

SOCIAL IDENTITIES IN PHYSICAL ACTIVITY PROMOTION FOR
SEDENTARY WOMEN

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STUDENT DECLARATION

I, Erin Leigh Pearson declare that the PhD thesis entitled *Social Identities in Physical Activity Promotion for Sedentary Women* is no more than 100,000 words in length, exclusive of tables, figures, appendices, references, and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

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31 March 2008

ABSTRACT

The importance of regular and life long physical activity, both from a physical and medical perspective and from a psychological well-being perspective, is well documented. Also well documented is the reduction, below sufficient levels, in physical activity participation, particularly for populations such as young and mid-life adult women. Physical activity promotion is, thus, of great importance in modern society. In this thesis, my primary aim is to develop ways to enhance the adoption and maintenance of physical activity in young and midlife women. To do so, I have utilised the theoretical conceptions from a dominant social cognitive model, the theory of planned behavior (Ajzen, 1985). Subjective norm has not been a strong predictor of intention or behaviour in research on the theory of planned behavior in physical activity contexts (Symons Downs & Hausenblas, 2005), the reasons for which have been the subject of much debate in the literature. To date, there is disagreement about the conceptualization, measurement, and importance of the variable. In this thesis, I examined the potential of the social identity approach as a basis for making subjective norm more meaningful. In this approach, rather than assessing the influence of a random collection of important others as in the original definition (Ajzen, 1985), subjective norm is conceptualised as the perceived pressure from specific reference groups relevant to self, a conceptualization more in keeping with the social identity approach (Terry & Hogg 1996). I expected that the social identity approach to subjective norms would enhance its ability to predict intentions and be the basis of an effective physical activity intervention. Specifically, I expected that physical activity norms, when presented to women from members of a shared social identity would influence both intentions and behaviour.

In the first study, I surveyed 214 women between the ages of 25 and 45 to obtain a list of the potential reference groups that would be relevant for young and midlife women. I asked women to list their self-characteristics and then to rate them on Simon's (1997) social self-categorisation index. I sorted the self-characteristics into types, and listed the frequency and social identity potential for each type. From the most frequently listed self-characteristic types, I found that the personality-based self-characteristics, such as strong independent woman, and spiritual caring woman, had more social identity potential, than the role-based self-characteristics, such as wife or professional. I used these personality-based self-characteristics as the basis for my intervention study.

In the second study, I conducted a 3-month physical activity study based on the social identity approach to subjective norm. The intervention was for sedentary women (25 to 45 years), who engaged in less than 150 minutes of exercise per week. In two social identity conditions (SI), I conducted a social identity-based subjective norm manipulation. The first SI condition was for women (n = 26) who identified as strong independent women. The second SI condition was for women (n = 17) who identified as spiritual caring women. In these SI conditions, I made salient the relevant identity, and then provided them with video taped normative support for physical activity from similar women (ingroup). In the personal identity (PI) condition (n = 21), I asked women to focus on their individuality and provided them with video-taped information about the importance of physical activity presented by health professionals.

Women in all conditions completed physical activity questionnaires pre-intervention, 2-weeks post-intervention, and questionnaires 3-months later to follow-up. TPB variables were measured as well group norm (re-conceptualised subjective

norm). At the 2-week post-test, I found that women from all conditions increased their level of physical activity and there was no difference between the conditions. At the 3-month post-test, however, only the women in the SI conditions maintained their increased level of physical activity. The physical activity levels for women in the PI condition dropped back to pre-intervention levels. These results indicate that subjective norm-based physical activity interventions can be successful in enabling women's adoption and maintenance of physical activity, more so, than interventions focused on women's personal identities.

Regression analyses in the second study, conducted to examine the TPB provided some support for the social identity-based approach to subjective norm because subjective norm was shown to be a significant predictor of intention for the SI conditions, but not for the PI condition. In the PI condition, only perceived behavioural control predicted intention. These results indicate that norms can be significant predictors of intention, but only in contexts in which women's social, rather than personal, identities are salient. Contrary to the theory of planned behavior, however, intention did not predict physical activity in either the PI or SI conditions, indicating that action is not influenced by good intentions alone. Before considering the impact of methodological issues on the findings, I investigated the other factors that were operating in the SI conditions, which could explain the increased and maintained physical activity in the absence of an intention-based explanation. This investigation led me to conclude that the social identity approach to subjective norm I used in the SI intervention conditions created the foundation for automatic goal activation based on auto-motive theory (Bargh, 1990), in which the women were able to bypass the more

effortful, intentional route in order to execute their physical activity goals. Much future research is, nevertheless, needed to substantiate this conclusion.

In the final study, I conducted focus group discussions about the 3-month physical activity study with 38 women from both the PI and SI intervention conditions. The aim of this study was to provide some evidence for the theoretical explanations I made when discussing the lack of an intention – behaviour relationship in my intervention study. I found some evidence that goals were activated automatically in the SI conditions but not the PI condition, and thus, provided some support for auto-motive theory, but more controlled experimental research is needed to further substantiate the argument.

Overall this thesis shows that a physical activity intervention based on the social, rather than personal, level of self is more effective in enhancing both adoption and maintenance of physical activity for young and midlife women. At this social level of self, I found that subjective norm has more of an influence on intention than the personal variables of attitude and perceived behavioural control, but, for young and midlife women, intention is not a strong predictor of behaviour. This means that enhancing the intentions of young and midlife women to exercise may not be enough to influence their exercise behaviour and that other theoretical approaches should be considered. My research shows that an understanding of the social identity approach and auto-motive theory may enable the development of useful strategies to enhance women's abilities to convert their intentions into action.

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TABLE OF CONTENTS

ABSTRACT.....	i
ACKNOWLEDGEMENTS.....	v
LIST OF TABLES.....	xiii
LIST OF FIGURES.....	xv
CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW.....	4
Introduction.....	4
Physical Activity Promotion.....	5
Importance of Physical Activity Promotion.....	5
Approaches to Physical Activity Promotion.....	7
Self-Efficacy.....	8
Transtheoretical Model.....	11
Social Cognitive Theories.....	18
Summary.....	24
Theory of Planned Behavior in Physical Activity Research.....	25
Strengthening the Volitional Phase of Behaviour Change in the TPB.....	26
Enhancing the Prediction of Behaviour.....	26
Enhancing the Intention – Behaviour Relationship.....	29
Strengthening the Motivational Phase of Behaviour Change in the TPB.....	33
Attitude.....	34
Perceived Behavioural Control.....	38
Subjective norm.....	45
Summary.....	57
Applying the TPB to Physical Activity Interventions.....	58
Subjective Norm in TPB Interventions.....	59

The Social Identity Approach	60
The Social Identity Approach and Subjective Norm	70
Subjective Norm Based Interventions for Young and Midlife Women	75
Summary	76
Purpose of the Thesis	77
CHAPTER 3: IDENTIFYING THE RELEVANT REFERENCE GROUPS FOR YOUNG AND MIDLIFE WOMEN.....	81
Introduction.....	81
Method	84
Participants.....	84
Measures	84
Procedure	87
Analysis	88
Results.....	89
Self-Characteristics: Frequency, Group Formation Potential, Saliency, and Physical Activity Norms.....	89
Group Formation Potential of Self-Characteristic Types	91
Saliency of Self-Characteristic Types.....	92
Self-Characteristic Types Related to Motherhood, Family, and Caring.....	92
Self-Characteristic Types Related to Career and Work.....	92
Physical Activity Norm of Self-Characteristic Types	93
Physical Activity Level.....	93
Relationship between Physical Activity and Physical Activity Norms.....	94
Discussion.....	96
General Findings.....	96
Self-characteristics.....	96
Saliency.....	98
Physical Activity Norm	99
Physical Activity.....	100

Relationship between Physical Activity Norms and Physical Activity	101
Methodological Issues	102
Future Research	104
Final Comments	105
 CHAPTER 4: THE EFFECTIVENESS OF A SOCIAL IDENTITY APPROACH TO SUBJECTIVE NORM IN A PHYSICAL ACTIVITY INTERVENTION FOR WOMEN	 107
Introduction	107
Method	111
Participants	111
Design	112
Measures	113
Intervention Conditions	116
Manipulation Check	118
Procedure	119
Analysis	121
Results	124
Manipulation Check	124
Salience	124
Normative Support	124
Effect of Social Identity Intervention on Physical Activity	125
Total Physical Activity	125
Combined Moderate and Vigorous Activity	129
Walking	133
Summary	135
Effect of Social Identity Intervention on Cognitions	137
Intention	137
Perceived Behavioural Control	139
Attitude	140
Subjective Norm	142

Group Norm.....	144
Summary.....	147
Examining the Predictions from the Theory of Planned Behavior.....	148
Predicting Intention.....	149
Summary.....	159
Predicting Physical Activity	160
Summary.....	169
Discussion.....	170
Predicting Intention.....	171
Effectiveness of the Manipulation	172
Effect of Subjective Norm on Intention.....	174
Changes in Intention and Behaviour.....	176
Intervention Effect on Intention.....	178
Explaining Intention – Behaviour Relations.....	183
Methodological Issues	198
Weakness of the Intention – Behaviour Relationship.....	198
Other Measurement Issues.....	200
Study Design.....	201
Summary.....	202
Future Research	203
Effect of Norms on Intention and Behaviour.....	203
Intention – Behaviour Relationship	204
Final Comments.....	206
 CHAPTER 5: QUALITATIVE REVIEW OF THE 3-MONTH PHYSICAL ACTIVITY STUDY: INVESTIGATING THE INTENTION – BEHAVIOUR RELATIONSHIP	 209
Introduction.....	209
Evidence for the TPB-Based Explanation	209
Evidence for Differentiating between Realistic and Fantastic Intentions.....	211
Evidence for the Auto-Motive-Based Explanation.....	213

Summary	216
Method	217
Participants.....	217
Design	218
Measures	218
Procedure	220
Analysis	222
Results.....	223
Women’s Thoughts about Physical Activity	223
The Thoughts about Physical Activity of Women in the Strong Independent Woman Condition.....	224
The Thoughts about Physical Activity for Women in the Spiritual Caring Woman Condition.....	227
The Thoughts about Physical Activity for Women in the Personal Identity Condition	231
Comparison of the Thoughts about Physical Activity between the Three Conditions.....	233
Evaluation of the 3-Month Physical Activity Study	236
The Evaluation of the 3-Month Physical Activity Study from the Women in the Strong Independent Woman Condition	237
The Evaluation of the 3-Month Physical Activity Study from the Women in the Spiritual Caring Woman Condition	240
Evaluation of the 3-Month Physical Activity Study from the Women in the Personal Identity Condition	244
Comparison between Evaluations of the 3-Month Physical Activity Study by the Three Conditions.....	248
Summary	253
Discussion.....	255
General Findings.....	255
Intention Formation	256

Automatic Goal Activation	258
Summary	263
Methodological Issues	264
Future Research	265
Final Comments	265
CHAPTER 6: GENERAL DISCUSSION	267
General Findings	269
Women and the Social Level of Self	270
Predicting Intention	271
Intention – Behaviour Relations	272
Methodological Issues	283
Self Report of Physical Activity	283
Recruitment	284
Variable Measurement and Researcher Bias	286
Future Research	288
The TPB at the Social Level of Self	288
Intention – Behaviour Relationship	289
Implications for Practice	290
Intention Formation	290
Enhancing Intention	291
Increasing Behaviour	293
Final Comments	294
References	295
LIST OF APPENDICES	317

LIST OF TABLES

Table 3.1: Frequency, Social Self-Categorization Index, Saliency, and Physical Activity Norms of Self-Characteristic Types for Women Aged 25 to 45	90
Table 3.2: Mean Time (mins.) of Physical Activity for Women Aged 25-45	93
Table 3.3: Means and Standard Deviations of Total Physical Activity for Women with the Characteristics of Homemaker and Active.	95
Table 4.1: Means and Standard Deviations for Total Physical Activity between the SI_1iw, SI_2sw, and PI Conditions across the Three Time Periods	127
Table 4.2: Means and Standard Deviations for ModVig between the SI_1iw, SI_2sw, and PI Conditions across the Three Time Periods.....	131
Table 4.3: Means, Standard Deviations, and Bivariate Correlations for the Predictors of Intention for the Three Conditions over the Three Time Periods.....	150
Table 4.4: Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at Time 1	154
Table 4.5: Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at Time 2.....	156
Table 4.6: Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at Time 3.....	158
Table 4.7: Means, Standard Deviations, and Bivariate Correlations for the Three Conditions over the Three Time Periods	161
Table 4.8: Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 1	165
Table 4.9: Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 2.....	167

Table 4.10: Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 3.....	168
Table 5.1: Hierarchical Development of the Thoughts about Physical Activity for the Women in the Strong Independent Woman Condition.....	225
Table 5.2: Hierarchical Development of the Thoughts about Physical Activity for the Women in the Spiritual Caring Woman Condition	228
Table 5.3: Hierarchical Development Thoughts about Physical Activity for the Women in the Personal Identity Condition	231
Table 5.4: Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Strong Independent Woman Condition.....	238
Table 5.5: Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Spiritual Caring Woman Condition.....	241
Table 5.6: Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Personal Identity Condition.....	245

LIST OF FIGURES

Figure 2.1. Theory of planned behavior.	22
Figure 2.2. Hierarchical self-structure.	64
Figure 4.1. Change in total physical activity over time.	126
Figure 4.2. Difference in total physical activity for each condition.	127
Figure 4.3. Interaction between condition and time on total physical activity.	129
Figure 4.4. Change in modvig over time.	130
Figure 4.5. Difference in modvig for each condition.	131
Figure 4.6. Interaction between condition and time on modvig.	133
Figure 4.7. Changes in walking activity over time.	134
Figure 4.8. Differences in walking for each condition.	135
Figure4. 9. Differences in intention over time.	138
Figure 4.10. Interaction between condition and time for intention.	139
Figure 4.11. Changes in perceived behavioural control over time.	140
Figure 4.12. Changes in attitude over time.	141
Figure 4.13. Interaction between condition and time for attitude.	141
Figure 4.14. Changes in subjective norm over time.	143
Figure 4.15. Interaction between condition and time for subjective norm.	144
Figure 4.16. Differences in group norm for each condition.	145
Figure 4.17. Interaction between condition and time for group norm.	146

CHAPTER 1: INTRODUCTION

Physical inactivity is becoming an increasing problem for modern industrialised societies. Research in the US, UK, and Australia shows that most people in these societies do not engage in sufficient physical activity and, as a result are creating a health crisis that will continue to worsen as the population ages (ADNFS, 1992; Armstrong, Bauman, & Davis, 2000; USDHHS, 1996). It appears in this research, that young and midlife women are a particularly inactive population and are therefore at greater risk of developing chronic disease and experiencing a poor quality of life. It is necessary to maintain regular physical activity throughout life to be able to achieve positive health benefits (Dishman, 1988) and, as such it is important to promote physical activity, especially to younger populations. The application of psychological theory to physical activity promotion has been particularly helpful in this regard.

There have been two psychological approaches to the promotion of physical activity, the stage-based approach and the social cognitive approach. The main theory utilising the stage-based approach is the transtheoretical model (TTM; Prochaska & DiClemente, 1983). One of the more prominent social cognitive models used in this area is the theory of planned behavior (TPB; Ajzen, 1985). Both theories utilise the concept of self efficacy in Bandura's (1986) social cognitive theory, but whereas the TTM includes five stages of physical activity change, the TPB only addresses two, a motivational and a volitional stage. The research is unclear whether there are five distinct phases in physical activity behaviour change (Armitage & Conner, 2000; Gerda & Brian Winfried, 2005; Griffin-Blake & DeJoy, 2006), so I argue that the TPB may offer a more parsimonious approach when designing physical activity interventions. The majority of physical activity intervention research, however, has been conducted

using the TTM, rather than the TPB. There is nevertheless a large body of research on the TPB in the exercise domain (Symons Downs & Hausenblas, 2005) and, as such it offers a strong framework for developing physical activity interventions.

Research in the TPB has provided substantial information on both the motivational and the volitional phase of physical activity behaviour change. When designing interventions for a chronically sedentary population, it may be more beneficial to focus on enhancing motivation for change, before working on the volitional processes involved in translating intentions into action, and therefore, I argue that physical activity interventions working with these sorts of populations should seek to enhance physical activity intention.

In the TPB, there are three predictors of intention, two personal variables, attitude and perceived behavioural control, and one social variable, subjective norm. Meta-analytic research has consistently shown the social variable contributes very little to the prediction of intention (Hagger, Chatzisarantis, & Biddle, 2002b; Symons Downs & Hausenblas, 2005). This has led to suggestions that subjective norm may not be an important predictor (Ajzen, 1991), and some significant debate in the literature.

According to some researchers, taking the social identity approach, a combination of social identity theory (Tajfel, 1978) and self categorisation theory (Turner, 1982), the low predictive validity of subjective norm is due to a primary focus on the personal self and a failure to consider the social level of self. The researchers argue that norms can only be influential at the social level of self and consequently, when they define subjective norm at this level, they have found it to be very effective in predicting intention (Terry & Hogg, 1996). Research suggests that young and midlife women may be a population for whom the social level of self is dominant (Brown,

Brown, Miller, & Hanson, 2001; Drew & Paradise, 1996), and, thus, I argue that physical activity interventions for sedentary women should investigate the effectiveness of manipulating subjective norm from the social level of self as a way to enhance intention for physical activity. In enhancing intention, these interventions can also expect to enhance physical activity behaviour since, according to the TPB, there is a direct association between intention and behaviour (Ajzen, 1985).

CHAPTER 2: LITERATURE REVIEW

Introduction

In this chapter I begin with a discussion of the importance of physical activity promotion in the context of the physical and psychological benefits of regular and lifelong physical activity and the risks associated with sedentary living. I address the main theories exercise psychologists have used to promote physical activity and the effectiveness of their application to physical activity interventions. In the sections that follow, I focus on one particular social cognitive theory, the TPB, that has been extensively researched in the exercise domain but which has not been applied very regularly to physical activity interventions. I argue that the state of knowledge about all aspects of the theory, both in the prediction of physical activity motivation and behaviour, place the TPB in a superior position to be utilised in interventions. I specifically make a case for TPB interventions that target sedentary populations to focus on the aspect of the theory which addresses the determinants of motivation. I particularly focus on subjective norm because it is one determinant of motivation which shows great promise in its capacity to be applied to physical activity interventions. Despite the vigorous debate about the subjective norm that exists in the literature, no firm conclusions have been made. I discuss the social identity perspective as the means for arriving at such a conclusion due to its capacity to explain the apparently disparate findings with regard to subjective norm. Finally, I suggest the ways in which the social identity perspective on subjective norm can be tested in physical activity interventions and conclude with a statement of the purpose of the thesis.

Physical Activity Promotion

High levels of inactivity in western urbanised populations means that the majority of people in these populations, despite increase in standard of living, face a future characterised, at best, by less than optimum psychological and physical health, and at worst, by chronic disease. Promoting physical activity has, thus, become increasingly important. The application of psychological theory to this domain provides valuable insight and potential solutions to the problem of increasing physical activity in sedentary people. In the following section, I discuss the health benefits of physical activity and why promoting physical activity, particularly in some populations, such as adult women, is critical. I then go on to discuss the psychological theories that have been, and have potential to be, used in physical activity promotion.

Importance of Physical Activity Promotion

The benefits of engaging in sufficient physical activity are both physical and psychological, and can be realised by men and women at any age. The physical benefits include a lowered risk of cardiovascular disease (USDHHS, 1996), type 2 diabetes (Manson & Spelsberg, 1994), and various types of cancer (Colditz, Cannuscio, & Frazier, 1997; Giovannucci et al., 1998; Verloop, Rookus, van der Kooy, & van Leeuwen, 2000). From a psychological perspective, participation in physical activity is linked to the reduction of the symptoms of stress, anxiety, and depression (Glenister, 1996), is associated with mental health (Stephens, 1998), and is linked with higher self-esteem (Sonstroem, 1984), more positive body image (Maxwell & Tucker, 1992) and a higher quality of life (Morans & Mohai, 1991). For women, in particular, the benefits of participating in regular physical activity include reduction in osteoporosis (Gutin & Casper, 1992), menstrual symptoms (Choi & Salmon, 1995), and breast cancer

(Verloop, Rookus, van der Kooy, & van Leeuwen, 2000). Physical activity has also been implicated in the enhancement of reproductive function in women (Choi & Mutrie, 1997). Furthermore, from a psychological perspective, the link between participation in physical activity and improved mental health, such as reduction in anxiety, depression, and increase in positive mood, has been found to be particularly strong for women (Stephens, 1988).

If maintained throughout life, physical activity significantly reduces many of the problems faced later in life, such as hip fractures (Grisso, Kelsey, O'Brian, Miles, Sidney, Maislin, et al., 1997), and issues associated with bone density (Gutin & Kasper, 1992). Indeed, bone density research has shown that, if women are sufficiently active while their bone mass is still accumulating, that is, while they are young, they will have a better chance at preventing osteoporosis when they are older (Krall & Dawson-Hughes, 1993). Research has also shown that developing a habit of exercising earlier in life provides the best safeguard against the main cause of coronary heart disease, atherosclerosis (Clarkson, Manuck, & Kaplan, 1986). This is because atherosclerosis, the fatty deposit build-up in the artery walls of the heart, occurs throughout life, but can be reduced through regular exercise (Bouchard & Depres, 1995). Although adopting physical activity at any stage of life is beneficial, it appears that lifelong exercise is particularly beneficial and is, as Dishman (1988) pointed out, essential for public health benefits to be fully realised.

The minimum recommended level of physical activity required to achieve health benefits is the accumulation of 150 minutes of moderate to vigorous activity over a seven-day period (Armstrong et al., 2000). Population surveys in the UK (ADNFS, 1992), the US (USDHHS, 1996), and Australia (Armstrong et al., 2000) have all

unanimously reported that the majority of people do not achieve this minimum level of physical activity and are not, therefore, in the position to realise the associated health benefits. Specifically in Australia, the Armstrong et al. study showed that more than half (55%) of Australians do not engage in sufficient physical activity to obtain positive health benefits. Of particular interest, is that in all these large-scale surveys, it is reported that women are more inclined to be sedentary than men.

It is clear that physical activity has many benefits, both physical and psychological and that there are particular benefits for women, especially those who exercise from a young age and maintain a lifelong pattern of activity. It is also clear that women, as a population, are more at risk of developing chronic diseases as they age because they are more inclined to be sedentary. It is, thus, particularly important for interventions to promote the adoption and maintenance of physical activity for sedentary women in early to mid adulthood.

Approaches to Physical Activity Promotion

There have been two dominant approaches to physical activity promotion in exercise psychology, the stage-based approach and the social cognitive approach. The stage approach analyses the process of change and tries to identify the main stages that an individual goes through in order to adopt and maintain difficult behaviours, like exercise. Understanding the stage a person is at in the change process is expected to aid attempts to move them towards the next stage, and ultimately into action and maintenance. The social cognitive approach assumes that difficult goal-directed behaviour, such as exercise, is governed by rational cognitive activity. These approaches are, thus, characterised by a focus on the social cognitive determinants of motivation and behaviour. Although the two approaches represent different

perspectives on physical activity promotion, they do share conceptual similarities, one of which is that both approaches have eventually included measures of self-efficacy. The widespread use of self-efficacy is an indication of the importance of the variable in exercise promotion and, thus, where any discussion of this area must begin. In the following sections, I will begin by explaining self-efficacy in the context of physical activity. I will then outline the two main approaches to physical activity promotion, starting with the main stage-based theory used in health promotion, followed by the dominant social cognitive theories and make some suggestions about the most effective and expedient approach to take when designing physical activity interventions.

Self-Efficacy

Self-efficacy is a central component of Bandura's (1986) social cognitive theory and, according to Bandura, is essential in changing health behaviour. Self-efficacy is a personal belief that individuals have, in their capability to perform particular tasks. Personal efficacy beliefs are expected to determine action both directly and indirectly through their effect on motivation. The belief that one's actions can produce the desired effect is expected to directly influence behavioural engagement because, according to Bandura, an individual will have little incentive to act, if they do not believe they possess the power to produce the desired outcomes. Self-efficacy is also expected to influence behaviour indirectly by regulating motivation. In particular, Bandura suggested that self-efficacy will influence the goals people set, their ability to persist in the face of obstacles, and their capacity to cope with setbacks and stress. Indeed, in the exercise psychology research, self-efficacy for exercise has been shown to predict those who will engage in regular exercise, such as walking (Hofstetter et al., 1991), and to effectively discriminate between those who will adhere to a program of

exercise and weight loss and those who will drop out (Rodgers & Brawley, 1993).

Generally speaking, higher levels of self-efficacy for exercise equate to more frequent exercise behaviour and greater adherence to exercise programmes (Bandura, 1997; McAuley & Jacobson, 1991; McAuley, Wraith, & Duncan, 1991; Rodgers & Gauvin, 1998).

The importance of self-efficacy in health promotion can be attributed not only to its strength as a predictor of exercise motivation and behaviour, but also to its operational value. That is, self-efficacy is a variable that comes with particular guidelines for its development. Bandura (1986) specified four main sources of efficacy development, all of which have been used in research to enhance self-efficacy. The strongest source of efficacy is performance attainment. Research shows that enabling participants to achieve success in performing the target behaviour will increase their self efficacy (McAuley, 1985). This is particularly true when success comes early in the skill acquisition process (Feltz & Lirgg, 2001). According to Bandura, past successes provide direct evidence of capability. When individuals do not have direct experience with the task, another important way to gain efficacy is through observational learning or vicarious experience. Although the importance of vicarious experience is expected to be reduced when individuals have personal experience of the task, research shows that if the task is novel, observing similar, rather than different, role models, perform the task, will have a large effect on self-efficacy (George, Feltz, & Chase, 1992). A weaker source of efficacy information is verbal persuasion, whereby an individual is “talked into” believing they have the capability to perform the task. Although, no substitute for actual and successful experience, research has suggested that verbal persuasion can add to the prediction of self-efficacy after the effects of past

performance have been controlled (Fitzsimmons, Landers, Thomas, & van der Mars, 1991). The final source of efficacy information is given by interpretations of physiological state. According to Bandura, people interpret their physiological arousal as indicators of their capability, such that high levels of arousal are perceived as indicating low capability, and low levels of arousal are perceived as indicating high capability. Although not as strong a predictor of self efficacy as the other three predictors, evidence suggests that physiological arousal may have a particularly important role to play in predicting self-efficacy for tasks that involve body sensations, such as physical activity (Chase, Feltz, Tully, & Lirgg, 1994).

Both the predictive power and ease of operation has meant that exercise psychologists often use self-efficacy independently from Bandura's (1986) social cognitive theory. The other variables in Bandura's theory include outcome expectations and proximal goals. In Bandura's terms, self-efficacy is continually "severed" from his social cognitive theory and "grafted" onto other theories (Bandura, 2000, p. 307). In Bandura's view, this represents "cafeteria style research" in which "constructs are picked from various theories and strung together in the name of theoretical integration" (Bandura, 2000, p. 299).

It is interesting that Bandura's (1986) social cognitive theory, in its entirety, has not been used more in exercise psychology research. Theoretically, Bandura's social cognitive theory shares many similarities with another social cognitive theory, discussed later, called the theory of planned behavior (Ajzen, 1985) and early research indicated that Bandura's theory had superior predictive validity (Dzewaltowski, Noble, & Shaw, 1990). One explanation is that the sheer volume of research testing the theory of planned behavior in the exercise domain has meant that it has become the more

dominant of the two. Where research has tested Bandura's social cognitive theory in its entirety, only self-efficacy, and not outcome expectations or proximal goals have been found to be predictive of physical activity (Dishman et al., 2004; Dzewaltowski, 1989; Godding & Glasgow, 1985; Kingery & Glasgow, 1989).

As will be seen in the following discussion, the researchers responsible for the stage-based and social cognitive theories have taken self-efficacy from Bandura's social cognitive theory and used it in their theories. Although Bandura seems to consider this to be less than ideal, researchers have recognised that to refrain from using self-efficacy would involve sacrificing the predictive power of their theories. Thus, it seems that for pragmatic reasons, self-efficacy will continue to be used apart from its "conceptual brethren" (Bandura, 2000, p. 307).

Transtheoretical Model

The transtheoretical model of behaviour change (Prochaska & DiClemente, 1983) is a stage-based model that combines variables from social cognitive, decision making, and psycho-dynamic theory. The TTM was first developed to treat addictive behaviours, such as smoking, but has now been applied to physical activity promotion. There has been substantial research interest in the TTM in exercise psychology. Indeed, a recent meta-analysis conducted by Marshall and Biddle (2001) found 71 published reports on the TTM in the exercise domain since the model's inception.

In the TTM, Prochaska and DiClemente (1983) described behaviour change as incremental, rather than sudden. They postulated that people move through different stages of readiness to change. In the TTM, as applied to physical activity, there are five main stages of change, precontemplation, contemplation, preparation, action, and maintenance. The precontemplation and contemplation stages are characterised by

different levels of intention to change, none in the precontemplation stage, and a small amount in the contemplation stage. The preparation, action, and maintenance stages differ in the level of behavioural engagement. In the preparation stage, small attempts are made to engage in the behaviour, but not at the required level. Behaviour is performed at the required level in both the action and maintenance stages, but the time frame is different. In the action stage, the behaviour is still new and has only recently been performed at the required level, whereas in the maintenance stage, the behaviour has been performed consistently at the required level for six months or longer.

The ability to locate people at a particular “stage” is considered valuable for physical activity interventions because it is expected to enhance recruitment and retention rates and reduce resistance to interventions (Prochaska & Marcus, 1994). According to Prochaska and Marcus, much work in the domain of health promotion utilises strategies that only appeal to those in the preparation or action stages, and are thus, ineffective in reaching or encouraging change in the majority of the population who are at precontemplation or contemplation stages. Consequently, the physical activity interventions using the TTM, attempt to match the intervention materials and strategies to a person’s stage of change. Generally speaking, research has shown that participants who receive TTM interventions matched to their stage of change, progress more towards the action and maintenance stages, than participants in control groups, who receive no treatment, or standard health care (Blissmer & McAuley, 2002; Dallow & Anderson, 2003; Fahrenwald, Atwood, Walker, & Johnson, 2004; Goldstein et al., 1999; Kim, Hwang, & Yoo, 2004; Kirk, Mutrie, McIntyre, & Fisher, 2004; Pinto et al., 2002; Woods, Mutrie, & Scott, 2002).

The value of the TTM extends beyond its ability to categorise people into stages, it also indicates how to encourage stage progression. According to Prochaska and DiClemente (1983), each stage is characterised by particular cognitive and psychodynamic variables, which, if targeted, have the power to move people into the action and maintenance stages of change. In particular, the change process is expected to be mediated by three main factors, self efficacy, decision balance, and ten specific strategies and techniques called, the processes of change.

Self-efficacy. Researchers have suggested that self-efficacy for physical activity increases in a linear fashion with the stage of change (Marcus & Simkin, 1994; Prochaska & Marcus, 1994). Higher exercise self-efficacy has indeed been found to be associated with advancement in stage of change (Marcus, Eaton, Rossi, & Harlow, 1994; Marcus & Owen, 1992), however, a recent meta-analysis of TTM studies in the exercise domain shows that the relationship is not linear. It appears that exercise self-efficacy is low in the early, pre-action stages, and increases to a moderate level at the later, action stages (Marshall & Biddle, 2001). For exercise, therefore, rather than incrementally increasing their self efficacy over the stages of change, people either have self-efficacy or they don't. When they don't, at the early stages, they are not motivated and they do not engage in physical activity, when they do, they are motivated, and they do engage in physical activity. This is consistent with Bandura's predictions that self efficacy predicts motivation and behaviour.

Decision balance. The cognitive process of weighing up the pros and cons of performing a particular behaviour, called decisional balance by Prochaska and DiClemente (1983), is also included as a mediator of the change process in the TTM. It is expected that the pros of engaging in the behaviour increase with advancing stage,

whereas the cons decrease. The preparation stage is expected to be characterised by an equalisation of the pros and cons, and is, therefore, considered to be the most unstable stage when individuals have the highest risk of relapse (Marcus & Simkin, 1994). Once in the action and maintenance stages, it is expected that decision balance will have less of an impact than at the early stages (Prochaska & Marcus, 1994). In their meta-analysis, Marshall and Biddle (2001) found partial support for these views. They showed that pros generally increased through stage progression and cons decreased, and they did so incrementally, but not by the same magnitude expected by Prochaska (1994). As with self-efficacy, rather than a linear progression in the decision balance, there appeared to be a dramatic increase in the pros at the contemplation stage and much smaller increments in later stages. Furthermore, the point at which the pros were equal to the cons could not be related specifically to the preparation stage. More recent studies investigating decision balance in exercise have shown that advancement in stage is characterised less by an increase in the pros, and more by a decrease in the cons. Specifically, Griffin-Blake and DeJoy (2006) showed that the predominantly adult female population they worked with, acknowledged the many pros of exercise at all stages of change, but it was only in the action and maintenance stages that the amount of cons was significantly reduced. This suggests that assisting people, particularly women, to reduce the barriers to exercise is more important in facilitating changes in exercise behaviour, than promoting the pros.

