features that mark them suitable to social marketing applications. See Section 10.3 for the analysis. Although they were not conceived as part of social marketing campaigns, the careful selection criteria and strong fit with Peattie and Peattie's (2003) criteria provide evidence that the findings from the meta-analysis can generalize to social marketing applications.

10.6. Future Research

The first research project on website credibility only looked at the role of increasing an intervention's credibility, but it did not address another application: undermining the credibility of competitors. For the future, it would be useful to assess how online counter-credibility campaigns could influence behaviours. For instance, Florida's Truth campaign did not preach to teens to stop smoking, but rather it informed them that the tobacco industry had manipulated them, and urged them to make their own decisions rather than be manipulated by greedy corporations. This was a direct attack on the tobacco industry's credibility. One could ask whether the counter-credibility component of this campaign was a factor in reducing smoking. If so, the same approach could be applied to other domains, such as debunking the influence of pro-anorexia advocates, anti-environmental industries, or the fast food industry. Thus, there is room to investigate the potential behavioural impacts of undermining the source credibility of competitors.

During the meta-analysis, the large number of influence components, and few studies, made it difficult to conduct mediation analysis. For instance, within the message cluster there were 40 possible influence components, although given just 30 studies, it was not possible to conduct multiple meta-regression analysis. Moreover, with much of the heterogeneity explained by control conditions, future meta-analysis should be conducted with the same control conditions. Additionally, they should probably focus on just one behavioural domain. Although these considerations could improve the quality of future meta-analyses, at present there are not enough studies to allow focused meta-analysis. The two other meta-analyses in the field faced the same constraints, due

to the limited number of papers. Perhaps in a few years there will be enough studies to undertake meta-analyses with an optimal population of intervention papers.

During the meta-analysis, a decision was made not to code stage transitions based on the transtheoretical approach. However, as the majority of interventions were modelled on Prochaska's transtheoretical model, there is an opportunity to conduct a similar meta-analysis examining stage transitions rather than final behavioural outcomes. Such a study could further support online social marketing research, as the role for mass-campaigns is more appropriate during the early stages, while the role for interventions that start approaching digital therapy are more appropriate for later stages.

Finally, the CBICM proved to be a useful way to frame influence components from a range of fields into a simple model. To make the model work, constructs from behaviour change and persuasion theories were disaggregated. Although disaggregation was a necessary step, it also had disadvantages. The CBICM may be highly comprehensive, but it does not show which of many combinations of influence components are best suited to particular applications. To improve this weakness, future research needs to reflect theory and best practices. The CBICM may be fine enough to offer a common denominator that can explain many influence systems. By clearly identifying these packages (groups of constructs from the major theories), the CBICM would be more useful as a tool to aid intervention design. There is also a need to reorganize some behavioural change techniques. For example, the primary list of behavioural change techniques includes some that better fit into the feedback message cluster, such as providing feedback to audiences. Additionally, should there be a point when enough homogenous interventions can be relative-coded, then it could be possible to validate packages through statistical means.

10.7. Summary

The first research question asked, "Can online social marketing campaigns influence target audiences' behaviour?" In answer to this, prior studies provide some evidence that they can. However, the meta-analysis provided additional, but stronger evidence due to its selection of studies that targeted behaviours similar to those targeted by social marketers.

The second research question asked, “What design factors are critical to online intervention success?” In answer to this question, most interventions were goal-orientated, offering skill building and feedback mechanisms to aid goal-attainment. There could be a trend (which was not statistically validated in the meta-analysis) where more psychologically sophisticated interventions can produce stronger results. Time is a critical factor, possibly due to an association with dose. In general, shorter interventions achieved larger impacts (with people receiving full exposure to an intervention), while longer interventions resulted in smaller impacts (possibly due to lower exposure as people lost motivation over time). Motivation was proposed as the key construct underpinning adherence. Participants were more likely to act on the advice of websites perceived to be credible. Additionally, active trust appears to mediate a small, but statistically significant indirect effect of website credibility on behavioural impact. The data showed the three-dimensional human credibility model—comprised of trustworthiness, expertise, and visual appeal—fits the data better.

The findings have implications for social exchange theory, influence component approaches, the CBICM, and intervention exposure considerations. Regarding social marketing implications, the website credibility study found that interventions were less generalizable to social marketing applications, except for the case of activism-like social marketing campaigns. However, the interventions in the meta-analysis were similar to social marketing applications and are thus more generalizable. From a 4Ps perspective, the website credibility study addressed price factors, while the meta-analysis addressed product factors. The interventions from the meta-analysis are primarily suitable to interventions where participants are motivated to some degree, and where an intervention can achieve impacts by providing services to help carry out behaviour, as well as education. The elaboration likelihood model explains much of the research in this thesis: website credibility, trust, tailoring, and the CBICM. Finally, future social marketing could aim to disseminate mass-interpersonal campaigns that engage large populations through numerous individualized, interactive relationships.

For practical applications, intervention planners can engineer trust through manipulating credibility factors; use the CBICM for intervention planning (though the model requires further work); better address motivation in online interventions; deploy brief interventions when appropriate; and use adherence systems to decrease potential dropouts.

11. Conclusions

Human behaviour affects the wellbeing of individuals, societies, and our planet. When social problems share features in common with marketing contexts, social marketing offers an effective way to influence the behaviours of individuals, which can positively impact social and environment health. Social marketing is predicated on the application of commercial marketing principles, alongside other behavioural change techniques. During the social marketing planning process, intervention architects commonly identify particular sub-groups and, with pre-testing, develop targeted communication materials that offer audiences beneficial exchanges.

When this research project began, there were few papers about social marketing over the Internet. Since that time, there has been a marginal increase in the number of papers about social marketing over the Internet, including studies on social marketing with other new media. Some of these papers have encouraged practitioners to adopt online engagement and to rethink how they communicate with their target audiences. Nonetheless, there has been a lack of research on the efficacy of online social marketing interventions and, perhaps because it is difficult to assess intervention impacts, there is also a lack of evidence-based guidelines to aid intervention development. However, literature from other fields—such as e-marketing, evidence-based behavioural medicine, health communications, and persuasive design—may help social marketers better appreciate intervention efficacy and design approaches. Building upon this literature, this thesis has presented two research projects designed to shed light on the impact of online interventions and to assess a few design factors associated with positive behavioural outcomes.

Efficacy of online social marketing

Meta-analyses and systematic reviews have shown that it is possible to influence the offline behaviours of individuals through online interaction. However, the prior meta-analyses that offered the strongest evidence had blended both voluntary and mandatory behavioural goals with psychological therapy, creating a situation where it was not possible to know if their conclusions were generalizable to social marketing applications. However, there was at least one exception: a systematic review that showed interventions suitable to social marketing contexts could work, but this study

did not offer pooled statistical synthesis. These studies provided an indication that online interventions could be incorporated into social marketing campaigns. However, the meta-analysis in this thesis supplements the existing evidence by providing additional and more generalizable evidence that online interventions can influence behaviours, and that they could be integrated into social marketing campaigns.

Factors associated with behavioural influence

Overall, the interventions in the meta-analysis had the capacity to influence behaviours. They were primarily goal-orientated and deployed a number of behaviour change techniques that informed people of the consequences of their behaviour, encouraged them to set goals and plans, and tracked their progress towards their goals. Intervention exposure, also called dose, was demonstrated to be important. People who received more exposure to interventions generally achieved greater behavioural outcomes. This principle appears to be manifest in an intervention's duration and adherence. Intervention duration was associated with behavioural outcomes, with shorter interventions resulting in stronger outcomes. At the same time, study adherence, intervention adherence, and behavioural outcomes appear to be related. It is proposed that motivation may be the key variable explaining adherence correlations, why people stick to some interventions, and why shorter interventions produce larger impacts.

The meta-analysis showed that just one of thirty online interventions specifically addressed source credibility. However, the website credibility study demonstrated that website credibility and trust are important factors in influencing users' behaviours. In particular, there are relationships between website credibility, users' trust, and their behaviour. For theoretical reasons, high credibility websites are unlikely to increase people's behaviours, but rather, lower credibility websites are likely to reduce people's trust, and consequently reduce their likelihood of acting on a website's advice. Thus, website credibility and trust can be leveraged to offset the possible negative impacts resulting from low trust and highly competitive online environments.

Designing online interventions

When describing online interventions, there is no single influence system capable of describing the full range of influence factors. To cope with the diversity of influence literature, the CBICM provides a communication-based framework that can incorporate a broad spectrum of influence systems and techniques. The model is founded on three

theoretical notions, which received some support within the two research projects. It is based on a two-way communication model, though it can also be applied to one-way communication by excluding feedback-based influence components (which can only operate when two-way communication exists). This model fits well with social marketing calls to rethink online communication as an interactive communication media (Lefebvre, 2007; Peattie, 2007). The model proved to be a useful way of describing online interventions. However, more work would be required if the model were to be used to guide intervention development.

Mass-interpersonal campaigns

It is conceivable that the types of online interventions described in the meta-analysis could be easily incorporated into social marketing campaigns. This would enable social marketers to design campaigns that both promote healthy behaviours and provide the services required to facilitate the change process. One of the innovations that social marketing offered over social advertising was the introduction of targeted communication, rather than generic messaging. In the future, it is conceivable that online social marketing campaigns could combine mass outreach with interactive and interpersonal services, to offer mass-interpersonal social marketing campaigns. Such campaigns could begin with broad outreach (one-to-many) to engage target audiences, but then offer them interactive online support (one-with-many), previously only offered by therapists, coaches, or health experts. Mass-interpersonal interventions could offer the field another major step forward. To achieve this vision, social marketers could first target key groups through multi-channel campaigns; then offer tailored online systems for specific sub-groups, and further provide tailored interventions to accommodate individual needs. During this process, different psychological design factors may be relevant and tailored for each level of aggregation: group, sub-group, and individual.

Future applications

At present, many nations are debating the value of unified patient records. In many countries, it is common for citizen's health records to be managed by their doctors, resulting in decentralized patient records where different medical staff treating the same patient may struggle to obtain their patients' full medical history. There are numerous social, political, and ethical concerns surrounding unified patient records. These human concerns are perhaps the most challenging to address, while the technology solutions

are much simpler. Nonetheless, it is reasonable to expect that many nations will move towards e-health solutions, with unified patient records as a key component.

In nations that are planning to harmonize patient health records, there are discussions about providing public interfaces. For example, in Ontario, Canada there are plans to provide citizen portals for disease management, medication management, and scheduling (eHealth Ontario, 2009). As these systems roll out, there will be a new opportunity for nations to offer their citizens lower-cost digital health interventions, which may also create an opportunity to automate social marketing interventions. For instance, there are numerous examples of social marketing campaigns that encourage women to screen for breast cancer. However, with unified patient records, public health officials could draw on an individual's health records to disseminate automated health campaigns that target women at risk, and provide tailored support, particular to their medical background, risk factors, and possibly lifestyle preferences.

There may come a point when social marketing and digital therapy merge. Such a confluence of fields could offer a powerful combination of targeted outreach and tailored support. Perhaps as countries around the world move towards centralized patient health records, the health campaign interventions of this decade could become routine digital-treatments in the next. At such a time, instead of targeting at-risk individuals with expensive and broad campaigns, doctors could prescribe their patients highly tailored digital interventions as routine preventative medicine.

Despite this thesis' optimistic conclusions and vision, many of the world's social problems are very difficult to resolve. The first sentence of Andreasen's (1995) social marketing book stated that "Changing behaviour to improve people's lives is not an easy task." Though the challenges are huge, given an imperfect and highly-wired world, the more we understand online intervention design, the better our chances of marketing a better future.

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13. Appendices

13.1. Social Marketing Bibliographic Analysis Methodology (1971-2008)

To gain perspective on the growth of social marketing literature, a bibliographic analysis was undertaken on the PubMed database. The time series chart is presented in Figure 13-1. This investigation was not intended to be a comprehensive or deep analysis, but rather a quick way to assess the trends over time. Consequently, this approach blended standard content analysis within a level of confidence that was low, but adequate for the purpose of basic insight.

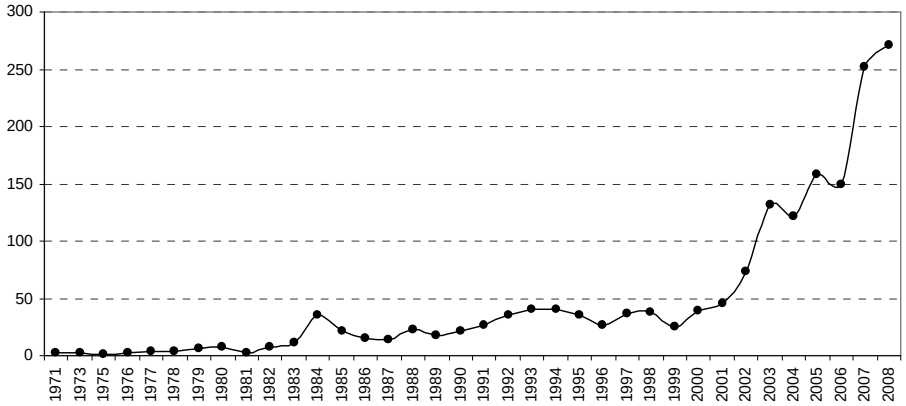


Figure 13-1: Social Marketing Journal Publications (1971-2008)

During the process, a number of key word combinations and two bibliographic abstract databases were compared. The analysis was conducted on 31 January 2009. Table 13-1 presents the three queries, the hits from Web of Knowledge (WOK) and PubMed, and the overall judgement after assessing the results. After evaluating the results, the search terms from Query 2 was selected, though both databases produced roughly the same results, with Web of Knowledge retrieving 1,774 citation and PubMed, 1,760. However, after retrieving the search results from both databases and querying for duplicate records through title matching, the Web of Knowledge produced 1,769 results and PubMed 1,749, which shows a small difference. A review of the results from both databases showed significant overlap in coverage; however, PubMed offered one advantage, in that it included the Social Marketing Quarterly, which was not indexed by Web of Knowledge. Thus, PubMed was selected.

Table 13-1: Search terms and results

Query	Keyword Search Terns	WOK	PubMed	Judgement
1	"Social marketing"	1766	1641	Good results, but appears to be missing some records
2	"Social marketing" OR "social marketer" OR "social marketers" OR "social marketed"	1774 (1769)	1760 (1749)	Good results and highly relevant
3	"social market*"	1994	14	Larger results than the other two queries, it included many irrelevant papers on economics

After retrieving the 1,760 results from PubMed, a process was undertaken to clean the data and evaluate query relevance. One article before 1971 and another from 2009 were removed. This produced a time series of 1,747 articles between the years 1971 and 2008. A random sample was drawn from 5.7% (n=100) of the abstracts to verify if each abstract was about social marketing or irrelevant. Abstracts and titles were evaluated by a loose definition of social marketing, as the application of commercial marketing principles, along with other techniques, to influence voluntary behavioural change. After assessing each abstract and title, they were marked for relevance as follows: *yes*, *perhaps*, *no*, or *cannot judge*. Table 13-2 presents the results, which were assessed within a +/-10% margin of error at a 95% confidence level (Neuendorf, 2005).