Processes of change. Prochaska and DiClemente (1983) proposed two types of change processes, experiential processes and behavioural processes. They predicted that the experiential processes would be more important at the earlier stages of change. Experiential processes include cognitive processes, such as consciousness raising,

dramatic relief, environmental reevaluation, self-reevaluation, and social liberation. Prochaska and DiClemente (1983) expected that the behavioural processes would play a more important role in the later stages of change. They include, counter-conditioning, helping relationships, reinforcement management, self-liberation, and stimulus control. Early evidence in the exercise domain supported a two-factor understanding of the processes of change, and the predicted patterns of these processes over the stages of change (Marcus, Rossi, Selby, Niaura, & Abrams, 1992), however, the meta-analysis conducted by Marshall and Biddle (2001) and later studies do not show such clear support. Marshall and Biddle showed that the experiential processes, hypothesised to only be important at the early stages, continued to be used in the preparation and action stages, and the behavioural processes, although peaking at the maintenance stage, as expected, were also used in the early stages of precontemplation and contemplation. Consistent with Marshall and Biddle's meta-analysis, Griffin-Blake and DeJoy (2006) reported that, for exercise, the experiential processes were used throughout the stages of change, which led Griffin-Blake and DeJoy to suggest that engaging in positive health behaviours requires more cognitive processes than for refraining from negative health behaviours, for which the TTM was first developed. They argued that, unlike ceasing smoking, where the less one thinks about smoking, the less the chance of resuming the habit, for exercise, the more one thinks about exercising, the better the chances of participating.

Although the TTM research has revealed unexpected and inconsistent findings, it has captured the imagination of many researchers. In a recent commentary paper, Whitelaw (2005) noted that when it comes to critiquing the model, one is often left with the impression that what is being critiqued is "a sacred orthodoxy rather than a

psychological model” (Brug et al., 2005, p. 255). Whitelaw suggested that this may be because the TTM embodies some deeply held cultural metaphors to do with cycles. Indeed, one author argued that the concepts in the model are logically valid and, thus, do not need empirical validation (Smedslund, 1997). When seeking the most effective methods for developing physical activity interventions, however, it is important to scrutinise the evidence.

TTM and physical activity interventions. It is clear that for exercise, self-efficacy is important in stimulating change, as is decision making, and the processes of change, particularly the experiential cognitive processes. What is less clear is whether these mediators are related to a precise stage of change, and whether it is important to match the intervention to the stage of change. Although stage-matched interventions perform better when compared with a control condition (Blissmer & McAuley, 2002; Dallow & Anderson, 2003; Fahrenwald et al., 2004; Goldstein et al., 1999; Kim et al., 2004; Kirk et al., 2004; Pinto et al., 2002; Woods et al., 2002), research comparing stage-matched with stage mismatched, or other social cognitive interventions, is more equivocal.

Gerda and Brian Winfried (2005) compared the progression in exercise stage of change in participants who had received a stage-matched intervention, including physician feedback and stage-matched leaflets, with participants who only received physician feedback. They found similar percentages of primary care patients had reached the action stage at seven weeks and 14 months after the intervention, showing no real differences between the groups. Similarly Wilcox (2003) found that stage-matched materials were no more helpful than a generic newsletter in helping participants reach prescribed levels of physical activity. Consistent with this, Griffin-

Blake and DeJoy (2006) reported no difference in physical activity stage of change between people who received stage-matched self-help manuals and those who received a manual based on Bandura's social cognitive theory. Both groups were able to increase their level of physical activity.

Although physical activity interventions based on the TTM appear to be more effective in changing behaviour than no intervention at all, they do not seem to consistently outperform other types of interventions. In a recent commentary McKellar (cited in; Brug et al., 2005), suggested that in spite of the interest in the TTM, the case for stage-specific interventions has not been conclusively made. According to Bandura (2000), the stages in the TTM represent arbitrary subdivision of two continuous variables, intention, and behaviour. In reality, Bandura argued that the first two stages represent a difference in degree of intention, both relating to a motivational phase of behaviour change. The last three stages represent differences in degree of duration of the specified behaviour and all relate to a volitional stage of behaviour, when one attempts to convert intentions into action. The findings that both self-efficacy and decision balance do not increase linearly with advancing stage, but tend to increase rapidly from contemplation to action, support the contention that there are only really two distinct stages. Indeed, Armitage and Conner (2000) suggested that the key contribution of the TTM has simply been to specify a motivational and a volitional phase of behaviour.

Rather than complicating matters with five stages of change, it might only be necessary for physical activity interventions to focus on the determinants of intention, the motivational phase, and the determinants of behaviour, the volitional phase. The social cognitive variables appear to be very important in this regard because all the

variables that have been shown to be predictive of stage transition in exercise behaviour in the TTM have been social-cognitive in nature. Thus, it would appear that social cognitive theories of behaviour change, which focus exclusively on the social cognitive determinants of intention and behaviour, are just as valid, and perhaps simpler to apply to physical activity promotion, than the TTM.

Social Cognitive Theories

Whereas the TTM is the dominant stage-based model in the exercise domain, there are many social cognitive theories that have been regularly applied with varying success in the health promotion and exercise domain. Based on my previous discussion, the two main criteria in the choice of what social cognitive theory to apply to physical activity promotion is that it should firstly provide information on the social cognitive determinants of the motivational phase of behaviour, and secondly, that it provides information on the social cognitive determinants of the volitional phase of behaviour.

The first criterion does not reduce the list of social cognitive models to consider, since the goal of many social cognitive theories is to predict behavioural intention, which is a measure of motivation. According to Ajzen (1991), intention is a measure of how much motivation a person has, how hard they are prepared to work, or how much effort they are prepared to invest. The theories differ in what social cognitive factors are used to predict intention, but they all aim to explain this motivational phase of behaviour. The social cognitive theories that fulfill this first criterion, and that have been regularly applied to the health promotion and exercise domain are, Bandura's (1986) social cognitive theory, Triandis' (1977) model of interpersonal behaviour,

protection motivation theory (Rogers, 1983), the theory of reasoned action (Fishbein & Ajzen, 1975), and the TPB (Ajzen, 1985).

The second criterion, that the social cognitive theory must provide information on the volitional phase of behaviour, does reduce the list. In many social cognitive theories, intention is viewed as the most proximal determinant of behaviour. Although explaining a significant proportion of the variance in behaviour, intention alone is often not enough to stimulate behaviour, particularly difficult behaviours like physical activity. Only the TPB, Trandis' model of interpersonal behaviour, and Bandura's social cognitive theory include additional predictors of behaviour, other than intention. Of these three, only the TPB has been widely tested in the exercise domain. As such, I will focus the following discussion on the TPB.

Theory of Planned Behavior. The theory of planned behaviour (Ajzen, 1985) is a revision of an original model, the theory of reasoned action (TRA; Fishbein & Ajzen, 1975). As I have pointed out, in both theories, intention is the key predictor of behaviour. In the TRA, Ajzen and Fishbein suggested that only two social cognitive variables are important in the prediction of intention. These are attitude and subjective norm. Attitude is a measure of a person's favourable or unfavourable evaluation of a particular behaviour, weighted by the importance placed on the consequences of behaviour. Subjective norm is the perception that important others do, or do not, desire the behaviour to be performed, weighted by the individual's motivation to conform to these social referents.

Studies across a wide variety of behaviours have demonstrated the utility of predicting behaviour from intention and the usefulness of using attitude and subjective norm as predictors of intention. In an early meta-analysis on the TRA, Sheppard,

Hartwick, and Warshaw (1988) reported an intention-behaviour correlation of 0.53 and an average correlation of 0.66 between the attitude and subjective norm components and intention. In an exercise context, Godin (1993) reviewed 12 published studies and found that 30% of the variance in intentions could be accounted for by attitude and subjective norm, and that 30% of the variance in exercise behaviour could be predicted by intention alone. According to Cohen (1992), accounting for 35% of the variance in multiple correlation tests, indicates a large effect size. The TRA results of Godin's (1996) meta-analysis were, therefore, impressive.

Although the TRA provided a strong and parsimonious theoretical basis for understanding exercise behaviour at a time when atheoretical approaches to studying exercise adherence abounded (Godin, 1994), it became clear to Ajzen (1985) that motivation, or intention, alone was not enough to account for some behaviours. He theorised that not all behaviour is completely volitional and that, regardless of intention, the ability to engage in some behaviours, is out of one's control. Engaging in physical activity, for example, is not as volitional a behaviour as conducting a breast self-examination or taking a multi-vitamin because behavioural execution relies, to some extent, on opportunity to engage in the behaviour, resources, such as time, money, and facilities, and the skills to be able to participate. Behavioural execution of these types of behaviours, therefore, requires both intention and a level of control over the opportunity, resources, and skills required. Ajzen, thus, revised the TRA by adding one more variable, behavioural control. He labeled the revised model the theory of planned behavior (TPB). The TPB was specifically intended to explain behaviours with incomplete volitional control.

Behavioural control is a measure of how much control a person has over performing a particular behaviour, although as Ajzen (1991) pointed out, obtaining a measure of actual control is difficult because people may not have all the information about the factors that can inhibit their behaviour. A proxy measure of behavioural control, called perceived behavioural control has, therefore, been favoured and is defined as a person's perceived ease or difficulty in performing the behaviour. Perceived behavioural control has been considered to be similar to Bandura's concept of self-efficacy. I will discuss the link between self efficacy and perceived behavioural control in greater detail in later sections. At the broadest level, perceived behaviour control is expected to have similar effects on motivation and behaviour as self efficacy. In particular, as with self-efficacy, Ajzen and Madden (1986) predicted that perceived behavioural control would have both a direct and indirect effect on behaviour. Perceived behavioural control is expected to influence behaviour directly and either attenuate, when opportunity, resources, and skills are lacking, or add to, the effect of intention on behaviour. Ajzen (1991) suggested that the perceived behavioural control – behaviour link is strongest when behaviour is not completely under volitional control and when the person's perception of control is close to actual control. Ajzen and Madden (1986) also expected the influence of perceived behavioural control on behaviour to be mediated by intention. This means that motivation can be reduced if a person perceives that they will have limited control over behavioural execution, or enhanced if they perceive they will have substantial control.

The TPB, displayed in Figure 2.1, has consistently been found to be superior to the TRA, especially for the prediction of behaviours, like exercise, which have incomplete volitional control. Godin (1993) showed perceived behavioural control, on

average, contributed an additional 8% to the prediction of intention in the eight exercise-based studies he analysed. Similarly, in their analysis of a large population-based sample, Wankel, Mummery, Stephens, and Craig (1994) showed that perceived behavioural control added an additional 16% to the prediction of intention over and above attitudes and subjective norm.

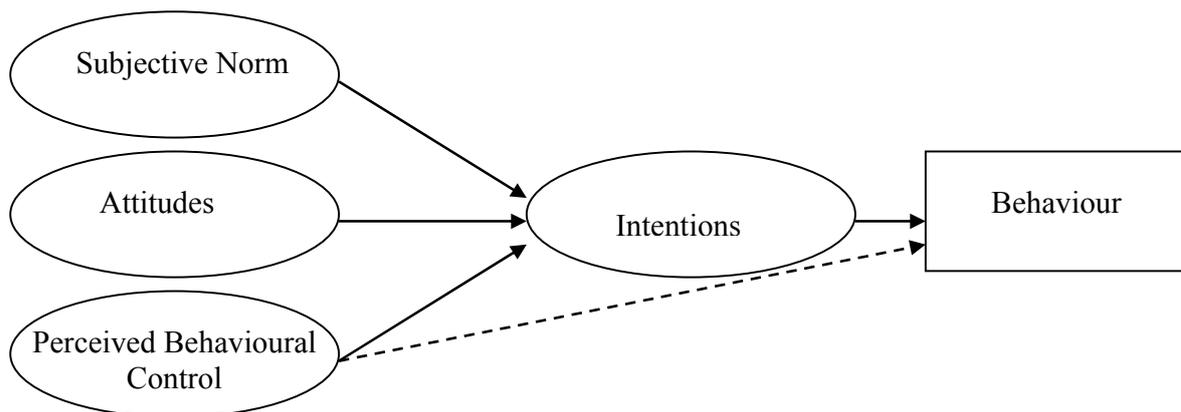


Figure 2.1. Theory of planned behavior.

In a later meta-analysis in the health domain, Godin and Kok (1996) showed that although 34% of the variance in a variety of health behaviours, including clinical screening, oral hygiene, and exercise, could be accounted for by both intention and perceived behavioural control, intention was the most important predictor of behaviour. Godin and Kok concluded, however, that this was because most of the health behaviours studied, such as oral hygiene and clinical screening, were volitional. This is consistent with the predictions of the TPB, that the strength of the perceived behavioural control – behaviour link varies with the controllability of the behaviour (Ajzen, 1991). Indeed a meta-analysis, in which Hagger et al. (2002b) tested the TPB specifically in the domain of physical activity, which is a less controllable behaviour. The TPB, with both the direct and indirect perceived behavioural control – behaviour paths, was found to be a stronger predictor of intention and behaviour than the TRA.

The inclusion of perceived behavioural control added 28% to the variance accounted for in the prediction of intention and just over 1% in the prediction of physical activity. These findings in the exercise domain are generally consistent with results for the TPB in other behavioural domains, although the prediction of intention appears to be stronger in the exercise domain. In a meta-analysis across a variety of health behaviours, Armitage and Conner (2001) found that perceived behavioural control added 6% to the prediction of intention and 2% to the prediction of behaviour.

There has now been over 20 years of research using the TPB and the theory has been tested extensively in the exercise domain. In a recent meta-analysis, Symons Downs and Hausenblas (2005) found 83 TPB studies specifically focused on exercise and physical activity. This most recent meta-analysis supported the main relationships between the TPB variables in the physical activity domain. Intention and perceived behavioural control contributed 21% of the variance in exercise behaviour, which is, according to Cohen (1992) a medium effect size. Contrary to earlier meta-analyses (Hagger et al., 2002b; Hausenblas, Carron, & Mack, 1997), however, perceived behavioural control was not found to add unique variance. Attitude, perceived behavioural control, and subjective norm, together contributed to 30% of the variance in intention, which represented a moderately large effect size (Cohen, 1992). Consistent with earlier meta-analyses (Armitage & Conner, 2001; Hagger et al., 2002b; Hausenblas et al., 1997) attitude and perceived behavioural control, and not subjective norm, were the only significant predictors of intention. In this latest meta-analysis, attitude emerged as slightly more important than perceived behavioural control. Although the fixed effect method of meta-analysis adopted in the Symons Downs and Hausenblas meta-analysis creates a methodological issue to do with measurement error

correction, it is the most recent and up to date study on the TPB in the domain of physical activity and thus, the most current conclusion in the exercise-based TPB research is that intention, and not perceived behavioural control, is the best predictor of physical activity, that attitude and perceived behavioural control are the best predictors of intention to be active, and that subjective norm is of nominal importance in the prediction of exercise intention.

Although it has been extensively tested in the exercise domain, the TPB is still an under-utilised theory when it comes to interventions. In a recent meta-analysis, Hardeman et al. (2002) identified only 30 intervention studies that used the TPB in the 10 years between 1989 and 1999. The meta-analysis of Hardeman et al. reviewed TPB intervention studies across a broad range of behaviours not limited to the health domain. Only two intervention studies were reported which focused exclusively on exercise behaviour. Hardeman et al. concluded that the TPB is used more frequently in the prediction of intention and behaviour than it is to develop interventions. Although Hardeman et al. reported that TPB interventions generally had a small to moderate effect on changing intention and behaviour, the limited amount of research in this area means that it is difficult to assess the effectiveness of using the TPB in interventions.

Summary

The physical and psychological benefits that can be gained as a result of regular and lifelong participation in physical activity have been adequately demonstrated. It is clear that physical activity promotion is of vital importance because the majority of people, particularly women, do not engage in sufficient physical activity. There have been two major approaches to physical activity participation, one founded on a stage-based model of behaviour change called the transtheoretical model, and one founded on

social cognitive principles, which includes many theories. Although the TTM has been regularly applied to physical activity interventions with some success, it is not clear whether TTM-based interventions are any more effective than other interventions. Some researchers have suggested that interventions based on the TTM are needlessly complicated, and that social cognitive models tap into the same primary conception that there is a motivational and a volitional aspect to behaviour change. Of the many social cognitive theories, there are only a few that are capable of explaining both the motivational and volitional phases of behaviour, and only one of these, the TPB, has been applied extensively to the exercise domain. Although there is limited research documenting the success of using the TPB in physical activity interventions, the expansive testing of the theory suggests that applying the TPB to physical activity promotion will be effective.

Theory of Planned Behavior in Physical Activity Research

In their review of the TPB in the exercise domain, Symons Downs and Hausenblas (2005) commented that the extensive theoretical testing of the TPB, particularly in the exercise domain, makes it an ideal theory for intervention efforts. It is interesting, therefore, that the use of the TPB in physical activity interventions is limited, compared to the TTM. The lack of TPB intervention work may be attributable to the ongoing testing of the theory because, although the usefulness of the TPB has been consistently demonstrated, and the effect sizes have been impressive, researchers have been concerned with the large amount of unexplained variance in both intention and behaviour, which is usually between 50 and 60 percent. Much of the effort in recent TPB research has, therefore, been focused on enhancing the predictive validity of the TPB. This has been done in two main ways. First researchers have worked on

the volitional phase of behaviour change by strengthening the prediction of behaviour, both directly by adding variables, and by strengthening the intention – behaviour link. Second, researchers have focused on enhancing the motivational phase of behaviour change by increasing the prediction of intention through a re-examination of the core TPB variables, intention, attitude, perceived behavioural control, and subjective norm. In the following two sections, I discuss these two main ways researchers have enhanced the predictive validity of the TPB. Within these sections, I include a discussion of the implications of these strategies for TPB exercise interventions, particularly for young and midlife women.

Strengthening the Volitional Phase of Behaviour Change in the TPB

According to some researchers, the most problematic finding is that the TPB is poorer at predicting behaviour than it is at predicting intentions. The TPB can usually be relied upon to explain approximately 45% of the variance in exercise intentions, but only around 27% of the variance in exercise behaviour (Hagger et al., 2002b). Although the superior prediction of intention could be accounted for, in part, by common method variance between self reports of attitude, subjective norm, and perceived behavioural control, and self-report of intention, much research has sought to close, what Sheeran (2002) has called, the intention – behaviour gap. Consequently the focus of a lot of the research in the TPB has been on the volitional phase of behaviour change. A number of additional predictors of behaviour have been investigated, as well as moderators of the intention – behaviour relationship. This research provides theoretical insight into the TPB, as well as valuable information for development of physical activity interventions for young and midlife women.

Enhancing the Prediction of Behaviour

Ajzen (1991) commented that the TPB is “in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention and behaviour” (p. 199). Consequently, one way researchers have attempted to close the intention – behaviour gap has been to investigate the possibility of including further direct predictors of behaviour in addition to intention and perceived behavioural control. Other variables, such as personality factors (Rhodes & Courneya, 2003b), planning (Norman & Conner, 2005), and past behaviour (Norman, Conner, & Bell, 2000) have been investigated for their ability to enhance the prediction of behaviour. Past behaviour has emerged as the variable with the most potential in this regard, and the findings have some implications for developing physical activity interventions for young and midlife women.

Past behaviour. Past behaviour has been found to add unique variance to the prediction of behaviour. In particular, in their meta-analysis, Conner and Armitage (1998) reported as much as 13% of the variance in behaviour could be accounted for by past behaviour after controlling for the effects of intention and perceived behavioural control. The effect of past behaviour has been explained, with reference to Triandis’ (1977) theory of interpersonal behaviour, in terms of habit. Triandis suggested that after repeated performance, some behaviours become automatic, and do not require conscious and rational intentions. Thus, when a person has been in the regular habit of exercising, it is expected that they will continue exercising, less so because of their conscious cognitions, and more so, because of automatic processes that drive behaviour. Put another way, the frequency of past behaviour may moderate the intention – behaviour relationship such that the relationship between intention and behaviour is diminished when the behaviour has been performed frequently in the past.

It has been suggested that exercise is unlikely to be a behaviour for which automatic processes will completely take over from conscious cognitions (Biddle & Mutrie, 2001). This is because, unlike tooth-brushing, exercise is an infrequent and highly effortful behaviour. Indeed, Norman, Conner, and Bell (2000) in their longitudinal self-report survey of 87 patients in a primary care setting, failed to find evidence of a moderating effect of past exercise behaviour on the intention – behaviour relationship. That is, the effect of intention was not reduced to zero in the presence of frequent past behaviour. This suggests that exercise is one behaviour that is always, to some extent, under the conscious control of intentions, regardless of exercise habit or routine. In their study, however, Norman et al. found that past behaviour did add directly to the prediction of exercise behaviour, which is consistent with the meta-analysis of Conner and Armitage (1998) and other recent studies (Sheeran & Orbell, 2000). In addition, Norman et al. found that past behaviour moderated the perceived behavioural control – behaviour relationship. In particular, the interaction between past behaviour and perceived behavioural control added 11% to the prediction of behaviour. The interaction effect was such, that when past exercise behaviour was highly frequent, perceived behavioural control was a stronger predictor of behaviour than when there was little past experience with exercise. Norman et al. suggested that more frequent past behaviour allowed more accurate perceptions of control. This is consistent with Ajzen's (1988) assertion that perceived behavioural control will be a stronger predictor of behaviour when it is close to actual control.

It appears that having a history of engaging in exercise, although not relegating the behaviour to a completely automatic process, will lead to more accurate judgments about the potential impediments to exercise. On the other hand, lack of experience with

exercise may lead to overestimating the factors that will impede behaviour and the perception of less control than is, in fact, the case. For populations like young and mid-life women who have been shown to have some of the lowest levels of exercise participation in the community (Armstrong et al., 2000), less experience with exercise may perpetrate the problem of inactivity because women may perceive more barriers to exercise than are necessary. Descriptive studies certainly show that women in this age group perceive many barriers to engaging in exercise (Anderson, 2003; Brown, Brown, Miller, & Hanson, 2001; Jaffee, Lutter, Rex, Hawkes, & Bucaccio, 1999; Johnson, Corrigan, Dubbert, & Gramling, 1990). Interventions that simply allow women to build up their exercise experience can, thus, be expected to assist in influencing their future exercise behaviour, both directly, and through creating more realistic perceptions of control.

According to the research, however, past behaviour, and specifically the interaction between past behaviour and perceived behavioural control only adds a small amount, around 10%, to the prediction of behaviour. It has been suggested that even a 1% increase in exercise behaviour would result in substantial health benefits for an inactive population (Sheeran & Abraham, 2003), however, in theoretical terms, these results suggest that the majority of the influence on behaviour will still come from positive intentions to engage in exercise. Thus, enhancing women's intentions and their ability to translate intentions into action is perhaps, of more benefit than focusing on other predictors, such as past behaviour.

Enhancing the Intention – Behaviour Relationship

Researchers have suggested that a major problem for interventions aiming to encourage physical activity is not to enhance exercise intention, but to enable positive

intentions to be translated into action. In a meta-analysis of six studies across a variety of health behaviours, Sheeran (2002) showed that only half (53%) of those who had positive intentions, actually carried out the target behaviour. The remaining 47% had good intentions to exercise, use a condom, or engage in cancer screening, but failed to act on their intentions. This means that even though people may be motivated, they may still have difficulty translating their intentions into action. As a result of this understanding, many researchers have focused on the post-intentional processes that lead to behaviour and the moderating factors that result in a stronger intention – behaviour link.

Planning. Planning, or forming implementation intentions, has been investigated as one potential self-regulatory process that can strengthen the intention – behaviour relationship (Norman & Conner, 2005; Orbell, Hodgkins, & Sheeran, 1997; Sheeran, 2002). When making an implementation intention, an individual makes a series of if/then statements which specify the exact conditions under which the intended behaviour will take place. According to Sheeran, Webb, and Gollwitzer (2005), specifying in advance, when and where the behaviour will take place enhances the situational cues to action. As a result an individual is more likely to seize the opportunity to act when the situation presents itself and are also less likely to be deterred from their intentions when other tempting alternatives are available. In their research, Orbell et al. showed that the positive intentions of participants who had been instructed to make specific plans regarding when and where they would perform breast self-examination, resulted in these participants reporting higher levels of breast self-examination than those who did not make plans. This suggests that planning moderates the intention – behaviour relationship, such that intentions are more likely to be

translated into action when there are high, rather than low, levels of planning. These results have recently been supported in the exercise domain by Norman and Conner (2005) who showed that those participants who had made detailed plans regarding when and where they would exercise were more able to translate their exercise intentions into action. In addition, consistent with earlier research (Orbell et al.), the interaction between planning and intention was found to be significant after controlling for past behaviour. This means that, regardless of past experience with the behaviour, making if/then plans will assist in strengthening the intention – behaviour relationship.

The finding that past behaviour has no effect on the planning – intention interaction, is particularly important for sedentary women. As I noted earlier, many sedentary women may have more difficulty adopting exercise because their lack of experience may lead them to distort perceptions of the amount of control they have over performing the behaviour, and thus, cause them to perceive more barriers than there really are. Norman and Conner's (2005) research shows, that even though a person has little past experience with the behaviour, they may still be able to overcome their potentially flawed perceptions of control, which could directly inhibit their behaviour, if they are assisted with formulating implementation intentions. Planning is, thus, a valuable and practical tool that can be used in developing physical activity interventions for young and midlife women.

Intention stability. Another way in which a stronger intention – behaviour link may be formed is through the creation of more stable intentions. Ajzen (2002a) noted that one of the major difficulties of the TPB is the temporal stability of intentions. It is for this reason, that Ajzen (1985) asserted that behavioural intentions should be measured as close together in time as possible with the behavioural measure. This is

because over time, intervening situations may change intentions and thereby reduce the ability of intention to predict behaviour. On the other hand, stable intentions which are resistant to challenge and which do not change over time, according to Sheeran, Orbell, and Trafimow (1999), will produce a stronger prediction of behaviour. Indeed, Sheeran et al. showed that when participants had unstable intentions, very little variance in behaviour could be accounted for by intention. In addition, when intentions were unstable, the only predictor of behaviour was past behaviour. On the other hand, when intentions were stable, intentions had a strong effect on behaviour and the effect of past behaviour was attenuated. Other research has shown that stable intentions are also more likely to result in the behaviour change being maintained (Conner, Norman, & Bell, 2002). These findings are more good news for physical activity interventions with sedentary women who do not have a lot of exercise experience. In particular, assistance in formulating more stable intentions that are resistant to challenge and change should lead to less of an impact of lack of experience with exercise and enhance their ability to maintain physical activity.

Other moderators of the intention – behaviour link have also been suggested over the years, but in a recent study, Sheeran and Abraham (2003) found that intention stability mediates all these other moderators. Self-schema is one variable that has been found to moderate the intention – behaviour relationship, such that, exercise schematics, those people for whom exercise is both self-descriptive and important, are more able to convert intentions into actions than aschematics (Sheeran & Orbell, 2000). The reason why self schema is able to strengthen the intention – behaviour relationship is, according to Sheeran and Abraham's research, because schematics have more stable intentions. Similarly, intentions based on attitudes have been found to produce a

stronger intention – behaviour relationship than intentions based on subjective norms (Sheeran, Norman, & Orbell, 1999). Sheeran and Abraham have shown that this is because intentions based on attitudes are more stable than intentions based on subjective norms.

Age has been found to be another moderator of the intention – behaviour link. In general, it has been shown that the older one gets, the more one is able to translate their intentions into action. A recent meta-analysis by Symons Downs and Hausenblas (2005) showed that intention does not predict behaviour as well for adolescents as it does for young adults (aged 18 to 25) and older adults (aged 65 to 80). It was suggested that young people have a lack of experience in acting on their intentions and are, thus, at risk of weak or unstable intentions. This suggests that age may be another moderator that is also mediated by intention stability. It is interesting to note that those aged between 26 and 64 experienced just as much difficulty in translating exercise intentions into behaviour as adolescents. Although this cohort can be expected to have more experience with acting on intentions, their exercise intentions may be just as unstable as the intentions of those with little experience. Strengthening intention stability appears to be a very important intervention strategy for those who do not have a lot of exercise experience, because it overcomes the effect of past behaviour, and particularly for those aged between 25 and 64.

Strengthening the Motivational Phase of Behaviour Change in the TPB

A different perspective on enhancing the predictive validity of the TPB is provided by researchers investigating the core TPB variables. In this research, the primary aim is to enhance the capacity of intention to predict. Thus, the focus is on the motivational phase of behaviour change. Researchers in this area have attempted to

clarify the conceptualisation and understanding of the core TPB variables that predict intention, attitude, perceived behavioural control, and subjective norm. In discussing this research, I will outline both the theoretical and practical implications.

Attitude

In TPB research, attitude is consistently one of the strongest predictors of intention. Indeed, in the most recent exercise-based meta-analysis, attitude was slightly more predictive of intention than perceived behavioural control (Symons Downs & Hausenblas, 2005). Attitude is, thus, already a strong predictor of exercise intention, but researchers have suggested that more variance could be explained by specifying and measuring both instrumental and affective aspects of attitude, particularly for some populations, for whom exercise has emotional connotations. In doing so, researchers may be able to uncover the specific aspects of attitude, instrumental or affective, to focus on in TPB interventions, for particular populations, such as young and midlife women.

Measurement and conceptualisation. Azjen and Fishbein (1975) originally conceptualised “attitude” as a single dimension varying from favourable to unfavourable. Recently, researchers have suggested that it is useful to distinguish between the affective and the instrumental aspects of attitude (Lowe, Eves, & Carroll, 2002). The affective aspects of attitude refer to the emotion associated with the target behaviour and judgments, such as good-bad or enjoyable-unenjoyable. The instrumental aspects of attitude refer to the perceived benefits and costs associated with the target behaviour and judgments like beneficial-harmful or healthy-unhealthy. Lowe et al. suggested that the affective component of attitude is more important than the instrumental component in decision making, particularly for behaviours, such as

exercise, which involve some degree of discomfort and fatigue and, therefore, are typically connected with emotion. The finding that lack of interest and enjoyment constituted the top two barriers to participation in physical activity, rather than lack of good health (Sallis et al., 1989), suggests that affective evaluations may be as important in understanding exercise behaviour as instrumental evaluations.

According to Lowe et al. (2002), the unexpected finding of a direct relationship between attitudes and physical activity in the meta-analysis conducted by Hausenblas et al. (1997) could be explained as the effect of affective attitudes. In their 6-month prospective survey of a large urban community-based sample, Lowe et al. tested the longitudinal effect of affective and instrumental attitudes on physical activity intention and moderate and vigorous physical activity. Consistent with the results of the meta-analysis of Hausenblas et al., Lowe et al. found that attitudes directly predicted exercise behaviour beyond the effect of intention, but that it was the affective, rather than the instrumental, aspects of attitude that were implicated.

The results from the Lowe et al. (2002) study suggest that, for physical activity, intention and behavioural control are not the only direct predictors in the TPB, and that affective aspects of attitudes also have a direct relationship with behaviour. Other studies, however, have failed to find a direct affective attitude – behaviour relationship. Rhodes and Courneya (2003a) tested an omnibus model of the TPB, including both affective and instrumental attitude, and found that a general attitude factor, including both aspects of attitude, was the optimal predictor of intention. In addition, they did not report a direct attitude-behaviour effect. These findings agree with Ajzen's (1991) reports of investigations into the two factor model of attitude. Although Ajzen acknowledged that there was discriminant validity in affective versus instrumental

attitudes, he found that the best prediction of leisure activity intention was given by the combined measures of attitude. Interestingly, although Rhodes and Courneya's study did not support the results of the Lowe et al. study, they did find that affective attitudes were more important in the prediction of physical activity intention for cancer survivors than for university undergraduates. They explained this by suggesting that exercise was a more emotional issue for people, like cancer survivors, who had recently come into contact with their own mortality and the physical realities of being ill.

Implications for interventions. There does seem to be some validity in focusing on the affective, as well as, the instrumental component of attitudes to physical activity. Although the direct affective attitude – behaviour relationship is not well supported, focusing on the affective aspects of people's attitudes to physical activity may be an effective way to enhance motivation for physical activity, particularly for some populations, like cancer survivors, for whom being physical is an emotional issue. Indeed, making a distinction between affective and instrumental attitudes may explain some unexpected findings with regard to women and physical activity.