Table 13-2: Results of random sample assessment

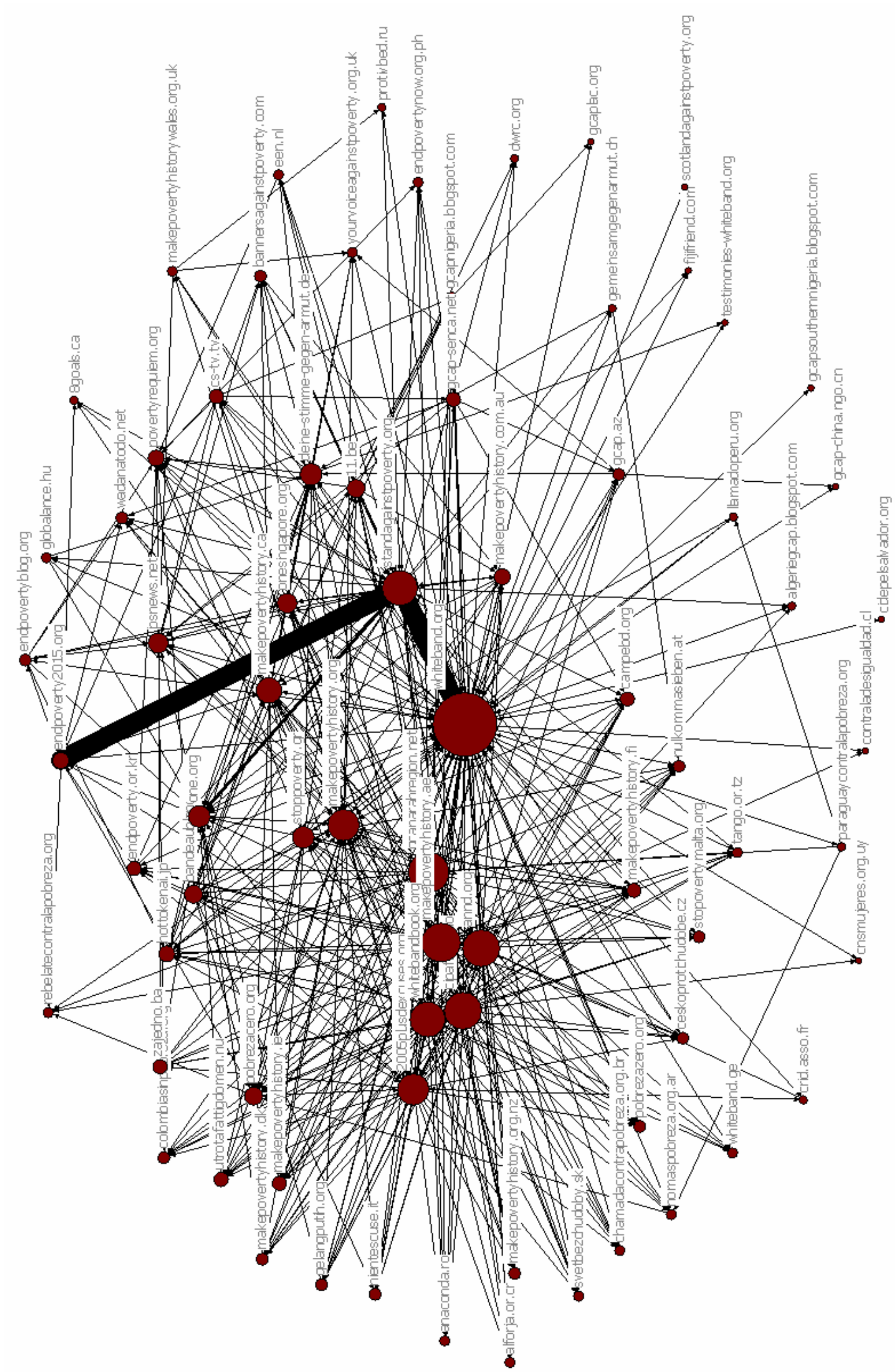
Category	Count	Percent
Yes	78	78%
Perhaps	11	11%
No	5	5%
Cannot judge	6	6%
Grand Total	***100***	***100%***
Grouped Categories	**Count**	**Percent**
Yes and perhaps	89	89%
No and cannot judge	11	11%
Grand Total	***100***	***100%***

Limitations and generalizability

Past research has shown that many interventions qualify as social marketing, despite the fact that they do not use the term “social marketing” (McDermott, et al., 2005). This quick assessment did not retrieve full text to make a definitive assessment; rather, it aimed to paint rough picture, rather than conduct an in-depth assessment. Consequently, these results are indicative at best.

13.2. Website Credibility and Trust Study

13.2.1. Campaign Online Network



13.2.2. Website Audit Code Sheet

Group	Details
Role and site type	• URL • Languages • Scope (global, regional, national) • Width (horizontal, vertical)
Branding/affiliation	• Campaign logo • White band symbol • White band link • MPH branding • MDG branding • Weak campaign link
Communications features	• Newsletter • Discussion forum
Ranking and relationships	• In-links (Yahoo) • Links between sites (Yahoo) • Co-Links (Yahoo) • PageRank (Google)

13.2.3. Research Partnership

Memorandum of Understanding between the GCAP E-communications Group and the University of Wolverhampton Statistical Cybermetrics Research Group

This paper outlines the key points that will form a partnership between the GCAP e-communications group and the University of Wolverhampton. Simply put, the researcher, Brian Cugelman, will play a dual role as member of the GCAP e-communications group while also undertaking a case study of the 2007 campaign. In doing so, he will provide expert online advocacy advice while conducting an extensive research project; this will provide the e-communications group access to high quality information that will strengthen the campaign, while information collected during the study will be used for research about non-profit communications.

Mutual support

- Based on a collaborative effort, the researcher will support GCAP's online campaign by providing advice, analysis, share almost 10 years of professional Internet campaigning experience and provide e-campaigning education when the occasion arises.
- Through this arrangement, the GCAP campaign will be granted indirect access to leading Internet researchers and marketing academics. At the same time, any published works about the GCAP campaign may be subject to academic scrutiny which would increase the credibility of this research.
- The researcher will conduct a number of research projects and implement a number of website monitoring activities. Findings will be made available to the e-communications at regular intervals during the 2007 campaign.
- To ensure that this arrangement supports the GCAP campaign, a needs assessment will be distributed to all members of the e-communications group and participating coalitions. Though it is impossible to address every single request, the needs of the majority will be met.

Ethical considerations for the main stakeholder groups

- **Survey participants**: Participants in the study have the right to anonymity and any confidential information they share will be protected. E-mail addresses collected during the study will be hand over to appropriate bodies as agreed to in the survey (such as agreeing to join an e-mail list or asking to be notified about the survey findings).
- **Website coordinators**: If desired, each website coordinator or coalition, will be provided a full copy of all data related to their website. However, user e-mail addresses or feedback may be withheld in the interests of protecting the rights of individuals whom whish to remain anonymous or not to have their e-mail addresses abused.
- **E-communications group and GCAP coordinators**: The e-communications group will have access to the fully tabulated results, minus any data considered confidential. They will be provided with incremental reports that can be used to benchmark progress and obtain valuable feedback about the online campaign's online progress. Furthermore, at the end of the research project, a report on the online campaign will be presented. The tabulated findings and final report may be used without any restriction; however, to protect months of full time work, certain considerations would apply to the full data set (as specified below)
- **Researcher**: Because this research project will represent several years of work, and as part of a PhD, it is important that the researcher have exclusive rights to publish academic papers based on the data. To protect years of research, and months of hands-on work, the full data set may not be distributed to any third parties nor used for publication purposes. However, as indicated above, the fully tabulated data and reports will be available for any member to use in any way.

Notifications

- On all research products, there will be a clear notice stating that the research will support the GCAP campaign, while at the same time, contributing to scholarly research about non-profit Internet campaigning.

_____

CIVICUS on behalf of the E-Communications Group Date

_____

University of Wolverhampton, Statistical Cybermetrics Research Group Date

13.2.4. Qualitative Study Materials

Interview Instrument

Survey #:AUTO NUMBER **Zone number:_____ Event letter:_____ Time:_____**

Visible campaign symbols: Y N M **Gender:** F M **Refusal:** Y

***Q*1. From what type of communications media did you learn about this event?** (Select all that apply)

Website *(qualifies for 1a, 6)*
E-mail *(qualifies for 1a, 6)*
Word of mouth (by phone or in person) *(qualifies for 7)*
Publicity material (Posters, flyers, promotional item)
Mobile phone (SMS, MMS)
Print media (newspaper, magazine, newsletter)
Broadcast media (TV, radio)
Found the event by accident *(If only this, end interview)*
Other:_____

If website or e-mail were selected:

1a. Can you remember the name of the website or URL?

(If participants can't remember, show campaign websites) □Aided

YourVoiceAgainstPoverty (The world can't wait) MakePovertyHistory WhiteBand/GCAP	Other:_____ Cannot remember

Q2. a. From which sources did you learn about this event? (Source: people or org behind media) (Select all that apply)

b. Of these sources, which ones most motivated you to attend? How did they communicate with you?

Source	a. Learn	b. Motivate *(Note communication media)*
Organization		
Your work/professional contact		
Fiend/acquaintance		
Family member/significant other (not 7)		
I'm not sure		
Other:		

Q3. Are you primarily attending this event because of an □organization, □campaign or □cause?

***If YES:* 3a. Which category best describes your participation at this event?** (Select one)

Coordinator/organizer Staff member Volunteer Member, supporter, constituent	Outside observer, as an individual Outside observer, from an organization Media/journalist Other:_____

3b. Can you name the organization, campaign or cause?_____

3c. How long have you been involved with it? (years and months)_____

***If NO:* 3d. Why did you attend today's event?_____**

Q4. What city did you travel from, to attend this event? □London □Other:_____

Q5. Which of the following activities have you undertaken?

a. Offline	X	b. Online	X
Attended a Women's day event		Subscribed to an e-newsletter	
Intentionally wore white clothing as requested by the campaigners (accidental white clothing does not count)		Joined an e-mail discussion list or online discussion forum	
Brought an alarm clock			
Made a speech bubble before today's event		Made a speech bubble and uploaded it online	
Informed colleagues or friends		Informed colleagues or friends	
Distributed campaign materials		Distributed campaign materials online	
Wrote or published campaign information		Wrote or published campaign information	
Sent a paper petition for the G8		Sent an e-petition to the G8	
Encouraged your MP to take action		E-mailed you MP to take action	
Bought white band		Bought white band	
Made a charitable donation		Made a charitable donation	
Volunteered		Volunteered	
Undertook event coordination activities		Undertook event coordination activities	
Others:		Others:	

If communicated through website or e-mail: Q6
If communicated through word of mouth only (excluding family members): Q7; If neither: end

Q6: website e-mail **Q7:** personal
How was your decision to attend today's event impacted by……..? (Follow up with WHYs)

Q6.a…your ability to easily find information on the website/e-mail?
Q7.a…your ability to easily communicate with the person?

Q6.b…your belief that you could trust information the website/e-mail?
Q7.b…your belief that the you could trust what this person said about the event?

Q6.c…your belief that the campaigners were acting in your best interest?
Q7.c…your belief that this person was acting in your best interest?

Q6.d…the website/e-mail's visual attractiveness?
Q7.d…the persons visual appearance?

Q6.e…how well information about the event related to your personal interests?
Q7.e…how well information about the event related to your personal interests?

***Q8.* In the future, how could interaction with the (website/e-mail/persons) better motivate you to be more active in the campaign?**

Event Sample Zones

Zones	1				2	3	
	Archbishops Park				River Thames	Emmanuel Centre	
11:00	Five or six stands and events (see list) **A**	Activities (see list) **B**	Speech Bubble Placard Making **C**			Make Aid Work – CAFOD **A**	Campaigning Marketplace
11:30				Debt Cancellation Since 2005: the Good, the Bad and the Ugly **D**			
12:00						Debate:Two years on from Gleneagles: Can the G8 deliver? **B**	
12:30							
13:00						Music – Kasai Masai **C**	
13:30							
14:00					RAISE YOUR VOICE AGAINST POVERTY		
14:30					Not sure duration		
15:00							
15:30						Workshops on Aid and Trade **D**	
16:00							
16:30							

13.2.5. Engagement Tools and Needs Assessment

Learning about GCAP's e-advocacy in 2007

Through a formal partnership between GCAP and the University of Wolverhampton, we will undertake a comprehensive study of GCAP's 2007 e-campaign. This research partnership presents an opportunity to better understand our online user's needs, improve our e-campaigning and contribute to research about non-profit outreach. In particular, this investigation will help us:

- Understand our constituents' background, interests, motivations and needs
- See how users perceive us, as organizations through our websites
- Understand the relationships between online engagement and offline action
- Learn how our approaches to e-advocacy may encourage or discourage participation
- Answer questions proposed by e-campaigners across the GCAP network

This investigation is part of a PhD thesis with the University of Wolverhampton's Statistical Cybermetrics Research Group and Business School. It will be conducted by Brian Cugelman who co-authored the GCAP websites evaluation in 2006 and brings 10 years of e-campaigning experience to the project.

A brief needs assessment will be sent out in early September and the full study will be conducted the first weekend after the Stand event on 17 October 2007. Due to budget limitations, this study will only be carried out in Arabic, English, French, Portuguese and Spanish. However, if your campaign is being conducted in another language, we welcome your participation provided you can help us translate the main survey.

To protect rights and confidentiality of all participants, the partnership agreement outlines ethical guidelines for this research project. In summary, each individual will be informed about this project so they may provide informed consent. Each national coalition will be provided a full copy of their data, but not data from any other coalitions. The aggregate findings will be published in a final report.

Participation is voluntary and is open to all GCAP coalitions with a web presence. It will only require a small investment of time and input, estimated to be no longer than 20 minutes. If you have any questions or wish to confirm your participation, please e-mail b.cugelman(at)wlv.ac.uk.

Learn more:

- View GCAP's online network (http://cybermetrics.wlv.ac.uk/GCAP/gcap-online-network.htm)
- Read the partnership agreement (http://cybermetrics.wlv.ac.uk/GCAP/gcap-partnership.htm)
- Learn about the overall research project (http://cybermetrics.wlv.ac.uk/GCAP/index.html)

Webmaster Needs Assessment

To prepare for the final survey, please tell us the top three things you'd like to know about your online constituents and list a website focal point we can contact later on (this person may be you). The website focal point should be heavily involved in your e-outreach efforts, be able to speak on behalf of your colleagues (or collect their viewpoints), and have the authority to post content on your site. This questionnaire is in English; however, the final questionnaire will be available in English, Spanish and French.

This study is being conducted by a partnership between the GCAP E-Communications Task-Force and the University of Wolverhampton. The partnership aims to help GCAP learn more about its e-advocacy while also contributing to research about non-profit e-engagement. All data will be treated confidentially, and only released in summaries. However, the names of GCAP website focal points will be shared with the GCAP E-Communications Task-Force for the purpose of aiding the exchange of expertise across the campaign network. You can learn more about this project on WhiteBand.org.

1. Which GCAP website do you represent?
   [Drop down list of countries]

2. What are the top three things you'd like to know about your users and their perceptions of your e-advocacy?
   1. [Open text field]
   2. [Open text field]
   3. [Open text field]

3. Please name the website focal point (who may be you) so we may contact them for this project?
   Organization name [text field]
   Contact name [text field]
   Role [text field]
   E-mail [text field]
   Phone [text field]
   Other contact details: [text field]

Newsletter announcement on needs assessment outcomes

GCAP E-Activism Study Focus

With input and discussions from about half of GCAP's 60 website operators, we have identified ten common themes for the upcoming website user study. Contributors to the needs assessment were interested in learning more about the people using their websites; which topics users are most interested in; what motivates them to participate in GCAP activities; how much campaigning users have done in the past, are doing at present, and might do in the future; whether their online outreach was working and if their users were spreading the word online (viral marketing); what sort of e-advocacy works best; and whether users consider their websites to be usable with high quality content. In addition, the study will address user's perceptions of website trust and credibility.

We wish to thank everyone who participated in the needs assessment, and stress that the final study is open to all coalition website operators. The online study will start at the end of October and website operators will receive a link to the online questionnaire, available in English, Spanish, French, Portuguese; and depending on technical issues, Arabic. If you would like to participate, but your national language is not represented here, we welcome your participation provided you can assist by translating the survey. Also, if you'd like to participate but didn't complete the needs assessment, just e-mail us to let us know you're interested.

Any questions should be directed to b.cugelman@wlv.ac.uk and you can read about the study here: http://www.whiteband.org/about-gcap/gcap-sites/researching-gcap-s-e-advocacy-in-2007

13.2.6. Website Credibility and Trust Questionnaire

There may be some discrepancies between this version, and the final study that was posted and subject to minor editing.

Navigational Elements

English	Spanish	Portuguese	French
<< Prev (short for previous)	<< Ant.	Ant.	<< Préc.
Next Next >>	Sig. >>	Próx.	Suiv. >>
Exit this survey >>	Salir de esta encuesta >>	Sair deste enquérito	Quitter
Please answer this question.	Por favor, responda esta pregunta	Por favor, responda esta pergunta	Vous devez répondre à cette question.
Please enter a comment in the other field.	Por favor, hace un comentario en el otro espacio	Por favor, comente no outro campo	SVP, ajoutez un commentaire ici
Done	Listo>>	Pronto	Fait
Global	Mundial	Global	International
Regional	Regional	Regional	Regional

Likert-type Scales

English:	Completely Disagree	Completely Agree
Spanish	Discrepo Totalmente	Totalmente De Acuerdo
Portuguese:	Discordo Totalmente	Concordo Totalmente
French:	Pas du Tout d'Accord	Tout à Fait d'Accord
English:	Very Bad	Very Good
Spanish	Muy Malo	Muy Bueno
Portuguese:	Muito Ruim	Muito Bom
French:	Très Mauvaise	Très Bonne
English:	Very Unattractive	Very Attractive
Spanish	Muy Poco Atractivo	Muy Atractivo
Portuguese:	Muito Desatraente	Muito Atraente
French:	Très Rebutant	Très Attirant
English:	No	Yes
Spanish	No	Sí
Portuguese:	Não	Sim
French:	Non	Oui
English:	Untrustworthy	Trustworthy
Spanish	No Fidedigno	Fidedigno
Portuguese:	Não Merece Confiança	Digno de Confiança
French:	Non Digne de Foi	Digne de foi
English:	Unreliable	Reliable
Spanish	Inconfiable	Confiable
Portuguese:	Inconfiável	Confiável
French:	Pas du Tout Fiables	Tout à Fait Fiables
English:	Not Experts	Experts
Spanish	No Expertos	Expertos
Portuguese:	Não-Especializados	Especializados
French:	Non-Experts	Experts
English:	Unknowledgeable	Knowledgeable
Spanish	Desinformado	Informado
Portuguese:	Mal-Informados	Bem-Informados
French:	Mal Informés	Bien Informés
English:	Unconfident	Confident
Spanish	Inseguro	Seguro
Portuguese:	Inconfiante	Confiante
French:	Sans Conviction	Avec Conviction
English:	Completely Mistrust	Completely Trust
Spanish	Desconfianza Total	Confianza Total
Portuguese:	Desconfio Totalmente	Confio Totalmente
French:	Aucune Confiance	Confiance Absolue

Survey Introduction

English	English | Español | Français | Português **GCAP's White Band Campaign Website Study** Thank you for contributing to this study. Your feedback will help us improve the White Band Campaign's online capabilities while supporting research on non-profit communications. The questionnaire will take about ten minutes to complete and you may use any of the languages listed above. This study is being carried out by the Global Call to Action against Poverty Campaign (GCAP) and the University of Wolverhampton. This is an anonymous questionnaire and we are using a secure website connection to protect your data. If you wish to read more about this study, how data will be used or our ethical guidelines, visit WhiteBand.org. When you start this questionnaire, you will first select the one website you're commenting on. Try to keep this website in mind throughout the survey. After completing each page, click on the "Next" button at the bottom of the screen. If you make a mistake, you can go back with the "Prev" button. The progress bar at the top will show 100% when you reach the last question. We appreciate your time.
Spanish	English | Español | Français | Português **Estudio del sitio web de la Campaña GCAP** Muchas gracias por su contribución a este estudio. Sus opiniones e insumos nos ayudarán a mejorar las capacidades on-line de la Campaña de la Banda Blanca, al tiempo de apoyar a la investigación sobre comunicaciones en el sector sin fines de lucro. Le llevará solamente 10 minutos completar el formulario y puede hacerlo en cualquiera de los idiomas enumerados abajo. Este estudio se lleva a cabo mediante un acuerdo del Llamado Global a la Acción contra la Pobreza (GCAP) y la Universidad de Wolverhampton. El cuestionario es anónimo y estamos usando una conexión de sitio web que otorga total seguridad a la privacidad de la información. Si quiere leer más sobre este estudio, el uso de los resultados o las directrices éticas, por favor visite: WhiteBand.org. Al comenzar el cuestionario usted seleccionará qué sitio web está comentando. Trate de recordarlo a lo largo del cuestionario. Después de completar cada página, haga clic en el botón "Sig.". La barra en la parte superior de la pantalla le mostrará 100% cuando usted haya completado todas las respuestas. Apreciamos mucho el tiempo que dedique a responder este cuestionario.
Portuguese	English | Español | Français | Português **Pesquisa para o Sítio da Campanha GCAP Faixa Branca** Obrigado por contribuir a este estudo. Suas reações nos ajudarão a aprimorar as habilidades online da Campanha da Faixa Branca e a apoiar as pesquisas acerca de comunicações sem fins lucrativos. O preenchimento do questionário levará cerca de dez minutos e você poderá fazê-lo em uma das línguas listadas acima. Este estudo é realizado pela Campanha Global de Ação contra a Pobreza (GCAP) e a Universidade de Wolverhampton. Este é um questionário anônimo e a conexão de nosso sítio é protegida para resguardar suas informações. Se você desejar ler mais acerca deste estudo, de como as informações serão ou usadas ou de nossas orientações éticas, visite WhiteBand.org. Ao começar o questionário, indique primeiro qual campanha você deseja comentar. Tente manter o sítio específico dela durante o preenchimento. Após completar cada página, clique no botão "Próx." abaixo na tela. Se você quiser corrigir um erro, retorne por meio do botão "Ant.". O indicador de progresso no topo chegará a 100% quando você estiver na última questão. Obrigado por sua participação.
French	English | Español | Français | Português **Etude sur les sites Internet de la campagne du Bandeau blanc de l'AMCP** Nous vous remercions de participer à cette étude. Vos réponses nous aideront à améliorer la cybercampagne du Bandeau blanc et serviront à la recherche sur la communication dans le secteur sans but lucratif. Il va vous falloir environ dix minutes pour répondre et vous pouvez utiliser l'une des quatre langues ci-dessus. Cette étude est menée par l'Action Mondiale Contre la Pauvreté (AMCP) et par l'Université de Wolverhampton. Le questionnaire est anonyme et nous utilisons une connexion sécurisée pour protéger vos données. Vous trouverez sur le site WhiteBand.org toutes précisions sur la façon dont seront utilisées les données et sur notre éthique. Pour commencer, il vous est demandé de sélectionner le site dont il va être question. Il faudra bien l'avoir en tête tout au long du questionnaire. Après avoir répondu à une question, cliquez sur le bouton "Suiv." en bas de l'écran. En cas d'erreur, utilisez le bouton "Préc."pour revenir en arrière. La barre d'avancement en haut de l'écran affichera 100% lorsque vous en serez à la dernière question. Nous vous sommes très reconnaissants du temps que vous nous accordez.

Questionnaires

English	Spanish	Portuguese	French
1. Please select the one website you are commenting on. *If you are not sure the exact name, look it up here.*	1. Por favor seleccione qué sitio web está comentando. *Si no está seguro del nombre exacto, mire esta lista.*	1. Por favor, indique o sítio que você deseja comentar. *Caso não tenha certeza do nome exato, confira aqui* Veja a lista de países ao final	1. Sélectionnez le site qui fait l'objet du présent questionnaire. *Si vous avez un doute sur son nom exact, cliquez ici pour vérifier.*
2. I primarily use this website to support a worthwhile cause.	2. Uso este sitio principalmente porque quiero apoyar una casa noble e importante.	2. Eu uso este sítio primariamente para apoiar uma causa digna.	2. J'utilise avant tout ce site pour soutenir une cause qui me tient à cœur.
3. This website is easy to use.	3. Es muy fácil usar este sitio web.	3. O sítio é fácil de usar.	3. Ce site est simple d'utilisation.
4. This website's reputation is:	4. La reputación de este sitio web es:	4. A reputação do sítio é:	4. La réputation de ce site est :
5. Because of this website, I am more willing to support this campaign in the future.	5. A causa de este sitio web, ahora estoy más inclinado(a) a apoyar su campaña en el futuro.	5. Por causa do sítio, estou hoje mais disposto/a a apoiar essa campanha no futuro.	5. Ce site renforce mon désir de soutenir cette campagne à l'avenir.
6. This website's visual appearance is:	6. La apariencia visual de este sitio web es:	6. A aparência visual do sítio é:	6. Visuellement, ce site est :
7. I'm primarily involved with the White Band Campaign because of obligations to others.	7. Mi vinculación a la Campaña de la Banda Blanca es principalmente a raíz de obligaciones con otras personas	7. Estou primariamente envolvido/a na Campanha da Faixa Branca por minhas obrigações junto a outras pessoas.	7. C'est avant tout par devoir envers les autres que je participe à la campagne du Bandeau blanc.
8. Information on this website is believable.	8. La información en este sitio web es confiable	8. A informação do sítio é confiável.	8. Les informations données sur ce site sont crédibles.
9. As a result of using this website, have you done any of the following activities? (select yes or no)	9. ¿Por haber usado este sitio, usted ha realizado alguna de las siguientes actividades? (seleccione si o no)	9. Como resultado do uso do sítio, você já realizou alguma das seguintes atividades? (marque sim ou não)	9. Ce site vous a-t-il conduit(e) à effectuer l'une des actions ci-dessous? (Oui ou Non pour chacun des items).

English	Spanish	Portuguese	French
Attended an event	Participó de un evento	Participou de um evento	Assister à un événement
Distributed campaign materials	Distribuyó materiales de la campaña	Distribuiu materiais de campanha	Distribuer des matériels
Gave a charitable donation	Realizó una donación	Faz uma doação por caridade	Faire un don
Got others involved	Involucró a otras personas	Envolveu outras pessoas	Convaincre d'autres personnes de s'engager
Helped coordinate an event	Ayudó a coordinar un evento	Ajudou a coordenar um evento	Participer à l'organisation d'un événement

Informed other people	Informó a otras personas	Informou outras pessoas	Informer d'autres personnes
Joined an online network	Se unió a una red electrónica	Juntou-se a uma rede online	Rejoindre un réseau en ligne
Made promotional materials	Preparó materiales promocionales	Criou materiais promocionais	Fabriquer des matériels promotionnels
Purchased promotional materials	Compró materiales promocionales	Adquiriu materiais promocionais	Acheter des matériels promotionnels
Signed a petition	Firmó una petición	Assinou uma petição	Signer une pétition
Subscribed to a newsletter	Se suscribió a un boletín	Assinou um informativo	S'abonner à une newsletter
Volunteered	Realizó actividades con carácter voluntario	Voluntariou-se	Etre volontaire/bénévole
Wore a white band	Usó la banda blanca	Usou uma faixa branca	Porter un bandeau blanc
Wrote campaign information	Escribió información de campaña	Escreveu informações de campanha	Ecrire sur la campagne
Other	Otros	Outro	Autre

10. This website has inspired me to do more for the White Band Campaign.	10. Este sitio me ha inspirado a hacer más por la Campaña de la Banda Blanca	10. Esse sítio me inspirou a fazer mais pela Campanha da Faixa Branca.	10. Ce site m'a incité(e) à en faire plus pour la campagne du Bandeau blanc.
11. How often do you visit this website? (select one)	11. ¿Cuán frecuentemente visita usted este sitio?	11. Com que freqüência você visita o sítio? (marque a opção)	11. A quelle fréquence allez-vous sur le site ? (une seule réponse)

English	Spanish	Portuguese	French
Every day	Todos los días	Todo dia	Quotidiennement
A few times each week	Algunas veces cada semana	Algumas vezes por semana	Plusieurs fois par semaine
About once a week	Cerca de una vez por semana	Uma vez por mês	Environ une fois par semaine
A few times each month	Algunas veces cada mes	Algumas vezes por mês	Plusieurs fois par mois
About once a month	Cerca de una vez por mes	Cerca de uma vez por mês	Environ une fois par mois
Every few months	Cada pocos meses	Uma vez em poucos meses	Tous les deux ou trois mois
A few times last year	Algunas veces el año pasado	Algumas vezes no último ano	Plusieurs fois l'année dernière
This is the first time	Esta es la primera vez	Esta é a primeira vez	Pour la première fois aujourd'hui
I'm not sure	No estoy seguro/a	Não tenho certeza	Je ne sais pas exactement
I'd rather not say	Mejor no diría	Prefiro não dizer	Je préfère ne pas répondre

12. Information on this website seems:	12. La información en este sitio parece:	12. A informação acerca desse sítio parece:	12. Les informations données sur ce site semblent :
13. Also, information on this website seems:	13. También, la información en este sitio parece:	14. Também, a informação acerca desse sítio parece:	13. Les informations données sur ce site semblent aussi :
14. How would you describe your connection to this campaign? (select one)	14. ¿Cómo describiría su forma de conectarse con la campaña? (seleccione una opción)	15. Como você descreveria sua relação com essa campanha (marque uma)	14. De quelle façon êtes-vous lié(e) à cette campagne ? (une seule réponse)

English	Spanish	Portuguese	French
Campaign staff	Funcionario/a de campaña	Equipe da campanha	En tant que permanent(e)
Campaign supporter/participant	Participante de campaña / activista	Apoiador/participante da campanha	En tant que militant(e)/participant(e)
Campaign volunteer	Voluntario/a de campaña	Voluntário/a da campanha	En tant que volontaire
GCAP coalition organization	Organización de coalición GCAP	Organização de coalizão da GCAP	En tant qu'organisation de la coalition AMCP
Outside observer (as an individual)	Observador(a) externo(a) (como persona)	Observador/a externo/a (individual)	En tant qu'observateur extérieur (à titre individuel)
Outside observer (with an organization)	Observador(a) externo(a) (en una organización)	Observador/a externo/a (institucional)	En tant qu'observateur extérieur (au sein de mon organisation)
Outside observer (as a journalist)	Observador(a) externo(a) (periodista)	Observador/a externo/a (jornalista)	En tant qu'observateur extérieur (comme journaliste)
I'd rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

15. Content on this website reflects authors who are:	16. El contenido de este sitio web revela que sus autores son:	15. O conteúdo nesse sítio reflete autores que são:	Le contenu de ce site montre que ses auteurs sont :
16. Also, content on this website reflects authors who are:	16. El contenido del sitio web también revela autores que son:	16. Também, o conteúdo nesse sítio reflete autores que são:	Le contenu de ce site montre aussi que ses auteurs sont :
17. Which of the following issues are you most interested in? (select all that apply)	17. ¿Cuál de los siguientes temas le interesa más? Seleccione tantas opciones como desee.	17. Quais das seguintes questões lhe interessam mais? (marque todas que desejar)	Quels sont ceux des sujets ci-dessous qui vous intéressent le plus ? (plusieurs réponses possibles)

English	Spanish	Portuguese	French
Aid & development financing	Ayuda y financiamiento al desarrollo	Ajuda e financiamento ao desenvolvimento	L'aide et le financement du développement
Climate change	Cambio climático	Mudança climática	Le changement climatique
Debt cancellation	Cancelación de la deuda	Cancelamento de dívidas	L'annulation de la dette
Gender equality	Equidad de género	Igualdade de gênero	L'égalité hommes-femmes
Human rights	Derechos Humanos	Direitos humanos	Les droits humains
Millennium Development Goals	Objetivos de Desarrollo del Milenio	Objetivos de Desenvolvimento do Milênio	Les Objectifs du Millénaire pour le développement
Poverty	Pobreza	Pobreza	La pauvreté
Public accountability & governance	Rendición pública de cuentas y gobernanza	Prestação pública de contas e governança	La responsabilité publique et la gouvernance