In particular, young and midlife women generally report positive attitudes towards physical activity (Currie & Develin, 2002), but population surveys show that this population has one of the lowest levels of actual physical activity (Armstrong, Bauman, & Davis, 2000; Currie & Develin, 2002). In light of the research of Lowe et al. (2002), it is conceivable that only women's instrumental attitudes to physical activity are positive. Indeed, a closer look at Currie and Develin's survey of 450 women with children reveals that the positive attitudes expressed by women in being involved in a pram walking-based physical activity regimen were probably instrumentally-based, rather than affectively-based. The women in the study agreed

that pram walking would reduce stress and postnatal depression, and would increase fitness and well-being, but no mention was made about how the women felt about pram walking. Research, such as Currie and Develin's, which, only shows evidence of women's instrumental attitudes, may thus, fail to fully assess the true state of affairs with regard to women's attitudes to exercise. The reality for many women may be that they think exercise is beneficial (positive instrumental attitude) but they don't like it (negative instrumental attitude). Consistent with this, Auweele, Rzewinicki, and Mele (1997) found that women experienced more negative emotions about exercise than men. Further support for this notion can be found in the general surveys of the incentives and barriers to physical activity in women. In these surveys, women predominantly list feeling-based cognitions about physical activity as barriers to activity, such as, "do not enjoy it", "don't feel sporty", "embarrassed about how I looked or performed", "disliked instructor", "disliked people in the class", "felt I wasn't making any progress" (Anderson, 2003; Brown et al., 2001; Jaffee et al., 1999; Johnson et al., 1990). It may be that, for women, when based on the instrumental factor, attitudes, although positive, may not have as much impact on intention and subsequent behaviour, as attitudes based on the affective factor.

Physical activity interventions for populations such as young and midlife women should, thus, aim to present physical activity in a more emotionally-appealing way in order to control the negative emotions associated with exercise participation. This type of intervention may be more beneficial in promoting adoption and maintenance of physical activity in this population than educating women on the health benefits of exercise.

The lack of correspondence between the apparently positive attitudes and exercise intention and behaviour in young and midlife women may be partly due to the lack of consideration of the importance of affective attitudes, but the other factors in the TPB, such as perceived behavioural control and subjective norm must also be considered.

Perceived Behavioural Control

In research on the TPB, perceived behavioural control has been very useful in predicting physical activity intention, and to a lesser extent, in predicting physical activity itself (Hagger et al., 2002b; Symons Downs & Hausenblas, 2005). There has, however, been considerable variation and confusion in its measurement, which can, to some extent, be traced back to ambiguities in the original conceptualisations of the variable. A multi-dimensional conceptualisation of perceived behavioural control is now favoured, which is able to enhance the prediction of motivation and behaviour and has distinct implications for physical activity interventions.

Measurement and conceptualisation. Ajzen (1987) added perceived behavioural control to account for the fact that successful execution of non-volitional behaviours required more than intention alone. Perceived behavioral control was, therefore, conceived as a measure of the amount of control over external, real world influences where perceived lack of control could potentially inhibit intention and behaviour. Ajzen (1991), however, also suggested that behavioural control was most compatible with Bandura's (1986) concept of self-efficacy. Self-efficacy refers to internal perceptions of capability to successfully execute particular behaviours. Thus, Ajzen has proposed two distinct definitions of perceived behavioural control, an external definition (resources, opportunity) and an internal definition (capability).

In research, it is now common to distinguish between external control factors, referred to as controllability, and internal control factors, known as self-efficacy (Ajzen, 2002b). Despite acknowledging the multi-dimensional nature of perceived behavioural control, Ajzen (2002b) continued to maintain that the two aspects of behavioural control do not exert differentiating causal influences on intention or behaviour. A growing body of research, however, suggests otherwise. In early work, Terry (1991, 1994) showed that confidence in one's ability (internal control or self-efficacy) is empirically distinct from perceptions that a situation is controllable (external control or controllability). In her TPB research in the exercise domain, Terry showed that by splitting the two components of behavioural control, different effects were found (Terry & O'Leary, 1995). In particular, self-efficacy predicted intentions and controllability predicted behaviour. Terry and O'Leary concluded that combining the two concepts has confounded a lot of research and masked the effects that the variables have in the TPB. For example, Terry and O'Leary found that controllability moderated the intention – behaviour relationship, such that high controllability resulted in a stronger intention – behaviour relationship than low controllability. This means that people's intentions are more likely to result in action, if they have a high degree of external control over the behaviour. This finding is not inconsistent with the predictions of the TPB, because Ajzen (1991) theorised that intention and behavioural control would interact. He did note, however, that this effect has seldom received empirical support. According to Terry and O'Leary, the lack of support for this theorised effect may be due to confounding self-efficacy with controllability. Indeed, when they combined self-efficacy and controllability, the moderator effect disappeared, providing support for this assertion.

Subsequent empirical work supports distinguishing self-efficacy from controllability. Consistent with Terry and O’Leary’s (1995) findings, in a meta-analysis of 11 studies, Trafimow, Sheeran, Conner, and Finlay (2002) found that self-efficacy, or “perceived difficulty” was the best predictor of intentions, however, contrary to Terry and O’Leary’s findings, the self-efficacy construct, “perceived difficulty”, rather than the controllability construct, also emerged as the best predictor of behaviour. The studies reviewed were not, however, exclusively conducted in the exercise domain and included behaviours, such as healthy eating, studying, and, telling a partner to use a condom. The type of non-volitional behaviour may, thus, be a factor to consider.

Terry and O’Leary (1995) suggested that general physical activity is a specific type of non-volitional behaviour that is not likely to be associated with very low levels of behavioural control. It is not, for example, an impossibly difficult behaviour that only few can access and master, such as Olympic diving, neither, however, is physical activity completely accessible and easy. On the continuum of non-volitional behaviours, physical activity may lie somewhere in the middle. Behaviours, such as, healthy eating, studying, and telling a partner to use a condom may be more accessible, and lie closer to the volitional end of the continuum of non-volitional behaviours. For these more accessible non-volitional behaviours, the perception of difficulty, or the self efficacy for the behaviour, may be the only perceived behavioural control variable required to predict both intentions and behaviour. For slightly less accessible behaviours, such as exercise, the perceptions of difficulty (self-efficacy perceptions) should influence exercise intention, but the very real external constraints associated with participating in physical activity (controllability) should also influence the

behaviour directly. The effects of self-efficacy and controllability may, thus, be different for different levels of non-volitional behaviours. In particular, whereas self-efficacy, rather than controllability, is a strong predictor of intention across all non-volitional behaviours, as the behaviour becomes less accessible, controllability, and not self-efficacy becomes more important in the direct prediction of behaviour.

Some support for the assertion that the importance of controllability, rather than self efficacy, as a direct predictor of behaviour, will vary with the difficulty or complexity of the non-volitional behaviour, can be found in the research by Bryan and Rocheleau (2002). Although confounding the two dimensions of perceived behavioural control, Bryan and Rocheleau showed that perceptions of control were more important for resistance than aerobic training. They suggested that this was because resistance training is a less accessible behaviour, requiring more equipment and facilities, than aerobic training. Motl et al. (2002) also showed that whereas self-efficacy was only related to moderate physical activity, controllability was also related to vigorous activity. This was presumably because vigorous activity requires more resources, or the perception of more resources, than moderate activity. The most recent meta-analysis of TPB studies specifically conducted in the exercise domain confirms Terry and O'Leary's findings that self-efficacy is a better predictor of physical activity intention than controllability, and that controllability is the better predictor of physical activity than self-efficacy (Symons Downs & Hausenblas, 2005). This supports the view that exercise is a behaviour for which both the self-efficacy and controllability aspects of perceived behavioural control must be considered.

Implications for interventions. Including self-efficacy in the TPB as an additional predictor of intention, whilst also retaining the direct controllability-

behaviour path seems to be a valid model structure for studies and interventions in the exercise domain. The demonstrated importance of self-efficacy in the TPB is important for interventions because, as Motl et al. (2002) noted, it is much easier to enhance self-efficacy through manipulations of reinforcement history, observational learning, persuasion, and perceived exertion, than it is to manipulate more generalised beliefs about external controls on behaviour. According to the research, manipulations of self-efficacy in physical activity interventions will only enhance intentions and not influence behaviour directly. Given that intention has been shown in meta-analytic research (Symons Downs & Hausenblas, 2005) to be a stronger predictor of exercise behaviour than perceived behavioural control, this is not necessarily problematic. It may be that the majority of people, although regarding exercise as a difficult behaviour to perform, do not perceive exercise to be particularly inaccessible.

It would be unwise, however, to rule out the controllability factor in physical activity interventions, particularly with some populations, such as young and midlife women. This is because it is likely that young and midlife women view exercise as a more inaccessible behaviour than the general population and, thus, controllability could be expected to have a larger additional impact on exercise behaviour. Although Symons Downs and Hausenblas (2005) found that perceived behavioural control made a small and non-unique contribution to exercise behaviour, it is possible that this finding may have been due to population factors. In the Symons Downs and Hausenblas meta-analysis, 40% of the studies used either undergraduate students or adolescents. An additional 10% of the studies reviewed were conducted on already active populations at fitness clubs, and another 11% were conducted with hospital patients. Only the remaining 39% of the studies reviewed, therefore, may have

included inactive women, but the demographic was not specified. Thus, the finding of a small contribution of perceived behavioural control to exercise behaviour may not be able to be generalised to young and midlife women.

Adopting and maintaining physical activity would conceivably involve overcoming more external barriers for young and midlife women than for many other populations. It is in these middle adulthood years that women can be expected to be having and raising children, starting and developing careers, and managing their immediate and extended families. A common thread in much of the research investigating the barriers to physical activity in young and midlife women, particularly women with children under 16, is that they do not have the time to engage in regular physical activity (Anderson, 2003; Brown et al., 2001; Currie & Develin, 2002; Eyler et al., 2002; Johnson et al., 1990; Miller, Trost, & Brown, 2002). This issue of time constraint appears to affect women from all socio-economic levels and cultures. The Brown et al. survey of white, middle class, Australian women with young children revealed that having no time due to household or childrearing responsibilities was the most commonly reported barrier to physical activity. Similarly, time constraints topped the list of barriers for Anderson's (2003) study with a white, undergraduate and postgraduate, university population in America. Johnson et al. surveyed black and white American women, predominantly under the age of 40, from a mix of socio-economic levels. In this diverse sample, Johnson et al. found that for women, the perceived barrier to physical activity that was the same for black and white, young and old, women, was lack of time due to work or school, household, and children. Likewise, in a series of qualitative studies conducted in the US, with women aged between 20 and 50, representing ethnic minorities, such as African American women,

Latina women, and American Indian women, many barriers to physical activity were identified, some of which were culturally specific, but the barrier of time was noted to be common to all groups (Eyler et al., 2002).

Time, as has been noted by various authors, can be considered an external controllability factor (Godin, 1994; Godin & Kok, 1996). Thus, although it may be easier to focus on enhancing self-efficacy for participating in regular exercise, in general physical activity interventions, for young and midlife women, controllability should also be addressed. In particular, changing perceptions of the time barrier should assist women translate their intentions into behaviour.

Addressing the perceptions of the time barrier for women is, however, complex. Research has shown that time-constraint is an issue for women becoming more active for two main reasons. The first is the external controllability issue I have been discussing. That is, women in middle adulthood are limited by real constraints in terms of work, childcare, household duties, partner care, and care of relatives (Brown et al., 2001; Drew & Paradise, 1996). This means that women are practically limited in the amount of time they can afford to spend on activities, such as exercise. The second is thought to be the influence of a traditional ideology of motherhood (Brown et al., 2001; Drew & Paradise, 1996). Meissner (1977) spoke of this ideology as a contract that women have, which requires them to be on call 24 hours a day, in which, according to Chodorow and Contratto (1989), they must service the needs of others for whom they feel responsible. Indeed, Drew and Paradise (1996) reported that the women in their qualitative study spoke of their time as belonging to those whom they cared for and were dependent on them, and not as belonging to themselves. Furthermore, engagement in activities, such as exercise, was construed as a misuse of time, non-

productive, or a waste of time, which created feelings of guilt when engaged in. Similarly, in their survey-based study, Brown et al. concluded that the inability of women to act out their leisure preferences was due to a mix of structural influences, such as lack of time, money, and energy, and ideological influences, such as a sense of commitment to others.

For young and midlife women, lack of perceived behavioural control, in the form of not having the hours in the day to exercise, is certainly an issue that could be addressed in physical activity interventions, but this seems to represent only part of the picture. The picture can only be completed by understanding the social influences on women's behaviour and addressing those influences, such as the norms associated with motherhood and caring, which, for women, seem to be detrimental to exercise. This leads to a consideration of the final variable in the TPB, subjective norm.

Subjective norm

The subjective norm variable in the TPB has attracted substantial research interest and, to date, there is disagreement over the conceptualisation, measurement, and importance of the variable. Symons Downs and Hausenblas (2005) concluded that in the exercise domain, “the influence of significant others has less of an impact on people's exercise intention, than their attitude and perceived behavioural control” (p. 88). This conclusion was drawn after finding, in their meta-analysis, that subjective norm was the only variable that did not make a significant contribution to intention. Meta-analytic reviews in other behavioural contexts, including dietary practice and condom use, have shown a similarly small subjective norm – intention relationship (Armitage & Conner, 2001). Fishbein and Ajzen (1975) originally suggested that the influence of subjective norm would vary across behaviours, but more recently Ajzen

(1991) suggested that personal considerations (attitude and perceived behavioural control) overshadowed the influence of perceived social pressure in most behavioural domains. Whilst many researchers have accepted that subjective norm is a weak predictor in the theory of planned behaviour, there have been some who have sought to improve the performance of social norm in the TPB. Before addressing the value of using subjective norms in TPB physical activity interventions, particularly with young and midlife women, I will discuss the various ways researchers have attempted to increase the predictive validity of subjective norm.

Social support. Courneya and his colleagues (Courneya, 2004; Courneya & McAuley, 1995; Courneya, Plotnikoff, Hotz, & Birkett, 2000) currently maintain that social support is the correct social variable to use in the TPB model. Courneya has argued that, when extending the boundary conditions of the TPB to include non-volitional behaviours, along with adding perceived behavioural control, Ajzen, should also have altered the conceptualisation of the social factor. In the same way that perceptions of controllability become more important the less volitional a behaviour becomes, so too, Courneya argued, does social support become more important than subjective norm, or the perceptions of what others expect. Thus, Courneya et al. (2000) suggested that as behaviours become more difficult, people are less interested in what others think of their behaviour and require more actual assistance in the form of social support. Thus, they argued that receiving, or at least anticipating receiving, actual social assistance in non-volitional behaviours, such as exercise, would have more impact on intention than normative influence. Indeed, in a study with a large community-based sample, Courneya et al. showed that social support was a stronger predictor of exercise intention than subjective norm. Similarly, VonDras and Madey

(2004) showed that the social support offered by a close friend or family member was more important in predicting behavioural intentions in the health domain, than subjective norm. Symons Downs and Hausenblas (2005) agreed that social support may be a stronger predictor than subjective norm, but indicated that the data is still insufficient to be able to draw firm conclusions on this issue.

Descriptive norm. Alternatively, rather than replace the social norm variable, other researchers have suggested that the problem lies in too narrow a conceptualisation (Armitage & Conner, 2001; Ravis & Sheeran, 2003a; Sheeran & Orbell, 1999). The conceptualisation of subjective norm is an injunctive measure whereby people are asked to rate how much they perceive important others would wish them to perform the behaviour (Fishbein & Ajzen, 1975). This injunctive measure is a prescriptive measure in that it is concerned with people's perceptions of gaining or losing approval from others in a social network for engaging in future behaviour. It has been argued that a descriptive measure of subjective norms would be a more effective way of operationalising the variable. Rather than measure perceptions of what important others think one ought to do (injunctive), the variable should measure perceptions of what important others actually do (descriptive). Observing the actual behaviour of important others is theorised to be a stronger source of motivation than anticipating approval or disapproval, because what other "important" people actually do, demonstrates typical or normal behaviour, and people generally want to fit in and be normal (Ravis & Sheeran, 2003b).

A recent meta-analysis has shown that descriptive norms contribute significantly to motivation. Ravis and Sheeran (2003a) analysed 14 studies using a descriptive norm component, involving a total of 5,810 participants across a range of

behaviours, including exercise. They found that, despite some methodological issues, descriptive norm contributed an additional 5% to the prediction of intention beyond attitudes, the standard subjective norm (injunctive norm) variable, and perceived behavioural control. They also reported low correlations between descriptive norms and subjective norms (injunctive), providing evidence of discriminant validity between the two variables.

One other study, also using descriptive norms, but not included in the meta-analysis conducted by Ravis and Sheeran (2003a), warrants discussion. Okun, Karoly, and Lutz (2002) gained self-reported exercise behaviour from 530 undergraduate students who were mainly 18 yrs or younger. They asked the students to rate injunctive and descriptive norms for physical activity amongst their parents and family members and also amongst their friends and peers. Consistent with Ravis and Sheeran's meta-analytic research, Okun et al. also showed that descriptive norm, rather than injunctive norm, predicted exercise intention. In addition, Okun et al. demonstrated a direct descriptive norm – behaviour relationship. An important finding in the Okun et al. study was that these relationships were only evident when the “important others”, in their predominantly teenage sample, were friends and peers, not when the “important others” were parents. Neither descriptive, nor injunctive, norm of parents for this sample were significant predictors of intention or behaviour. Similar research by Baker, Little, and Brownell (2003) supports this differential effect of norms on intention. In a study of 305 adolescent girls and boys, Baker et al. showed that for the adolescent boys in particular, peer, rather than parent, norms predicted intention.

Ravis and Sheeran (2003a) reported that age tends to moderate the descriptive norm – intention relationship such that the effect of descriptive norm on intention is

stronger for younger age groups, such as teenagers, than it is for adults. This has been theorised to occur because young children and adolescents are more susceptible to social influence as they try to establish their self-identity (Erickson, 1968). The Okun et al. (2002) and Baker et al. (2003) studies were indeed conducted with teenagers and this may explain the main effect of norms on intention, but the potential moderator effect of age does not explain the interaction between important other and descriptive norms. That is, why one group of important others (peers) exerted more social influence than another group of important others (parents).

Reference group norm. The evidence certainly suggests that descriptive norm may be a stronger predictor of intention than injunctive norm, but the Okun et al. (2002) and Baker et al. (2003) studies also highlight the importance of the reference group, suggesting that not every individual a person knows and considers important in their lives, is capable of social influence. Indeed, there is a growing body of research showing that group identification moderates the effect of subjective norm on intention such that, only strong identification with a relevant reference group results in a strong subjective norm - intention link (Terry & Hogg, 1996). Along these lines, Terry and Hogg suggested that subjective norm should be defined not as the perception that important others desire the behaviour (injunctive), or even that they engage in the behaviour themselves (descriptive), rather, subjective norm should be defined as the perception that relevant reference groups desire and/or engage in the behaviour. For Terry and Hogg, differentiating between descriptive and injunctive norms is not as important as differentiating between “important others” and “relevant reference groups”. Accordingly, when Terry and Hogg asked university students about the pressure they felt from important others to exercise (standard subjective norm) they

found a small subjective norm – intention effect consistent with recent meta-analytic reviews of the TPB (Hagger et al., 2002b; Hausenblas et al., 1997; Symons Downs & Hausenblas, 2005). When they asked the same students about the pressure they felt from their university peers to exercise (relevant reference group), they found that subjective norm had a significant effect on intention, but only for those who identified with the reference group. Subsequent research has supported the finding that identification with a relevant reference group moderates the effect of norms on intention in household recycling (Terry, Hogg, & White, 1999), healthy eating (Astrom & Rise, 2001), and binge drinking (Johnston & White, 2003).

Terry and Hogg (1996) took their findings as evidence that neither a disconnected collection of “important others”, nor any random reference group can exert social influence. Rather, only reference groups relevant to an individual’s sense of self, those groups with which they identify, can exert normative influence. This rationale can also be applied to the Okun et al. (2002) and the Baker et al. (2003) studies. It can be theorised that only the norms of those who were relevant to the self-identity of teenagers, their peers, not their parents, were able to influence intention.

Individual difference. Trafimow and Finlay (1996) labelled the finding that identification with a reference group increases the strength of the subjective norm – intention relationship, an individual difference, to which only a minority of people are susceptible. According to Trafimow and Finlay, a minority of people are normatively controlled and for these people, subjective norm will always have a strong effect on intentions. Thus, the reason TPB research often shows a small effect of subjective norms, is, according to Trafimow and Finlay, because only a small number of people are actually susceptible to normative influence. To demonstrate this point, Trafimow

and Finlay conducted within-subject correlations for a set of 30 behaviours. Their analysis revealed a small, but consistent, percentage of participants seemed to be normatively controlled. For these participants, intentions were more influenced by subjective norm than attitude in all behavioural domains. It follows from Trafimow and Finlay's argument, therefore, that for a person who is susceptible to normative influence, it does not matter what the behaviour is, or who is doing the influencing, their friends, their parents, their teachers, their work colleagues; they will be influenced. Latimer and Martin Ginis (2005) empirically tested these ideas and operationalised the trait of being normatively controlled, as high ratings on a fear of negative evaluation scale. Consistent with Trafimow and Finlay's approach, they found that those participants, undergraduate students, who had a high fear of negative evaluation, and were, therefore, considered "normatively controlled", evidenced a stronger subjective norm – intention relationship, than those participants who had a low fear of negative evaluation.

Recently Hagger, Nikos, and Chatzisarantis (2006) have taken a similar individual differences approach, but instead of labelling people "normatively controlled" they differentiate people on the basis of whether they were self-identity orientated or TPB-orientated. Self-identity orientation was defined as the tendency for individuals to act on the basis of their socially defined roles, whereas TPB-orientation was defined as the tendency to act on the basis of individual attitudes and control beliefs. Also using the technique of within-subject correlations for a set of 30 behaviours, Hagger et al. found that subjective norm was a stronger predictor of intentions for those who were self-identity orientated than those who were TPB-orientated.

Although the individual differences approach to subjective norms is somewhat compelling, it is, as Armitage and Conner (2001) have pointed out, highly unlikely that the “majority of people’s behaviour is unaffected by social pressure” (p. 488). Indeed, recent TPB studies on condom use in non-Western societies, such as Ethiopian adolescents living in Addis Ababa (Fekadu & Kraft, 2001), and African Zulus living in rural locations (Giles, Liddell, & Bydowell, 2005) have found that whole communities are affected by social pressure. Contrary to much TPB research, based on urbanised Western samples, this research has shown subjective norm to be one of the most important predictors of intentions to use a condom and, in the Giles et al. study, attitude, the variable suggested by research to be the strongest predictor of intention (Symons Downs & Hausenblas, 2005), for the majority of people, did not add any unique variance to the prediction of intention.

Interestingly, in the Giles et al. (2005) study, and similar to the Okun et al. (2002) and Baker et al. (2003) studies, some sources of social influence were found to be more important than others. In the Okun et al. and Baker et al. studies, in Western societies, social influence from adolescents’ friends was found to be a stronger predictor of intention and behaviour than social influence from their parents. For African teenagers, the social influence from family was found to be more important than influence from other referents, such as partner, friends, and teachers. According to Giles et al., this is consistent with observations that family are generally more central in collectivist, non-Western cultures than they are in the individualistic Western cultures. In these collectivist cultures, Giles et al. suggested that the concerns of the family and community are not necessarily separable from those of the individual. This research demonstrates that, even if it were true that only a small number of people or specific

groups of people, such as the teenagers in the Okun et al. and Baker et al. studies and the African Zulus in the Giles et al. study, are susceptible to normative control, these people are not susceptible to normative control from all referents, rather only from those people or groups who are considered central to the individual's self-concept.

The influence of the norms of a relevant reference group may also account for the low participation in physical activity of young and midlife women. As I discussed earlier, one of the reasons women do not engage in sufficient exercise is thought to be because of the influence of the ideology of motherhood and caring. This could mean that women are persuaded not to exercise because of the norms of their relevant reference groups, such as other mothers, emphasise caring for others over the self. Since exercise could be considered a self-care behaviour, this would not be included as a normative behaviour for women who identify as mothers and carers.

Normative influence. The notion that others in a group, or a community, can be important to a person's sense of self is not a new concept in social psychology (Mayo, 1949; Sherif, 1936; Tajfel & Billings, 1974; Turner, 1982), but it is one that TPB researchers seem unwilling to accept. Despite the growing body of research, just outlined, showing that normative influence has the capacity to be self-relevant and, thus, exert a strong effect on intentions, much of the TPB research in exercise and health psychology continues to construe normative influence as an external, rather than an internal, self-relevant force. Only recently, and in a qualified way, has normative influence in the exercise and health-based literature, been conceived of as self-relevant

Hagger, Chatzisarantis, and Biddle (2002a) suggested that the concept of introjected regulation from the perceived locus of causality continuum (PLOC), based on self-determination theory (SDT; Deci & Ryan, 1985), is the motivational precursor

of subjective norms. Introjected regulation lies at the controlling end of the PLOC continuum, but is a less extreme version of external motivation than external regulation (behaviour performed purely for rewards or to avoid punishment). Introjected regulation describes the type of motivation that underlies behaviour carried out because of external pressure and to avoid feelings of shame or guilt. In contrast, Hagger et al. suggested that the motivational precursors of attitudes and behavioural control are intrinsic motivation or identified regulation, two types of motivation that lie at the opposite, autonomous end of the PLOC continuum. These types of internal or autonomous motivation describe behaviour performed for enjoyment, pleasure, and fun (intrinsic motivation) or because of personally held values (identified regulation).

Since internal or autonomous motives relate to personal values and goals, they are considered to be more motivationally adaptive (Deci & Ryan, 1985). Thus, according to Hagger et al. (2002a), attitudes and perceived behavioural control are stronger predictors of intention because they are more self-relevant. In their study of a large population of children, Hagger et al. found that only autonomous motives indirectly predicted exercise intention and they did so, only through the factors of attitudes and perceived behavioural control, not through subjective norm. Thus, subjective norms, or normative influence, were not considered to be a self-relevant construct, whereas attitudes and perceived behavioural control were considered self-relevant. Similar reasoning was applied by Sheeran and Orbell (1999), when they demonstrated that intentions based on subjective norms resulted in a weaker intention – behaviour link than intentions based on attitudes. The poorer motivational impact of intentions based on subjective norms was attributed to the idea that normative influence

stems from controlling motives, which are experienced as pressure and coercion and are unrelated to the core self, unlike attitudes.

Godin, Conner, and Sheeran (2005) have recently qualified the idea that normative control is not ever self-relevant, by suggesting that normative control is only external to self and non self-relevant, when it is experienced as social pressure, but not when it is experienced as moral or personal pressure. This qualification was made in light of a growing number of studies showing that moral norm, or the perceived moral correctness of the behaviour, makes an independent and significant contribution to the prediction of intentions (Harland, Straats, & Wilke, 1999; Manstead, 2000; Parker, Manstead, & Stradling, 1995). The rationale is that moral norm is very much an expression of the core self because morals have to do with deeply held personal values, more so, perhaps, than attitudes. On this basis, Godin et al. suggested that moral norms are in a position to have a large motivational impact. Indeed, Godin et al. showed that intentions based on moral norms had a stronger motivational impact (stronger intention – behaviour link) than intentions based on attitudes. An important adjunct was that the finding only applied to behaviour that could be construed in moral terms. Exercise, was not considered to be a behaviour that is construed in moral terms, therefore, exercise intentions based on moral norms had no stronger impact on the intention – behaviour relationship than intentions based on attitudes.

Despite the qualification that the consideration of moral norm has elicited, there seems to be agreement in one camp, that subjective norm has a small effect in the TPB, for the majority of the population, except for the small proportion of those who are normatively controlled, because influence that emanates from social sources, is external, non self-relevant, and imparts shallow influence. Attitudes and perceived

behavioural control, however, have a large effect in the TPB because they are internal and self-relevant. This perspective can be traced back to Deutsch and Gerard's (1955) dual-process model of social influence, which differentiates between shallow normative (external) and deep informational (internal) influence. It is understandable, therefore, that with this dual process understanding of behaviour change, only the cognitive or informational influence (attitude and PBC) is perceived to have any real power. As such, social/ normative influence (subjective norm) is considered peripheral.

According to Turner (1991), however, it is wrong to think that information processing is isolated from social concerns. In his theorising, all perception and cognition is a function of one's own position in the world and is, thus, screened, or filtered by social groupings/ social reality. The research, listed earlier, showing subjective norms to have a strong effect in the TPB (Astrom & Rise, 2001; Baker et al., 2003; Giles et al., 2005; Johnston & White, 2003; Okun et al., 2002; Terry et al., 1999; Terry & Hogg, 1996), simply attests to this point. The social pressure in this research was strong because it was not perceived of as "external" to the self, rather it was considered internal and self-relevant because it emanated from reference groups with which the individual's identified.

Rather than quibble about what is strong and what is weak influence as is advocated in the dual process model that the TPB research has employed, Turner's (1991) perspective proposes a single process model of social influence whereby only influence that is self-relevant has any power to influence. Critically, in his perspective, the "self" is not only individual and personal, it is, and can be, in some contexts, social and consensual. The ability of the "self" to be social is the reason that social influence in the Okun et al. (2002) study, and other research discussed, (Astrom & Rise, 2001;

Baker et al., 2003; Giles et al., 2005; Johnston & White, 2003; Terry et al., 1999; Terry & Hogg, 1996), was so powerful. The influence was strong because it emanated from the self (social self). Turner's concept of the "self" and the implications for subjective norm in the TPB is outlined more fully in the next sections on social identity and self categorisation theory.

Summary

The level of research on the TPB means that it is a theory which should be seriously considered when designing physical activity interventions. One reason the TPB has not been used as the basis of more intervention work is that researchers have been more interested in improving the predictive validity of the theory, than using it in interventions. There has been a great deal of research conducted at both the volitional and motivational stages of the theory which have provided additional insights into predicting behaviour and intention.

In terms of improving the prediction of behaviour, the volitional stage, researchers have generally agreed that past behaviour can have a direct effect on present behaviour, over and above intentions and perceived behavioural control, but at least some of this variance may be accounted for by the post intentional process of planning and the stability of intentions. Thus, the effect that lack of experience with exercise can have on reducing future exercise behaviour, may be overcome through planning and developing more stable intentions. The most important contribution past behaviour appears to make in the TPB is by moderating the perceived behavioural control – behaviour relationship. Finally, for exercise behaviour, there is a growing body of evidence to suggest that it is the external, controllability aspect of perceived

behavioural control, rather than the internal, self-efficacy aspect, that is more important in the direct prediction of behaviour.

In terms of improving the prediction of intention, the motivational stage, the importance of attitudes, both the affective and instrumental aspects, are well established. The argument for using the internal aspect of perceived behavioural control, self-efficacy, as a predictor of intention, rather than the external aspect, controllability, has been well made. With regard to subjective norm, however, there is less agreement in the literature. Debate still continues about the conceptualisation and measurement of subjective norm. Indeed there is even a question about whether subjective norm is of any importance at all in the prediction of intention.

Although there are still many issues to clarify in the TPB literature, knowledge of the TPB, particularly in the exercise domain, is at a very high level and, thus, researchers are in a perfect position to begin applying the TPB to physical activity interventions.

Applying the TPB to Physical Activity Interventions

Although the research on the volitional, or post intentional, phase of behaviour change is compelling and provides much that can be practically applied in physical activity interventions, focusing on the motivational or pre-intentional phase of behaviour change may be more important for physical activity interventions that target sedentary populations. Sedentary people, by definition, are not in an action stage in which they are regularly engaging in physical activity. Although some sedentary people may be inactive because they are unable to convert their positive intentions into action, it is more likely that the source of most sedentary people's inactivity is due to

lack of motivation. Thus TPB interventions for sedentary populations should focus on manipulating the social cognitive factors in order to enhance intention to exercise.

Both attitude and the internal aspect of perceived behavioural control have been demonstrated to be stronger predictors of intention than subjective norm, and thus would perhaps be more useful in enhancing intention in physical activity interventions. Manipulating subjective norm in physical activity interventions, however, may be of more benefit for two reasons. Firstly, quasi-experimental intervention research can provide a unique contribution to the debate about the importance of subjective norm in the TPB. Secondly, a growing body of research indicates that manipulating subjective norm, when conceptualised as reference group norm, may be very effective in enhancing motivation, particularly for some populations, for whom reference groups are an important aspect of the self, such as teenagers, and young and midlife women.