Trade justice	Comercio justo	Justiça comercial	La justice commerciale

18. If I were to act on the advice of this website, I would feel:	18. Si yo tuviera que hacer algo siguiendo las recomendaciones de este sitio web, me sentiría:	18. Se eu tivesse que agir a partir dos conselhos deste sítio, eu me sentiria assim:	18. Si je devais agir sur les conseils de ce site, je me sentirais :
19. Approximately, when did you first learn about this website? (select one)	19. Aproximadamente, ¿cuando fue la primera vez que supo de este sitio? Seleccione solamente una opción	19. Aproximadamente, quando foi que você ouviu falar do sítio pela primeira vez? (marque uma)	19. Quand avez-vous découvert ce site ? (une seule réponse)

English	Spanish	Portuguese	French
Just this month	Recién este último mes	Neste mês	Ce moi-ci
In the last few months (From July 2007)	En los últimos meses (a partir de julio de 2007)	Nos últimos meses (após jul. de 2007)	Ces derniers mois (après juillet 2007)
Beginning this year (From Jan 2007)	A principios de este año (a partir de enero de 2007)	No começo deste ano (após jan. de 2007)	Au début de cette année (après janvier 2007)
Around one and a half years ago (From July 2006)	Hace un año y medio (a partir de julio de 2006)	Cerca de um ano e meio atrás (após jul. de 2006)	Il y a environ un an et demi (après juillet 2006)
Around two years ago (From Jan 2006)	Hace dos años (a partir de de enero de 2006)	Cerca de dois anos atrás (após jan. de 2006)	Il y a environ deux ans (après janvier 2006)
Around two and a half years ago (From July 2005)	Hace dos años y medio (a partir de julio de 2005)	Cerca de dois anos e meio atrás (após jul. 2005)	Il y a environ deux ans et demi (après juillet 2005)
Around three years ago (From Jan 2005)	Hace tres años (a partir de enero de 2005)	Cerca de três anos atrás (após jan. de 2005)	Il y a environ trois ans (après janvier 2005)
I'm not sure	No estoy seguro / segura	Não tenho certeza	Je ne sais pas exactement

20. This website looks professionally designed.	20. El diseño de este sitio es profesional	20. A aparência do sítio tem um design profissional.	20. Ce site semble avoir été conçu par des spécialistes.
21. There is too much inconsistency in this website.	21. Hay muchas inconsistencias en este sitio	21. Existem muitas inconsistências nesse sítio.	21. Il y a trop d'incohérences sur ce site.
22. When I visit this website, I am interested in the following types of content. (select all that apply)	22. Cuando visito este sitio, me interesan los siguientes contenidos: (marque tantos como sea necesario)	22. Quando visito o sítio, estou interessado/a nos seguintes tipos de conteúdo. (marque todos que desejar)	22. Les contenus de ce site qui m'intéressent sont les suivants. (plusieurs réponses possibles)

English	Spanish	Portuguese	French
Action alerts	Avisos de acciones	Alertas de ação	Les avis d'action
Audio	Audios	Áudio	Les audios
Background information	Información de contexto	Informações contextualizantes	Les articles de fond
Events	Eventos	Eventos	Les événements
Images	Imágenes	Imagens	Les images
Networking contacts	Contactos en red	Contatos de rede	Les adresses de réseaux
News or press releases	Noticias o comunicados de prensa	Notícias ou comunicados à imprensa	Les actualités ou les communiqués de presse
Official GCAP declarations	Declaraciones oficiales del GCAP	Declarações oficiais da GCAP	Les déclarations officielles de l'AMCP
Official GCAP resources	Recursos oficiales del GCAP	Recursos oficiais da GCAP	Les ressources fournies par l'AMCP
Statistics	Estadísticas	Estatísticas	Les statistiques
Videos	Videos	Vídeos	Les vidéos
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

23. The people and organizations operating this website are reputable.	23. Las organizaciones y personas que operan este sitio son de confianza	23. As pessoas e organizações que operam esse sítio são confiáveis.	23. Ceux qui gèrent ce site et leurs organisations ont une bonne réputation.
24. How did you first learn about this website?	24. ¿Cómo supo de este sitio?	24. Quando você ficou sabendo desse sítio pela primeira vez?	24. De quelle façon avez-vous découvert ce site ?

English	Spanish	Portuguese	French
I found it myself	Lo encontré yo mismo/misma	Encontrei por conta própria	Je l'ai découvert tout(e) seul(e)
I was informed about it	Me contaron	Fui informado/a a respeito dele	On m'en a parlé
I cannot remember	No me recuerdo	Não me lembro	Je ne m'en souviens pas

25. Which people or organizations first informed you about this website? (select one)	25. ¿Qué personas u organizaciones le informaron de este sitio? Seleccione una opción	25. Que pessoas ou organizações lhe informaram pela primeira vez acerca desse sítio? (marque uma)	25. Qui, ou quelle organisation, vous a fait découvrir ce site ? (une seule réponse)

English	Spanish	Portuguese	French
Club or interest group	Club o grupo de interés	Clube ou grupo de interesse	Un club ou une association
Educational institution	Institución educativa	Instituição educacional	Un établissement d'enseignement
Employer or a professional contact	Mi empleador o un contacto profesional	Empregador ou contato profissional	Mon patron ou un(e) collègue de travail
Family members or significant	Integrante de mi familia o mi	Membros da família ou outras pessoas	Un membre de la famille ou un proche

other	pareja	próximas	
Fiends or acquaintances	Amigos, amigas, conocidos	Amigos ou conhecidos	Un(e) ami(e) ou connaissance
Non-profit organization	Organización sin fines de lucro	Organização sem fins lucrativos	Une organisation sans but lucratif
Religious or spiritual institution	Institución religiosa o espiritual	Instituição religiosa ou espiritual	Une institution religieuse ou un groupe de spiritualité
Union	Sindicato	Sindicato	Un syndicat
I'm not sure	No estoy seguro / segura	Não tenho certeza	Je ne sais pas exactement
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

26. At the time, how much did you trust this source?	26. Nesta época, ¿cuánto ha confiado usted en esa fuente?	26. Naquela época, qual era o seu grau de confiança nessa fonte?	26. A ce moment-là, quel était votre degré de confiance en cette source d'information?
27. Can you remember the way you first learned about this website? (select one)	27. ¿Puede usted recordar la forma cómo se enteró de este sitio web?	27. Consegue lembrar a maneira como você ouviu falar do sítio pela primeira vez? (marque uma)	27. Vous souvenez-vous de la façon dont vous avez été informé(e) de l'existence de ce site ? (une seule réponse)

English	Spanish	Portuguese	French
Another website	A través de otro sitio web	Outro sítio	Par un autre site
Broadcast media (TV, radio)	Medios de comunicación (TV, radio)	Meio de divulgação (TV, rádio)	Par la télévision ou la radio
Email	Correo electrónico	E-mail	Par un mail
Internet advertisement	Anuncio en internet	Anúncio pela internet	Par une publicité sur Internet
Internet search engine	Mecanismo de búsqueda en internet	Sítio de busca na internet	Par un moteur de recherche
Mail or post	Correo postal	Correio postal	Par le courrier
Print media (newspaper, magazine)	Medios escritos (periódico, revista)	Meio impresso (jornal, revista)	Par la presse écrite (journal, magasine)
Publicity material (posters, flyers)	Material publicitario (folletos, afiches)	Materiais de divulgação (pôsteres, flyers)	Par un matériel publicitaire (affiche, plaquette)
Word of mouth	Boca a boca (por referencias orales)	Boca a boca	Par le bouche à oreille
I'm not sure	No estoy seguro / segura	Não tenho certeza	Je ne sais pas exactement
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

28. The content in this website is difficult to understand.	28. El contenido de este sitio web es difícil de entender	28. O conteúdo desse sítio é de difícil compreensão.	28. Le contenu de ce site est difficile à comprendre.
29. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?	29. En general ¿diría usted que se puede confiar en la mayoría de las personas o que nunca se puede ser lo suficicientemente	29. Em termos gerais, você diria que a maioria das pessoas merece confiança ou que todo cuidado é pouco ao lidar com as	29. Pensez-vous que, sauf exception on peut faire confiance aux autres, ou plutôt que l'on n'est jamais assez prudent(e) ?

	cuidadoso para tratar con otras personas?	pessoas?	

English	Spanish	Portuguese	French
You Can't Be Too Careful	Siempre hay que estar alerta y nunca se puede confiar	Todo cuidado é pouco	On n'est jamais assez prudent(e)
Most People Can Be Trusted	Se puede confirmar en la mayoría de las personas	A maioria das pessoas merece confiança	Sauf exception, on peut faire confiance aux autres

30. If you support any causes or campaigns beyond the White Band Campaign, what do you do for them? (select all that apply)	30. Si usted apoya causas o campañas además de la de la Banda Blaanca ¿Qué hace por tales causas o campañas? Selecciona todas las que correspondan.	30. Caso você apóie quaisquer causas ou campanhas além da Campanha da Faixa Branca, o que você está a fazer por elas? (marque todos que desejar)	30. Si vous participez à d'autres campagnes ou causes que celle du Bandeau blanc, en quoi consiste cette participation ? (plusieurs réponses possibles)

English	Spanish	Portuguese	French
Attend events	Asisto a eventos	Participo em eventos	J'assiste aux événements
Do online actions	Acciones en línea	Participo de ações on-line	Je participe aux actions en ligne
Give donations	Doy donaciones	Faço doações	Je fais des dons
Promote the campaign or cause	Promuevo la causa o la campaña	Promovo a campanha ou causa	Je fais la promotion de la campagne ou de la cause
Receive information	Recibo información	Recebo informações	Je reçois leurs informations
Volunteer	Soy voluntario / voluntaria	Voluntario-me	Je suis volontaire/bénévole
Work as a staff member	Trabajo como funcionario /a	Trabalho como membro da equipe	Je suis l'un(e) des permanent(e)s
I don't support any other causes or campaigns	No apoyo ninguna causa o campaña	Não apóio nenhuma outra causa ou campanha	Je ne participe à aucune autre campagne ou cause
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

31. Currently, I live in:	32. Actualmente, vivo en:	31. Atualmente, vivo em:	31. En ce moment, j'habite en :
32. My age is:	Mi edad es:	32. Minha idade é:	32. Je suis âgé(e) de :

English	Spanish	Portuguese	French
14 or lower	14 años o menos	14 ou menos	Moins de 15 ans
75 or more	75 años o más	75 ou mais	Plus de 74 ans
I'd rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre

33. I am:	33. Soy:	33. Eu sou:	33. Je suis :

English	Spanish	Portuguese	French
Male	Masculino	Masculino	Un homme
Female	Femenino	Feminino	Une femme
I'd rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre

34. Currently, my occupation is with:	34. Actualmente mi ocupación es:	34. Atualmente, trabalho em:	34. Pour le moment, je suis professionnellement dans :

English	Spanish	Portuguese	French
Donor Agency	Agencia donante	Agência doadora	Un organisme de financement
Education	Educación	Educação	L'éducation
Government	Gobierno	Governo	Le gouvernement
Health Sector	Sector de la salud	Setor de saúde	Le secteur de la santé
Inter-Governmental Agency	Agencia intergubernamental	Agência intergovernamental	Une agence intergouvernementale
Journalism or Media	Periodismo o medio de comunicación	Jornalismo ou mídia	Le journalisme ou les médias
Non-Profit Organization	Organización sin fines de lucro	Organização sem fins lucrativos	Une organisation sans but lucratif
Private Sector	Sector privado	Setor privado	Le secteur privé
Student	Estudiante	Estudante	Je suis étudiant(e)
Unemployed	Desempleado	Desempregado/a	Je suis au chômage
United Nations Agency	Agencia de las Naciones Unidas	Agência da ONU	Une agence des Nations Unies
I'd rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

35. I primarily access the Internet from:	36. Uso y accedo a internet principalmente en:	35. Meu local primário de acesso à internet é:	35. Le plus souvent je me connecte à Internet depuis :

English	Spanish	Portuguese	French
Home	Mi hogar	Casa	Chez moi
Cyber café	Cyber café	Cyber café	Un cybercafé
School	Escuela	Escola	Mon école
Work	Trabajo	Trabalho	Mon lieu de travail

Library	Biblioteca	Biblioteca	Une bibliothèque
Community centre	Centro comunitario	Centro comunitário	Un centre communautaire
I rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre
Other (please specify)	Otro (especifique)	Outro (especifique)	Autre (précisez)

36. My highest level of education is:	36. Mi nivel más alto de educación es:	36. Meu nível mais alto de educação formal é:	36. Mon niveau de formation est :

English	Spanish	Portuguese	French
No formal education	No tengo educación formal	Não tive educação formal	Pas d'études
Primary School	Enseñanza primaria	Ensino primário	Primaire
High School (Secondary Education)	Enseñanza secundaria	Ensino secundário	Secondaire
Technical College	Escuela técnica	Escola técnica	Formation professionnelle
Undergraduate Degree (B.A., B.S. or similar)	Licenciatura en la Universidad	Graduação	Licence
Graduate Degree (M.A., M.S. or similar)	Posgrado (Maestría)	Pós-graduação (MA, MSc ou similar)	Master
Post Graduate Degree (PhD, MPhil or similar)	Posgrado (Doctorado, PhD)	Pós-graduação (PhD, MPhil ou similar)	Doctorat
I'd rather not say	Prefiero no decirlo	Prefiro não dizer	Je préfère ne pas répondre

37. Why do you use this website?	37. ¿Por qué usa este sitio web?	37. Por que você usa esse sítio?	37. Pourquoi utilisez-vous ce site ?
38. If applicable, why are you more likely to act on some email requests than others?	38. Si corresponde, ¿Por qué usted puede a veces actuar o responder a ciertos mensajes de correo electrónico más que a otros?	38. Caso se aplique: por que você tem mais propensão a agir com um pedido com e-mail do que outros?	38. Le cas échéant, pourquoi y a-t-il certaines demandes par mail que vous êtes plus porté(e) à satisfaire que d'autres ?
39. How can we improve our website to help you get more involved?	39. ¿Cómo podemos mejorar nuestro sitio para ayudar a que más gente se involucre?	39. Como poderíamos aprimorar nosso sítio e fazer com que você se envolva mais?	39. Comment améliorer ce site pour vous donner la possibilité de vous impliquer plus ?
Thank you for contributing to this study. Your input will help improve the White Band Campaign's online outreach while contributing to research about non-profit communications.	Muchas gracias por su contribución a este estudio. Sus opiniones e insumos nos ayudarán a mejorar las capacidades en línea de la Campaña de la Banda Blanca, al tiempo de apoyar a la investigación sobre comunicaciones en el sector sin fines de lucro	Obrigado por sua contribuição a este estudo. Sua colaboração nos ajudará a aprimorar a Campanha da Faixa Branca on-line e nosso alcance externo, juntamente com as pesquisas acerca de comunicações sem fins lucrativos.	Merci d'avoir participé à cette étude. Vos réponses vont aider à améliorer la cybercampagne du Bandeau blanc et servir à la recherche sur la communication dans le secteur sans but lucratif.

Website drowp down list

English	Spanish	Portuguese	French
GLOBAL> White Band (www.whiteband.org)	GLOBAL> Banda Blanca (www.whiteband.org)	GLOBAL> Faixa Branca (www.whiteband.org)	INTERNATIONAL > Le Bandeau blanc (www.whiteband.org)
GLOBAL> Banners Against Poverty (www.bannersagainstpoverty.com)	GLOBAL> Estandartes contra la Pobreza (www.bannersagainstpoverty.com)	GLOBAL> Banners contra a Pobreza (www.bannersagainstpoverty.com)	INTERNATIONAL > Banderoles contre la pauvreté (www.bannersagainstpoverty.com)
GLOBAL> End Poverty Blog (www.endpovertyblog.org)	GLOBAL> End Poverty Blog (www.endpovertyblog.org)	GLOBAL> End Poverty Blog (www.endpovertyblog.org)	GLOBAL> End Poverty Blog (www.endpovertyblog.org)
GLOBAL> GCAP MySpace (www.myspace.com/endpoverty)	GLOBAL> GCAP MySpace (www.myspace.com/endpoverty)	GLOBAL> GCAP MySpace (www.myspace.com/endpoverty)	GLOBAL> GCAP MySpace (www.myspace.com/endpoverty)
GLOBAL> GCAP Testimonies (www.testimonies-whiteband.org)	GLOBAL> Testimonios del GCAP (www.testimonies-whiteband.org)	GLOBAL> Testemunhos GCAP (www.testimonies-whiteband.org)	INTERNATIONAL > Témoignages de l'AMCP (www.testimonies-whiteband.org)
GLOBAL> GCAP videos (www.cs-tv.tv/wbd)	GLOBAL> Videos del GCAP (www.cs-tv.tv/wbd)	GLOBAL> GCAP Vídeos (www.cs-tv.tv/wbd)	GLOBAL> Vidéos AMCP (www.cs-tv.tv/wbd)
GLOBAL> IPS (www.ipsnews.net/new_focus/poverty)	GLOBAL> IPS (www.ipsnews.net/new_focus/poverty)	GLOBAL> IPS (www.ipsnews.net/new_focus/poverty)	GLOBAL> IPS (www.ipsnews.net/new_focus/poverty)
GLOBAL> Millennium Campaign (www.endpoverty2015.org)	GLOBAL> Campaña del milenio (www.endpoverty2015.org)	GLOBAL> Campanha do Milênio da ONU (www.endpoverty2015.org)	GLOBAL> Campagne du Millénaire (www.endpoverty2015.org)
GLOBAL> Poverty Requiem (www.povertyrequiem.org)	GLOBAL> Réquiem a la Pobreza (www.povertyrequiem.org)	GLOBAL> Réquiem da Pobreza (www.povertyrequiem.org)	INTERNATIONAL > Requiem de la Pauvreté (www.povertyrequiem.org)
GLOBAL> Stand Against Poverty (www.standagainstpoverty.org)	GLOBAL> Levántate contra la Pobreza (www.standagainstpoverty.org)	GLOBAL> Levanta-te contra a Pobreza (www.standagainstpoverty.org)	INTERNATIONAL > Debout contre la pauvreté (www.standagainstpoverty.org)
GLOBAL> White Band Book (www.whitebandbook.org)	GLOBAL> Libro de la Banda Blanca (www.whitebandbook.org)	GLOBAL> White Band Book (www.whitebandbook.org)	INTERNATIONAL > Le Livre du Bandeau blanc (www.whitebandbook.org)
REGIONAL> Arab region (www.gcaparabregion.net)	REGIONAL> Región árabe (www.gcaparabregion.net)	REGIONAL> Região árabe (www.gcaparabregion.net)	RÉGIONAL> Pays arabes (www.gcaparabregion.net)
REGIONAL> Latin America and Caribbean (www.gcaplac.org)	REGIONAL> América Latina y el Caribe (www.gcaplac.org)	REGIONAL> América Latina e Caribe (www.gcaplac.org)	RÉGIONAL > Amérique latine et Caraïbes (www.gcaplac.org)

REGIONAL> South East North & Central Asia (www.gcap-senca.net)	REGIONAL> Asia del, Sur, Este, Norte, y Central (www.gcap-senca.net)	REGIONAL> Sul, Leste, Norte e Centro da Ásia (www.gcap-senca.net)	RÉGIONAL > Asie Sud Est Nord et Centrale (www.gcap-senca.net)
Algeria (algeriegcap.blogspot.com)	Argelia (algeriegcap.blogspot.com)	Argélia (algeriegcap.blogspot.com)	Algérie (algeriegcap.blogspot.com)
Argentina (www.nomaspobreza.org.ar)	Argentina (www.nomaspobreza.org.ar)	Argentina (www.nomaspobreza.org.ar)	Argentine (www.nomaspobreza.org.ar)
Australia (www.makepovertyhistory.com.au)	Australia (www.makepovertyhistory.com.au)	Austrália (www.makepovertyhistory.com.au)	Australie (www.makepovertyhistory.com.au)
Austria (www.nullkommasieben.at)	Austria (www.nullkommasieben.at)	Áustria (www.nullkommasieben.at)	Autriche (www.nullkommasieben.at)
Azerbaidjan (www.gcap.az)	Azerbaijan (www.gcap.az)	Azerbaijão (www.gcap.az)	Azerbaïdjan (www.gcap.az)
Azerbaijan (groups.yahoo.com/group/azericoalition/)	Azerbaijan (groups.yahoo.com/group/azericoalition/)	Azerbaijão (groups.yahoo.com/group/azericoalition/)	Azerbaïdjan (groups.yahoo.com/group/azericoalition/)
Bangladesh (www.campebd.org)	Bangladesh (www.campebd.org)	Bangladesh (www.campebd.org)	Bangladesh (www.campebd.org)
Belgium (www.11.be)	Bélgica (www.11.be)	Bélgica (www.11.be)	Belgique (www.11.be)
Bosnia Herzegovina (www.zajedno.ba)	Bosnia Herzegovina (www.zajedno.ba)	Bósnia Herzegovina (www.zajedno.ba)	Bosnie Herzégovine (www.zajedno.ba)
Brasil (www.chamadacontrapobreza.org.br)	Brasil (www.chamadacontrapobreza.org.br)	Brasil (www.chamadacontrapobreza.org.br)	Brésil (www.chamadacontrapobreza.org.br)
Canada (www.makepovertyhistory.ca)	Canadá (www.makepovertyhistory.ca)	Canadá (www.makepovertyhistory.ca)	Canada (www.makepovertyhistory.ca)
Canada (www.8goals.ca)	Canadá (www.8goals.ca)	Canadá (www.8goals.ca)	Canada (www.8goals.ca)
Chile (www.contraladesigualdad.cl)	Chile (www.contraladesigualdad.cl)	Chile (www.contraladesigualdad.cl)	Chili (www.contraladesigualdad.cl)
China (www.gcap-china.ngo.cn)	China (www.gcap-china.ngo.cn)	China (www.gcap-china.ngo.cn)	Chine (www.gcap-china.ngo.cn)
Colombia (www.colombiasinpobreza.org)	Colombia (www.colombiasinpobreza.org)	Colômbia (www.colombiasinpobreza.org)	Colombie (www.colombiasinpobreza.org)
Costa Rica (www.alforja.or.cr/centros/cep/odm/)	Costa Rica (www.alforja.or.cr/centros/cep/odm/)	Costa Rica (www.alforja.or.cr/centros/cep/odm/)	Costa Rica (www.alforja.or.cr/centros/cep/odm/)
Czech Republic (www.ceskoprotichudobe.cz)	República Checa (www.ceskoprotichudobe.cz)	República Checa (www.ceskoprotichudobe.cz)	République Tchèque (www.ceskoprotichudobe.cz)
Denmark (www.makepovertyhistory.dk)	Dinamarca (www.makepovertyhistory.dk)	Dinamarca (www.makepovertyhistory.dk)	Danemark (www.makepovertyhistory.dk)
Dominican Republic (www.cipaf.org.do)	República Dominicana (www.cipaf.org.do)	República Dominicana (www.cipaf.org.do)	République Dominicaine (www.cipaf.org.do)

El Salvador (www.cidepelsalvador.org)	El Salvador (www.cidepelsalvador.org)	El Salvador (www.cidepelsalvador.org)	Le Salvador (www.cidepelsalvador.org)
Fiji (www.fijifriend.com)	Fiji (www.fijifriend.com)	Fiji (www.fijifriend.com)	Fiji (www.fijifriend.com)
Finland (www.makepovertyhistory.fi)	Finlandia (www.makepovertyhistory.fi)	Finlândia (www.makepovertyhistory.fi)	Finlande (www.makepovertyhistory.fi)
France (www.2005plusdexcuses.org)	Francia (www.2005plusdexcuses.org)	França (www.2005plusdexcuses.org)	France (www.2005plusdexcuses.org)
France (www.crid.asso.fr)	Francia (www.crid.asso.fr)	França (www.crid.asso.fr)	France (www.crid.asso.fr)
Georgia (www.whiteband.ge)	Georgia (www.whiteband.ge)	Geórgia (www.whiteband.ge)	Géorgie (www.whiteband.ge)
Germany (www.deine-stimme-gegen-armut.de)	Alemania (www.deine-stimme-gegen-armut.de)	Alemanha (www.deine-stimme-gegen-armut.de)	Allemagne (www.deine-stimme-gegen-armut.de)
Greece (www.stoppoverty.gr)	Grecia (www.stoppoverty.gr)	Grécia (www.stoppoverty.gr)	Grèce (www.stoppoverty.gr)
Hungary (www.globalance.hu)	Hungría (www.globalance.hu)	Hungria (www.globalance.hu)	Hongrie (www.globalance.hu)
India (www.wadanatodo.net)	India (www.wadanatodo.net)	Índia (www.wadanatodo.net)	Inde (www.wadanatodo.net)
Indonesia (www.gelangputih.org)	Indonesia (www.gelangputih.org)	Indonésia (www.gelangputih.org)	Indonésie (www.gelangputih.org)
Ireland (www.makepovertyhistory.ie)	Irlanda (www.makepovertyhistory.ie)	Irlanda (www.makepovertyhistory.ie)	Irlande (www.makepovertyhistory.ie)
Italy (www.nientescuse.it)	Italia (www.nientescuse.it)	Itália (www.nientescuse.it)	Italie (www.nientescuse.it)
Japan (www.hottokenai.jp)	Japón (www.hottokenai.jp)	Japão (www.hottokenai.jp)	Japon (www.hottokenai.jp)
Lebanon (www.annd.org)	Líbano (www.annd.org)	Líbano (www.annd.org)	Liban (www.annd.org)
Luxembourg (www.bandeaublanc.lu)	Luxemburgo (www.bandeaublanc.lu)	Luxemburgo (www.bandeaublanc.lu)	Luxembourg (www.bandeaublanc.lu)
Malta (www.stopovertymalta.org)	Malta (www.stopovertymalta.org)	Malta (www.stopovertymalta.org)	Malte (www.stopovertymalta.org)
New Zealand (www.makepovertyhistory.org.nz)	Nueva Zelandia (www.makepovertyhistory.org.nz)	Nova Zelândia (www.makepovertyhistory.org.nz)	Nouvelle Zélande (www.makepovertyhistory.org.nz)
Nigeria (Southern) (gcapsouthernnigeria.blogspot.com)	Nigeria (Sur) (gcapsouthernnigeria.blogspot.com)	Nigéria (Sul) (gcapsouthernnigeria.blogspot.com)	Nigeria (austral) (gcapsouthernnigeria.blogspot.com)
Nigeria (www.gcapnigeria.blogspot.com)	Nigeria (www.gcapnigeria.blogspot.com)	Nigéria (www.gcapnigeria.blogspot.com)	Nigeria (www.gcapnigeria.blogspot.com)
Paraguay (www.paraguaycontralapobreza.org)	Paraguay (www.paraguaycontralapobreza.org)	Paraguai (www.paraguaycontralapobreza.org)	Paraguay (www.paraguaycontralapobreza.org)
Peru (www.llamadoperu.org)	Perú (www.llamadoperu.org)	Peru (www.llamadoperu.org)	Pérou (www.llamadoperu.org)
Philippines (www.endpovertynow.org.ph)	Filipinas (www.endpovertynow.org.ph)	Filipinas (www.endpovertynow.org.ph)	Philippines (www.endpovertynow.org.ph)
Portugal (www.pobrezazero.org)	Portugal (www.pobrezazero.org)	Portugal (www.pobrezazero.org)	Portugal (www.pobrezazero.org)
Romania (www.anaconda.ro)	Rumania (www.anaconda.ro)	Romênia (www.anaconda.ro)	Roumanie (www.anaconda.ro)

Russia (www.protivbed.ru)	Rusia (www.protivbed.ru)	Rússia (www.protivbed.ru)	Russie (www.protivbed.ru)
Scotland (www.scotlandagainstpoverty.org)	Escocia (www.scotlandagainstpoverty.org)	Escócia (www.scotlandagainstpoverty.org)	Écosse (www.scotlandagainstpoverty.org)
Singapore (www.onesingapore.org)	Singapur (www.onesingapore.org)	Singapura (www.onesingapore.org)	Singapour (www.onesingapore.org)
Slovakia (www.svetbezchudoby.sk)	Eslovaquia (www.svetbezchudoby.sk)	Eslováquia (www.svetbezchudoby.sk)	Slovaquie (www.svetbezchudoby.sk)
South & North Korea (www.endpoverty.or.kr)	South & North Korea (www.endpoverty.or.kr)	Coréia do Norte e do Sul (www.endpoverty.or.kr)	Corée du Sud et du Nord (www.endpoverty.or.kr)
Spain (www.pobrezacero.org)	España (www.pobrezacero.org)	Espanha (www.pobrezacero.org)	Espagne (www.pobrezacero.org)
Spain (www.rebelatecontralapobreza.org)	España (www.rebelatecontralapobreza.org)	Espanha (www.rebelatecontralapobreza.org)	Espagne (www.rebelatecontralapobreza.org)
Sweden (www.utrotafattigdomen.nu)	Suecia (www.utrotafattigdomen.nu)	Suécia (www.utrotafattigdomen.nu)	Suède (www.utrotafattigdomen.nu)
Switzerland (www.gemeinsamgegenarmut.ch)	Suiza (www.gemeinsamgegenarmut.ch)	Suíça (www.gemeinsamgegenarmut.ch)	Suisse (www.gemeinsamgegenarmut.ch)
Tanzania (www.tango.or.tz)	Tanzania (www.tango.or.tz)	Tanzânia (www.tango.or.tz)	Tanzanie (www.tango.or.tz)
The Netherlands (www.een.nl)	Países Bajos (www.een.nl)	Países Baixos (www.een.nl)	Pays-Bas (www.een.nl)
Uruguay (www.cnsmujeres.org.uy)	Uruguay (www.cnsmujeres.org.uy)	Uruguai (www.cnsmujeres.org.uy)	Uruguay (www.cnsmujeres.org.uy)
United Arab Emirates (www.makepovertyhistory.ae)	Emiratos Árabes Unidos (www.makepovertyhistory.ae)	Emirados Árabes Unidos (www.makepovertyhistory.ae)	Émirats Arabes Unis (www.makepovertyhistory.ae)
United Kingdom (www.makepovertyhistory.org)	Reino Unido (www.makepovertyhistory.org)	Reino Unido (www.makepovertyhistory.org)	Royaume Uni (www.makepovertyhistory.org)
United States (www.one.org)	Estados Unidos (www.one.org)	Estados Unidos (www.one.org)	Etats-Unis (www.one.org)
Wales (www.makepovertyhistorywales.org.uk)	País de Gales (www.makepovertyhistorywales.org.uk)	País de Gales (www.makepovertyhistorywales.org.uk)	Pays de Galles (www.makepovertyhistorywales.org.uk)

13.3. Intervention Psychology Meta-Analysis

13.3.1. Meta-Analysis Code Sheet

Research Description

Study ID		**Date:**	
Authors			
Title			
Year			
Pub Type	1-Book 2-Book chapter 3-Journal article	4-Conference paper 5-Thesis or doctoral dissertation	6-Technical report 7-Other
Study Type	1-Lab experiment | 2-Field experiment | 3-Cross-sectional | 4-Longnitudinal		
Study Setting	1-Clinical | 2-Real world | 3-Mixed | 4-Unable to determine		
Control	1-Control group | 2-No control group		
Experimental Design	1-Within-subjects | 2-Between-subjects | 3-Mixed | 4-Unable to determine		
Assignment	1-Random | 2-Non-random | 3-Unable to determine		
Intervention Obtained	Yes | No		
E.g. (url/file)			
General Notes			
Successive Projects			

Research Quality Score

	Reporting (11)
Y N	1. Is the hypothesis/aim/objective of the study clearly described?
Y N	2. Are the main outcomes to be measured clearly described in the Introduction or Methods section?
Y N	3. Are the characteristics of the patients included in the study clearly described?
Y N	4. Are the interventions of interest clearly described?
Y Part N	5. Are the distributions of principal confounders in each group of subjects to be compared clearly described?
Y N	6. Are the main findings of the study clearly described?
Y N	7. Does the study provide estimates of the random variability in the data for the main outcomes?
Y N	8. Have all important adverse events that may be a consequence of the intervention been reported?
Y N	9. Have the characteristics of patients lost to follow-up been described?
Y N	10. Have actual probability values been reported(e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001?
	External validity (3)
Y N U	11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited?
Y N U	12. Were those subjects who were prepared to participate representative of the entire population from which they were recruited?
Y N U	13. Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive?
	Internal validity – bias (7)
Y N U	14. Was an attempt made to blind study subjects to the intervention they have received?
Y N U	15. Was an attempt made to blind those measuring the main outcomes of the intervention?
Y N U	16. If any of the results of the study were based on "data dredging", was this made clear? ***(INVERSE)***
Y N U	17. In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients? Or in case-control studies, is the time period between the intervention and outcome the same for cases and controls?
Y N U	18. Were the statistical tests used to assess the main outcomes appropriate?
Y N U	19. Was compliance with the intervention/s reliable?
Y N U	20. Were the main outcome measures used accurate (valid and reliable)?
	Internal validity - confounding (selection bias) (6 or 11)
Y N U	21. Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population?
Y N U	22. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time?
Y N U	23. Were study subjects randomised to intervention groups?
Y N U	24. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable?
Y N U	25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn?
Y N U	26. Were losses of patients to follow-up taken into account?