Subjective Norm in TPB Interventions

Whilst there has not yet been a common consensus about the importance and conceptualisation of subjective norm, particularly in the exercise and health domain, what is clear, is that there are more complex social psychological processes involved in understanding the effect of subjective norm on intention, than simply concluding that social influence is external to self and, therefore, has no capacity to deeply influence a person. I now discuss one approach that has the potential to reconcile the apparently disparate TPB studies on the subjective norm component. This approach is based on two social psychological theories and is called the social identity approach. I go on to discuss the way in which the social identity approach may be able to establish a common understanding of the processes by which subjective norm influences intention,

and finally, I suggest some important ways in which this understanding of subjective norms may be particularly relevant in physical activity interventions.

The Social Identity Approach

Social identity theory (SIT; Tajfel, 1974) and self categorisation theory (SCT; Turner, 1982) arose out of frustration with psychological analysis that gave precedence to the individual or personal identity, and that saw group behaviour as nothing but the sum of each individual reality (Allport, 1924). In these individual types of analysis, social groups are typically seen as a context in which individuals behave, but groups are not expected to change the essential and true “individual” psychology (see Turner & Oakes, 1989). There is, however, a long tradition of opposing thought. It has been argued that groups are more than the sum of their parts and that groups have the capacity to change individuals (Mayo, 1949). As a result of his school camp studies, Sherif (1936) argued that individuals, acting as “individuals”, was a qualitatively distinct process from individuals acting as “group members”. In these studies, Sherif found that the competition and rivalry of school boys, grouped into separate camps and asked to compete for scarce resources, crossed all lines of friendship and camaraderie that had existed between the boys prior to the grouping. In SIT, Tajfel aimed to clarify the apparent discontinuity between group and individual behaviour and, in SCT, Turner further explained the cognitive processes surrounding group versus individual behaviour.

Social identity theory. Social identity theory (Tajfel, 1974) arose from studies similar to the Sherif school camp studies, called the minimal group studies (Tajfel, 1972; Tajfel, Flament, Billing, & Bundy, 1971). In these studies, Tajfel observed that distinct “group” behaviour, in particular, ingroup favouritism and outgroup

discrimination, emerged in settings that were so minimal as to rule out any interpersonal conflict, attraction, or similarity. These studies showed that social categorisation by itself, was sufficient to produce group behaviour, such as ingroup bias. Tajfel theorised that this was because social categorisation provided meaning to the minimal social situation and a way to orient the self. When categorised into a group, people began to see themselves as belonging to that group and the self became defined in terms of “we”, rather than “I”. Tajfel (1978) labelled this connection between the self and the group “social identity” and predicted that it could guide action. The underlying assumption of SIT is that people are motivated to evaluate themselves positively. When the self is connected with the group (social identity), individuals are motivated to evaluate that group positively. In the same way that people may seek a positive personal identity, Tajfel suggested that when categorised into groups, people will seek a positive social identity. The ingroup favouritism and outgroup discrimination behaviour that was observed in the minimal group studies was explained as a way in which individuals in the minimal group context could achieve this positive social identity. Thus, in a point allotment task, when a social identity was created through categorisation in a minimal group, members of the ingroup would seek to maximise the difference between the ingroup and the outgroup, such that the ingroup would receive the greatest number of points in comparison to the outgroup. This competitive behaviour in the minimal group setting established the ingroup as superior to the outgroup and thereby created a positive social identity for its members.

Tajfel proposed that when the self is defined in terms of the group, social identity concerns come into play and interactions between people will be inter-group in nature. This may involve, but is not limited to, the competitive behaviour observed in

the minimal group experiments. On the other hand, when the self is not defined in terms of the group, personal identity concerns take precedence and interaction is interpersonal, which, according to Oakes and Turner (1990), is the level on which most psychological theories focus. Tajfel proposed that inter-group and interpersonal interactions exist as poles on a behavioural continuum. Tajfel argued, however, that most social encounters could never be entirely interpersonal and all involved some elements of inter-group interaction, no matter how close the personal relationship, such as interactions between student and teacher or patient and doctor (Tajfel, 1978). Thus, in SIT, Tajfel sought to broaden psychological analysis from a limited personal identity level to include consideration of psychological analysis of behaviour at social identity levels.

Self-categorisation theory. In self-categorisation theory, Turner (1982) clarified the relationship between personal and social identity and provided cognitive explanations for the concepts raised in SIT. In particular, SCT addressed the cognitive processes involved in moving behaviour along Tajfel's (1978) behavioural continuum and how social or personal identities are made salient. The theory also provided information about the cognitive and behavioural changes that take place within the individual, when personal or social identities are salient.

To explain the cognitive mechanism that underpinned Tajfel's (1978) behavioural continuum, in SCT, Turner (1982) conceptualised the self as a type of stimulus that could be categorised. The concept of "categorisation" in SCT is founded in cognitive psychology and theories of categorisation in the natural world (Rosch, 1978). A principal difference is that, in SCT, the self is the target of categorisation, rather than a tangible object or being in the natural world. According to Turner, the

self-concept is variable, flexible, and multi-layered, rather than one static or unified whole. Thus, the self can be connected, or “categorised” with others to form a “social self”. Alternatively, the self can be categorised with no others to form an individual or “personal self”. One person may have many “selves”, one personal self, and as many different social selves, as there are groups to be connected with. These “selves” are conceptualised as existing in a hierarchical structure such that, more inclusive self-categories subsume the less inclusive self-categories. The personal self is at the bottom of the hierarchy because it is a self-category to which only the individual belongs. The social self-categories are at a higher level because they subsume the lower, personal level of self and include other people’s personal selves. Self-categories can become more and more inclusive subsuming lower level self-categories, until the superordinate level is reached. A possible hierarchical self-structure for an academic is shown in Figure 2.2. As can be seen, Sarah belongs to five self-categories, the most subordinate personal category, which includes only her, three intermediate categories which become more inclusive, each including a wider circle of people than the previous one, and a superordinate category, which includes all people. For the one personal and two intermediate categories, I have given an example of an identity from which Sarah would be excluded.

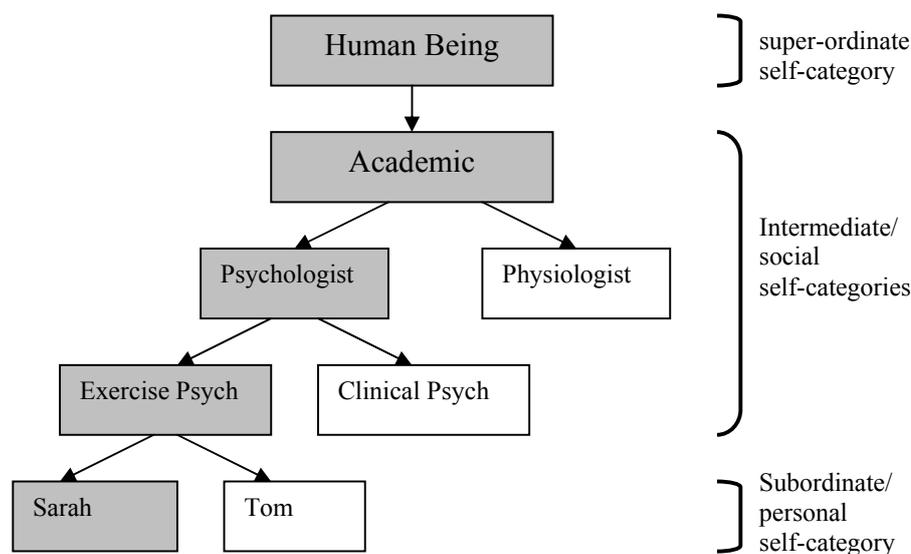


Figure 2.2. Hierarchical self-structure.

The subordinate level of self-category, the personal self, is associated with the interpersonal end of Tajfel's (1978) continuum and the concept of personal identity, whereas the intermediate and superordinate levels of self-categorisation are associated with the inter-group end of the continuum and the concept of social identity. Although Turner and his colleagues considered personal identity, the subordinate self-category level, to be the dominant level of analysis in most psychological theorising (Oakes & Turner, 1990), Turner did not propose any one self-category level to be more important than any other. Nonetheless, he did acknowledge that some self-categories may be accessed more frequently, or become more regularly salient, than others. Central to this line of reasoning is the assumption of "functional antagonism" (Turner, 1985), which suggests that as one self-category becomes more salient, other self-categories become less salient. In practice, this means that only one self-category can be salient at any given time, that is, if the personal self is salient, the many potential social selves an

individual has, will not be salient. On the other hand, if a particular social self is salient, the personal self, and all other potential social self-categories will be less salient.

In outlining which self-category will become salient, SCT is again similar to theories about cognitive categorisation of the natural world (Medin, 1989; Rosch, 1978). In SCT, Turner (1982) emphasized that self-categorisation is not a random or irrational process, but is a lawful process in which people make judgments about the most sensible way of representing the world (in SCT, the social, rather than natural, world is the focus of analysis). When people categorise anything as a group, from animals to objects, they do so because, in the particular context, the differences within the category are seen to be less than the differences between the category and other categories. Oakes et al. called this “meta-contrast” and referred to it as “on the spot judgments of relative differences” (Oakes, Haslam, & Turner, 1994, p. 96). In SCT, this process of meta-contrast is applied to person perception. If the social context is such that differences between individuals are small, relative to others, those individuals will see themselves as a category and be more likely to use a social self-category than a personal self-category, because it makes more sense. The self-category of exercise psychologist is likely to be invoked by an exercise psychologist in a context that includes clinical psychologists because the differences between exercise psychologists can be expected to be smaller than the differences between clinical psychologists and exercise psychologists. As the context is extended to include more different stimuli, the self-category invoked will also change. If the context in the example is extended to include physiologists, the exercise psychologist may be more likely to see themselves as sharing a more inclusive category of “psychologist” with clinical psychologists,

because the differences between exercise and clinical psychologists may be perceived to be less than the differences between psychologists and physiologists in that context. The same exercise psychologist may tend to invoke the personal self-category in a context where differences between group members are considered to be large, when, for example, talking to another exercise psychologist who is a close friend in a coffee shop. Hogg and Turner (1987) provided support for these concepts by showing that individuals were more likely to invoke a social identity based on gender when in a context with two males and two females, whereas they were more likely to invoke personal identity when in a context of one other person of the same sex.

It was later suggested, in order to determine the salience of a particular self category, there were two more principles to be considered. According to Oakes, Turner, and Haslam (1991), the peculiarities of person perception and self-categorisation also required the concepts of “perceiver readiness” and “normative fit” to be added to the principle of meta-contrast, which has also been referred to as comparative fit (Oakes et al., 1991).

Perceiver readiness refers to the accessibility of a particular self-category. Perceiver readiness can be affected by knowledge, culture, beliefs, and values (McGarty & Turner, 1992). It is possible, then, that even if there was a comparative difference between groups, such as feminist versus non-feminist, if the perceiver did not recognise or know about the potential self-category of feminist, the self-category would be less likely to be invoked.

Normative fit refers to the nature and content of the differences between and within categories. For an inclusive self-category (social identity) to be invoked in a social context, it is not enough for there to be a perception of structural difference

between two categories as defined in meta-contrast or comparative fit, but it is also necessary that the differences be in the “right direction”, based on the background theories and cultural knowledge of the perceiver. Thus, an inclusive self-category of women would only be invoked if the context included different stimuli, men (meta-contrast/comparative fit), and that the men acted in what could be considered a stereotypical “male” way (normative fit), for example, they drank a lot of beer and talked about sport. If the men did not act in stereotypical “male” ways, for example they enjoyed talking about shopping and preferred champagne to beer, even though the context provided a structural perception of relative differences, the gender-based self-category would be less likely to be invoked. In line with this, Oakes et al. (1991) showed that arts students were categorised more in terms of their group membership as “arts students” and less in terms of their individual identity, not only when they were in a comparative context, with science students (comparative fit), but also when the arts students differed in stereotypical ways from the science students (normative fit). That is, the arts students expressed an interest in social life and extra-curricular activities, in comparison to the science students, who expressed an interest in achieving good grades and working hard. Arts students were less likely to be categorised in terms of their group membership as “arts students” when they expressed counter-stereotypical interests in achieving good grades and working hard, even when they were in a comparative context with science students. According to SCT, all self-categories vary reliably and lawfully with the context. This means that there is no stable universal self, only self-categories that become more or less salient depending on the context. Thus, knowledge of the comparative and normative features of a situation allows predictions to be made about the likelihood of particular self-categories being invoked.

The last important feature of SCT is the predictions it makes about the cognitive and behavioural outcomes of shifts in self-category salience, and, in particular, shifts towards social self-categories. According to Turner (1982), when social self-categories become salient and individuals evaluate themselves in terms of an inclusive social category (e.g., sex, profession, class, team), perceived differences between individuals in the category are minimised and similarities are accentuated. In these circumstances, individuals begin to see themselves as relatively interchangeable with other members of the category, a term referred to as depersonalisation (Hogg & Turner, 1987; Turner, 1982). A change to a social self-category from the personal self-category is, in effect, a change in the way that a person cognitively represents their “self”. This change in the structure of the self from the individual to the social level has several behavioural implications. In particular, when a social self-category is invoked, members will tend to adopt the group stereotypes (Turner, 1982) and begin to act in terms of shared values, beliefs, goals, and behaviours (Brown & Turner, 1981). For example, Hogg and Turner (1987) demonstrated that when categorised as men in a comparative context with women, the men in their study accentuated their group similarities with other men and their differences from the women. They also reduced their idiosyncratic personal differences from the men in their group. Turner has summed up this principle of depersonalisation by saying, “the cognitive output of a functioning social identification is, in a nutshell, stereotypic perception” (Turner, 1982 p. 27). The effects of depersonalisation have been empirically tested in studies explaining group phenomena, such as cooperation, cohesiveness, competition, and social influence. In general, it has been found that people tend to perceive more similarity within, feel more liking towards, and agree more with those who share a self-category (Oakes et al. 1994;

Turner, 1991; Turner, Hogg, Oakes, Reicher, & Wetherrell, 1987; Turner & Oakes, 1989).

According to Turner (1991), the depersonalisation that results from sharing a self-category makes it important for members of that social group to achieve valid social cognition by seeking consensus from the group about beliefs and frames of reference. This is a process termed social reality testing. It is through this process of social reality testing that individual perceptions and behaviours are brought in line with the group. When the self is categorised as part of the group, “not only [does a group member] expect to agree with that person on issues relevant to their shared identity, but [they] are also motivated to *strive actively to reach* agreement on those issues” (Haslam, 2001, p. 54).

Summary of the social identity approach. The social identity approach has broadened psychological analysis to include the psychological realities of individuals when they act as group members as opposed to when they act as individuals. In SIT, Tajfel suggested that individuals possess both personal and social identities and that these existed at opposite ends of a behavioural continuum. In SCT, Turner proposed that personal and social identities represented different levels of self-categorisation. Whereas personal identity is the result of categorising the self with no others, social identity is the result of categorising the self with other similar individuals in a particular context. Turner considered both the personal or social level of self-categorisation to be valid forms of self-definition but suggested that most psychological analysis has been focused only on the personal level of self-definition. In SCT, Turner, thus, focused on the psychological implications of social level self-definition. In particular, SCT research has shown when the self is categorised at a social level, when social identity is

salient, group members tend to feel more similar to each other, like each other more, and conform to the attitudes and behaviours of the group. More importantly, Turner considered that conforming to group norms in circumstances of social identity salience to be a form of self-definition, social self-definition, rather than a form of compliance.

The Social Identity Approach and Subjective Norm

There are two main implications of taking the social identity approach to subjective norm. The first is to acknowledge that the concept of self involves two qualitatively distinct levels, the personal and the social-self. The second is to understand that these different levels of self are associated with distinct shifts in cognition and behaviour. What may guide motivation and behaviour when the self is categorised at a personal level is not necessarily the same as that which guides motivation and behaviour when the self is categorised at a social level. In particular, it is clear from the research discussed in the social identity approach, that the beliefs and attitudes of a social group are very influential when an individual categorises themselves as belonging to that group. It is logical, therefore, to predict that subjective norms, the perceived beliefs and attitudes of others, will have a significant impact on intentions when these norms come from a reference group with which individuals categorise themselves as belonging. Indeed, it is based on this reasoning, that Terry and Hogg (1996) suggested that subjective norms could only have an effect on intention when defined as norms that emanate from behaviourally relevant reference groups.

In the research of Terry and others, this conceptualisation was consciously chosen, and consistent with the social identity approach, the research showed norms had a powerful influence on the intention of those for whom the reference group was relevant (Astrom & Rise, 2001; Johnston & White, 2003; Terry & Hogg, 1996; Terry et

al., 1999). The other research discussed earlier that has shown strong subjective norm – intention relationships has conformed to the three main principles of Terry and Hogg’s social identity-based conceptualisation of subjective norm. First, the researchers were clear about the specific referents that exerted the social pressure, rather than a combination of different others. In the Okun et al. (2002) and Baker et al. (2003) studies, the researchers referred specifically to the teenagers’ peer group, distinct from their parents. In the Giles et al. (2005) study, the families of African Zulu teenagers were singled out from partners, friends, and teachers. Second, these referents were groups and not simply other individuals. Third, the researchers tapped into reference groups, perhaps inadvertently, which had the potential to be a salient basis for social self-definition. In doing so, and consistent with the social identity approach, these researchers found that subjective norms had a strong effect on intentions and sometimes directly on behaviour.

Research that conceptualises subjective norm in the standard way, as the perceived pressure of “important others” is not able to access the effect of subjective norms on intention because it taps into none of these main principles. The standard conceptualisation is not referent specific and the referents referred to, are individuals, not groups with whom a common self-category can be shared and be the basis of social self-definition. The same can be said even when subjective norm is defined in the descriptive, rather than the injunctive sense because, although changing the focus from what others expect to what others actually do, the conceptualisation still refers to the social influence of important others, not a specific, relevant reference group.

According to Terry and Hogg (1996), in the standard conceptualisation of subjective norm, the only social influence process likely to cause an individual to

change their intentions on the basis of the expectations or behaviours of important others, is public compliance. This is a shallow form of influence because it is applied externally, rather than emanating from the self. Indeed, this is the exact conclusion to which many researchers have come (Godin et al., 2005; Hagger et al., 2002a; Sheeran & Orbell, 1999). This is different, however, from the social influence process in the studies described previously, which show subjective norm to have a strong effect. This is because the individuals in these studies were compelled to change their intentions on the basis of the expectations and/or behaviours of a relevant reference group. Here the social influence, while exerted by others, is not exerted externally, but emanates from the self because the self is connected to these others in social categorisation.

This distinction is important because, if social pressure can be conceived of as self-relevant, there is no need to question either SDT (Deci & Ryan, 1985) or the conclusions of researchers, such as Hagger et al., (2002a), Sheeran and Orbell (1999), and Godin et al. (2005). Thus, it is still valid to draw the conclusion that variables that are relevant to the self will have a stronger motivational impact than variables external to the self. What needs to be questioned, however, is the concept of the self, implicit in these conclusions, namely, that self can only be personal, and not social. Research using the social identity approach has shown that the self can be categorised as either personal or social, depending on the social comparative context, and that changes in self-categorisation also bring about changes in cognition and behaviour. In terms of the TPB, whereas personally-held attitudes and perceptions of control are the self-relevant cognitions that contribute to motivation when the personal self is salient, the subjective norms of the relevant reference group are the self-relevant cognitions contributing to motivation when a social self is salient.

Implications for interventions. The reasoning derived from the social identity approach, suggests that manipulations of subjective norm in TPB interventions can only be effective at the social level of self when an individual categorises themselves with a relevant reference group. In designing an intervention based on the social identity approach to subjective norm, the first step is, therefore, to identify the relevant reference groups of a given population. Based on the social identity approach, individuals can be expected to be more open to influence from other people who belong to that reference group, than from a random collection of important others. Thus, in the intervention context, specifically providing physical activity supportive information perceived to be emanating from members of a relevant reference group, in other words, providing normative support for physical activity, should have the power to influence motivation and behaviour.

A recent study has shown that this type of intervention can be successful. Renger, Steinfeld, and Lazarus (2002) conducted a highly localised media campaign in a small town community, which featured members of the community engaging in exercise and discussing the importance of it in their lives. This campaign was aimed simply to raise awareness about the importance of physical activity, but the researchers reported an unexpected and significant increase in physical activity amongst community members after showing the advertisements. In providing a rationale for the effect, Renger et al. referred to the possible and surprising effect of subjective norm. Indeed, this study clearly demonstrates the effect of subjective norm at the social level. In the Renger et al. study, information about physical activity was provided by the local townspeople of a small country town. This information was most likely perceived, by the other local townspeople, as having emanated from a relevant reference group.

Thus, it is likely that exercise was seen by community members as an important and normative behaviour for members of that small country town community. As a result of these perceptions, community members, who identified with the small country town community, increased their level of exercise. In other words, behaviour fell in line with the norms of the relevant reference group, norms which, in this case, included exercise.

In the Renger et al. (2002) study, the relevant reference group's promotion of pro-exercise norms seemed to have directly affected the exercise behaviour of the townspeople. The study was not, however, based on the TPB and, thus, the mediating variable, intention, was not specifically measured. Based on the research discussed earlier, the inadvertent manipulation of subjective norm at the social level of analysis in the Renger et al. study, is likely to have influenced behaviour through intention. Although, based on the TPB, it is safer to assume that the effect of subjective norms on behaviour are mediated by intention, according to the social identity approach, it would not be surprising if, when the self is categorised at the social level, norms would also directly influence behaviour. This is because when norms are internalised as an aspect of self, social-self, both attitudes and behaviour should be brought in line with those of the group. Indeed, there have been some reports of a social normative factor, that, it can be argued, was operationalised as the norms of a relevant reference group, which directly predicted behaviour, rather than predicting indirectly through the mediation of intention (Okun et al., 2002; Ravis & Sheeran, 2003b). In addition, it is not uncommon for correlations between the attitudinal and normative components of the TPB to be reported (Fishbein & Ajzen, 1981; Ryan, 1978; Shepherd & O'Keefe, 1984). This crossover effect, while somewhat controversial in the TPB literature (Fishbein & Ajzen, 1975; Liska, 1984), is not problematic at the social level of analysis since attitudes

towards particular behaviours, can be personal, but they “can also be widely shared and normative” (Terry, Hogg, & Duck. 1999, p. 285).

The rationale from the social identity approach and empirical evidence both suggest that physical activity interventions that manipulate subjective norm at the social level of self will be effective. At the very least, this type of intervention will be effective in enhancing motivation, but may also influence attitudes and have a direct effect on behaviour. In this thesis, I, therefore, advocate manipulating subjective norm at the social level of self in physical activity interventions. I now discuss the particular benefit of using this type of intervention for young and midlife women.

Subjective Norm Based Interventions for Young and Midlife Women

Research shows that women in the middle adulthood years, feel they don't have time for “themselves” (Drew & Paradise, 1996). As discussed earlier, this has been found to be because of responsibilities associated with family, household, and work (Brown et al., 2001). It is likely that when these women speak of the self, they are referring to the personal self, thus, voicing a sentiment that their personal identity is not as important in their day to day functioning, as their social identities. The various social selves associated with family and work that women have, may be a more salient form of self-definition than their personal self. Thus, it is not that women don't have time for their “self”, it is rather, that they don't have time for their “personal self”. If women predominantly operate at the social level of self, it makes more sense for physical activity interventions to target women's social identities than their personal identities. This means that the reference groups with which women identify will be more important in promoting physical activity, than simply appealing to women at the individual level, a level they may not give time priority.

Following the logic outlined in the previous section, designing a subjective norm-based physical activity intervention for women would involve two steps. First, research is needed which can identify the reference groups with which young and midlife women identify. This research should also assess the perceptions women have of the norms of these reference groups, particularly in terms of physical activity. If, for example, some women considered mothers to be a relevant reference group but they perceived that exercise was not a normative behaviour for this group, these women could be expected to have little motivation to engage in physical activity. To do so would be to reject, or deviate from, the norms of their social group. Indeed, some support for this can be found in the results of Drew and Paradise's (1996) qualitative research. Drew and Paradise reported that the women in their study felt guilty when they exercised. Exercise was not seen as a legitimate use of time and was considered to require sacrificing family concerns. The women in this study appeared to be rejecting exercise because they did not consider it to be a normative behaviour for their social definition of themselves as mothers or carers. This leads to the second step in designing a subjective norm-based physical activity intervention. That is, interventions should provide more exercise supportive information from members of women's relevant reference groups. Enhancing the perception that exercise is normal for women who belong to particular social groups, such as "mothers" can be expected to enhance motivation to exercise, which according to the TPB, should in turn, enhance exercise participation.

Summary

TPB interventions that focus on the motivational, rather than the volitional, phase of behaviour change can be expected to be more effective for sedentary

populations because inactivity in sedentary populations is more likely to be due to a lack of motivation, rather than an inability to translate their motivation into action. I have argued that although much has been gained through the manipulation of attitude and perceived behavioural control, the potential of subjective norm in TPB physical activity interventions is relatively untapped. In addition to providing valuable information on the importance of subjective norm in the TPB, research suggests that subjective norm-based interventions can be very effective when subjective norm is operationalised as the norms of relevant reference groups. Based on a rationale from the social identity approach, it can be expected that norms will have the capacity to influence cognition and behaviour at the social, rather than at the personal level, of self. Practically speaking, this means that interventions should be developed in which members of a specific reference group promote physical activity in order to enhance motivation for physical activity in those people who identify with the reference group. This type of intervention could be particularly useful for young and midlife women because they may form a population for whom reference groups are particularly important due to a tendency to operate at the social rather than personal level of self.

Purpose of the Thesis

This thesis aims to demonstrate that a subjective norm-based physical activity intervention can be successful in enhancing physical activity motivation and behaviour in sedentary women aged between 25 and 45. In this thesis, I conduct three studies. The first is a descriptive study of women's social identities designed to inform an intervention study, the second is an intervention study, and the third is a qualitative evaluation of the intervention.

In the first study, I aim to elicit the relevant reference groups for young and midlife women. I survey women aged 25 to 45 to ascertain the reference groups with which they identify using a method devised by Simon (1997; Simon, 1999). In this method, any characteristic by which a woman describes herself can become the basis of a reference group if she considers that she shares the characteristic with other women. Thus, in this study, I rate those self-characteristics that have “group formation potential” based on Simon’s social self-categorisation index. Those self-characteristics which have the highest group formation potential will be considered a relevant reference group for young and midlife women. The most frequent of these will be used as the basis of the intervention study. I expect that most of the self-characteristics of women aged 25 to 45 will have high group formation potential due to my proposition that women in these ages operate more at a social identity level than at a personal identity level. This means that women are more likely to believe that they share their self-characteristics with other women, rather than perceiving that their self-characteristics are the unique property of their individual self. I anticipate that the self-characteristics associated with motherhood, family, and caring, will be more frequently listed, as well as self characteristics related to career and work. Finally, I expect that that the levels of normative support for physical activity, for most of the self-characteristics women have, and particularly those associated with motherhood, family and caring, will be low. As a result of this low normative support for physical activity, and accordance with the large population surveys conducted in Australia, the US and the UK, I further expect that the women in the survey will not participate in sufficient levels of physical activity.

The second study is an intervention study in which I utilise two of the most frequently listed relevant reference groups identified in Study 1. Based on the results of Study 1, the reference groups I will be using will be “strong independent woman”, and “spiritual caring woman”. In this intervention, sedentary women will be recruited who list themselves as having the self-characteristics of either strong independent woman or spiritual caring woman. The women who identify with the characteristic “strong independent woman” will be placed into a condition with other strong independent women. They will be asked to focus on their shared identity as strong independent women in order to make the identity salient. They will then be provided with video-taped normative support for physical activity, that is, pro-exercise information from other women who label themselves as strong independent women, their relevant reference group. The women who identify with the self-characteristic “spiritual caring woman” will be given the same treatment, except the emphasis will be on spiritual and caring, rather than strong and independent. These two conditions will make up the social identity intervention. There will be a third comparison condition called the “personal identity” condition. In this condition, sedentary women will be recruited. They will not be required to identify with either the characteristic of strong independent woman or spiritual caring woman. In this condition, the women will be asked to focus on their individuality, thereby making their personal identity salient, and they will be provided with video-taped information from health professionals about the benefits of physical activity. That is, they will receive a standard health promotion message aimed at them as individuals. For all conditions, the TPB variables and self-reported physical activity will be measured prior to the intervention, 2-weeks after the intervention, and 3-months after the intervention.

I expect that all intervention conditions will work to increase women's intention to participate in physical activity, but I predict that the social identity conditions will be more effective in enhancing intention for physical activity than the personal identity condition, and thus, based on the TPB, I further expect that the women in the social identity conditions will show greater levels of physical activity than the women in the personal identity condition. Over the three measurement times, I expect that, with the exception of the social norm variables, the TPB variables will behave in similar ways to the recent meta-analyses in the exercise domain. Specifically, I expect intention, rather than perceived behavioural control will be the primary predictor of physical activity behaviour. In terms of the prediction of intention, I anticipate that the social norm variables will be more important in the prediction of intention for the social identity conditions, than for the personal identity conditions, whereas attitude and perceived behavioural control will be the dominant predictors of intention for the women in the personal identity condition.

The third study is a qualitative evaluation of the intervention by the women who participated in the intervention. In this study, I will compare the differences in the experiences of the women participating in the social identity conditions to the experiences of the women who participated in the personal identity condition. I expect there to be differences between the three conditions both in the women's thoughts about physical activity after the intervention, and in their evaluation of the study. In particular, I expect that the main differentiation between the conditions will be between the social identity and the personal identity conditions, rather than between the social identity conditions. I expect there to be more similarity than difference between the two social identity conditions.

CHAPTER 3: IDENTIFYING THE RELEVANT REFERENCE GROUPS FOR YOUNG AND MIDLIFE WOMEN

Introduction

The first study of this thesis is designed to elicit information to inform my intervention study. The intervention study will be based on the social identity approach to subjective norm, which defines subjective norm as the perception of pressure from a relevant reference group to perform or not to perform a given behaviour. According to Terry and Hogg (1996), norms are only effective in influencing motivation and behaviour when they emanate from relevant reference groups. The primary aim of this study was, therefore, to elicit the reference groups with which young and midlife women identify. The secondary aims of this study were to assess the physical activity norms within women's relevant reference groups, and also to examine the relationship between the level of physical activity in which the women in this study participated and their physical activity norms. I will first outline the technique I used to elicit women's relevant reference groups and then elaborate on each of the secondary aims. I make several predictions for the outcomes of this study.

The technique and rationale for eliciting the reference groups with which women identify, was based on Simon's (1997) research. According to Simon, every characteristic possessed by an individual, including social roles, socio-demographic characteristics, and social-type or personality factors, has a "collective or group formation potential" (Simon, 1999, p. 51). This potential for a self-characteristic to be the basis of a relevant reference group is realised when the individual acknowledges that their self-characteristic is shared with others. In practice, this means that any characteristic a woman might use to explain who she is, e.g., a mother, a wife, a carer, a

family focused person, or a business woman, can be the basis of a relevant reference group, if she believes that the characteristic she has, is not unique to her, but shared with other women, and if she believes that the women with whom she shares that characteristic are highly similar to her. According to Simon (1997), the sharing of a common self-characteristics can become explicit and meaningful in the appropriate social context. This means that self-characteristics with group formation potential can become a salient basis of self-definition, in other words, a social identity. As has been described in Chapter 2, the contexts in which a shared self-characteristic can become a salient basis of self definition, or social identity, will be those that enhance comparative and normative fit (Oakes, Haslam, & Turner, 1994). That is, those social situations which enhance the perception of similarity with other people who share the characteristic and difference from other people who do not share that characteristic along normative lines, will enhance social identity salience. This study identified the self-characteristics with group formation potential, and the intervention study, outlined in the next chapter, created the context for them to become salient social identities so that norms, in the social identity sense, could be manipulated.

Interventions, such as the one I will conduct, should be particularly beneficial for young and midlife women because research suggests that women aged between 25 and 45 have many social responsibilities and little time for their personal selves (Drew & Paradise, 1996). This means that young and midlife women may give more time priority to their social identities than their personal identities, thus, interventions which target women's social identities may be more helpful in promoting physical activity. Thus, I expected that most of the self characteristics of women aged 25 to 45 would have "group formation potential" which could, in the right contexts, become the basis

of a social identity. For the women in this survey, the self-characteristics that I predicted would be the most frequent and would have highest group formation potential were those associated with motherhood, family, and caring, and those related to career and work. This is because research by Brown et al. (2001) shows that women tend to cite their duties associated with motherhood, family, and career as the main reasons for their lack of personal time for exercise. Within the context of the survey, however, I did not expect all the self-characteristics with “group formation potential” would be highly salient for the women, because the context provided in the survey, did not serve to make them salient. That is, the survey did not place them in a social context that enhances the perception of similarity with other people who share the characteristic and difference from other people who do not share the characteristic.