Samples	A	B
Characteristics		
Mean age		
Men (number)		
Women (number)		
Gender (% men)		
Ethnicity (groups & %)	Aboriginal_____ African_____ Asian_____ Caucasian_____ Latin American_____ Mixed_____ Other_____	Aboriginal_____ African_____ Asian_____ Caucasian_____ Latin American_____ Mixed_____ Other_____
Education (groups & %)	Non-educated_____ Primary_____ Secondary_____ Technical_____ BA_____ MA_____ Doctorate_____	Non-educated_____ Primary_____ Secondary_____ Technical_____ BA_____ MA_____ Doctorate_____
Social context	Individual Individual and supporter Family Group (eg, club, organization) Institution (eg. School, business) Geographic (eg. city, province)	Individual Individual and supporter Family Group Institution Geographic
Country		
Country 2		

Interventions	A	B
Intervention Media	Website Email Website and Email	Website Email Website and Email
Intervention Source	Human-Human | Human-Computer | Mixed	Human-Human | Human-Computer | Mixed
Treatment Duration (Category)	One-time | Short | Med 1 | Med 2 Long 1 | Long 2 | Not specified	One-time | Short | Med 1 | Med 2 Long 1 | Long 2 | Not specified
Treatment Duration (Native Units)		Eg. 4-weeks
Treatment Dur (Days)		1=Single treatment
Treatment Frequency (Native Units)		Eg. treatments/week
Treatment Total		How many treatments?
Treatment Length (min)		
Intervention Theory (Open)		
Personal Interaction (face-to-face, phone, email)	Pre-study | During | Pre and during No interaction | Unable to judge	Pre-study | During | Pre and during No interaction | Unable to judge
Time Encoding Modifiers	Single Interaction	Single Interaction

Outcomes	A	B
ES Measure Type and Time	**Measure** / **Measure Time** ☐ Relative A (Primary) / ☐ Post-Test ☐ Relative B / ☐ Follow-up 1 ☐ Absolute / ☐ Follow-up 2 **DV TYPE** / ☐ Follow-up 3 ☐ Single ☐ Blended / ☐ Follow-up 4	**Measure** / **Measure Time** ☐ Relative A (Primary) / ☐ Post-Test ☐ Relative B / ☐ Follow-up 1 ☐ Absolute / ☐ Follow-up 2 **DV TYPE** / ☐ Follow-up 3 ☐ Single ☐ Blended / ☐ Follow-up 4
Measure type	Post-test | Follow-up Pre-test/Post-test | Pre-test/Follow-up	Post-test | Follow-up Pre-test/Post-test | Pre-test/Follow-up
Measurement Time (Nat Units)		Native Units
Measure Days (Pre-Intervent)		Round to 1 for measures after brief interventions
Measure Days (Post-Interventi)		Round to 1 for measures on the last intervention day, or just after
Measure Contrasts	Between-Subjects | Within-Subjects Mixed	Between-Subjects | Within-Subjects Mixed
Broad BC domain	Health Safety Environmental protection Social development Other	Health Safety Environmental protection Social development Other
Exact BC goal		
BC Polarity	1. Adopt-Vice (+ -) 3. Reject-Vice (- -) 2. Adopt-Virtue (+ +) 4. Reject-Virtue (- +) 5. Blended (+ +) & (- -)	1. Adopt-Vice (+ -) 3. Reject-Vice (- -) 2. Adopt-Virtue (+ +) 4. Reject-Virtue (- +) 5. Blended (+ +) & (- -)
Behavioural Determinism	Addictive | Voluntary/Habitual Uncertain	Addictive | Voluntary/Habitual Uncertain
Control Treatment	Strong treatment (Potentially superior) Treatment as usual (Standard treatment) Straw man (Weak treatment) Placebo (Fake treatment) Wait list (Survey only) Self-control (Gain score only) No treatment (*also mark in outcomes*)	Strong treatment Treatment as usual Straw man Placebo Wait list (Survey only) Self-control (Gain score only) No treatment
Control Media	**Online:** Website, Email, Website & Email **Print:** Minor, Major, Interactive **Human:** Therapist, Trainer **PC:** CD ROM, Video Game, Programme Wait-list (Survey-only) | Others | No control	**Online:** Website, Email, Website & Email **Print:** Minor, Major, Interactive **Human:** Therapist, Trainer **PC:** CD ROM, Video Game, Programme Wait-list (Survey-only) | Others | No control
Raw Diff Favours	Treatment | Control | Neither | Can't Judge	Treatment | Control | Neither | Can't Judge
Data from pg		
Allocated N		
Measured N		
Samp Size (Treat/T2)		
Samp Size (Cont)		
Raw Score (Treat/T2)		
Raw Score (Cont)		

	Multiple Interactions Sequential Requests (Foot-in-the door) Sequential Requests (Door-in-the-face) Not specified	Multiple Interactions Sequential Requests (Foot-in-the door) Sequential Requests (Door-in-the-face) Not specified
Source Modifiers	Credibility (trustworthiness, expertise) Attractiveness (design) Similarity Liking (can increase trustworthiness) Readability Not specified	Credibility Attractiveness Similarity Liking Readability Not specified
Audience Feedback Modifiers	Tailoring Personalization Adaptation/Content matching Demographic Targeting Not specified	Tailoring Personalization Adaptation/Content matching Demographic Targeting Not specified
Stage Matching Modifiers	PC-C | C-P | P-A | A-M | M-T Not stage matched	PC-C | C-P | P-A | A-M | M-T Not stage matched
Behavioural Package		

SD (Treat/T2)		
SD (Cont)		
Pooled SD		
Sig Test Used	T-test | F-test | Chi-square | P-value | CI	T-test | F-test | Chi-square | P-value | CI
Sig Test Score		
ES Type	Stand. Mean Difference (Between-Subjects) Logged-Odds Ratio (& Arcsine trans) Stand. Mean Gain (Within-Subjects) Product Moment (r)	Stand. Mean Difference (Between-Subjects) Logged-Odds Ratio (& Arcsine trans) Stand. Mean Gain (Within-Subjects) Product Moment (r)
ES Extraction Method	(insert code)	
Small Samp (n<20)	Yes | No	Yes | No
ES (d)		
ES (r)		
ES SE		
Inverse Var (w)		

Behavioural Determinants and Techniques (Mark with **A** and **B** for multiple interventions. Mark **Cont** and **Exp** for items used by either intervention)

BC Determinants	(1) Knowledge (10) Emotion (5) Beliefs about consequences (Anticipated outcomes/attitude) (6) Motivation and goals (Intention) (11) Behavioural regulation (Goal process) (7) Memory, attention and decision processes	(2) Skills (Skills) (4) Beliefs about capabilities (Self-efficacy) (8) Environmental context and resources (Environmental constraints) (3) Social/professional role and identity (Self-standards) (9) Social influences (Norms) (12) Nature of the behaviours
BC Techniques	1. Provide information on consequences of behaviour in general 2. Provide information on consequences of behaviour relevant to the individual 3. Provide information about others' approval 4. Provide normative information about others' behaviour 5. Goal setting (behaviour) 6. Goal setting (outcome) 7. Action planning 8. Barrier identification/Problem solving 9. Set graded tasks 10. Prompt review of behavioural goals 11. Prompt review of outcome goals 12. Provide rewards contingent on effort or progress towards behaviour 13. Provide rewards contingent on successful behaviour 14. Shaping 15. Prompting generalisation of a target behaviour 16. Prompt self-monitoring of behaviour 17. Prompt self-monitoring of behavioural outcome 18. Prompting focus on past success 19. Provide feedback on performance 20. Provide information on where and when to perform the behaviour	21. Provide instruction on how to perform the behaviour 22. Model/ Demonstrate the behaviour 23. Teach to use prompts/ cues 24. Environmental restructuring 25. Agree behavioural contract 26. Prompt practice 27. Use of follow up prompts 28. Facilitate social comparison 29. Plan social support/ social change 30. Prompt identification as role model/ position advocate 31. Prompt anticipated regret 32. Fear Arousal 33. Prompt Self talk 34. Prompt use of imagery 35. Relapse prevention/ Coping planning 36. Stress management 37. Emotional control training 38. Motivational interviewing 39. Time management 40. General communication skills training

ES Coding Reference

Absolute and Relative ES

Duration	Experimental	Control	Other groups

Outcomes (DV) selected	Blended	Measure	Notes
	Yes | No	Continuous Dichotomous	
	Yes | No	Continuous Dichotomous	

Baseline exposure groupings	N	Inclusion	Reason
Intention To Treat (ITT)		Yes | No	
Intervention Received		Yes | No	
Full Intervention Exposure		Yes | No	
		Yes | No	

Treatment Duration	Post-measures	Days (week)	Days (month)	Weeks	Months	Native Units
One-time		=<1			0	
Short	**Post-test**	1-28	30	1-4	1	
Med 1	**Follow-up 1**	29-112	120	5-16	4	
Med 2	**Follow-up 2**	113-196	210	17-28	7	
Long 1	**Follow-up 3**	197-280	300	29-40	10	
Long 2	**Follow-up 4**	281-364	390	41-52	13	

ES Types

- **One Variable:** Proportion (Direct) | Proportion (Logit) | Arithmetic Mean
- **Two Variables (Pre-Post measures, within-subject):** Mean Gain (Unstandardized) | *Mean Gain (Standardized)*
- **Two Variables (Group Contrasts, between-subjects):** Mean Difference (Unstandardized) | *Mean Difference (Standardized)* | Proportional Difference | *Logged-Odds Ratio (with Arcsine transformation)*
- **Two Variable Relations (Associations, Correlations):** Product Moment (r)

ES Extraction Method codes

1. Means and Standard Deviation, Post-Treatment Scores
2. Means and t-test, Post-Treatment Scores
3. Mean Gain Scores and Gain Score Standard Deviation
4. Independent t-test, No Means Reported
5. Independent t-test, p-value only
6. Dependent t-test, No Means Reported
7. Proportion or Frequency (Dichotomous) Arcsine
8. Proportion or Frequency (Dichotomous) Logit
9. Proportion or Frequency (Dichotomous) Probit
10. Proportions (Ordinal Polychotomous)
11. Oneway ANOVA with Two Groups (k=2)
12. Oneway ANOVA with Three or More Groups (k>2)
13. OnewayANCOVA Analysis of Covariance
14. Chi-Square (df=1)
15. Chi-Square, p-value only (df=1)
16. Correlation and Mean Difference Effect Size Conversion

13.3.2. Meta-Analysis Code Book

Shorthand for Papers

The following acronyms will be used while coding papers, as a shorthand for key constructs.

Code	Meaning
BCT	Behavioural change technique
BCD	Behavioural change determinant or antecedent
THEORY	Behavioural change theories
ES	Effect size
CONT	Control group information
EXP	Experimental group information
LOST	Study groups lost to follow-up
CONFOUND	Confounders
DEMO	Demographics
TIME	Any time factors
ADHER	For any adherence data
HUMAN	Any human contact with participants

Study Selection Criteria

Category	Criteria
Timeframe	**Inclusion**: years 1999-2008
Age	**Inclusion**: Pre-teens to older persons **Exclusion**: Studies with persons nine years and younger
Behavioural domains	**Inclusion**: Health, safety, environmental behaviours, or community development **Borderline inclusion**: Subjects with ailments for which the behavioural was beneficial, but not critical; occupational groups for which the target behaviour was voluntary **Exclusion**: Compulsory behaviours; critical behavioural linked to chronic illness; and psychological disorders
Behavioural outcome (dependent variable)	**Inclusion**: A clear behavioural outcome **Borderline inclusion**: Interventions that blended change with maintenance objectives, such as interventions encouraging both weight loss and maintenance **Exclusion**: Behavioural maintenance or psychological outcomes
Intervention types	**Inclusion**: web-based or web and e-mail-based **Borderline inclusion**: Interventions stored on a CD ROM, USB stick or Intranet, provided they contained an intervention designed for Internet deployment; technology such as pedometers, provided both intervention and control groups received them, so the difference lay in the web-based intervention, not the additional treatment
Intervention mechanism	**Inclusion**: Primarily automated intervention (human-computer) **Borderline inclusion**: Interventions that were primarily human-computer, but included minor computer-mediated communication; cases where both the experimental and control groups receive similar human contact, so the difference lay with the online intervention; cases where human interaction was secondary, such as technical support, voluntary help lines, or minor councillor engagement **Exclusion**: Primarily computer-mediated communication (human-human)
Control treatments	**Inclusion**: Control group intervention comprising a print; web-based interventions; waitlist or placebos; and therapist **Exclusion**: Studies that contrasted different behavioural outcomes; when the difference between interventions was a non-web based factor, such as contrasting populations or administering a mobile phone to one group; studies where the difference between the two interventions was not clear

Downs and Black's (1998) Research Instrument for Randomized and Non-Randomized Studies

Reporting (11)

1. Is the hypothesis/aim/objective of the study clearly described? *(Yes=1, No=0)*

2. Are the main outcomes to be measured clearly described in the Introduction or Methods section? *(Yes=1, No=0)*
If the main outcomes are first mentioned in the Results section, the question should be answered no.

3. Are the characteristics of the patients included in the study clearly described? *(Yes=1, No=0)*
In cohort studies and trials, inclusion and/or exclusion criteria should be given. In case-control studies, a case-definition and the source for controls should be given.

4. Are the interventions of interest clearly described? *(Yes=1, No=0)*
Treatments and placebo (where relevant) that are to be compared should be clearly described.

5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? *(Yes=2, Partially=1, No=0)*
A list of principal confounders is provided.

6. Are the main findings of the study clearly described? *(Yes=1, No=0)*
Simple outcome data (including denominators and numerators) should be reported for all major findings so that the reader can check the major analyses and conclusions. (This question does not cover statistical tests which are considered below).

7. Does the study provide estimates of the random variability in the data for the main outcomes? *(Yes=1, No=0)*
In non normally distributed data the inter-quartile range of results should be reported. In normally distributed data the standard error, standard deviation or confi- dence intervals should be reported. If the distribution of the data is not described, it must be assumed that the estimates used were appropriate and the question should be answered yes.

8. Have all important adverse events that may be a consequence of the intervention been reported? *(Yes=1, No=0)*
This should be answered yes if the study demonstrates that there was a comprehensive attempt to measure adverse events. (A list of possible adverse events is provided).

9. Have the characteristics of patients lost to follow-up been described? *(Yes=1, No=0)*
This should be answered yes where there were no losses to follow-up or where losses to follow-up were so small that findings would be unaffected by their inclusion. This should be answered no where a study does not report the number of patients lost to follow-up.

10. Have actual probability values been reported(e.g. 0.035 rather than <0.05) for the main outcomes except where the probability value is less than 0.001? *(Yes=1, No=0)*

External validity (3)

All the following criteria attempt to address the representativeness of the findings of the study and whether they may be generalised to the population from which the study subjects were derived.

11. Were the subjects asked to participate in the study representative of the entire population from which they were recruited? *(Yes=1, No=0, Unable to determine=0)*
The study must identify the source population for patients and describe how the patients were selected. Patients would be representative if they comprised the entire source population, an unselected sample of consecutive patients, or a random sample. Random sampling is only feasible where a list of all members of the relevant population exists. Where a study does not report the proportion of the source population from which the patients are derived, the question should be answered as unable to determine.

12. Were those subjects who were prepared to participate representative of the entire population from which they were recruited? *(Yes=1, No=0, Unable to determine=0)*
The proportion of those asked who agreed should be stated. Validation that the sample was representative would include demonstrating that the distribution of the main confounding factors was the same in the study sample and the source population.

13. Were the staff, places, and facilities where the patients were treated, representative of the treatment the majority of patients receive? *(Yes=1, No=0, Unable to determine=0)*

For the question to be answered yes the study should demonstrate that the intervention was representative of that in use in the source population. The question should be answered no if, for example, the intervention was undertaken in a specialist centre unrepresentative of the hospitals most of the source population would attend.

Internal validity – bias (7)

14. Was an attempt made to blind study subjects to the intervention they have received? *(Yes=1, No=0, Unable to determine=0)*

For studies where the patients would have no way of knowing which intervention they received, this should be answered yes.

15. Was an attempt made to blind those measuring the main outcomes of the intervention? *(Yes=1, No=0, Unable to determine=0)*

16. If any of the results of the study were based on "data dredging", was this made clear? (INVERSE) *(Yes=1, No=0, Unable to determine=0)*

Any analyses that had not been planned at the outset of the study should be clearly indicated. If no retrospective unplanned subgroup analyses were reported, then answer yes.

17. In trials and cohort studies, do the analyses adjust for different lengths of follow-up of patients, or in case-control studies, is the time period between the intervention and outcome the same for cases and controls ? *(Yes=1, No=0, Unable to determine=0)*

Where follow-up was the same for all study patients the answer should yes. If different lengths of follow-up were adjusted for by, for example, survival analysis the answer should be yes. Studies where differences in follow-up are ignored should be answered no.

18. Were the statistical tests used to assess the main outcomes appropriate? *(Yes=1, No=0, Unable to determine=0)*

The statistical techniques used must be appropriate to the data. For example nonparametric methods should be used for small sample sizes. Where little statistical analysis has been undertaken but where there is no evidence of bias, the question should be answered yes. If the distribution of the data (normal or not) is not described it must be assumed that the estimates used were appropriate and the question should be answered yes.

19. Was compliance with the intervention/s reliable? *(Yes=1, No=0, Unable to determine=0)*

Where there was non compliance with the allocated treatment or where there was contamination of one group, the question should be answered no. For studies where the effect of any misclassification was likely to bias any association to the null, the question should be answered yes.

20. Were the main outcome measures used accurate (valid and reliable)? *(Yes=1, No=0, Unable to determine=0)*

For studies where the outcome measures are clearly described, the question should be answered yes. For studies which refer to other work or that demonstrates the outcome measures are accurate, the question should be answered as yes.

Internal validity - confounding (selection bias) (6, or 11)

21. Were the patients in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited from the same population? *(Yes=1, No=0, Unable to determine=0)*

For example, patients for all comparison groups should be selected from the same hospital. The question should be answered unable to determine for cohort and casecontrol studies where there is no information concerning the source of patients included in the study.

22. Were study subjects in different intervention groups (trials and cohort studies) or were the cases and controls (case-control studies) recruited over the same period of time? *(Yes=1, No=0, Unable to determine=0)*

For a study which does not specify the time period over which patients were recruited, the question should be answered as unable to determine.

23. Were study subjects randomised to intervention groups? *(Yes=1, No=0, Unable to determine=0)*

Studies which state that subjects were randomised should be answered yes except where method of randomisation would not ensure random allocation. For example alternate allocation would score no because it is predictable.

24. Was the randomised intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? *(Yes=1, No=0, Unable to determine=0)*

All non-randomised studies should be answered no. If assignment was concealed from patients but not from staff, it should be answered no.

25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? *(Yes=1, No=0, Unable to determine=0)*
This question should be answered no for trials if: the main conclusions of the study were based on analyses of treatment rather than intention to treat; the distribution of known confounders in the different treatment groups was not described; or the distribution of known confounders differed between the treatment groups but was not taken into account in the analyses. In nonrandomised studies if the effect of the main confounders was not investigated or confounding was demonstrated but no adjustment was made in the final analyses the question should be answered as no.

26. Were losses of patients to follow-up taken into account? *(Yes=1, No=0, Unable to determine=0)*
If the numbers of patients lost to follow-up are not reported, the question should be answered as unable to determine. If the proportion lost to follow-up was too small to affect the main findings, the question should be answered yes.

Communication-based Influence Components Model Coding

Source Modifiers

Modifiers	Details
Credibility	• Code any reference to Credibility, Trustworthiness and/or Expertise • Can include
Attractiveness	• Code when Design, Visual and/or Graphic design factors are overtly considered in the intervention
Similarity	• Code when any reference to Similarity between target audiences and intervention elements. • Can be relevant when interventions reflect demographic attributes in visuals, stories, and other intervention elements.
Liking	• Code any overt factors to address positive feelings towards the intervention and/or source • Can increase trustworthiness

Audience Feedback

Modifiers	Details
Tailoring	• Based on user input, the intervention (content and interactivity) is individually tailored to meet users' needs. • Each user is likely to experience very different interventions.
Personalization	• Making the interaction personal by including users' name, age, and other personal information. • The intervention will be the same for all users, with only superficial aspects changed, such as the name of the user. • For example "Dear Brian"
Adaptation/content matching	• Adapting the intervention style to user trait, such as gender, ethnicity or other demographic attributes. • The core intervention stays the same, but is expressed in a style suitable to the audience. • For example, the same intervention may be expressed in simple straight-forward language older audiences, and cool lingo for youth audiences.

Audience: List of Behavioural Determinants by Michie et al. (2005)

Construct	Comparable constructs	Relevant questions
(1) Knowledge	• Knowledge • Knowledge about condition/scientific rationale • Schemas+mindsets+illness representations • Procedural knowledge	• Do they know about the guideline? • What do they think the guideline says? • What do they think the evidence is? • Do they know they should be doing x? • Do they know why they should be doing x?
(10) Emotion (Emotion)	• Affect • Stress • Anticipated regret • Fear • Burn-out • Cognitive overload/tiredness • Threat • Positive/negative affect • Anxiety/depression	• Does doing x evoke an emotional response? If so, what? • To what extent do emotional factors facilitate or hinder x? • How does emotion affect x?
(5) Beliefs about consequences (Anticipated outcomes/attitude)	• Outcome expectancies • Anticipated regret • Appraisal/evaluation/review • Consequents • Attitudes • Contingencies	• What do they think will happen if they do x? (prompt re themselves, patients, colleagues and the organisation; positive and negative, short term and long term consequences) • What are the costs of x and what are the costs of the consequences of x?

	• Reinforcement/punishment/consequences • Incentives/rewards • Beliefs • Unrealistic optimism • Salient events/sensitisation/critical incidents • Characteristics of outcome expectancies– physical, social, emotional; • Sanctions/rewards, proximal/distal, valued/not valued, probable/improbable, salient/not salient, perceived risk/threat	• What do they think will happen if they do not do x? (prompts) • Do benefits of doing x outweigh the costs? • How will they feel if they do/don't do x? (prompts) • Does the evidence suggest that doing x is a good thing?
(6) Motivation and goals (Intention)	• Intention; stability of intention/certainty of intention • Goals (autonomous, controlled) • Goal target/setting • Goal priority • Intrinsic motivation • Commitment • Distal and proximal goals • Transtheoretical model and stages of change	• How much do they want to do x? • How much do they feel they need to do x? • Are there other things they want to do or achieve that might interfere with x? • Does the guideline conflict with others? • Are there incentives to do x?
(11) Behavioural regulation	• Goal/target setting • Action planning • Self-monitoring • Goal priority • Generating alternatives • Feedback • Moderators of intention-behaviour gap • Project management • Barriers and facilitators	• What preparatory steps are needed to do x? (prompt re individual and Implementation intention organisational) • Are there procedures or ways of working that encourage x?
(7) Memory, attention and decision processes	• Memory • Attention • Attention control • Decision making	• Is x something they usually do? • Will they think to do x? • How much attention will they have to pay to do x? • Will they remember to do x? How? • Might they decide not to do x? Why? (prompt: competing tasks, time • constraints)
(2) Skills (Skills)	• Skills • Competence/ability/skill assessment • Practice/skills development • Interpersonal skills • Coping strategies	• Do they know how to do x? • How easy or difficult do they find performing x to the required standard in the required context?
(4) Beliefs about capabilities (Self-efficacy)	• Self-efficacy • Control—of behaviour and material and social environment • Perceived competence • Self-confidence/professional confidence • Empowerment • Self-esteem • Perceived behavioural control • Optimism/pessimism	• How difficult or easy is it for them to do x? (prompt re. internal and external • capabilities/constraints) • What problems have they encountered? • What would help them? • How confident are they that they can do x despite the difficulties? • How capable are they of maintaining x? • How well equipped/comfortable do they feel to do x?
(8) Environmental context and resources	• Resources/material resources (availability and management) • Environmental stressors • Person X environment interaction	• To what extent do physical or resource factors facilitate or hinder x? • Are there competing tasks and time constraints?

(Environmental constraints)	• Knowledge of task environment	• Are the necessary resources available to those expected to undertake x?
(3) Social/professional role and identity (Self-standards)	• Identity • Professional identity/boundaries/role • Group/social identity • Social/group norms • Alienation/organisational commitment	• What is the purpose of the guidelines? • What do they think about the credibility of the source? • Do they think guidelines should determine their behaviour? • Is doing x compatible or in conflict with professional standards/identity? (prompts: moral/ethical issues, limits to autonomy) • Would this be true for all professional groups involved?
(9) Social influences (Norms)	• Social support • Social/group norms • Organisational development • Leadership • Team working • Group conformity • Organisational climate/culture • Social pressure • Power/hierarchy • Professional boundaries/roles • Management commitment • Supervision • Inter-group conflict • Champions • Social comparisons • Identity; group/social identity • Organisational commitment/alienation • Feedback • Conflict—competing demands, conflicting roles • Change management • Crew resource management • Negotiation • Social support: personal/professional/organisational, intra/ interpersonal, society/community • Social/group norms: subjective, descriptive, injunctive norms • Learning and modelling	• To what extent do social influences facilitate or hinder x? (prompts: peers, managers, other professional groups, patients, relatives) • Will they observe others doing x (i.e. have role models)?
(12) Nature of the behaviours	• Routine/automatic/habit • Breaking habit • Direct experience/past behaviour • Representation of tasks • Stages of change model	• What is the proposed behaviour (x)? • Who needs to do what differently when, where, how, how often and with whom? • How do they know whether the behaviour has happened? • What do they currently do? • Is this a new behaviour or an existing behaviour that needs to become a habit? • Can the context be used to prompt the new behaviour? (prompts: layout, reminders, equipment) • How long are changes going to take? • Are there systems for maintaining long term change?

Intervention Message: List of Behavioural Change Techniques by Abraham and Michie (2008)

1. Provide information on consequences of behaviour in general
Information about the relationship between the behaviour and its possible or likely consequences **in the general case**, usually based on epidemiological data, and not personalised for the individual (contrast with technique 2).

2. Provide information on consequences of behaviour relevant to the individual
Information about the ***benefits and costs*** of action or inaction **relevant to the individual or tailored to a relevant group based on that individual's** characteristics (i.e. demographics, clinical or psychological information). This can include any outcome and not necessarily outcomes related to health, e.g. feelings.

3. Provide information about others' approval
Involves information about what other people think about the target person's behaviour. It clarifies whether others will like, approve or disapprove of what the person is doing or will do. **NB** Check that any instance does not also involve techniques 1 or 2 or 4.

4. Provide normative information about others' behaviour
Involves providing information about what other people are doing i.e., indicates that a particular behaviour or sequence of behaviours is common or uncommon amongst the population or amongst a specified group – presentation of case studies of a few others is not normative information. **NB** this concerns other people's actions and is distinct from the provision of information about others' approval (technique 3).

5. Goal setting (behaviour)
The person is encouraged to make a behavioural resolution (e.g. take more exercise next week). This is directed towards encouraging people to decide to change or maintain change. **NB** This is distinguished from technique 6 and 7 as it does not involve **planning** exactly how the behaviour will be done and either when or where the behaviour or action sequence will be performed. Where the text only states that goal setting was used without specifying the detail of action planning involved then this would be an example of this technique (not technique 7).

6. Goal setting (outcome)
The person is encouraged to set a general goal that can be achieved by behavioural means (e.g. to reduce blood pressure or lose/maintain weight), as opposed to a goal based on changing behaviour as such. The goal may be an expected consequence of one or more behaviours, but is not a behaviour per se (see also techniques 5 and 7).

7. Action planning
Involves detailed planning of what the person will do including, when, where and how to act.. "How" may describe intensity (e.g., speed); "when" may describe frequency (such as how many times a day/week or duration (e.g., for how long for). The exact content of action plans may or may not be described, in this case code as this technique if it is stated that the three dimensions are attended to in the action plan even if exact details are not present **NB** The terms "goal setting" or "action plan" are not enough to ensure inclusion of this technique, instances of this should be regarded as applications of technique 5 and 6.

Action planning could include identification of sub-goals or preparatory behaviours and/or specific contexts in which the behaviour will be performed. The behaviour in this technique will be directly related to the target behaviour. NB – any techniques applied to preparatory behaviours should also be coded as instances of technique 9 (set graded tasks).

8. Barrier identification/Problem solving
This relates to making an initial plan to change behaviour. The person is prompted to think about potential barriers and identify ways of overcoming them. Barriers may include competing goals in specified situations. This may be described as "problem solving". If it is problem solving in relation to the performance of a behaviour, then it counts as an instance of this technique. Examples of barriers may include behavioural, cognitive, emotional, environmental, and/ or physical barriers. **NB** Closely related to techniques 7 and 9 but involves a focus on specific obstacles to performance. It contrasts with 35 which is about maintaining behaviour that has already been changed.

9. Set graded tasks
Breaking down the target behaviour into smaller easier to achieve tasks and enabling the person to build on small successes to achieve target behaviour. This may include increments towards a target behaviour, or incremental increases from baseline behaviour. **NB** The key difference to technique 7 lies in planning to perform a sequence of preparatory actions, task components or target behaviours which *increase in difficulty over time* - as opposed to planning "**if-then" contingencies** when/where to perform behaviours.

10. Prompt review of behavioural goals
Involves a review or analysis of the extent to which previously set behavioural goals were achieved. In most cases this will follow previous goal setting and an attempt to act on those goals, followed by a revision or readjustment of goals. **NB** Check that any instance does not also involve techniques 5, 8, 9 or 11.

11. Prompt review of outcome goals
Involves a review or analysis of the extent to which previously set goals were achieved. In most cases this will follow previous goal setting and an attempt to act on those goals, followed by a revision of goals. **NB** Check that any instance does not also involve techniques 5, 8, 9 or 10.