A secondary aim of this study was to understand the perceptions women have of the physical activity norms of the reference groups with which they identify and belong. Several researchers have suggested that women see exercise as an illegitimate use of time, have feelings of guilt when they leave their families to engage in physical activity, or have other such ideological reasons for their lack of participation in physical activity (Brown et al., 2001; Drew & Paradise, 1996). This suggests that one explanation for women’s low levels of physical activity participation (ADNFS, 1992; Armstrong et al., 2000; USDHHS, 1996) is based on social normative factors. As I have argued in Chapter 2, normative information usually emanates from relevant reference groups and is influential because the self can become connected with relevant reference groups. In contexts of social identity salience, then, behaving in line with reference group norms becomes self-defining (Hogg & Turner, 1987; Turner, 1982). Thus, women who perceive their relevant reference groups to have weak normative

support for physical activity, will most likely show low levels of physical activity participation. Consistent with the idea that women's social identities, particularly those associated with motherhood and caring, are unsupportive of regular physical activity, I expected there to be low perceptions of the appropriateness and relevance of physical activity, low physical activity norms, in most of the self-characteristics women identified. I further expected that the women in this survey would not report sufficient levels of physical activity and that this may be related to the low levels of normative support for physical activity.

Method

Participants

Participants were 214 women, of whom 139 women were between the ages of 25 and 34, and 75 women were between the ages of 35 and 45. The majority (172) held a university degree at an undergraduate (81) or postgraduate (91) level, and the remaining 42 women held either a Year 10, Year 12, or TAFE (tech-ed) certificate. The majority of the participants (194) worked full-time, 44 women were employed on a part-time or casual basis, and six women did not work in paid employment. There were 119 women who were in a married or *de facto* relationship, 78 who regarded themselves as single, and 17 were divorced or separated. The majority of the women (141) did not have children, and 73 had one or more children. The sample consisted, therefore, of younger, educated, married women, who worked full time, and who did not have children.

Measures

Level of physical activity. I asked women to indicate their participation in physical activity on three different levels, vigorous, moderate, and walking activity.

vigorous activity was defined as hard physical effort such as heavy lifting, aerobics, fast bicycling or running. Moderate activity was defined as activity causing you to breathe harder than normal such as moderate bicycling or doubles tennis, not including walking. Walking was defined as walking for at least 10 minutes at a time, including at work, traveling to and from places (e.g., train station to work), and recreational walking. For each level of activity, participants indicated the days, in the last seven days when they engaged in each type of physical activity (occasion), and the approximate amount of time in minutes that they engaged in the activity on one of those days (time). This measure (See Appendix A) was adapted from the International Physical Activity Questionnaire (IPAQ; Booth, 2000). I calculated the time in minutes spent on each type of physical activity by multiplying occasion by time, thus, I obtained separate measures of moderate, vigorous, and walking activity. I calculated the total time spent participating in physical activity by adding the time in minutes women reported that they engaged in each physical activity type, moderate, vigorous, and walking.

Self-characteristics. In order to apply the methodologies of Simon (1997), I required a list of the characteristics women used to describe themselves, their self-characteristics. In this measure, I instructed women to list, in a free format, a maximum of 10 (minimum of 5) characteristics that they believed defined them most as a person. In order to stimulate the generation of characteristics and to obtain the most important characteristics, there were three separate tasks, requiring women to reflect on the important “hats” that they wear, the important social groups that they belonged to, and any other words they would use to describe themselves. From these lists, they were asked to select up to 10 of the most important self-characteristics (See Appendix B).

Group formation potential of self-characteristics. For each of the final set of self-characteristics, a self-categorisation measure was administered following the method used by Simon (1997) to elicit their group formation potential, and thereby identify women's relevant reference groups. This measure consisted of four items measured on 7-point Likert scales. Two questions measured how similar women felt to other women with the characteristic or different to women without the characteristic: 1 (*not very similar/different*) to 7 (*very similar/different*). High scores indicated women's willingness to group themselves with other women who share the self-characteristic. Two questions measured how different women felt to other women with the characteristic and how similar they felt to other women without the characteristic: 1 (*not very similar/different*) to 7 (*very similar/different*). Here, low scores indicated women's willingness to group themselves with other women who share the self-characteristic, and these items were reverse scored. I obtained a social self-categorisation index by adding the scores from the four measures. The higher the total score, the higher the participants' tendency to group that self-characteristic with other women, and the higher the group formation potential. Total social self-categorisation scores of 18 or higher represent a rating of equal to, or greater than, 4.5 on each of the four 7-point scales, that is, they are well above the midpoint of the scale. Thus, I considered social self-categorisation scores of 18 or higher to reflect self-characteristics with high group formation potential (See Appendix C)

Salience of self-characteristics. To measure the salience of the self-characteristics, I combined two items measuring cognitive centrality and importance of the self-characteristic. I measured both items on 7-point Likert scales. I used Cameron and Lalonde's (2001) approach to measure *Cognitive centrality*. In this measure,

participants rated how often they thought about the fact that they have the characteristic: 1 (*not very often*) to 7 (*very often*). I adapted one item from a measure reported by Brown, Condor, Matthews, Wade, and Williams (1986) to measure *Importance*. Participants rated how important the characteristic was to their self image: 1 (*not very important*) to 7 (*very important*). I averaged ratings on both of these scales to give a total measure of how salient that self-characteristic was to the individual. I considered scores greater than or equal to six on this measure to indicate that the self-characteristic was highly salient in the women's lives (See Appendix C).

Physical activity norm. I used three items, measured on 7-point Likert scales, to indicate the physical activity norm for each self-characteristic based on Terry and Hogg's (1996) measurement of norms. In the first item, I asked participants to rate the extent to which they considered other people who share the self-characteristic would see the focal behaviour, regularly exercising three times a week for 30 minutes or more, as appropriate: 1 (*not very appropriate*) to 7 (*very appropriate*). In the other two items, I asked participants to rate the extent to which they considered other women who shared the self-characteristic would see the focal behaviour as relevant: 1 (*not very relevant*) to 7 (*very relevant*), and acceptable: 1 (*not very acceptable*) to 7 (*very acceptable*). I obtained a total measure of physical activity norm for each self-characteristic, by averaging the three items. I considered scores greater than, or equal to, six on this combined measure to represent a strong physical activity norm for the self-characteristic (See Appendix C).

Procedure

I sought approval for this study from the Victoria University Human Research Ethics Committee. I gained access to participants via contacting the human resources

manager in a variety of large private and public organizations. A broadcast email was sent from the human resources manager to employees of that organization, inviting women aged 25-45 to participate in a survey looking at physical activity in women's lives. The survey was attached as a link in the email message. In the email, those who were eligible and interested were asked to click on the survey link and complete the survey online. Those who participated were entitled to receive a free 7-day pass to a well known franchised women's gym. Informed consent was implied by the completion and submission of the online survey. All results were submitted automatically to an online database.

Analysis

With another rater, to ensure inter-rater reliability, I performed a sort task on the self-characteristics listed by the participants. In this sort task, all similar self-characteristics were grouped into one "self-characteristic type" in order to reduce the self-characteristics down to a smaller set. I calculated descriptive statistics which described the frequency of women using each self-characteristic type, the social self-categorization index, salience, and physical activity norm. I then compared the self-characteristic types in a table, in order to identify the self-characteristic types that were the most frequent and those that had the highest group formation potential and salience scores. I also calculated the descriptive statistics for the overall actual level of physical activity among the participants and conducted t-tests to compare the difference between the reported level of physical activity in the sample, and the recommendation for sufficient physical activity (150 minutes per week). In order to demonstrate a relationship between physical activity norms and actual physical activity, I created a subset of data from women who indicated a self-characteristic associated with the

highest physical activity norm, and women who indicated a self-characteristic associated with the lowest physical activity norm. I then conducted a 2x2 ANOVA to compare the physical activity scores of these women further separated by how salient the self-characteristic was to them.

Results

Self-Characteristics: Frequency, Group Formation Potential, Salience, and Physical Activity Norms

Participants generated 1,103 self-characteristics in the course of the survey. All women nominated at least one self-characteristic, and most women were able to list between three and five self-characteristics. Only a small percentage of the participants were able to produce more than six self-characteristics.

With an additional rater, I sorted the final set of 1,103 self-characteristics into 19 self-characteristic types. These are listed in Table 3.1, along with their frequency amongst the 214 participants, the mean and standard deviation of the social self-categorisation index, salience, and physical activity norm. The 19 self-characteristic types are listed in order to frequency with which participants cited them.

Table 3.1

Frequency, Social Self-Categorisation Index, Salience, and Physical Activity Norms of Self-Characteristic Types for Women Aged 25 to 45

Self-Characteristic	Frequency	Social Self-Categorisation Index		Salience		Physical Activity Norm	
		Mean	SD	Mean	SD	Mean	SD
				(≥6 high)		(≥6=strong)	
Professional	139	17.8	4.5	5.3	1.2	5.8	1.2
Strong	109	19.6	4.5	5.1	1.5	5.8	1.3
Independent							
Family Member	107	18	4.5	5.0	1.4	5.2	1.6
Friend	105	20.5	5.0	5.6	1.2	5.4	1.5
Wife/Partner	94	16.4	5.3	5.3	1.3	5.8	1.2
Spiritual/Caring	90	19.5	4.9	5.1	1.2	5.3	1.4
Active	84	19.1	5.0	5.2	1.5	6.6	0.8
Mother	71	18.7	4.9	6.3	0.9	5.8	1.2
Fun and	58	19.9	5.2	5.2	1.1	5.7	1.5
Sociable							
Thinker	44	18.9	3.9	4.9	1.2	5.7	1.0
Family Focused	44	19.0	4.7	5.3	1.2	5.4	1.4
Creative	38	18.3	5.2	4.8	1.5	5.3	1.4
Political	30	20.1	5.0	5.2	1.3	5.2	1.0

Table 3.1 (continued)

Frequency, Social Self-Categorisation Index, Salience, and Physical Activity Norms of Self-Characteristic Types for Women Aged 25 to 45

Self-Characteristic	Frequency	Social Self-Categorisation Index		Salience		Physical Activity Norm	
		Mean	SD	Mean	SD	Mean	SD
				(≥6 high)		(≥6=strong)	
Homemaker	24	18.5	5.3	4.6	1.4	5.2	1.3
Pet Owner	17	20.3	3.2	5.6	1.2	5.8	1.5
Homeowner	14	18.4	4.7	4.6	1.3	5.3	1.4
Healthy	10	19.7	4.7	6.1	1.4	7.0	0.0
Traveller	9	20.2	5.3	4.7	1.8	6.3	1.2
Socially Active	9	18.7	2.6	5.0	0.7	5.6	1.5

Group Formation Potential of Self-Characteristic Types

Table 3.1 shows that all the self-characteristic types identified by women aged 25 to 45, except for the self-characteristics of professional and wife/partner, achieved a social self-categorisation index above 18. This represents an above average rating on all four of the 7-point Likert scales that made up the index. Thus, these women saw themselves as very similar to, but not very different from, other women who share most of their self characteristics and very different from, but not very similar to, those who do not share those self characteristics. The majority of the self-characteristics listed by women aged 25-45, therefore, have a high social identity potential.

Saliency of Self-Characteristic Types

Except for the self-characteristic of mother, the saliency level for the self-characteristic types were below 6.0, therefore, all the self-characteristics, except for mother, were not particularly salient at the time of the survey.

Self-Characteristic Types Related to Motherhood, Family, and Caring

There were five self-characteristic types generated that related to motherhood, family, and caring. They were family member, wife/partner, spiritual/caring, mother, and family focused. In all of these self-characteristics, at least one third of the women listed them as an important self-characteristic. Thus, this set of self-characteristic types represented some of the most frequently generated self-perceptions. All but one of this set of self-characteristics (wife/partner) achieved a high social self-categorisation index of above 18, representing an above average group formation potential. The spiritual/caring self-characteristic achieved the highest index of the set (19.5) and the self characteristic of wife/partner received the lowest (16.4). Except for wife/partner, the family/caring-based self-characteristic types had high group formation potential.

Self-Characteristic Types Related to Career and Work

There were two main self-characteristic types generated that related to career. They were professional and strong independent woman. These two self-characteristic types represented the two most frequently generated types. The group formation potential for the strong independent women self-characteristic was high, with one of the highest social self-categorization indexes (19.6). The self-characteristic of professional, however, received a relatively low index of 17.8, which, after the self-characteristic of wife/partner, was the next lowest index reported.

Physical Activity Norm of Self-Characteristic Types

The physical activity norm for all the family/caring-based self-characteristics was below 6.0 therefore I did not consider them to be strong. The physical activity norm for the self-characteristics of mother and wife/partner was 5.8, however, which approaches 6.0 and is relatively strong. The remaining family/caring-based self-characteristic types were all below 5.5, indicating moderate physical activity norms. The physical activity norm for both self-characteristic types relating to career and work was 5.8. This was higher than the average physical activity norm of the self-characteristic types relating to motherhood, family, and caring, and was exceeded only by the self-characteristic types of healthy and active, which, not surprisingly, obtained physical activity norm scores well above 6.0.

Physical Activity Level

Participants' physical activity levels are displayed in Table 3.2.

Table 3.2

Mean Time (mins.) of Physical Activity for Women Aged 25-45

	Walking	Moderate Activity	Vigorous Activity	Vigorous and Moderate Combined	Overall Physical Activity
Mean	185	87	49	136	321
SD	262	115	88	155	309

As can be seen in Table 3.2, total physical activity, a combination of walking, moderate activity, and vigorous activity, was 321 minutes, which is well above the 150 minutes per week, considered to be sufficient for health benefits to accrue (Armstrong

et al., 2000). Indeed, a two-tailed t-test revealed that total physical activity was significantly higher than the required 150 minutes per week, $t(213)=15.2, p<0.05$. Walking activity was also higher than the level considered to be sufficient. On average, participants reported that they engaged in 185 minutes of walking per week, which is 35 minutes more than the requirement of 150 minutes per week. A two-tailed t-test revealed that walking was at a significantly greater level than the requirement on 150 minutes per week, $t(213)=10.3, p<0.05$. The standard deviation for walking was, however, very high, in comparison to the measures of moderate and vigorous activity. Furthermore, the range for walking was very large, between 0 and 1500 minutes (equivalent to approximately 3.5 hours of walking per day). This large range indicated that there may have been some misunderstanding about the walking measure, or that walking activity was overestimated. As can be seen, when combining only vigorous and moderate activity, Table 3.2 shows that women aged 25-45 engaged in, on average, 136 minutes of physical activity in a week. This is a level of physical activity which was found in a two-tailed t-test to be significantly below the standard requirement of 150 minutes per week, $t(213)=12.8, p<0.05$. When considering only moderate and vigorous activity, which may be a more realistic estimate of physical activity, the women in our sample did not achieve a sufficient level of physical activity during a 7-day period.

Relationship between Physical Activity and Physical Activity Norms

I conducted a 2x2 ANOVA between women who had a self-characteristic associated with the lowest physical activity norm, that of “homemaker” and women who had a self-characteristic associated with the highest physical activity norm, that of “active”. The first factor was self-characteristic, with two levels, active or homemaker.

The second factor was salience, with two levels, high (≥ 6) and low (< 6). Total physical activity, a combination of walking, vigorous activity, and moderate activity was the dependent variable. The means and standard deviations are shown in Table 3.3

Table 3.3

Means and Standard Deviations of Total Physical Activity for Women with the Characteristics of Homemaker and Active

Homemaker						Active					
Low Salience			High Salience			Low Salience			High Salience		
N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
17	315	276	4	170	131	31	463	383	22	551	340

The descriptive statistics in Table 3.3 indicate that physical activity is lower for women with the self-characteristic of “homemaker” than “active”. Consistent with this observation, the 2x2 ANOVA revealed a main effect for self-characteristic, $F(1,70)=6.3$, $p<0.05$, partial $\eta^2 = 0.08$.. There was however no main effect for salience, $F(1,70)=0.07$, $p>0.05$, partial $\eta^2 = 0.001$.. There appeared to be no real difference between the physical activity levels of women for whom a self-characteristic was salient and those for whom a self-characteristic was not salient. Interestingly, the descriptive statistics point towards an interaction between self-characteristic and salience such that women for whom “homemaker” is not salient have higher level of physical activity than women for whom “homemaker” is salient. Similarly, the descriptive statistics show that women for whom the self-characteristic “active”, was not salient, were less physically active than the women for whom the self-characteristic

“active” was salient. The 2x2 ANOVA revealed that this observed interaction approached significance, but was not significant, $F(1,70)=1.22, p>0.05$, partial $\eta^2 = 0.02$.

Discussion

A number of general findings about the relevant reference groups for young and midlife women, and the ways in which physical activity is viewed within these reference groups, have emerged from this study. Despite some methodological issues, the results from this study are particularly useful for informing future social identity-based physical activity interventions. I will discuss the general findings from this research, outline the methodological issues, and indicate how this research may be used to inform future social-identity based physical activity interventions.

General Findings

The results of the current research provide insight into the group formation potential and frequency of the self-characteristics young and midlife women use to describe themselves. The research also reveals the salience of the self-characteristics, as well as the perceptions of the relevance and appropriateness of physical activity in these self-characteristics. This research also provides information about the actual level of physical activity in which young and midlife women engage and provides preliminary evidence of the relationship between norms and behaviour. I will now discuss each of these general findings.

Self-characteristics

Approaching subjective norm from the social identity perspective in a physical activity intervention requires that the physical activity norms of a relevant reference group be enhanced. Thus, the main purpose of the current study was to ascertain the

reference groups with which women aged 25 to 45 identified. Based on Simon's (1997) approach, I subscribed to the view that any characteristic a woman uses to describe who she is, her self characteristics, which can include her social roles (mother, wife), socio-demographic characteristics (race/ethnicity, social class), social types and personality factors (sociable, friendly), can form a relevant reference group, if the self-characteristic is considered to be shared with other women with whom she considers herself similar.

Consistent with my expectations, all the self-characteristic types generated by the women in this sample, except for two, wife/partner and professional, had very strong group formation potential according to the self-reported criteria of similarity to and difference from others with the self characteristic. This finding shows that young and midlife women have many potentially relevant reference groups that can become the basis of a social identity when in the appropriate social context. Although the study does not rule out the importance women place on their personal identities, it certainly shows that women will very easily link themselves to a social category, which indicates that a social identity-based physical activity intervention focusing on this social aspect of their identities could be of use to women aged between 25-45.

As I expected, the self-characteristic types associated with motherhood, family, and caring, and the self-characteristic types associated with career and work were among the most frequently generated self-characteristic types. The family/caring-based and career-based self characteristics did not, however, stand out as having stronger group formation potential than the other types of self-characteristics generated by the women who participated in the study. Interestingly though, for both the family/caring-based self-characteristic types and the career-based self-characteristic types, the social

type, or personality based self-characteristics had the strongest group formation potential. Thus, the self-characteristic of spiritual caring woman had a stronger group formation potential than the role-based self-characteristic types of mother or wife/partner. Likewise, in the career-based self-characteristic types, the social type, personality-based self-characteristic of strong independent woman had a much higher group formation potential than the role-based self-characteristic of professional. This finding, while surprising, is consistent with Thoits and Virshup's (1997) contention that role-based similarity may not be enough to stimulate collective identification, but that a perception of similarities in beliefs and behaviours may be a stronger basis of collective identification. Women who see themselves as spiritual caring women or strong independent women, may, thus, perceive they have more in common with other women who are spiritual and caring type women or strong independent women, and be more likely to identify with them, than they do with other women who simply share the same role, as a mother or professional. Although most of the self-characteristic types had high group formation potential and could all, if made salient, become the basis of a social identity, the personality-based self-characteristics such as, strong independent, and spiritual, woman, may more easily engender a perception of group-based similarity than other self-characteristics and as such would perhaps be the best target identities to focus on in a social identity-based physical activity intervention.

Salience

In terms of salience of the self-characteristic types, only the self-characteristic of mother achieved a high salience level. All other self-characteristic types were not considered by the women in our sample to be particularly salient. Turner and his colleagues (Hogg & Turner, 1987; McGarty & Turner, 1992; Oakes et al., 1994; Oakes

et al., 1991; Turner, 1982) have discussed salience of social identities at great length. Based on these discussions, it is not particularly surprising that most of the self-characteristic types, although having strong group formation potential, were not salient. According to Turner and his colleagues, there are certain conditions that facilitate salience of a self-identity. These include a comparative and normative context in which the structural and normative differences between, and similarities within, individuals can be perceived, and a social group may, thus, emerge. The survey I administered did not encourage these perceptions of structural and normative similarities and difference. Thus, although the women in the sample seemed to recognise that they were similar to other women who shared their self-characteristics, there was no context to bring any one self-characteristic into focus, that is, to give it salience. Given that the survey provided no context in which to bring into salience any one self-characteristic, it is interesting that the self characteristic of mother was perceived to be highly salient. This may be a self-characteristic, which, for women, is chronically salient, and all contexts bring it into focus, or salience. In general though, it must be assumed that any one of the self-characteristics could be, or could be made to be, salient, and that enhancing the salience of those self-characteristics with high group formation potential would enable a social identity to be created.

Physical Activity Norm

Another area of interest for the self-characteristic types generated by the women in the sample was the strength of the physical activity norm for each self-characteristic types. Research has suggested that social normative factors, such as ideologies associated with motherhood, prevent women from engaging in self-care activities, such as physical activity (Brown et al., 2001; Chodorow & Contratto, 1989; Drew &

Paradise, 1996; Meissner, 1977). I, thus, expected to see low physical activity norms in the self-characteristics women generated, particularly those associated with motherhood, family, and caring. Accordingly, this research shows that the physical activity norm for none of the family/caring-based self-characteristic types exceeded the threshold level of 6.0. The level of the physical activity norms were not, however, as weak as I expected, and all, while still falling below the cut-off point at which I considered the norms to be strong, at least approached the threshold level of 6.0. The ideology of motherhood that Meissner (1977) spoke about may not be as strongly against self-care activities, like physical activity, as Drew and Paradise (1996) first thought. Women do seem to recognise that physical activity is relevant, acceptable, and appropriate for their self-characteristics associated with family and caring, but presumably, not at a level that would create a strong imperative to actually exercise.

The physical activity norms for the career-based self-characteristics types were slightly stronger on average than the physical activity norms in the family/caring-based self-characteristic types. This finding supports the research of Brown et al. (2000), which suggested that women working in a professional or managerial capacity may be exposed to stronger norms that support self-care activities. Nonetheless, the physical activity norm for the career-based self-characteristic types was still below the threshold and could benefit from some strengthening in social identity-based physical activity interventions.

Physical Activity

Consistent with the findings from large scale population surveys in the US (USDHHS, 1996), UK (ADNFS, 1992), and Australia (Armstrong et al., 2000), the results of this research showed that women aged between 25 and 45 are not sufficiently

active. In particular, this survey showed that the combination of moderate and vigorous activity in my sample of women aged 25 to 45 was well below the sufficient level of 150 minutes of physical activity per week. According to Armstrong et al. it is the moderate and vigorous levels of physical activity that afford the greatest health benefit. This means that the women in my study were unlikely to achieve the host of positive health benefits, which can be expected, if physical activity is engaged in at a sufficient level. It must be noted that the women in this study did seem to engage in a lot of walking activity. Indeed, the results show that walking activity was significantly above the required level of 150 minutes per week. The walking results were, however, problematic. This is because of an unusually large range, high standard deviation, and some extremely high, thus, questionable, individual scores. This unusual distribution points to the possibility that some women did not understand what constituted walking activity. It may be that these women grossly overestimated their walking activity, thus, created an unrepresentative and inflated mean. Indeed, investigation of the individual scores indicated that some women reported engaging in as much as three and a half hours of walking activity every day during a seven-day week. These women may have considered simply being on their feet, as walking activity. I propose that the measure of moderate and vigorous activity was more realistic because the survey gave examples of what constituted moderate and vigorous activity, and, as such, I had reason to focus specifically on the reported levels of moderate and vigorous activity in the survey.

Relationship between Physical Activity Norms and Physical Activity

In order to further investigate the relationship between physical activity norms and physical activity, I compared the total physical activity level of women who had a self-characteristic with the strongest physical activity norm “active” with the total

physical activity level of women who had a self-characteristic with the weakest physical activity norm “homemaker”. Results showed that the women with the self-characteristic of “homemaker” were significantly less active than the women with the self-characteristic of “active”. Importantly, the data, although not statistically significant, indicated that the salience of the self-characteristic moderated the relationship between norms and behaviour. Specifically, women for whom the self-characteristic of “homemaker” was not highly salient or cognitively central were more active than the women for whom the self-characteristic was salient. Conversely women for whom the self-characteristic “active” was not cognitively central were less active than women for whom the self-characteristic was cognitively central. It appears from these results that when a woman sees herself as belonging to a particular reference group, she will be influenced by the norms of that group when the group is a salient means of self-definition. This influence may not be as strong when the group is not a salient means of self-definition. Thus the supportive physical activity norms in the self-characteristic of “active” led to enhanced exercise levels in the women for whom this self-characteristic was a central aspect of their self-concept, whereas the non-supportive physical activity norms in the self-characteristic of “homemaker” led to lower exercise participation in women who identified strongly with the reference group. These results provide some preliminary evidence, as outlined by Terry and Hogg (1996), that norms are influential, but only when they emanate from a relevant reference group.

Methodological Issues

The results of this study have laid the ground work for an intervention study that takes a social identity approach to subjective norm, however, this study has raised some methodological issues that must be taken into account. The unusual distribution for

walking, as noted earlier, indicates that the adapted IPAQ was not universally understood, but because of the method of administration, via the internet, there was no opportunity for women to clarify what was required. Administration of the internet survey during work hours may also have caused the women to rush their responses, which may have exacerbated the problem of misunderstanding. These issues highlight the problems with self-test measures of physical activity, and particularly self-tests administered without the aid of researcher interaction with participants during administration.

The ANOVA analysis I conducted, although demonstrating some evidence of the moderating effect of social identity salience on the relationship between physical activity norms and physical activity must be interpreted with caution. In the first place, I only analysed data from two of the self-characteristics generated and, thus, cannot make any general conclusions about the effect of salience of social identities on the relationship between norms and behaviour. In addition, the sample size for the self-characteristics I analysed was small and the groups were uneven. There were many more women in the “active” category than in the “homemaker” category and the further division into high and low salience created even smaller sample sizes. Finally, the interaction between self-characteristic and salience, taken to indicate evidence of the moderation effect, although approaching significance, was not significant. Had the sample size been larger, this effect may have been significant. Despite these issues, the results were in the theorised direction and provided some preliminary support that norms will be influential when they emanate from a relevant reference group.

The main issue for this research, however, was my sample as a whole. Although a large number of women participated, they did not broadly represent the

wider population. The sample was biased in favour of younger, educated women who worked full time, in what were mainly professional/ managerial jobs. Most were married, but few had children. The demographics of my sample can be attributed to the fact that the survey was administered via email in large public and private organisations. In such organisations, those in professional, managerial, and administrative roles typically have ready access to computers and company email or internet facilities. Those who work on “the shop or factory floor” typically have less access. The ability to generalise the relevant reference groups identified in this study to a wider population of women is, thus, limited.

Future Research

The physical activity results of this study provide further evidence that interventions are indeed needed that promote the adoption and maintenance of physical activity. The results specifically indicate that women require more assistance in engaging in moderate and vigorous activity, than walking activity.

The finding that many of the self-characteristics for young and midlife women have group formation potential has implications for this future intervention research. If young and midlife women have many potential reference groups, using the social identity approach to subjective norm in physical activity interventions, that is, manipulating subjective norm as the pressure from relevant reference groups should be easy to apply to this population. In particular, using the personality-based self-characteristics, such as strong independent woman or spiritual woman, as the basis of these relevant reference groups may be particularly useful.

The current research showed that the physical activity norms were weak for most of the women’s self-characteristics, including those associated with motherhood

and caring, and the career-based self-characteristics. This indicates that there is scope, for future intervention research, to strengthen the physical activity norms in selected self-characteristics. Consistent with Terry and Hogg's (1996) research, the preliminary evidence presented in this study suggests that norms can be influential when they emanate from a relevant reference group, thus women's motivation to engage in physical activity will be influenced if physical activity is promoted in a physical activity intervention as a relevant and appropriate behaviour for women who identify with the family/caring-based self-characteristics, or the career-based self-characteristics.

Based on the sampling bias of this research, the future intervention research, conducted on the basis of the current study, should be limited to young and midlife women who are both highly educated and at a relatively high socio-economic level. In order to conduct social identity-based intervention research with women from lower socio-economic and education levels, other similar surveys need to be conducted with a wider sample of women, particularly those with lower educational attainment, because the research shows that lower levels of physical activity are related to lower levels of education and socio-economic status (Armstrong et al., 2000).

Final Comments

Despite these methodological issues, in this study, I have shown that young and midlife women do not engage in sufficient physical activity, specifically moderate and vigorous activity, and thus, I have further supported the need for physical activity interventions for women. This research also suggests that a physical activity intervention based on the social identity approach to subjective norm is warranted. This is because most of women's self-characteristics were shown to have high group

formation potential, indicating that interventions that encourage women to group themselves in a common social identity with other women will not be promoting an alien concept. In particular, this study has enabled me to identify two self-characteristics that are the most likely to become the basis of a salient social identity for young and mid life women, those of strong independent woman, and spiritual caring woman. Although I have not explicitly linked my finding of low physical activity norms within most of women's self-characteristics with their insufficient level of physical activity participation, I have shown in one self-characteristic, "homemaker", that an unsupportive physical activity norm results in lower physical activity of those who identify with the self-characteristic than those who don't identify. I have also shown that most of the relevant reference groups for young and midlife women are unlikely to promote physical activity as a highly normative behaviour. Thus, there is scope for increased promotion, in physical activity interventions, of physical activity within the reference groups with which women aged 25 to 45 identify.

CHAPTER 4: THE EFFECTIVENESS OF A SOCIAL IDENTITY
APPROACH TO SUBJECTIVE NORM IN A PHYSICAL ACTIVITY
INTERVENTION FOR WOMEN

Introduction

In this chapter, I document the second study in this thesis, the intervention study. In this intervention, I aimed to enhance physical activity participation among sedentary women between the ages of 25 and 45. This intervention was based on the TPB (Ajzen, 1985) and, as such, I assumed that intention is the primary predictor of behaviour. In this study, rather than work on enhancing the ability of intention to predict behaviour, the volitional stage of the TPB, I focused on the motivational phase and, thus, on enhancing the prediction of intention, which according to the TPB, works to enhance behaviour. The logic for this approach is based on the idea that sedentary women are likely to be in a pre-motivational stage and, therefore, can be expected to benefit from interventions that enhance their motivation for physical activity. I now summarise the approach I took in the intervention and my main predictions.

In the TPB, there are three variables that are expected to predict intention. These are attitude, perceived behavioural control, and subjective norm (Ajzen, 1985). In the exercise domain, only the personal variables, attitude and perceived behavioural control, rather than the social variable, subjective norm, have been found to significantly contribute to the prediction of intention (Hagger et al., 2002b; Symons Downs & Hausenblas, 2005). Despite these findings, in this intervention, I planned to manipulate the subjective norm variable in order to enhance motivation.

A growing body of research has suggested that the poor performance of subjective norm can be attributed to the way in which the variable is conceptualised.

When Terry and Hogg (1996) conceptualised subjective norm as the perception of pressure from relevant reference groups, rather than from important individuals, as in the standard conceptualisation, they found subjective norm to be a significant predictor of intention for those who identified with the reference group. According to these researchers, this is because norms are influential when they emanate from social groups to which an individual categorises themselves as belonging, their relevant reference groups. This rationale is based on the social identity approach to the self-concept (Haslam, 2001). In this approach, the self is viewed as both personal and social (Turner, 1982; Tajfel, 1974). It is personal when one categorises the self with no others, and social when one categorises the self with a group. One of the outcomes of social self-categorisation is that an individual is depersonalised and begins to adopt the attitudes and behaviours of the group with which they have classed themselves (Hogg & Turner, 1987; Turner, 1982). Norms, or the attitudes and behaviours of the group, are influential at the social level of self because they are self defining, they define the social self, rather than the personal self.

As I showed in Chapter 2, research suggests that the more self-relevant a variable, the better it is at predicting intention. Previously, only the personal variables in the TPB, attitude and perceived behavioural control, have been considered self-relevant variables (Hagger et al., 2002a; Sheeran & Orbell, 1999). Although it may be true that attitude and perceived behavioural control are the only self-relevant variables at the personal level of self, based on the social identity approach, it is clear that subjective norm, can also be a self-relevant variable, when it is defined at the social level of self. The re-conceptualised version of subjective norm defines norms at the social level of self because in this conceptualisation, only relevant reference groups, the

groups that define the social self, are expected to have any normative influence. The standard conceptualisation of subjective norm, on the other hand, being based on the personal level of self, only takes into consideration the influence of other individuals.

As I outlined in Chapter 2, “other individuals” are not necessarily categorised with the self in a social sense, thus, can only exert influence that is external to the personal self. This form of non self-relevant influence is generally referred to as public compliance, or normative control, and research shows that only a minority of people are normatively controlled (Trafimow & Finlay, 1996). It is not surprising, then, under the standard definition of subjective norm, that the TPB research in the exercise domain has shown that norms only contribute a small amount to the prediction of intention. In light of this rationale, in the current intervention study, I manipulated subjective norm for physical activity from the social identity perspective. I hypothesised that, when conceptualised from the social identity perspective, subjective norm makes a significant contribution to intention.

Research conducted on women and physical activity has suggested that a social identity-based subjective norm intervention may be particularly beneficial for young and midlife women. Brown et al. (2001) and Drew and Paradise (1996) have shown that young and midlife women’s social responsibilities and roles are the main reasons for women’s lack of participation in physical activity. In particular, women complain that they do not have time for “themselves”. From a social identity perspective, this implies that women give time priority to their social selves, but not their personal selves. Interventions which target women’s relevant social selves, or their relevant reference groups, which form the basis of their social identities, may, thus, be more effective in promoting the adoption and maintenance of physical activity, than

interventions which target women's personal selves, purely because women give more time priority to their social selves. Indeed, the results from my first study provide some support for the idea that the social level of self is highly accessible for young and midlife women. I also showed in my first study that for women, the physical activity norms, for most of their social identities, are weak, and could be enhanced in a social identity-based subjective norm intervention.

In this intervention, I aimed to test whether targeting social self, and the norms therein, is a more fruitful approach to physical activity promotion than targeting personal self. To do this, it is necessary to single out target identities that can become the basis of social identities for young and midlife women. In my first study, I identified many self-characteristics that have this "social identity potential". It is important to note that while it is essential to tap into realistic target identities for young and midlife women, the specific target identity is not as critical as the context that serves to make it the basis of salient social identity (Oakes, Haslam, & Turner, 1994). Nevertheless, two target identities emerged from Study 1 as having particular promise as being target identities for women that could become salient social identities, those of strong independent woman and spiritual caring woman. These target identities were two of the most frequently mentioned self-characteristics with which women associated, had high social identity potential, and because they were both social type, personality-based self-characteristics, which, evidence suggests, may be a stronger basis of collective identification than more role-based self characteristics, such as, career woman or wife and mother (Thoits & Virshup, 1997). In the present study, I, therefore, used strong independent woman and spiritual caring woman as the basis for a social identity-based subjective norm manipulation, in which I made the target social

identity salient, and encouraged women who had the target identity to see physical activity as a highly normative behaviour. There were, thus, two social identity conditions (SI), one emphasising the strong independent woman social identity and one reflecting the spiritual caring woman social identity. The SI conditions were compared to one personal identity condition (PI) in which women were encouraged to participate in more physical activity for their personal health and well-being.

I expected that the SI intervention conditions would be more effective in enhancing women's motivation for physical activity and subsequent adoption and maintenance of physical activity than the PI intervention condition. Consistent with the TPB research in the exercise domain, I expected that intention would be the main predictor of behaviour and, thus, I expected that the intervention, both for the social and personal identity conditions, would have their effect on physical activity through the mediation of intention. I expected that intention would be enhanced for all conditions, but at a higher level and primarily through subjective norm for the SI conditions. For the PI condition, I expected that intention would be enhanced at a lower level, through the personal variables of attitude and perceived behavioural control. Due to the enhancement of intention in all conditions, I expected that physical activity would also be enhanced for all conditions, but at a higher level for the women in the social identity conditions than for the women in the personal identity condition.

Method

Participants

I analysed data over three time-periods for a total of 64 participants. Initially there were 77 participants enrolled in the study, but 13 dropped out after Time 1 and their data were subsequently removed from the analysis. Of the 64 participants, 26

were placed in the first social identity condition, based on the social identity of “strong independent woman”. There was one dropout in this condition. A total of 17 women were placed in the second social identity condition, based on the social identity of “spiritual caring woman”. There were two dropouts in this condition. Finally, 21 women were placed in the personal identity (PI) condition, which was focused on participants’ individual identities. There were 10 dropouts in this condition. I dealt with missing data in the two sets of post-test data by substituting the mean for each condition. There was missing data for three participants at Time 2, two from the strong independent woman condition and one from the spiritual caring woman condition. There was missing data for two participants at Time 3, one from each of the SI conditions. A full account of how the participants were placed into each of the three conditions is given in the procedure section.

The mean age for the sample was 36. The majority of participants held either an undergraduate or postgraduate degree (51) and the remaining 13 women held a Year 10, 12, or TAFE (Tech Ed) certificate. Most women were married (42) and of the remaining women, 10 were single and 12 were divorced. Only one woman had five or more children, 39 women had between one and four children, and 25 had no children. Ten women classified their work as “home-duties” and one woman considered herself to be unemployed, but the remaining women classified themselves as being employed full-time (29) or part-time/casual (24).

Design

Physical activity intervention. The intervention was a 3 x 3 mixed design. The between groups variable was the condition in which the participants were placed; either the strong independent woman, spiritual caring woman, or the PI condition. The within

groups variable was the time that the participants were surveyed. Time had three levels, the pre-intervention survey (Time 1), the two-week post-intervention survey (Time 2), and the three-month follow-up survey (Time 3). The dependent variable was self-reported physical activity.

Testing the theory of planned behavior. I also measured the predictor variables of physical activity and the intention to be physically active as defined by the TPB, over the three time periods. Prior to the intervention, two weeks after the intervention, and three-months after the intervention, I distributed surveys which measured attitude, subjective norm, behavioural control, and intention to be physically active. I also measured a reconceptualised subjective norm (group norm), over these three time periods.

Measures

International Physical Activity Questionnaire (IPAQ). In the IPAQ (Booth, 2000), the women were asked to indicate the number of days in the last seven days on which they were involved in vigorous activity (e.g., heavy lifting, digging, aerobics, fast bicycling), moderate activity (e.g., carrying light loads, bicycling at a moderate pace, or doubles tennis), or walking for more than 10 minutes at a time. This forms the number of occasions participants engaged in physical activity. For each category of physical activity, the women were then asked to estimate the time in minutes that they spent on one of those occasions. The number of occasions for each category of physical activity was then multiplied by the minutes they spent on one occasion. This gave a score for the amount of time the women spent engaging in each category of physical activity. I obtained a measure of total physical activity by adding each category score (See Appendix D).

Attitude. As recommended by Ajzen (2002a), I measured attitude toward a specifically defined and time constrained behaviour (engaging in exercise in which you breathe harder than usual for 30 minutes or more, three times a week for the next three months) using five items in a semantic differential format (adjective pairs: harmful-beneficial, pleasant-unpleasant, good-bad, worthless-valuable, enjoyable-unenjoyable). Women rated the adjective pairs on a 5-point scale: 1 (*pleasant*) to 5 (*unpleasant*). Two of the items were reverse scored. (See Appendix E).

Subjective norm. In line with Ajzen's (2002) recommendation for the measurement of subjective norm, I used four items in which women rated their perception of the thoughts, expectations, and opinions of important others for the focal behaviour, engaging in exercise in which you breathe harder than usual for 30 minutes or more, three times a week for the next three months. Three items measured injunctive norm, which is a measure of perception of what others think should be done ('Most people who are important to me think that I should undertake exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale: 1 (*strongly disagree*) to 7 (*strongly agree*), and 'It is expected of me that I undertake exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale: 1 (*strongly disagree*) to 7 (*strongly agree*), and finally, 'The people in my life whose opinion I value most would approve of me engaging in exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale: 1 (*strongly disapprove*) to 7 (*strongly approve*)). One item measured descriptive norm, which is a measure of perception of what important others actually do ('Most people who are important to me undertake exercise in which they

breathe harder than usual for 30 minutes or more, three times a week' 7-point Likert scale: 1 (*completely false*) to 7 (*completely true*)) (See Appendix E).

Perceived behavioural control. I measured perceived behavioural control using four items, based on those recommended by Ajzen, 2002. These items assess the extent to which women believe they can perform the target behaviour (e.g., 'For me to undertake exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months would be': 7-point Likert scale: 1 (*impossible*) to 7 (*entirely possible*)), and the extent of control they perceived they had over the behaviour (e.g., 'How much control do you believe you have over engaging in exercise in which you breathe harder than usual for 30 minutes or more, three times a week for the next three months?', 7-point Likert scale: 1 (*no control*) to 7 (*complete control*)) (See Appendix E).

Behavioural intention. I measured behavioural intention using three items (e.g., 'I intend to engage in exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale: 1 (*strongly disagree*) to 7 (*strongly agree*)), and 'I plan to engage in exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale: 1 (*strongly disagree*) to 7 (*strongly agree*)) (See Appendix E).

Group norm. In line with Terry and Hogg's (1996) re-conceptualisation of subjective norm as the consensual attitudes and behaviours of behaviourally relevant reference groups, I measured group norm using three items. These assess participants' perception of the reference group norms, in the context of the intervention, for performing the focal behaviour (for the strong independent woman condition, I asked women: how many *strong independent women* would think that engaging in exercise in

which you breathe harder than usual for 30 minutes or more, three times a week for the next three months is a good thing to do?', 7-point Likert scale: 1 (*none*) to 7 (*all*), and 'think about other *strong independent women*. How much would they agree that engaging in exercise in which you breathe harder than usual for 30 minutes or more, three times a week for the next three months is a good thing to do?', 7-point Likert scale: 1 (*strongly disagree*) to 7 (*strongly agree*), and 'It is expected of me, as a *strong independent woman*, that I engage in exercise in which I breathe harder than usual for 30 minutes or more, three times a week for the next three months', 7-point Likert scale, 1 (*strongly disagree*) to 7 (*strongly agree*)). I asked the same questions of the women in the spiritual caring woman condition, but the reference group "spiritual caring women" was used. I asked the women in the PI condition, for whom no reference group was made salient, both sets of questions, for strong independent women and spiritual caring women (See Appendix E).

Intervention Conditions

Salience. I manipulated the salience of the target identity "strong independent woman" in the strong independent woman condition or "spiritual caring women" in the spiritual caring woman condition following a procedure used by Hogg, Cooper-Shaw, and Holzworth (1993). I asked the high salience participants in the strong independent woman and spiritual caring woman conditions to list the qualities they share with other "strong independent women" or "spiritual caring women" respectively. Based on the recommendation of White, Hogg, and Terry (2002), I also asked the high salience participants to consider the characteristics of the opposite, or out-group identity, either submissive and dependent women, or non-spiritual caring women, and how they, as strong independent women or spiritual caring women, differed from those people (See

Appendix F). I asked the low salience participants in the PI condition to list their unique individual characteristics and reflect on their uniqueness, thus, there was no focus on any particular social identity. (See Appendix F)

Normative support. I manipulated normative support through the viewing of video interviews and group reflection on the content. Normative support participants in the strong independent woman and spiritual caring woman conditions watched a series of interviews with three other women who professed to belong to the target identity, strong independent women for the strong independent woman condition, and spiritual caring women for the spiritual caring woman condition and were, thus, members of a relevant reference group. In these video interviews, the women talked about how physical activity was a very important behaviour for the target identity (scripts for these video interviews are attached in Appendix G). Following the video, participants were led into a group discussion about the video content and group agreement about the role of physical activity for the target identity was facilitated. Participants also received a take-home pack, which included gym passes for various gyms in the area and an exercise tracker to place on their fridge with the title “strong independent women exercise tracker” or “spiritual caring women exercise tracker”. No normative support participants in the PI condition also watched a series of video interviews (scripts of these video interviews are attached in Appendix G). The interviews were with three women posing as general health professionals in the community. One interviewee posed as a medical doctor, one as a health psychologist, and one as a personal trainer. Each woman in the video talked about the benefits of physical activity for all people and offered encouragement for people to be more active. Following the video, participants in the PI condition also engaged in a group reflection on how the

information presented in the video could be applied to their lives. Participants in the PI condition also received a take-home pack of gym passes for various gyms in the area and an exercise tracker to place on their fridge with a more simple title of “exercise tracker”. The video duration was approximately 10 minutes for all three conditions and featured the same three women. The post-video discussion sessions for each group also went for approximately 10 minutes.

Manipulation Check

Salience. In order to measure the effectiveness of the salience manipulation, I asked the women two questions at the end of the intervention workshop, which were answered on 7-point Likert scales. In the strong independent woman condition, I asked women to what extent was your identity as a *strong independent woman* in focus during this workshop?, 7-point Likert scale: 1 (*not at all*) to 7 (*very much*), and secondly, how aware were you of your identity as a *strong independent woman* during this workshop?, 7-point Likert scale: 1 (*not at all*) to 7 (*very much*). I asked the women in the spiritual caring woman condition the same questions with regard to the reference group “spiritual caring woman”. I asked the women in the PI condition both sets of questions with regard to both reference groups.

Normative support. In order to measure the effectiveness of the normative support manipulation, I asked two questions at the end of the intervention workshop, which were answered on 7-point Likert scales. In the strong independent woman condition, I asked women, to what extent did this workshop facilitate your belief that exercise is a behaviour, which is supported by *strong independent women*?, 7-point Likert scale: 1 (*not at all*) to 7 (*very much*), and secondly, to what extent did this workshop promote the idea that exercise is a typical behaviour for *strong independent*

women?, 7-point Likert scale: 1 (*not at all*) to 7 (*very much*). I asked women in the spiritual caring woman condition the same questions with regard to the reference group “spiritual caring woman”. I asked the women in the PI condition both sets of questions with regard to both reference groups.

Procedure

I encouraged sedentary women aged between 25 and 45 to volunteer for a 3-month physical activity study designed to assist them in becoming more active through a story and picture spread about the study in a the local newspaper and posters in libraries and doctors surgeries. The interested women contacted me and I asked three types of initial screening questions to ascertain their suitability for the study. Firstly, I checked the basic demographics of the women, the most important of which was age. Secondly, I administered a short version of the IPAQ, which assessed the women’s level of physical activity. Thirdly, I assessed the self-characteristics with which the women identified. My previous study enabled me to compile a list of common self-characteristics for women aged 25 to 45. I read the women the list and asked them to indicate which self-characteristic they identified with and which they did not by saying either “yes” or “no”. The list was randomised. Only the women who were within the age bracket of 25 to 45, and who engaged in less than 150 minutes of total physical activity in a seven-day period were invited to participate in the 3-month physical activity study. For ethical reasons, I invited the women who did not match these two criteria to attend a physical activity workshop at the end of study.

After assessing the number of eligible intervention participants I split the participants into one of the three intervention conditions as evenly as possible. The

majority of the women indicated that they identified with the self-characteristic of “strong independent woman”. Where possible, most of these women were placed in the strong independent woman SI condition, but in order to achieve an even split between conditions, some of these women were placed in the PI condition. All women who identified with the self-characteristic of “spiritual woman” were placed in the spiritual woman SI condition. Those women who identified with neither the strong independent woman nor spiritual woman self-characteristics were placed in the PI condition. Women who contacted me after a particular cut-off date were also placed in the PI condition, regardless of their identification with the self-characteristics of either strong independent or spiritual caring woman. All these eligible participants were then sent an invitation appropriate to the condition in which they had been placed, to an initial physical activity workshop to which they returned an RSVP.

I conducted the physical activity workshops for the two SI conditions and the PI condition at a room in a local recreation centre. Prior to the commencement of the workshop, I administered standard informed consent procedures for the 3-month physical activity study (information to participants and informed consent for the intervention are attached as Appendix H).

The women in each group initially filled out a pre-test questionnaire package, including the IPAQ, and the TPB measures of attitude, perceived behavioural control, subjective norm, and behavioural intention, as well as the questions assessing group norm and identification with the target identity. I then administered the salience manipulation. Following this, each group watched the 10 minute video, which manipulated normative support for physical activity. I then facilitated a post-video

discussion, which ran for approximately 10 minutes. The women in each condition were then given a take-home pack, including information about the types of physical activity possible in the local area, passes for various gyms in the area, and an exercise tracker. Women were encouraged to track their exercise over the next three months.

Two-weeks after the physical activity workshop, I sent out a post-test questionnaire package, exactly the same as the pre-test package administered at the workshop, with a reply paid envelope. Three months after the physical activity workshop, I send out the follow-up post-test questionnaire package with a reply paid envelope. At this 3-month point, I invited interested women to a final workshop to receive a de-briefing about the study and to discuss their progress in a focus group session.

Analysis

Manipulation check. I conducted two manipulation checks to validate the effect of the salience and the normative support manipulations in the physical activity intervention workshop. To check the salience manipulation, I averaged the two salience items in the manipulation check to form the dependent variable and conducted a two-tailed independent t-test to measure the difference between the salience of either the “strong independent woman”, or “spiritual caring woman” social identity in the SI conditions with the salience of those social identities in the PI condition. To check the normative support manipulation, I averaged the two normative support items in the manipulation check to form the dependent variable and conducted a two-tailed independent t-test to measure the difference between perceptions of normative support for physical activity from either the “strong independent woman” or “spiritual caring woman” reference group in the SI conditions with the perception of normative support

from the “strong independent woman” or “spiritual caring woman” reference group in the PI condition.

Measuring the change in physical activity. I conducted a series of 3 x 3 mixed ANOVA’s to measure the change in self-reported physical activity between the three conditions over the three time periods. The condition was the between groups factor. This had three levels, the strong independent woman condition, the spiritual caring woman condition, and the PI condition. Time was the within groups factor. This had three levels, the pre-test (Time 1), the two-week post-test (Time 2), and the three-month post-test (Time 3). I used the measure of total physical activity as the dependent variable in the first ANOVA. In subsequent ANOVA’s, I separated out the total measure of physical activity into its sub-parts. In the second ANOVA, I used a combination of moderate and vigorous activity as the dependent variable, and in the third ANOVA, I used walking as the dependent variable.

Measuring the change in cognitions. I conducted a series of 3 x 3 mixed ANOVA’s to measure the change in cognitions (intention, perceived behavioural control, attitude, subjective norm, and group norm) between the three conditions over the three time periods. The condition was the between groups factor. This had three levels, the strong independent woman condition, the spiritual caring woman condition, and the PI condition. For each cognition, time was the within groups factor. This had three levels, the pre-test (Time 1), the two-week post-test (Time 2), and the three-month post-test (Time 3). Intention over the three time periods was the dependent variable for the first ANOVA, perceived behavioural control, attitude, subjective norm, and group norm respectively, were the dependent variables in the subsequent four ANOVA’s.

Testing the theory of planned behavior. I used a series of hierarchical regression analyses to measure the predictors of physical activity and intention to be physically active, as given by the TPB variables and the group norm variable, for the three conditions over the three time periods.

To measure the predictors of intention to be physically active, I carried out a set of two-step hierarchical regression analyses for each of the three conditions, over each of the three time measures (a total of nine regression analyses). I entered the measures of attitude, group norm, and subjective norm at the first step in the regression model. I entered the measure of perceived behavioural control at the second step. This analysis was conducted in line with the TPB, in which Ajzen (1985) suggested that perceived behavioural control will add to the prediction of intention after controlling for the effect of attitudes and norms.

To measure the predictors of self-reported physical activity (total physical activity), I carried out a set of three-step hierarchical regression analyses for each of the three conditions, over each of the three time measures, (a total of nine regression analyses). I entered the measure of intention at the first step in the regression model and perceived behavioural control in the second step. This analysis was conducted in line with the TPB, in which Ajzen (1985) suggested that perceived behavioural control will add to the prediction of behaviour after controlling for the effect of intention. I entered the measures of attitude, subjective norm, and group norm as a third step in the regression analyses to examine whether the effect of attitudes and norms are mediated through intention, as suggested in the TPB. In line with the theory of planned behaviour, I did not expect norms and attitudes would add to the prediction of physical activity after intention and behavioural control had been added.

Results

Manipulation Check

I conducted two independent t-tests to check whether the manipulation of salience and normative support had been successful.

Salience

Women in the strong independent woman condition reported higher levels of salience of the reference group identity “strong independent woman” than the PI group (Mean = 5.9, SD=1.7 and Mean =4.3, SD=1.5 respectively). This difference was significant, $t(45) = 4.29$, $p < 0.01$, indicating, as expected, that in the strong independent woman condition, the identity of strong independent woman was made more salient than in the PI condition. Similarly, when comparing the salience of the identity “spiritual caring woman” in the spiritual caring woman condition with the salience of the identity “spiritual caring woman” in the PI condition, the mean was higher for the spiritual caring woman condition than in the PI condition (Mean = 6.1, SD=0.75 and Mean =2.2, SD=1.2 respectively). This difference was significant, $t(36) = 12.25$, $p < 0.01$, which indicated that in the spiritual caring woman condition, the identity of spiritual caring women was made more salient than in the PI condition.

Normative Support

The mean for normative support of physical activity for strong independent women in both the strong independent woman condition and the PI condition was relatively high (Mean= 5.3, SD=1.2 and Mean = 4.7, SD=1.8 respectively). Although the women in the strong independent woman condition reported slightly higher levels of belief that the workshop promoted physical activity as a behaviour supported by strong independent women than the women in the PI condition, the difference was not

significant, $t(47)=1.51, p>0.05$. This indicates that the workshops for women in both the strong independent woman and the PI conditions encouraged the perception that physical activity is a highly normative behaviour for strong independent women. When comparing the perception of normative support of physical activity for spiritual caring women, the women in the spiritual caring woman condition felt that physical activity was more normative for spiritual caring women (Mean = 6.0, SD = 0.91) than the women in the PI condition (Mean = 2.3, SD = 1.4). This difference was significant, $t(36)=10.29, p<0.01$ indicating that the workshop encouraged women in the spiritual caring woman condition to believe that physical activity was a more normative behaviour for “spiritual caring women” than the workshop for women in the PI condition.

Effect of Social Identity Intervention on Physical Activity

I conducted three 3 x 3 mixed design ANOVA's, each with a different dependent variable, in order to compare the effect of the social identity-based interventions (the two SI conditions) on the initial adoption of physical activity, and maintenance over a 3-month period, with a personal identity-based intervention (the PI condition). A measure of total physical activity was the first dependent variable, a combination of moderate and vigorous activity was the second, and walking was the third.

Total Physical Activity

In the first ANOVA, I analysed the changes in total physical activity (combination of moderate, vigorous, and walking activity) over time for the three conditions. I used the Huynh-Feldt Epsilon statistic for all effects involving the within groups factor, to correct for the violation of sphericity since Mauchley's test of

sphericity for the within-groups factor was significant, $\chi^2(2) = 15.1, p < 0.01$. Results revealed a main effect of time, $F(1.7, 105.5) = 13.38, p < 0.01$, partial $\eta^2 = 0.18$.

Bonferroni post-hoc tests showed that there was a significant increase in total physical activity, across all conditions, between Time 1, $M=106.5, SD=87.1$ and Time 2, $M=212.9, SD=116.2, p < 0.01$, and between Time 1, $M=106.5, SD=87.1$ and Time 3, $M=199.3, SD=181.2, p < 0.01$. There was no significant difference in physical activity, across all conditions, between Time 2 and Time 3, $p > 0.01$. These results are displayed in Figure 4.1.

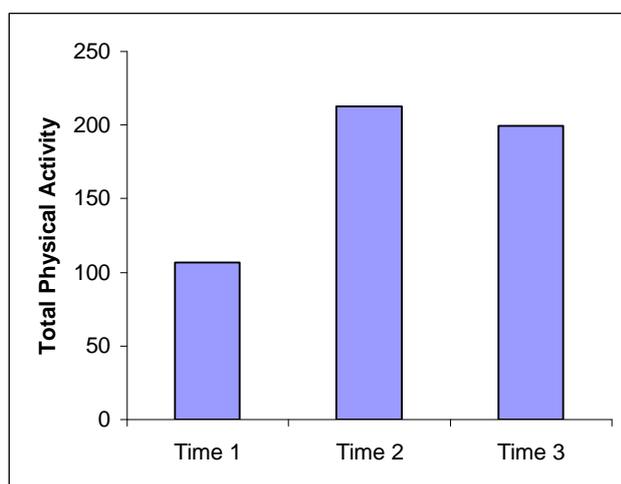


Figure 4.1. Change in total physical activity over time.

The main effect of condition was not significant, $F(1,61) = 1.67, p > 0.05$, partial $\eta^2 = 0.05$. There was no difference between the means of total physical activity for each condition across all time periods. Figure 4.2 displays the difference in total physical activity across the three conditions.

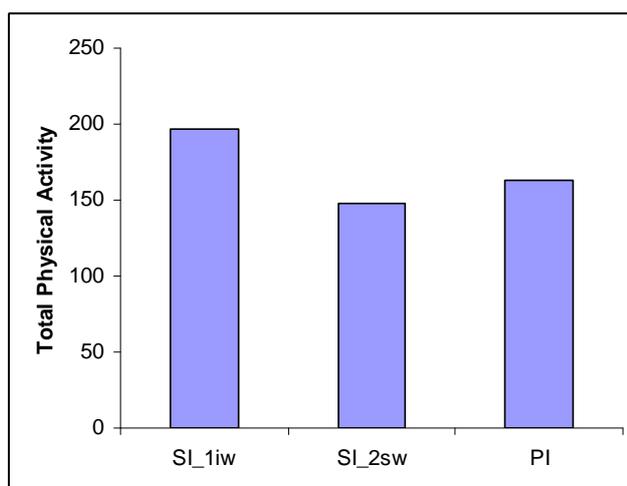


Figure 4.2. Difference in total physical activity for each condition.

For Figure 4.2 and all subsequent figures and tables, I have used the notation SI_1iw to refer to the strong independent woman condition and SI_2sw to refer to the spiritual caring woman condition. There was a significant interaction between time and condition, $F(3.4, 105.5) = 4.87, p < 0.05$, partial $\eta^2 = 0.10$. The means and standard deviations displaying the differences between each condition at the three time points are displayed in Table 4.1.

Table 4.1

Means and Standard Deviations for Total Physical Activity between the SI_1iw, SI_2sw, and PI Conditions across the Three Time Periods

	SI_1iw		SI_2sw		PI	
	Mean	SD	Mean	SD	Mean	SD
Time 1	87.7	72.6	109.4	90.3	127.6	99.1
Time 2	238.7	128.7	165.6	109.9	219.5	96.9
Time 3	264.6	238.9	169.6	129.9	142.6	93.9

I conducted two sets of follow-up analyses to interpret this interaction. In the first analysis, I analysed the differences between the conditions within each time level by conducting three one-way between groups ANOVA's with planned follow-up comparisons. At Time 1, the ANOVA detected no significant difference in total physical activity between the SI conditions and the PI condition, $F(2, 63) = 1.24$, $p > 0.05$. The ANOVA also detected no significant difference in level of total physical activity between the three conditions at Time 2, $F(2, 63) = 2.16$, $p > 0.05$. There was a difference detected between the means at time 3, $F(2, 63) = 3.14$, $p < 0.05$. This difference at Time 3 was not strong and follow-up Bonferroni post-hoc tests did not detect any significant differences in pairwise comparisons. The difference in total physical activity between the strong independent woman and PI condition, however, approached significance ($p = 0.06$).

In the second follow-up analyses, I analysed the differences between the three time measures within each group by conducting three one-way within groups ANOVA's with planned follow-up comparisons. The ANOVA for the strong independent woman condition was significant, $F(1.6, 38.9) = 10.08$, $p < 0.01$. Planned follow-up comparisons showed that the differences were between Time 1 and Time 2, $t(25) = -5.2$, $p < 0.01$ and between Time 1 and Time 3, $t(25) = -3.42$, $p < 0.01$ indicating that for the SI_1iw condition, physical activity significantly increased over time. The small rise in physical activity from Time 2 to Time 3 was not, however, significant, $t(25) = -0.59$, $p > 0.01$. The second ANOVA for the spiritual caring woman condition was significant $F(2, 32) = 3.28$, $p < 0.05$ and planned follow-up comparisons revealed the same pattern as in the strong independent woman condition. Specifically, there was a significant increase in total physical activity between Time 1 and Time 2, $t(16) = -$

2.19, $p < 0.05$ and between Time 1 and Time 3, $t(16) = -2.13$, $p < 0.05$, but the small rise in physical activity between Time 2 and Time 3 was not significant, $t(16) = -0.16$, $p > 0.05$. The ANOVA for the PI condition was also significant, $F(2, 40) = 7.75$, $p < 0.01$, but the follow-up comparisons showed a different pattern of differences than for the two SI conditions. There was a significant increase in total physical activity between Time 1 and Time 2, $t(20) = -4.29$, $p < 0.05$, but there was no difference in physical activity between Time 1 and Time 3, $t(20) = -0.58$, $p > 0.05$ revealing that, by time 3, physical activity had dropped back down to pre-test levels. The drop in physical activity from Time 2 to Time 3 was significant, $t(20) = 2.80$, $p < 0.01$. The pattern of these effects is displayed in Figure 4.3.

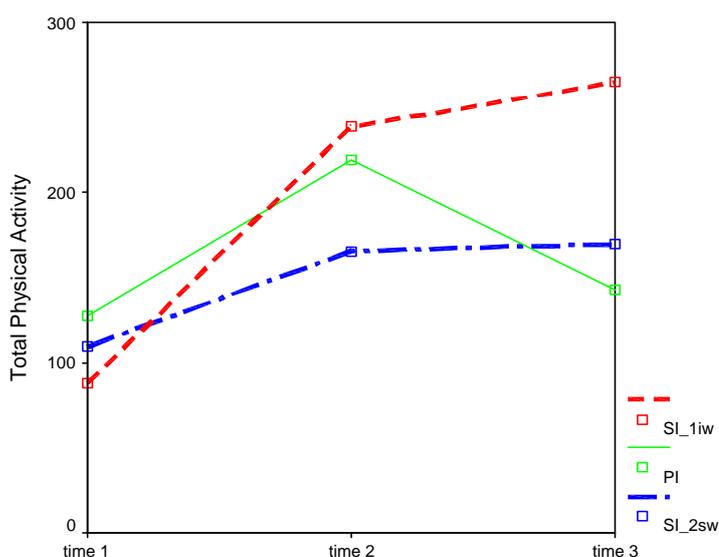


Figure 4.3. Interaction between condition and time on total physical activity.

Combined Moderate and Vigorous Activity

I conducted a second mixed design ANOVA using a subset of total physical activity. In this analysis, I removed the walking measure of physical activity and only analysed a combination of moderate and vigorous activity (modvig). The means were

smaller overall, but I found the same pattern of effects as the first ANOVA on total physical activity. Specifically, there was a main effect of time, $F(2, 122) = 26.73$, $p < 0.01$. In this case, the effect size was bigger than the effect size for total physical activity, partial $\eta^2 = 0.31$. I used the sphericity assumed statistic, because Mauchly's test of sphericity was not significant, $\chi^2(2) = 3.90$, $p > 0.05$. Bonferroni post-hoc tests showed that, as with total physical activity, modvig increased significantly from Time 1 to Time 2, ($p < 0.01$), and the overall increase from Time 1 to Time 3 was significant ($p < 0.01$). There was a small decrease in modvig from Time 2 to Time 3, but this difference was not significant ($p > 0.05$). Figure 4.4 displays the main effect of time for modvig.

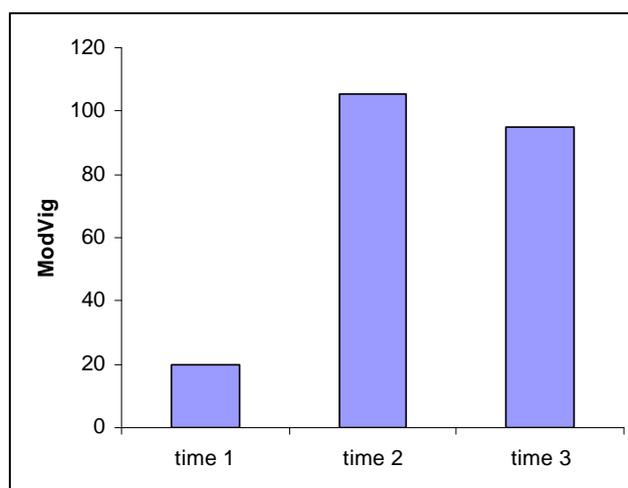


Figure 4.4. Change in modvig over time.

The main effect of condition was not significant, $F(2, 61) = 0.58$, $p > 0.05$, partial $\eta^2 = 0.02$, revealing that all participants in all conditions engaged in a similar level of modvig over the entire study. Figure 4.5 displays the main effect of condition for modvig.