12. Provide rewards contingent on effort or progress towards behaviour
Involves praising or rewarding the person **for attempts** at achieving a behavioural goal. This might include efforts made towards achieving the behaviour, or progress made in preparatory steps towards the behaviour, but not merely participation in intervention. This can include self-reward **NB** Not reinforcement for performing the target behaviour itself (technique 13).

13. Provide rewards contingent on successful behaviour
Reinforcing successful performance of the specific target behaviour. This can include praise and encouragement as well as material rewards but the reward/ incentive must be explicitly linked to the achievement of the specific target behaviour i.e. the person receives the reward if they perform the specified behaviour but not if they do not perform the behaviour. This can include self-reward **NB** Check the distinction between this and techniques 7 and 17.

14. Shaping
Contingent rewards are first provided for any approximation to the target behaviour e.g., for any increase in physical activity. Then, later, only a more demanding performance, e.g., brisk walking for 10 minutes on three days a week would be rewarded. Thus, this is graded use of contingent rewards over time.

15. Prompting generalisation of a target behaviour
Once a behaviour is performed in a particular situation, the person is encouraged or helped to try it in another situation. The idea is to ensure that the behaviour is not tied to one situation but becomes a more integrated part of the person's life that can be performed at a variety of different times and in a variety of contexts.

16. Prompt self-monitoring of behaviour
The person is asked to keep a record of specified behaviour/s as a method for changing behaviour. This should be an explicitly stated intervention component. This could e.g., take the form of a diary or completing a questionnaire about their behaviour.

17. Prompt self-monitoring of behavioural outcome
The person is asked to keep a record of specified measures expected to be influenced by the behaviour change, e.g. blood pressure, blood glucose, weight loss, physical fitness. NB It must be reported as part of the intervention, rather than only as an outcome measure.

18. Prompting focus on past success
Involves instructing the person to think about or list previous successes in performing the behaviour (or parts of it) before the intervention. **NB** this is not just encouragement but a clear focus on the person's past behaviour. It is also not feedback because it refers to behaviour preceded the intervention.

19. Provide feedback on performance
This involves providing the participant with data about their own recorded behaviour (e.g., following technique 16) or commenting on a person's behavioural performance (e.g., identifying a discrepancy with between behavioural performance and a set goal – see techniques 5 and 7 – or a discrepancy between one's own performance in relation to others' – note this could also involve technique 28; Audit and feedback involves this technique).

***20. Provide information on <u>where and when</u> to perform the behaviour**
Involves telling the person about when and where they might be able to perform the behaviour this e.g. tips on places and times participants can access local exercise classes. This can be in either verbal or written form. NB. Check whether there are also instances of technique 21.

21. Provide instruction on how to perform the behaviour
Involves ***telling*** the person ***how*** to perform a behaviour or preparatory behaviours, either verbally or in written form. Examples of instructions include; how to use gym equipment (without getting on and showing the participant), instruction on suitable clothing, and tips on how to take action *Showing* a person how to perform a behaviour without

verbal instruction would be an instance of technique 22 only. **NB** Check whether there are also instances of techniques 5, 7, 8, 9, 22.

22. Model/ Demonstrate the behaviour
Involves ***showing*** the person how to correctly perform a behaviour e.g., through physical or visual demonstrations of behavioural performance, in person or remotely**. NB** This is distinct from just providing instruction (technique 21) because in "demonstration" the person is able to *observe* the behaviour being enacted. Techniques 21 and 22 may be used separately or together – check for this.

23. Teach to use prompts/ cues
The person is taught to identify environmental prompts which can be used to **remind** them to perform the behaviour (or to perform an alternative, incompatible behaviour in the case of behaviours to be reduced). Cues could include times of day, particular contexts or elements of contexts which prompt them to perform the target behaviour. Note that this could be used independently or in conjunction with techniques 5 and 7 (see also 24).

24. Environmental restructuring
The person is prompted to alter the environment in ways so that it is more **supportive** of the target behaviour e.g. altering cues or reinforcers. For example they might be asked to destroy all their cigarettes or all their high calorie snacks, or take their running shoes to work**.**

25. Agree behavioural contract
Must involve written agreement on the performance of an explicitly specified behaviour so that there is a written record of the person's resolution witnessed by another.

26. Prompt practice
Prompt the person to rehearse and repeat the behaviour or preparatory behaviours numerous times. Note this will also include parts of the behaviour e.g., refusal skills in relation to quitting smoking. This could be described as "building habits or routines" but is still practice so long as the person is prompted to try the behaviour (or parts of it) during the intervention or practice between intervention sessions, e.g. as "homework".

27. Use of follow up prompts
Intervention components are gradually reduced in intensity, duration and frequency over time, e.g. letters or telephone calls instead of face to face and/or provided at longer time intervals.

28. Facilitate social comparison
Involves explicitly drawing attention to others' performance to elicit comparisons. **NB** the fact the intervention takes place in a group setting, or have been placed in groups on the basis of shared characteristics, does not necessarily mean social comparison is actually taking place. Social support may also be encouraged in such settings and this would then involve technique 29. Group classes may also involve instruction (technique 21) demonstration (technique 22) and practice (technique 26). Check for these additional techniques.

29. Plan social support/ social change
Involves prompting the person to plan how to elicit social support from other people to help him/ her achieve their target behaviour. This will include support during interventions e.g., setting up a "buddy" system or other forms of support and following the intervention including support provided by the individuals delivering the intervention, partner, friends, family.

30. **Prompt identification as role model/ position advocate**
Involves focusing on how the person may be an example to others and affect their behaviour e.g., being a good example to children. Also includes providing opportunities for participants to persuade others of the importance of adopting/ changing the behaviour. For example, giving a talk, running a peer-led session,.

31. Prompt anticipated regret
Involves inducing expectations of future regret about the performance or non-performance of behaviour. This includes focusing on how the person will *feel* in the future and specifically whether they will feel regret or feel sorry that they did or did not take a different course of action.

32. Fear Arousal
Involves presentation of risk and/or mortality information relevant to the behaviour but also negative outcomes (e.g., death or serious illness) with verbal communication of threats (e.g., to health) and/or emotive images designed to evoke a fearful response (e.g, "smoking kills!" or images of the grim reaper).

33. Prompt Self talk

Encourage the person to use talk to themselves (aloud or silently) before and during planned behaviours to encourage and support action.

34. Prompt use of imagery
Teach the person to imagine successfully performing the behaviour or to imagine finding it easy to perform the behaviour, including component or easy versions of the behaviour.

35. Relapse prevention/ Coping planning
This relates to planning how to maintain behaviour that has been changed. The person is prompted to identify in advance situations in which the changed behaviour may not be maintained and develop strategies to avoid or manage those situations. Contrast with techniques 7 and 8 which are about initiating behaviour change.

36. Stress management
This is a specific set of specific techniques (e.g., progressive relaxation) which do not target the behaviour directly but seek to reduce anxiety and stress to facilitate the performance of the behaviour. **NB** Only rate this technique if explicitly referred to by name, not if one identifies specific elements of it, this may happen if you have prior experience with this technique

37. Emotional control training
Techniques designed to reduce negative emotions or control mood or feelings that may interfere with performance of the behaviour, and to increase positive emotions that might help with the performance of the behaviour. NB Check whether there are any instances of technique 8 also, which includes identifying emotional barriers to performance, in contrast to the current technique, which addresses emotions, whether they have been identified as barriers or not.

38. Motivational interviewing
This is a specific set of techniques involving prompting the person to provide self-motivating statements and evaluations of own behaviour to minimise resistance to change (includes motivational counselling). **NB** Normally this technique will be mentioned by name. Only rate this technique if explicitly referred to by name, not if one identifies specific elements of it, this may happen if you have prior experience with this technique

39. Time management
This includes any technique designed to teach a person how to manage their time in order to make time for the behaviour. These techniques are not directed towards performance of target behaviour but rather seek to facilitate it by freeing up times when it could be performed. **NB** Only rate this technique if explicitly referred to by name, not if one identifies specific elements of it, this may happen if you have prior experience with this technique

40. General communication skills training
This includes any technique directed at general communication skills but not directed towards a particular behaviour change. Often this may include role play and group work focusing on listening skills or assertive skills. **NB** Practicing a particular behaviour-specific interpersonal negotiation e.g., refusal skills in relation to cigarettes or alcohol would not be an instance of this technique.

Sample coding

Sample Ethnicity

Ethnic classification	Descent
Aboriginal	Inuit, Métis, Indian, indigenous people
African	African
Asian	Indian, Pakistani, Bangladeshi, Chinese, Filipino, Japanese, Korean
Caucasian	European
Latin American	Hispanic, Mexican, South and Central America
Mixed	Any mixed groups
Unclassified	Any other groups or unlisted

Sample Education

Classification	Examples
Non-educated	No degree, certificate or diploma
Primary	Junior high or earlier
Secondary	Secondary (high) school
Technical	Trade/technical certificate or diploma
BA	University Bachelor's degree
MA	University Master's degree
Doctorate	PhD, Medical Doctor

Report either the highest degree obtained or current study. Groups will include those with a degree and currently studying.

Statistical Extraction and Coding

Adherence Constructs

Construct	Details
Adherence Study %:	• Percent of experimental group users in the study at a given time compared to the baseline • When studies only provide the overall attrition, this is used instead
Adherence Intervention Construct	• Log-ins • Visits • Required reading • Required participation • Minimum exposure measure
Adherence Intervention %:	
Adherence Intervention Avg:	
Adherence Intervention Never Logged %:	

Selecting among Multiple Possible Outcome Measures

- If there are multiple different outcomes, select the most relevant behavioural outcome.
- If there are multiple outcomes that are all equally viable, flip a coin or use some random selection method.
- If multiple outcomes measure the same concept, and are measured by the same scale, blend them.
- Always select specific behavioural measures rather than behavioural outcome. However, when the intervention targets multiple behaviours, take the outcome. For example, in a diet intervention, take reduction of eating (behaviour) before weight (outcome). However, for a complex intervention promoting exercise and diet, take weight as it reflects both behaviours.
- If multiple outcomes include doing good (+, +), as well as reducing bad (-, -), always select the positive doing good (+, +) behaviour.

Baseline Exposure Group

For papers that compare outcomes against three baseline groups (Intention To Treat [ITT], Intervention Received, Full Intervention Exposure), select the middle group, with intervention received.

Baseline exposure group	Description
Intention To Treat (ITT)	Outcome are based on all subjects invited to participate, whether or not they were actually exposed to the intervention
Intervention Received	Outcomes based on groups that had been exposed to an intervention at least once
Full Intervention Exposure	Outcomes only based on individuals that were exposed to the entire intervention

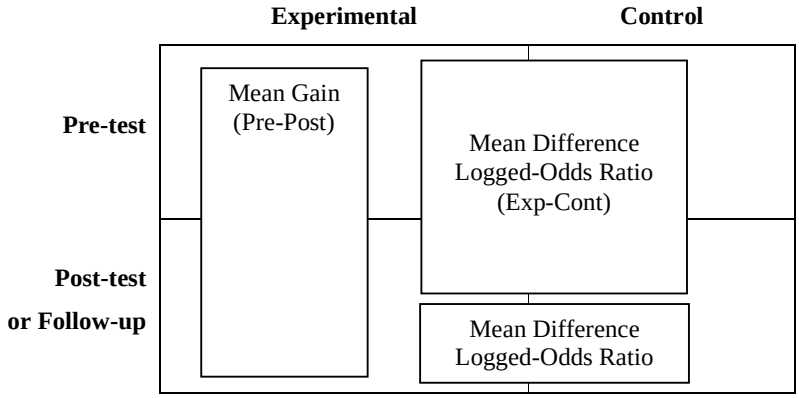
Measurement Times (Post-treatment and Follow-up)

Ignore mid-intervention measures. Only code post-test and follow-up measures. When coding time, code two post-treatment measures, from the start of the intervention and end of the intervention.

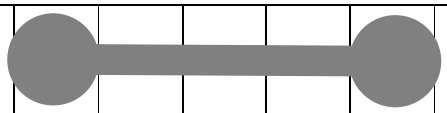
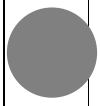
Category	Details
Post Treatment Measure (from Start)	• List the number of days, since the treatment started, that the measure occurred • Code 0 for same day measures. • For example, 0=same day measure, 1=the day after
Post Treatment Measure (from End)	• List the number of days after treatment when the measures happen • For studies that already took place within the study period, leave blank • For studies taking place on the last day of a treatment, code 0 to signify a post-treatment • For example, 0=post-intervention measure on last day of intervention, while 1=first post-intervention measure • *Null* means the measure happened during the study only

Effect Size Selection and Time Coding

- Two Variables (Pre-Post measures, within-subject): Mean Gain (Unstandardized) | Mean Gain (Standardized)
- Two Variables (Group Contrasts, between-subjects): Mean Difference (Unstandardized) | Mean Difference (Standardized) | Proportional Difference | Logged-Odds Ratio (with Arcsine transformation)
- Lipsey & Wilson (2001) caution that the Mean Gain and Mean Difference are statistically similar, but should never be combined because they are conceptually different.



Time Coding for Pre/Post-Intervention Time

Process intervention										
Brief intervention										
Measure Times	Pre	Post				Post			Follow -up	
Pre-Intervention Time (from start)	0	1	2	3	4	5	6	7	8	9
Post-Intervention Time (from end)	0	1			-1	0	1	2	3	4

Intervention coding examples

- This intervention is coded as 5-days long.
- A 10-minute intervention is coded as within 1-day.
- A weeklong intervention counts as within 7-days.

Measurement coding examples

- Post-measures often occur on the last day of an intervention. Such a post-measure is recorded in pre-intervention time as day-5, or in post-intervention time as day-0.
- The follow-up measure takes place on pre-intervention time day-8, or post-intervention time day-3.
- For the sake of simplicity, code measurements taking place on the last day of an intervention, or the day after, as day-1.

Time Frame Reference

Depending on how timeframes are reported, count the number of days according to the reported units.

DV Phase	Day From	Day To	Year Days	Month Days	Weeks	Months
Post-treatment	1	7	8		1	0.25
	8	14	15		2	0.50
	15	21	23		3	0.75
	22	28	30	30	4	1
Follow-up 1	29	35	38		5	1.25
	36	42	46		6	1.50
	43	49	53		7	1.75
	50	56	61	61	8	2
	57	63	68		9	2.25
	64	70	76		10	2.50
	71	77	84		11	2.75
	78	84	91	91	12	3
	85	91	99		13	3.25
	92	98	106		14	3.50
	99	105	114		15	3.75
	106	112	122	122	16	4
Follow-up 2	113	119	129		17	4.25
	120	126	137		18	4.50
	127	133	144		19	4.75
	134	140	152	152	20	5
	141	147	160		21	5.25
	148	154	167		22	5.50
	155	161	175		23	5.75
	162	168	182	182	24	6
	169	175	190		25	6.25
	176	182	198		26	6.50
	183	189	205		27	6.75
	190	196	213	213	28	7
Follow-up 3	197	203	220		29	7.25
	204	210	228		30	7.50
	211	217	236		31	7.75
	218	224	243	243	32	8
	225	231	251		33	8.25
	232	238	258		34	8.50
	239	245	266		35	8.75
	246	252	274	274	36	9
	253	259	281		37	9.25
	260	266	289		38	9.50
	267	273	296		39	9.75
	274	280	304	304	40	10
Follow-up 4	281	287	312		41	10.25
	288	294	319		42	10.50
	295	301	327		43	10.75
	302	308	334	335	44	11
	309	315	342		45	11.25
	316	322	350		46	11.50
	323	329	357		47	11.75
	330	336	365	365	48	12
	337	343	372		49	12.25
	344	350	380		50	12.50
	351	357	388		51	12.75
	358	364	395	395	52	13