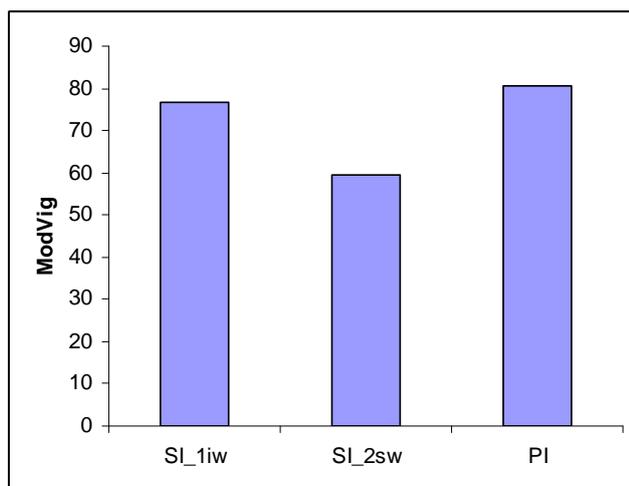


Figure 4.5. Difference in modvig for each condition.

There was also a significant interaction between condition and time for modvig, $F(4, 122) = 3.30, p < 0.05$. The effect size for this interaction was the same as for total physical activity, partial $\eta^2 = 0.10$. The means and standard deviations for the three conditions over each time measure are displayed in Table 4.2.

Table 4.2

Means and Standard Deviations for ModVig between the SI_1iw, SI_2sw, and PI

Conditions across the Three Time Periods

	SI_1iw		SI_2sw		PI	
	Mean	SD	Mean	SD	Mean	SD
Time 1	6.35	22.96	20.00	41.35	36.67	63.27
Time 2	102.46	97.43	75.59	78.00	132.86	99.10
Time 3	121.19	125.62	82.77	93.01	71.91	76.62

I used a two-part analysis to interpret this interaction, firstly, I analysed the differences between the three conditions within each time period, and, secondly, I

analysed the differences over time for each condition. I used one-way between groups ANOVA's with planned follow-up comparisons and one-way within groups ANOVA's with planned follow-up comparisons, respectively. The interaction for modvig could be interpreted in a similar way to the interaction for total physical activity.

The first follow-up analysis, which assessed the differences between the conditions at each time point, showed that there were no differences in modvig between the conditions at Time 1, $F(2, 63) = 2.70, p > 0.05$, Time 2, $F(2, 63) = 1.79, p > 0.05$, or at Time 3, $F(2, 63) = 1.48, p > 0.05$. As with the previous interaction analysis on total physical activity, the differences appeared when assessing the pattern of change over time for each group. The pattern of effects for each condition for this analysis was identical to the earlier analysis on total physical activity. Specifically, the within groups ANOVA's for the two SI conditions were significant. Strong independent woman condition, $F(1.5, 37.4) = 17.39, p < 0.01$, spiritual caring woman condition, $F(2, 32) = 8.911, p < 0.01$. For both conditions, the follow-up comparisons showed that the increase in modvig for women in both the strong independent woman and the spiritual caring woman conditions, from Time 1 to Time 2, were significant, $t(25) = -4.7, p < 0.01$ and $t(16) = -3.49, p < 0.01$ respectively. The overall increase from Time 1 to Time 3 for both conditions was also significant, strong independent woman condition, $t(25) = -4.39, p < 0.01$, spiritual caring woman condition, $t(16) = -3.20, p < 0.01$. In both conditions, there were small increases in modvig from Time 2 to Time 3, but these differences were not significant, strong independent woman condition, $t(25) = -1.30, p > 0.05$, spiritual caring woman condition, $t(16) = -0.58, p > 0.05$. The ANOVA for the PI condition was also significant, $F(2, 40) = 9.42, p < 0.01$, but, as with the earlier analysis on total physical activity, the differences in modvig over time were different to

the SI conditions. Similar to the SI conditions, there was a significant rise in modvig from Time 1 to Time 2, $t(20) = -4.40, p < 0.01$, but, unlike the SI conditions, there was no difference between modvig from Time 1 to Time 3, $t(20) = -1.84, p < 0.05$ showing that over the long term, modvig dropped back to pre-test levels. The drop in modvig from Time 2 to Time 3 was significant, $t(20) = 2.33, p < 0.05$. The pattern of these effects is displayed in Figure 4.6.

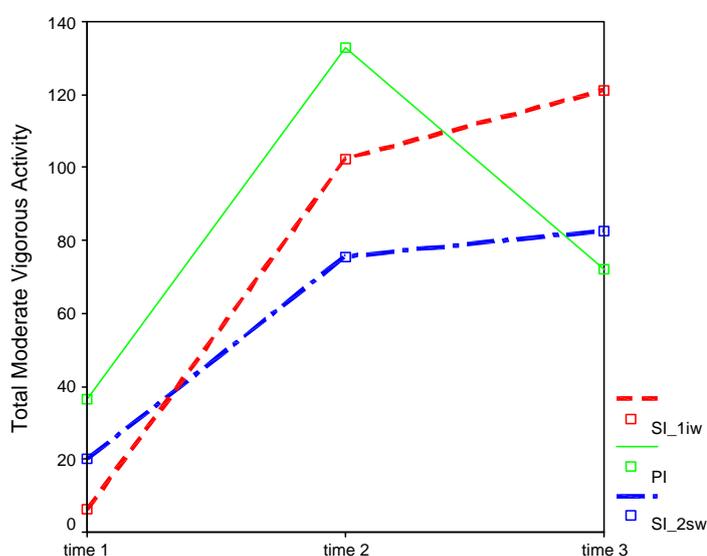


Figure 4.6. Interaction between condition and time on modvig.

Walking

In the third mixed design ANOVA assessing the effect of the intervention on exercise behaviour, I analysed walking activity on its own. In this analysis, unlike the previous two analyses, there was no significant main effect for time, $F(1.9, 114.1) = 0.68, p < 0.05$, partial $\eta^2 = 0.01$, indicating that there was no change in walking activity over the three time periods. I used the Huynh-Feldt Epsilon statistic for all effects involving the within groups factor, to correct for the violation of sphericity, because

Mauchley's test of sphericity for the within-groups factor was significant, $\chi^2(2) = 8.72$, $p < 0.01$. This effect can be seen in Figure 4.7.

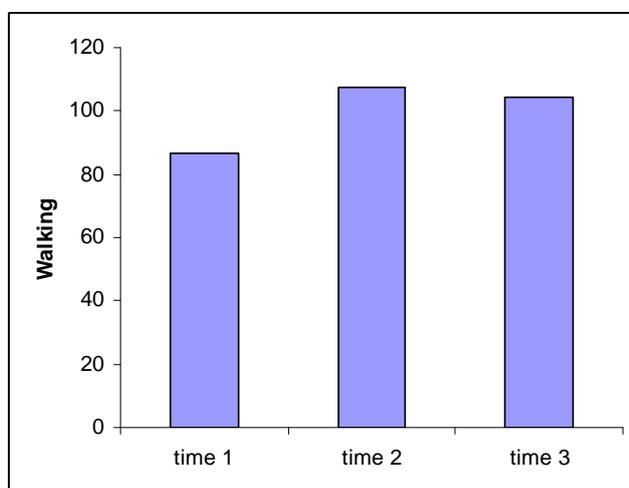


Figure 4.7. Changes in walking activity over time.

Also unlike the earlier analyses, the interaction was not significant, $F(1.9, 114.1) = 1.65$, $p > 0.05$, partial $\eta^2 = 0.01$. Consistent with the previous two analyses, however, there was no main effect for condition, $F(2, 61) = 2.39$, $p > 0.05$, partial $\eta^2 = 0.07$. Although the effect sizes for the main effect of time and the interaction were small in comparison to the effect sizes for the previous two analyses, they were consistent with the absence of a significant result. The effect size for the main effect of condition, whilst yielding a result that was not significant, was moderate, and larger than the effect sizes in the previous two analyses on total physical activity and modvig, where the η^2 for the main effect of condition were 0.05 and 0.02 respectively. Descriptively speaking (see Figure 4.8), the walking means for the conditions also looked different. Thus, based on the descriptive difference between the means and the moderate effect size for the main effect of condition, I conducted some planned comparisons between the conditions using independent t-tests.

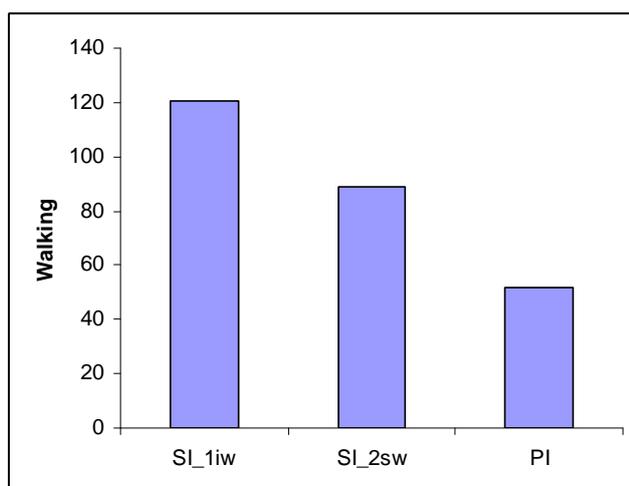


Figure 4.8. Differences in walking for each condition.

I found one significant difference in the planned comparison analysis. This was between the strong independent woman and the PI condition, $t(43.9) = 2.0, p < 0.05$, showing that the women in the strong independent woman condition engaged in more walking than the women in the PI condition. The other comparisons between the strong independent woman and spiritual caring woman conditions and the spiritual caring woman and PI conditions were not significant, $t(40.8) = 1.60, p > 0.05$ and $t(34.2) = 0.35, p > 0.05$, respectively.

Summary

The results analysing the differences in physical activity levels between the three conditions over three months show that physical activity, when measured as a total combination of moderate, vigorous, and walking activity, increased over time. The biggest increase occurred two weeks after the intervention, and although there was not another significant increase after three months, the combined activity level across all conditions, did not decline and stayed significantly higher than pre-test levels. When analysing only moderate and vigorous activity, this effect was the same, but there

were no changes over time in the walking results, when taken alone. Thus the women participating in the 3-month physical activity study appeared to increase their moderate and vigorous activity and not their walking. There were no differences between the three conditions in physical activity, when taken as a total score and when analysing modvig separately. Over the three time periods, women in all the conditions engaged in similar amounts of exercise during the 3-month study. The main effect of condition, for walking, was also not significant, but the moderate effect size indicated bigger differences between the conditions than when analysing modvig and total physical activity. Indeed, the follow-up comparisons showed that the women in the strong independent woman condition engaged in significantly more walking than the women in the PI condition, but I found no other effects. In the main analyses, there were also two important interaction effects. In the analyses on total physical activity and modvig, I found significant interactions between condition and time and was able to apply the same interpretation for both. In particular, the SI conditions increased their total physical activity and modvig levels from Time 1 to Time 2 and although there was no significant increase from Time 2 to Time 3, there was no decline, and total physical activity and modvig levels remained significantly higher than pre-test levels. On the other hand, the PI condition in both analyses, although significantly increasing their total physical activity and modvig levels from Time 1 to Time 2, showed significant drops in their total physical activity and modvig levels from Time 2 to Time 3, such that there was no difference in the activity levels (total and modvig) between Time 3 and the pre-test levels.

When taken as a whole the results show that the women in the strong independent woman condition engaged in the most total physical activity, followed by

the women in the PI condition. The women in the spiritual caring woman condition engaged in the least amount of total physical activity. With the exception of walking, however, these differences between the conditions were not significant. Importantly, although women in all the conditions were able to increase their level of physical activity (total physical activity and modvig), only the women in the two SI conditions were able to maintain this higher level of physical activity in the longer term. Unfortunately, total physical activity and modvig significantly declined in the long term for the women in the PI condition.

Effect of Social Identity Intervention on Cognitions

According to the TPB, intention is the primary determinant of behaviour. Perceived behavioural control is another determinant, if the behaviour is one, like physical activity, in which there is incomplete volition. I expected that the significant increase, over time, in total physical activity that I found in the previous analysis should, therefore, be accompanied by concomitant increases in intention and perceived behavioural control. In the following analyses, I conducted two 3 x 3 mixed design ANOVA's, to detect the changes in intention and perceived behavioural control. I also conducted a further three 3 x 3 mixed design ANOVA's to detect differences in the other measured cognitions, attitude, subjective norm, and group norm.

Intention

There was a change in intention over time across the three conditions. The main effect of time, using the Huynh-Feldt statistic, due to a violation of sphericity, $\chi^2(2) = 14.90, p < 0.01$, was significant, $F(1.7, 105.8) = 6.37, p < 0.01$, partial $\eta^2 = 0.10$, but contrary to expectations, the change was in the downwards direction. That is, despite

the increase in physical activity reported in the previous analysis, intention decreased. Bonferroni post-hoc tests revealed that the decrease in intention was not significant between Time 1 and Time 2 ($p>0.05$), but the drop between Time 2 and Time 3 was significant ($p<0.05$), and intention at Time 3 was significantly lower than intention at Time 1 ($p<0.05$). The main effect of time on intention is displayed in Figure 4.9.

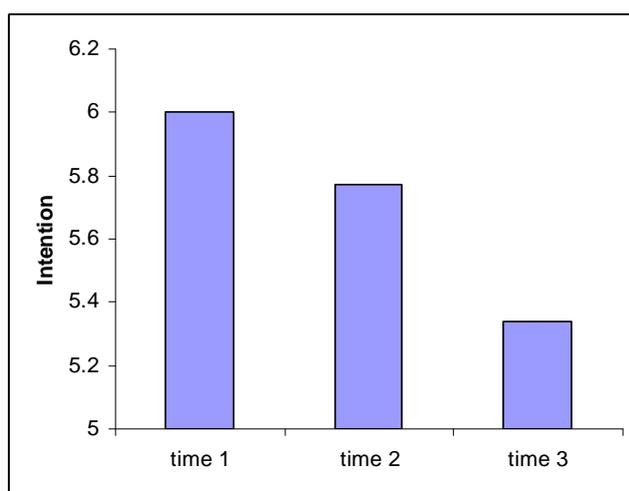


Figure 4.9. Differences in intention over time.

For intention, neither the main effect of condition nor the interaction between condition and time were significant, $F(2, 61) = 1.76, p>0.05$, partial $\eta^2 = 0.05$ and $F(3.5, 105.8) = 2.21, p>0.05$, partial $\eta^2 = 0.05$, respectively. Despite achieving a result that was not significant, my observation of the means for each group over the three time periods, displayed in Figure 4.10, lead me to conduct post-hoc analyses assessing the changes in intention over time for each condition.

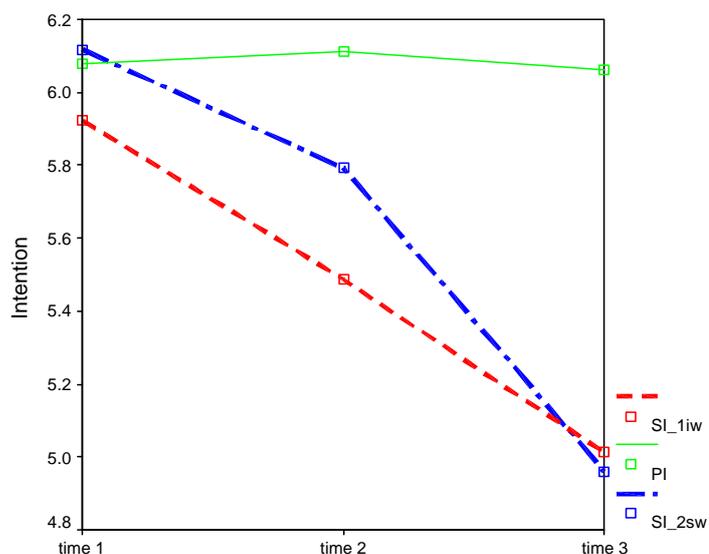


Figure 4.10. Interaction between condition and time for intention.

The post-hoc paired sample t-tests showed that for both the SI conditions, intention significantly dropped from Time 1 to Time 3, strong independent woman condition, $t(25) = 2.14$, $p < 0.05$ and spiritual caring woman condition, $t(16) = 2.36$, $p < 0.05$. Consistent with observations of the means in Figure 4.10, there was no difference in intention between Time 1 and Time 3 for the PI condition, $t(20) = 0.068$, $p > 0.05$.

Perceived Behavioural Control

Unlike the intention results, the changes in perceived behavioural control over time, were in an upwards direction, and the main effect of time, using the Huynh-Feldt statistic, due to a violation of sphericity, $\chi^2(2) = 16.09$, $p < 0.01$, was significant, $F(1.7, 104.4) = 3.18$, $p < 0.05$. The effect size was not, however, very large, partial $\eta^2 = 0.05$. Bonferroni post-hoc tests showed that, although it looked like perceived behavioural control showed overall increased from Time 1 to Time 3 (see Figure 4.11), this change was not significant ($p > 0.05$). The only significant increase in perceived behavioural

control was between Time 1 and Time 2 ($p < 0.01$). The observed decline in perceived behavioural control from Time 2 to Time 3 (see Figure 4.11), was not significant ($p > 0.05$).

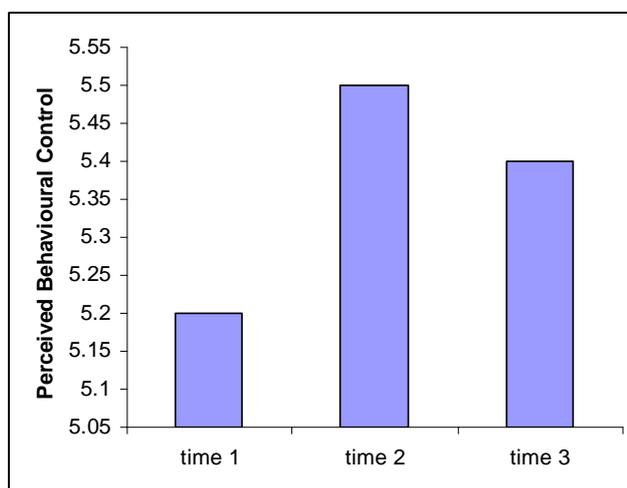


Figure 4.11. Changes in perceived behavioural control over time.

Consistent with the results for intention, neither the main effect of condition nor the interaction between condition and time for perceived behavioural control were significant, $F(2, 61) = 0.60, p > 0.05$ and $F(3.4, 104.4) = 1.78, p > 0.05$ respectively.

Attitude

There were also significant changes in attitude over time. The main effect of time, using the Huynh-Feldt statistic, due to a violation of sphericity, $\chi^2(2) = 9.14, p < 0.01$, was significant, $F(1.9, 106.9) = 53.16, p < 0.01$, partial $\eta^2 = 0.47$. The means displayed in Figure 4.12 show that attitudes initially became more positive (low scores equal more positive attitudes) then started becoming more negative in the long term. Bonferroni post-hoc tests showed that these differences were significant. The drop from Time 1 to Time 2, the increase from Time 2 to Time 3, and the overall increase

(indicating attitudes becoming more negative) from Time 1 to Time 3 all obtained a probability less than 0.05.

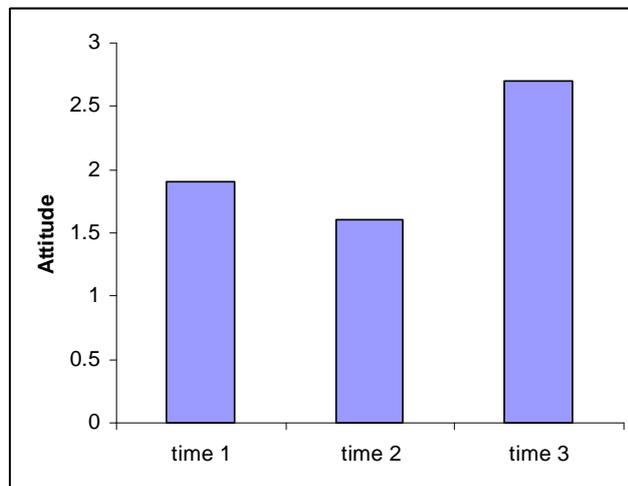


Figure 4.12. Changes in attitude over time.

The main effect of condition was not significant, $F(2, 61) = 0.13, p > 0.05$, partial $\eta^2 = 0.004$, but there was a significant interaction between condition and time, $F(3.7, 106.9) = 4.98, p < 0.01$, partial $\eta^2 = 0.14$. The interaction is displayed in Figure 4.13.

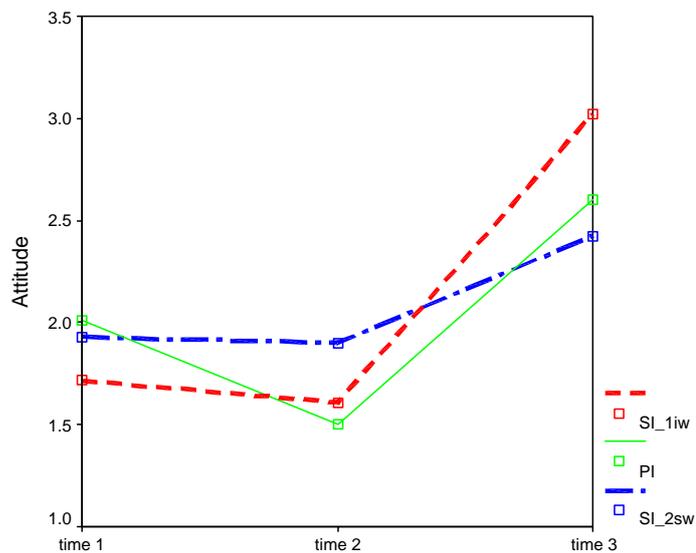


Figure 4.13. Interaction between condition and time for attitude.

To interpret this interaction, I initially conducted a one-way between groups ANOVA at each time period and found the only significant effect was at Time 3, $F(2, 63) = 3.36, p < 0.05$. Bonferroni post-hoc tests showed that at Time 3, women in the strong independent woman condition had significantly more negative attitudes than women in the spiritual caring woman condition ($p < 0.05$). The differences between the strong independent woman and PI condition and between the spiritual caring woman and PI conditions were not significant ($p > 0.05$).

I also analysed the changes in attitude for each condition over time by conducting one-way within groups ANOVA's. These analyses revealed that there were no significant changes in attitude over time for the spiritual caring woman condition, $F(2, 32) = 3.25, p > 0.05$. There were significant changes in attitude for the women in the strong independent woman condition and the PI condition, $F(2, 50) = 54.59, p < 0.01$ and $F(1.6, 32.7) = 22.18, p < 0.01$ respectively. Women's attitudes towards physical activity in the strong independent woman condition did not significantly change from Time 1 to Time 2 ($p > 0.05$), but they did get significantly more negative between Time 2 and Time 3 ($p < 0.01$) and the increase in negative attitudes from Time 1 to Time 3 was also significant ($p < 0.01$). Women's attitudes to physical activity in the PI condition got significantly more positive from Time 1 to Time 2 ($p < 0.01$), but then became significantly more negative from Time 2 to Time 3 ($p < 0.01$), such that the overall effect from Time 1 to Time 3 was for attitudes to become significantly more negative ($p < 0.05$).

Subjective Norm

There were significant changes in subjective norm over time. There was a main effect of time, $F(2, 122) = 3.73, p > 0.05$, partial $\eta^2 = 0.06$ in which Bonferroni post-hoc

tests revealed a significant decrease from Time 1 to Time 2 ($p < 0.05$), an increase between Time 2 and Time 3 that was not significant ($p > 0.05$) and, although subjective norm at Time 3 was lower than at Time 1 the difference was not significant ($p > 0.05$).

Figure 4.14 displays the main effect of time.

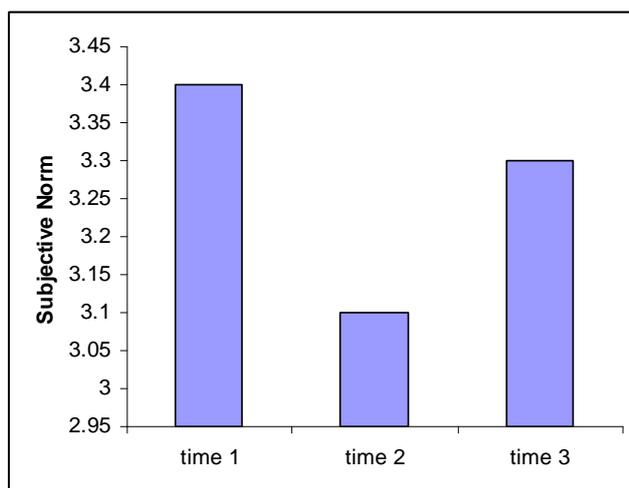


Figure 4.14. Changes in subjective norm over time.

The main effect of condition was not significant, $F(2, 61) = 0.15, p > 0.05$, partial $\eta^2 = 0.01$, but there was a significant interaction between condition and time, $F(4, 122) = 3.49, p < 0.05$, partial $\eta^2 = 0.10$. The interaction effect is displayed in Figure 4.15.

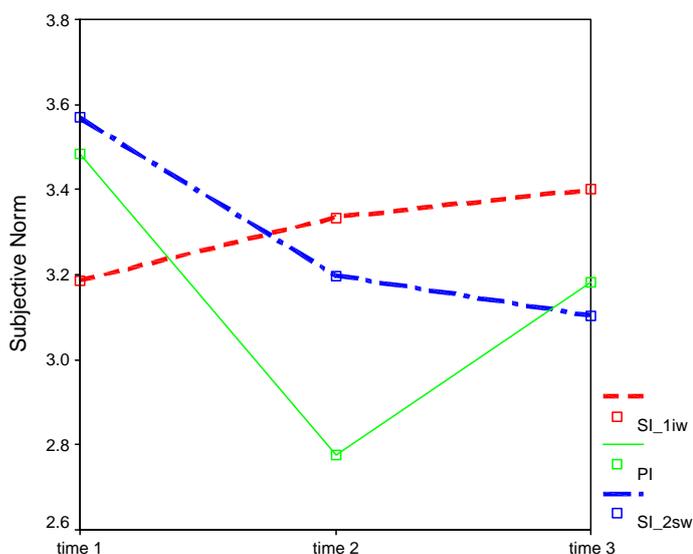


Figure 4.15. Interaction between condition and time for subjective norm.

Investigation of the interaction showed no significant differences between the three conditions at Time 1, $F(2, 63) = 0.64, p > 0.05$, Time 2, $F(2, 63) = 1.43, p > 0.05$, or Time 3, $F(2, 63) = 0.35, p > 0.05$. The difference was between the three time periods for the PI condition only, $F(2, 40) = 6.25, p < 0.05$. The results did not show a significant change in subjective norm over time for the SI conditions, strong independent woman condition, $F(2, 50) = 0.84, p > 0.05$, and spiritual caring woman condition, $F(2, 32) = 2.41, p > 0.05$. Consistent with the observation of means in Figure 4.15, Bonferroni post-hoc tests showed that subjective norm in the PI condition was significantly reduced from Time 1 to Time 2 ($p < 0.05$), significantly increased from Time 2 to Time 3 ($p < 0.05$), but there was no difference in the level of subjective norm between Time 1 and Time 3 ($p > 0.05$).

Group Norm

Unlike the results for the other cognitions, there was no main effect of time for group norm, $F(2, 122) = 0.22, p > 0.05$, partial $\eta^2 = 0.004$. There was, however a very

strong main effect of condition, $F(2, 61) = 8.12, p < 0.01$, partial $\eta^2 = 0.21$. This effect can be seen in Figure 4.16.

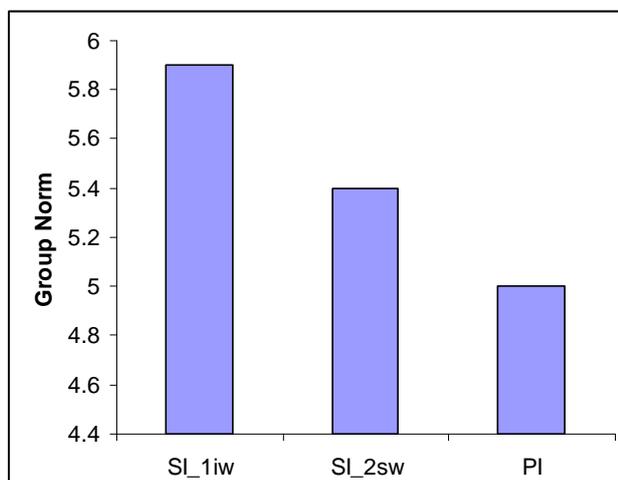


Figure 4.16. Differences in group norm for each condition.

The Bonferroni post-hoc tests showed that group norm was stronger in the strong independent woman condition than in the PI condition ($p < 0.01$), but there were no significant differences between the group norm in the strong independent woman condition as compared to the spiritual caring woman condition ($p > 0.05$), or between the spiritual caring woman condition as compared to the PI condition ($p > 0.05$). The interaction between condition and time was not significant, $F(4, 122) = 2.04, p > 0.05$, but it did obtain a moderate effect size, partial $\eta^2 = 0.06$, and therefore, I conducted follow-up analysis. The interaction effect is shown in Figure 4.17.

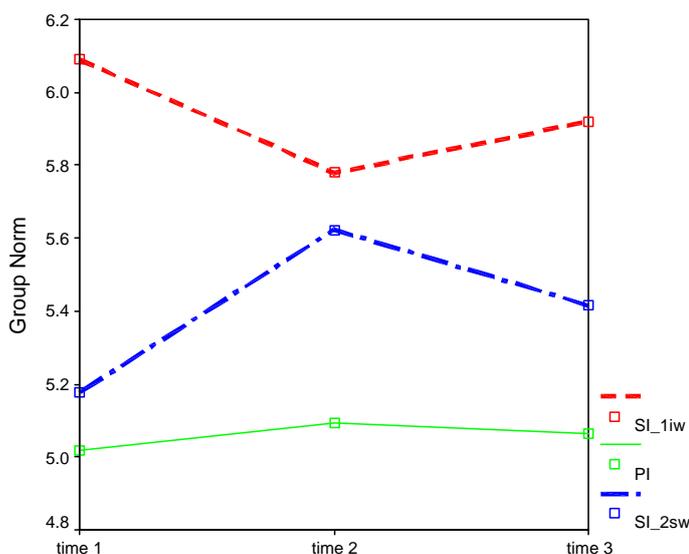


Figure 4.17. Interaction between condition and time for group norm.

The analysis of the interaction showed that the changes in the group norm over time for the spiritual caring woman condition were not significant, $F(2, 32) = 2.99$, $p < 0.05$, but the effect was large, partial $\eta^2 = 0.16$, and planned follow-up comparisons showed that the group norm significantly increased for women in the spiritual caring woman condition from Time 1 to Time 2, $t(16) = -2.41$, $p < 0.05$, and stayed at an elevated level as the difference between Time 2 and Time 3 was not significant, $t(16) = 1.34$, $p > 0.05$. Group norm did not, however, significantly change over time for the strong independent woman condition, $F(1.7, 42.5) = 1.55$, $p > 0.05$, or the PI condition, $F(2, 40) = 0.09$, $p > 0.05$, although, as can be observed from Figure 17, the level of group norm is consistently higher in the strong independent woman condition than the group norm for the PI condition. Indeed, the difference between conditions at Time 1, Time 2, and Time 3, were all revealed to be significant, $F(2, 63) = 9.88$, $p < 0.01$, $F(2, 63) = 4.04$, $p < 0.01$, and $F(2, 63) = 4.81$, $p < 0.01$ respectively, and Bonferroni post-hoc tests revealed all the differences between the strong independent woman condition and

the PI condition were significant ($p < 0.01$). At Time 1, the difference between the spiritual caring woman condition and the strong independent woman condition was also significant ($p < 0.01$).

Summary

Most of the cognitions changed over time, but not always in the expected direction. Intention decreased over time, and follow-up analysis showed that this decrease was mainly due to large decreases in intention in the two SI conditions, and not due to the women in the PI condition, who maintained a stable and relatively high level of intention. Perceived behavioural control did increase slightly over time for all conditions, but this was not a strong effect. Attitude also changed over time for all conditions, such that attitudes initially became more positive, but by the end of the study were more negative than at the beginning. Follow-up analysis revealed that this pattern was the most prominent in the strong independent woman and the PI conditions. Subjective norm initially decreased, then rose to a level similar to the pre-test level by the end of the study. Interaction analysis showed that this pattern was mainly due to changes in subjective norm for women in the PI condition, as subjective norm for women in both the SI conditions did not significantly change over time, and remained relatively low. The only cognition for which there was a main effect of condition, was group norm. In particular, group norm was higher for women in both the SI conditions than the women in the PI condition. Interaction analysis showed that group norm did not change over time for the strong independent woman and the PI condition, but the women in the strong independent woman condition maintained a significantly higher group norm than the women in the PI condition and the group norm for the women in

the spiritual caring woman condition got significantly stronger over the course of the study.

Despite significant changes in physical activity, the results reveal that there were not concomitant increases in the key cognitions of intention and perceived behavioural control. Rather than increasing, intentions actually decreased over time, particularly for the women in the SI conditions, the only participants who were able to maintain their physical activity over the long term. Another change inconsistent with the rise in physical activity was that attitudes to physical activity became more negative over time, particularly for the strong independent woman and the PI conditions. The changes in subjective norm were also unusual, and showed a pattern not necessarily consistent with the TPB predictions. The finding that group norm was maintained at a consistently high level for the strong independent woman condition, in comparison to the PI condition, and rose significantly over time for the spiritual caring woman condition suggests that this is the only cognition that may be related to the maintenance of physical activity in the SI conditions.

Examining the Predictions from the Theory of Planned Behavior

I conducted two sets of hierarchical regression analyses to test the predictions from the theory of planned behaviour, specifically examining the predictors of intention and the predictors of behaviour. In the first set of hierarchical regression analyses, I analysed the predictors of intention. Consistent with the TPB, I regressed attitude, subjective norm, and behavioural control on intention to be physically active. I also added group norm as a predictor of intention. I carried out this regression analysis for each condition, the strong independent woman condition, the spiritual caring woman condition, and the PI condition over the three time periods, Time 1, Time 2, and Time 3

(a total of 6 regression analyses). In the second set of hierarchical regression analyses, I analysed the predictors of physical activity and regressed intention and behavioural control on the criterion variable total physical activity. I added attitude, subjective norm, and group norm as predictors in a later step. As with the first set of regression analyses, I carried out this regression analysis for each of the three conditions over the three time periods (a total of 6 regression analyses).

Predicting Intention

In order to test the predictors of intention according to the TPB, I performed a two-step hierarchical regression analysis. The measures of attitude, subjective norm, and group norm were entered at the first step and the measure of perceived behavioural control was entered at the second step. This analysis was conducted for the two SI conditions and the PI condition at Time 1, Time 2, and Time 3.

The means, standard deviations, and bivariate correlations of the variables used in the regression analyses are shown in Table 4.3. As can be seen, all multiple item measures, except attitude at Time 3, and subjective norm at all time periods, achieved a reliability of at least .7 (assessed by Cronbach's coefficient alpha). According to Aron and Aron (1999), alphas greater than or equal to .7 indicate that the scales are reliable. Alphas of .6 are also considered adequate, and since the alphas for subjective norm were all greater than or equal to .6 they can, cautiously, be considered reliable. The alpha for attitude at Time 3, was just under Aron and Aron's minimum cut-off for reliability, and, thus, must be interpreted with caution. The collinearity statistics showed tolerance values for all predictors were higher than 0.01. According to Brace, Kemp, and Snelgar (2003), this indicates that multi-collinearity was not a problem, and no predictor variables correlated unreasonably highly with each other.

Table 4.3

Means, Standard Deviations, and Bivariate Correlations for the Predictors of Intention for the Three Conditions over the Three Time Periods

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i> <i>Intention</i>	<i>2</i> <i>Attitude</i>	<i>3</i> <i>Group Norm</i>	<i>4</i> <i>Subjective Norm</i>	<i>5</i> <i>Behavioural Control</i>
1. Intention							
Time 1			(.92)				
SI_1iw	5.9	0.64	1.0	.18	.10	-.25	.54**
SI_2sw	6.1	1.31	1.0	-.37	.41*	-.37	.70**
PI	6.1	1.1	1.0	.27	-.14	-.52**	.40*
Time 2			(.96)				
SI_1iw	5.5	1.59	1.0	-.57**	.64**	-.62**	.49*
SI_2sw	5.8	1.42	1.0	-.28	.08	-.59**	-.02
PI	6.1	0.95	1.0	-.44*	.41*	.001	.57**
Time 3			(.96)				
SI_1iw	5.0	1.85	1.0	-.45*	.22	-.67**	.48*
SI_2sw	5.0	2.21	1.0	-.07	.58**	-.43*	.63**
PI	6.1	0.95	1.0	-.28	.29	-.21	.60**
2. Attitude							
Time 1				(.74)			
SI_1iw	1.7	0.66	1.0	.07	-.23	.02	
SI_2sw	1.9	0.79	1.0	-.33	.35	-.30	
PI	2.0	0.60	1.0	-.19	.16	-.49**	
Time 2				(.72)			
SI_1iw	1.6	0.63	1.0	-.33*	.22	-.38*	
SI_2sw	1.9	0.89	1.0	.00	-.29	-.62**	
PI	1.5	0.34	1.0	.07	.02	-.32	
Time 3				(.58)			
SI_1iw	3.0	0.75	1.0	-.10	.34*	-.19	
SI_2sw	2.4	0.77	1.0	-.26	-.27	-.28	
PI	2.6	0.84	1.0	-.07	-.41*	-.18	

Table 4.3 (continued)

Means, Standard Deviations, and Bivariate Correlations for the Predictors of Intention for the Three Conditions over the Three Time Periods

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i> <i>Intention</i>	<i>2</i> <i>Attitude</i>	<i>3</i> <i>Group Norm</i>	<i>4</i> <i>Subjective Norm</i>	<i>5</i> <i>Behavioural Control</i>
3.Group Norm							
Time 1					(.74)		
SI_1iw	6.1	1.20			1.0	-.48**	.10
SI_2sw	5.2	1.13			1.0	-.56*	.12
PI	5.0	0.94			1.0	-.10	.30
Time 2					(.88)		
SI_1iw	5.8	0.81			1.0	-.52**	.32
SI_2sw	5.6	0.86			1.0	-.28	.26
PI	5.1	0.87			1.0	.31	.34
Time 3					(.77)		
SI_1iw	5.9	0.75			1.0	-.27	.18
SI_2sw	5.4	1.07			1.0	-.45*	.44*
PI	5.1	1.10			1.0	.03	.06
4.Subjective Norm							
Time 1						(.60)	
SI_1iw	3.2	0.97				1.0	-.27
SI_2sw	3.6	1.31				1.0	-.04
PI	3.5	1.34				1.0	-.30
Time 2						(.64)	
SI_1iw	3.3	1.17				1.0	-.35*
SI_2sw	3.2	1.08				1.0	.22
PI	2.8	1.17				1.0	.14
Time 3						(.69)	
SI_1iw	3.4	1.19				1.0	-.29
SI_2sw	3.1	1.46				1.0	-.03
PI	3.2	1.02				1.0	-.11

Table 4.3 (continued)

Means, Standard Deviations, and Bivariate Correlations for the Predictors of Intention for the Three Conditions over the Three Time Periods

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i> <i>Intention</i>	<i>2</i> <i>Attitude</i>	<i>3</i> <i>Group</i> <i>Norm</i>	<i>4</i> <i>Subjective</i> <i>Norm</i>	<i>5</i> <i>Behavioural</i> <i>Control</i>
5.Behavioural Control							
Time 1							(.89)
SI_1iw	5.3	1.26					1.0
SI_2sw	5.4	1.39					1.0
PI	4.9	1.60					1.0
Time 2							(.88)
SI_1iw	5.4	1.37					1.0
SI_2sw	5.8	1.15					1.0
PI	5.4	1.26					1.0
Time 3							(.86)
SI_1iw	5.1	1.30					1.0
SI_2sw	5.6	1.42					1.0
PI	5.5	1.30					1.0

NOTE: Mean scores computed as average item scores on 7-point scales, with the exception of attitude (scored on 5-point scale).

Cronbach alpha reliability coefficients in ()

* $p < 0.05$. ** $p < 0.01$.

The bivariate correlations between intention and the four predictor variables show that perceived behavioural control was strongly related to intention for the SI conditions before the 3-month physical activity study, whereas subjective norm was the variable most strongly related to intention for the PI condition. This pattern of correlations changed after the intervention. Subjective norm became more strongly related to intention for both the SI conditions in the first post test, two-weeks after the intervention, and for the strong independent woman condition, group norm, and attitude were also highly correlated with intention. The only variable significantly related to intention at this time point for the PI condition was perceived behavioural control. At

the final time period, three months after the intervention, the relationship between norms and intention remained significant for both the SI conditions, subjective norm for the strong independent woman condition and group norm for the spiritual caring woman condition. Consistent with the earlier time measure, only perceived behavioural control was significantly related to intention for the PI condition and Time 3. The inter-correlation matrix shows that attitude significantly correlated with perceived behavioural control and the two norm variables, but most correlations were in the moderate range from 0.3 to 0.5. There were also some inter-correlations between subjective norm and group norm, which was to be expected. It should be noted that the negative correlations between intentions and attitude and between intentions and subjective norm are negative. This is because of the way that these variables were coded. A low score on the attitude scale indicated a positive attitude (1 = *very positive*, 5 = *very negative*). Similarly, a low score on the subjective norm scale indicated a strong subjective norm score (1 = *strongly agree*, 7 = *strongly disagree*). The intention scores, however, were coded in an opposite pattern, such that a high score on the intention scale indicated strong intention (1 = , 7 = *strongly agree*). In the next three sections, I report the regression results for the predictors of intention for all conditions at Time 1, Time 2, and Time 3.

Predicting intention - Time 1. The results of the two-step regression analysis for each condition at Time 1 are displayed in Table 4.4. Only the full model for the spiritual caring woman condition was significant, $F(4,12) = 5.23, p < 0.01, \Delta R^2 = 0.51$, and consistent with the strong correlation between intention and perceived behavioural control for the spiritual caring woman condition, only the beta weight for perceived behavioural control was significant, $\beta = 0.66, p < 0.01$. As can be seen in Table 4.4, in

the strong independent woman and the PI conditions, neither the full nor the partial models were significant, but the effect sizes were relatively strong, both around .20, and there were some significant beta weights for both conditions. For the strong independent woman condition, the beta weight for perceived behavioural control was significant, $\beta = 0.52$, $p < 0.01$, and for the PI condition, the beta weight for subjective norm was significant, $\beta = -0.44$, $p < 0.05$.

Table 4.4

Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at Time 1

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R²</i>	ΔR^2	<i>F</i>	<i>df</i>	β	<i>p</i>
<i>SI_1iw</i>								
1	Attitude	0.28	0.079	-0.047	0.63	3, 22	0.16	0.53
	Subj. Norm						-0.10	0.36
	Group Norm						0.00	0.95
2	Behavioural Control	0.57	0.33	0.197	2.53	4, 21	0.52**	0.01
<i>SI_2sw</i>								
1	Attitude	0.49	0.24	0.07	1.40	3, 13	-0.29	0.38
	Subj. Norm						-0.22	0.64
	Group Norm						0.20	0.41
2	Behavioural Control	0.80	0.64	0.51	5.23**	4, 12	0.66**	0.004
<i>PI</i>								
1	Attitude	0.60	0.36	0.20	2.71	3, 17	-0.12	0.53
	Subj. Norm						-0.44*	0.03
	Group Norm						-0.18	0.48
2	Behavioural Control	0.65	0.42	0.21	2.32	4, 16	0.25	0.31

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26, N=17, N=26 respectively. Beta coefficients computed at each step of the equation.

* $p < 0.05$. ** $p < 0.01$.

Predicting intention - Time 2. The results of the two-step regression analysis for each condition at Time 2 are displayed in Table 4.5. In the strong independent woman condition, both the partial and the full regression models were significant, $F(3, 22) = 13.33, p < 0.01, \Delta R^2 = 0.60$ and $F(4, 12) = 10.24, p < 0.01, \Delta R^2 = 0.60$ respectively. The partial and full models for the spiritual caring woman condition were also significant, $F(3, 13) = 6.13, p < 0.01, \Delta R^2 = 0.49$ and $F(4, 12) = 4.79, p < 0.05, \Delta R^2 = 0.49$ respectively. For the PI condition, only the full model, with the inclusion of perceived behavioural control, was significant, $F(4, 16) = 2.96, p < 0.01, \Delta R^2 = 0.28$. As can be seen in Table 4.5, the regression models for the SI conditions accounted for a greater percentage of the variance in intention than the models in the PI condition. In both the SI conditions, the addition of perceived behavioural control, in the second step, did not change the adjusted R^2 value and, thus, the variance accounted for in these conditions was due primarily to the partial regression model in which only attitude, subjective norm, and group norm were included. Indeed, for both the strong independent woman and the spiritual caring woman conditions, the F change statistic was only significant at the first step, when only attitude, subjective norm, and group norm were in the equation, $F \text{ change } (3, 22) = 13.33, p < 0.01$ and $F \text{ change } (3, 13) = 6.14, p < 0.01$ respectively, and not did not significantly change after the addition of perceived behavioural control, $F \text{ change } (1, 21) = 1.0, p > 0.05$ and $F \text{ change } (1, 12) = 0.90, p > 0.05$ respectively. Consistent with these results, the only significant beta weights for both these conditions were found in the preliminary model. For the strong independent woman condition, the beta weights for attitude and subjective norm were both significant $\beta = -0.34, p < 0.01$ and $\beta = -0.35, p < 0.05$ respectively. In this condition, the beta weight for group norm approached significance, $\beta = 0.29, p = 0.06$. For the spiritual

caring woman condition, the beta weights for attitude and subjective norm were also significant, $\beta = -0.64$, $p < 0.01$ and $\beta = -0.74$, $p < 0.01$.

In contrast, the addition of perceived behavioural control in the PI condition enabled the regression model to reach significance and more than doubled the amount of variance accounted for. Not surprisingly, in the PI condition, the *F* change statistic was not significant at the first step, *F* change (3, 17) = 1.84, $p > 0.05$, but was at the second step, with the addition of perceived behavioural control, *F* change (1,16) = 5.03, $p < 0.05$ and the only significant predictor of intention was perceived behavioural control, $\beta = 0.46$, $p < 0.05$.

Table 4.5

Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at

Time 2

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>Df</i>	β	<i>p</i>
<i>SI_1iw</i>								
1	Attitude	0.80	0.65	0.597	13.33**	3, 22	-0.34**	0.01
	Subj. Norm						-0.35*	0.02
	Group Norm						0.29	0.06
2	Behavioural Control	0.81	0.66	0.597	10.24**	4, 21	0.14	0.33
<i>SI_2sw</i>								
1	Attitude	0.77	0.59	0.49	6.13**	3, 13	-0.64**	0.01
	Subj. Norm						-0.74**	0.002
	Group Norm						-0.065	0.48
2	Behavioural Control	0.78	0.62	0.49	4.79*	4, 12	-0.23	0.36
<i>PI</i>								
1	Attitude	0.64	0.41	0.11	1.84	3, 17	-0.29	0.06
	Subj. Norm						-0.08	0.95
	Group Norm						0.17	0.29
2	Behavioural Control	0.71	0.50	0.28	2.96*	4, 16	0.46*	0.04

Control

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26, N=17, N=26 respectively. Beta coefficients computed at each step of the equation.

* $p < 0.05$. ** $p < 0.01$.

Predicting intention - Time 3. The results of the two-step regression analysis for each condition at Time 3 are displayed in Table 4.6. Similar to the results at time 2, both the partial and full regression models for the strong independent woman condition were significant, $F(3,22) = 7.34, p < 0.01, \Delta R^2 = 0.43$ and $F(4,21) = 7.20, p < 0.01, \Delta R^2 = 0.50$. The addition of perceived behavioural control for the strong independent woman condition at Time 3 increased the adjusted R^2 value, but similar to the Time 2 analysis, the F change statistic was only significant at the first step $F \text{ change } (3,22) = 7.34, p < 0.01$, not after perceived behavioural control had been added, $F \text{ change } (1,21) = 3.80, p > 0.05$ and the only significant predictor of intention, could be found in the initial model. Subjective norm obtained the only significant beta weight, $\beta = -0.50, p < 0.01$, however, the beta weight for perceived behavioural control did approach significance, $\beta = 0.295, p = 0.06$.

Unlike the Time 2 analysis for the spiritual caring woman condition, only the full regression model with the addition of perceived behavioural control, was significant, $F(4, 12) = 4.40, p < 0.05, \Delta R^2 = 0.46$. Consistent with this, perceived behavioural control was the only significant beta weight, $\beta = 0.54, p < 0.05$. The initial model, for the spiritual caring woman condition at Time 3, did, however, account for a moderate amount of variance, $\Delta R^2 = 0.23$, and the F change statistic at this first step did approach significance, $F \text{ change } (3,13) = 2.57, p = 0.09$. The beta weight for group norm also approached significance, $\beta = 0.22, p = 0.09$. For the PI condition at Time 3, the analysis was the same as for Time 2. In particular, only the full regression model was

significant, $F(4, 16) = 3.28, p < 0.05, \Delta R^2 = 0.31$, and the F change statistic was only significant after the addition of perceived behavioural control, $F \text{ change } (1, 16) = 6.20, p < 0.05$. Perceived behavioural control was also the only significant beta weight, $\beta = 0.50, p < 0.05$.

Table 4.6

Hierarchical Regression Predicting Behavioural Intention for the Three Conditions at Time 3

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>	<i>df</i>	<i>β</i>	<i>p</i>
<i>SI_1iw</i>								
1	Attitude	0.71	0.50	0.43	7.34**	3, 22	-0.22	0.13
	Subj. Norm						0.50**	0.002
	Group Norm						0.012	0.78
2	Behavioural Control	0.76	0.58	0.50	7.20**	4, 21	0.295	0.06
<i>SI_2sw</i>								
1	Attitude	0.61	0.37	0.23	2.57	3, 13	0.062	0.99
	Subj. Norm						-0.297	0.46
	Group Norm						0.22	0.09
2	Behavioural Control	0.77	0.60	0.46	4.40*	4, 12	0.54*	0.03
<i>PI</i>								
1	Attitude	0.52	0.28	0.10	1.76	3, 17	-0.31	0.06
	Subj. Norm						-0.28	0.10
	Group Norm						-0.05	0.35
2	Behavioural Control	0.72	0.51	0.31	3.28*	4, 16	0.50*	0.03

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26, N=17, N=26 respectively. Beta coefficients computed at each step of the equation.

* $p < 0.05$. ** $p < 0.01$.

Summary

With regard to the contribution of perceived behavioural control and norms to the prediction of intention, the results for both the SI conditions were similar and the PI condition showed an almost opposite, pattern of effects. Perceived behavioural control was the most important predictor for the SI conditions before the physical activity intervention, Time 1, but it became less important immediately after the intervention, and although returned as an important predictor at Time 3, it was not as strong. For the SI conditions, the post-intervention measures at Time 2 and Time 3, revealed that norms, subjective norm, and to a lesser extent group norm, became important predictors of intention. In the PI condition, however, perceived behavioural control was not important in the prediction of intention at the beginning of the study, Time 1, but became the only significant predictor of intention at Times 2 and 3. Whereas subjective norm made a significant contribution to the prediction of intention before the intervention, for the PI condition at Time 1, it was not at all important in the prediction of intention in the two post-intervention time periods. Thus, for the SI conditions, perceptions of control over engaging in physical activity was the most important predictor of motivation, but became less important and norms became more important as the study progressed. For the PI conditions, perception of control over engaging in physical activity was not as important to the prediction of motivation at the early stages of the study, but became the only important predictor at the later stages and norms, while starting out as important for the PI condition, became less so as the study progressed.

Predicting Physical Activity

In order to test the predictors of physical activity, I performed a three-step hierarchical regression analysis. According to the TPB, intention is the most proximal predictor of behaviour and, thus, I entered the measure of intention at the first step in this regression model. In the TPB, perceived behavioural control is also expected to add to the prediction of behaviour and so was entered at the second step. The effects of attitude, subjective norm, and group norm, on behaviour, in the TPB, are expected to be completely mediated by intention. In order to test this prediction from the TPB, I added these variables as a third step in the regression model, but did not expect them to add to the prediction. This analysis was conducted for the PI and the two SI conditions at Time 1, Time 2, and Time 3.

The means, standard deviations, and bivariate correlations of the variables used in the regression analyses are shown in Table 4.7. The reliability of the multiple item measures as assessed by Cronbach's coefficient alpha can be viewed in Table 4.3. The collinearity statistics showed tolerance values for all predictors were higher than 0.01. According to Brace, Kemp, and Snelgar (2003), this indicates that multi-collinearity was not a problem, and no predictor variables correlated unreasonably highly with each other.

Table 4.7

Means, Standard Deviations, and Bivariate Correlations for the Three Conditions over the Three Time Periods

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i> <i>Physical</i> <i>Activity</i>	<i>2</i> <i>Intention</i>	<i>3</i> <i>Behav.</i> <i>Control</i>	<i>4</i> <i>Attitude</i>	<i>5</i> <i>Subjective</i> <i>Norm</i>	<i>6</i> <i>Group</i> <i>Norm</i>
1.Total PA								
Time 1								
SI_1iw	87.7	72.61	1.0	.10	.21	.009	.08	-.15
SI_2sw	109.4	90.28	1.0	.01	-.08	.05	-.23	.25
PI	127.6	99.3	1.0	.25	.34	-.47*	-.34	.03
Time 2								
SI_1iw	238.7	128.68	1.0	.45*	.17	-.09	.32*	-.28
SI_2sw	165.6	109.88	1.0	.33	.37	-.42*	-.34	-.12
PI	219.5	96.91	1.0	.31	.39*	-.20	.22	.04
Time 3								
SI_1iw	264.6	238.96	1.0	.19	.29	.07	.03	.06
SI_2sw	169.6	129.97	1.0	.56**	.45*	-.15	.10	-.22
PI	142.6	93.92	1.0	.32	.35*	-.27	.04	-.16
2.Intention								
Time 1								
SI_1iw	5.9	0.64		1.0	.54**	.18	-.25	.10
SI_2sw	6.1	1.31		1.0	.70**	-.37	.41*	-.37
PI	6.1	1.1		1.0	.40*	-.27	-.52*	-.14
Time 2								
SI_1iw	5.5	1.59		1.0	.49*	-.57**	.62**	-.64**
SI_2sw	5.8	1.42		1.0	-.02	-.28	.08	-.59
PI	6.1	0.95		1.0	.57**	-.44*	.41*	.001
Time 3								
SI_1iw	5.0	1.85		1.0	.48*	-.45*	.22	-.67**
SI_2sw	5.0	2.21		1.0	.63**	-.07	.58**	-.43*
PI	6.1	0.95		1.0	.60**	-.28	.29	-.21

Table 4.7 (continued)
Means, Standard Deviations, and Bivariate Correlations for the Three Conditions over the Three Time Periods

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i> <i>Physical</i> <i>Activity</i>	<i>2</i> <i>Intention</i>	<i>3</i> <i>Behav.</i> <i>Control</i>	<i>4</i> <i>Attitude</i>	<i>5</i> <i>Subjective</i> <i>Norm</i>	<i>6</i> <i>Group Norm</i>
3. Behavioural Control								
Time 1								
SI_1iw	5.3	1.26			1.0	.02	-.27	.10
SI_2sw	5.4	1.39			1.0	-.30	-.04	-.04
PI	4.9	1.60			1.0	-.49*	.30	-.30
Time 2								
SI_1iw	5.4	1.37			1.0	-.38*	.33*	0.32
SI_2sw	5.8	1.15			1.0	-.62	.22	.26
PI	5.4	1.26			1.0	-.32	.14	.34
Time 3								
SI_1iw	5.1	1.30			1.0	-.19	-.29	.18
SI_2sw	5.6	1.42			1.0	-.28	-.03	.44*
PI	5.5	1.30			1.0	-.18	-.11	.06
4. Attitude								
Time 1								
SI_1iw	1.7	0.66				1.0	-.23	.07
SI_2sw	1.9	0.79				1.0	-.35	.33
PI	2.0	0.60				1.0	.16	-.19
Time 2								
SI_1iw	1.6	0.63				1.0	-.22	-.33
SI_2sw	1.9	0.89				1.0	-.29	0.00
PI	1.5	0.34				1.0	.02	.04
Time 3								
SI_1iw	3.0	0.75				1.0	.34*	-.10
SI_2sw	2.4	0.77				1.0	-.27	-.26
PI	2.6	0.84				1.0	-.41*	-.07
5. Subjective Norm								
Time 1								
SI_1iw	3.2	0.97					1.0	-.48
SI_2sw	3.6	1.31					1.0	-.56**
PI	3.5	1.34					1.0	-.10
Time 2								
SI_1iw	3.3	1.17					1.0	-.52**
SI_2sw	3.2	1.08					1.0	-.28
PI	2.8	1.17					1.0	.31
Time 3								
SI_1iw	3.4	1.19					1.0	-.27
SI_2sw	3.1	1.46					1.0	-.45*
PI	3.2	1.02					1.0	.03

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
			<i>Physical</i>	<i>Intention</i>	<i>Behav.</i>	<i>Attitude</i>	<i>Subjective</i>	<i>Group</i>
			<i>Activity</i>		<i>Control</i>		<i>Norm</i>	<i>Norm</i>
6.Group Norm								
Time 1								
SI_1iw	6.1	1.20						1.0
SI_2sw	5.2	1.13						1.0
PI	5.0	0.94						1.0
Time 2								
SI_1iw	5.8	0.81						1.0
SI_2sw	5.6	0.86						1.0
PI	5.1	0.87						1.0
Time 3								
SI_1iw	5.9	0.75						1.0
SI_2sw	5.4	1.07						1.0
PI	5.1	1.10						1.0

NOTE: Mean scores computed as average item scores on 7-point scales, with the exception of attitude (scored on 5 point scale).

* $p < 0.05$. ** $p < 0.01$.

The most notable feature of the bivariate correlations between total physical activity and the predictor variables is that not many are significant. Most importantly, the correlations between intention, which, according to the TPB, is the primary predictor of behaviour, and physical activity, are generally small. These small correlations are evident for all conditions across the three time periods. Indeed there are only two significant correlations between intention and physical activity. Similarly, there is also a lack of significant correlations between perceived behavioural control and physical activity. Two of the three significant correlations between perceived behavioural control and intention were for the PI conditions at Time 2 and Time 3. This is consistent with earlier analyses showing that perceived behavioural control was the only important predictor of intention for the PI condition as the study progressed. The correlations between physical activity and the other three predictors are also small and although some, between attitude and physical activity and between subjective norm

and physical activity, are significant, they also appear to occur randomly in the correlation matrix. The overall correlation matrix shows that physical activity is not highly related to any of the predictor variables used in my study. In the next three sections, I report the regression results for the predictors of physical activity for all conditions at Time 1, Time 2, and Time 3.

Predicting physical activity - Time 1. As evidenced by Table 4.8, at Time 1, none of the regression models for any of the conditions were significant. Interestingly, for all conditions, the adjusted R^2 value increased substantially after the addition of attitude, subjective norm, and group norm. This increase in the adjusted R^2 value did not cause the F change statistic to become significant and was, thus, not enough to make the full model significant for the strong independent woman, spiritual caring woman, or the PI conditions, $F(5,20) = 0.33, p > 0.05, \Delta R^2 = -0.15$, $F(5,11) = 0.42, p > 0.05, \Delta R^2 = -0.23$ and $F(5,15) = 1.78, p > 0.05, \Delta R^2 = 0.16$ respectively. Consequently, there were no significant beta values in any of the conditions for any of the predictors at Time 1.

Table 4.8

Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 1

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>F</i>	<i>df</i>	β	<i>p</i>
<i>SI_1IW</i>								
1	Intention	0.10	0.01	-0.03	0.233	1, 24	-0.41	0.98
2	Behavioural Control	0.20	0.04	-0.04	0.52	2, 23	14.22	0.34
3.	Attitude	0.28	0.08	-0.15	0.33	5, 20	3.76	0.88
	Subj. Norm						6.25	0.75
	Group Norm						-14.90	0.59
<i>SI_2sw</i>								
1	Intention	0.01	0.00	-0.07	0.003	1, 15	31.45	0.34
2	Behavioural Control	0.12	0.02	-0.13	0.110	2, 14	-24.88	0.38
3.	Attitude	0.40	0.16	-0.23	0.415	5, 11	-8.41	0.82
	Subj. Norm						20.63	0.42
	Group Norm						-18.22	0.53
<i>PI</i>								
1	Intention	0.25	0.06	0.01	1.24	1, 19	-8.93	0.71
2	Behavioural Control	0.36	0.13	0.03	1.32	2, 18	7.82	0.63
3.	Attitude	0.55	0.31	0.16	1.78	5, 15	-46.99	0.28
	Subj. Norm						-23.20	0.22
	Group Norm						-32.02	0.19

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26; N=17, N=21 respectively. Beta coefficients computed after all variables in the equation.

*p<0.05. **p<0.01.

Predicting physical activity - Time 2. In Table 4.9, the results of the three-step regression analysis for each condition at Time 2 are displayed. Similar to the Time 1 analysis, for the spiritual caring woman and the PI conditions, none of the regression

models, partial, or full, were significant. The addition of the attitude, subjective norm, and group norm at the third step of the regression equation, for both the spiritual caring woman and the PI conditions, did, however, increase the adjusted R^2 , although the F change for this step was not significant for either condition, F change (3, 11) = 2.12, $p > 0.05$, and F change (3, 15) = 0.04, $p > 0.05$ respectively. The adjusted R^2 for the spiritual caring woman condition at the third step was, nevertheless, much stronger than the adjusted R^2 for the PI condition, $\Delta R^2 = 0.30$ and $\Delta R^2 = -0.12$ respectively. It is not surprising, therefore, that there were no significant beta weights for any of the predictors of physical activity in the PI condition, but at the third step for the spiritual caring woman condition, the beta weights for both attitude and group norm approached significance, $\beta = 19.65$, $p = 0.09$ and $\beta = -58.44$, $p = 0.08$.

For the strong independent woman condition, a different pattern of effects was evident. The initial model with only intention added, was significant, $F(1, 24) = 6.16$, $p < 0.05$, $\Delta R^2 = 0.17$. The beta weight for intention at this first step was also significant, $\beta = 36.67$, $p < 0.05$. As can be seen in table 4.9, for the SI_1iw condition, the addition of perceived behavioural control reduced adjusted R^2 . In the full model, when all the other variables were added, unlike the other two conditions, adjusted R^2 was reduced further. In addition, when all predictors were in the model, the beta weight for intention was no longer significant.

Table 4.9

Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 2

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>	<i>df</i>	<i>β</i>	<i>p</i>
<i>SI_1iw</i>								
1	Intention	0.45	0.20	0.17	6.16*	1, 24	49.6	0.08
2	Behavioural Control	0.46	0.21	0.14	3.01	2, 23	-2.43	0.91
3.	Attitude	0.50	0.25	0.06	1.32	5, 20	50.2	0.32
	Subj. Norm						8.5	0.77
	Group Norm						10.3	0.80
<i>SI_2sw</i>								
1	Intention	.33	.11	.05	1.87	1, 15	44.96	0.66
2	Behavioural Control	.51	.26	.15	2.39	2, 14	51.80	0.11
3.	Attitude	.72	.52	.30	2.37	5, 11	19.65	0.09
	Subj. Norm						27.16	0.45
	Group Norm						-58.44	0.08
<i>PI</i>								
1	Intention	0.31	0.09	0.05	1.97	1, 19	10.86	0.73
2	Behavioural Control	0.40	0.16	0.07	1.72	2, 18	23.73	0.31
3.	Attitude	0.41	0.17	-0.12	0.58	5, 15	-14.36	0.85
	Subj. Norm						-0.47	0.97
	Group Norm						1.34	0.96

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26; N=17, N=21 respectively. Beta coefficients computed after all variables in the equation.

*p<0.05. **p<0.01.

Predicting physical activity - Time 3. The results for the three-step regression analysis for each condition at Time 3 are displayed in Table 4.10. As can be seen, the only regression model that was significant, was for the spiritual caring woman

condition at the first step with only intention in the model, $F(1,15)=6.80$, $p<0.05$, $\Delta R^2=0.27$. At this step, the beta weight for intention was also significant, $\beta=32.89$, $p<0.05$, but after all the variables were added to the model, at the third step, intention was no longer significant, $\beta=34.16$, $p>0.05$. In the other two conditions, neither the partial, nor the full, regression models, were significant, and the percentage of variance accounted for in the models was very low, with the variables accounting for between 1 and 6 percent of the variance in physical activity. Only the regression models in the spiritual caring woman condition obtained moderate effect sizes, with the variables in this condition accounting for between 23 and 27 percent of the variance in physical activity.

Table 4.10

Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 3

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>	<i>df</i>	<i>β</i>	<i>p</i>
<i>SI_1iw</i>								
1	Intention	0.19	0.04	-0.006	0.86	1, 24	43.53	0.29
2	Behavioural Control	0.30	0.09	0.010	1.12	2, 23	45.16	0.31
3.	Attitude	0.40	0.16	-0.05	0.78	5, 20	52.58	0.48
	Subj. Norm						58.93	0.30
	Group Norm						1.55	0.98
<i>SI_2sw</i>								
1	Intention	.56	.31	.27	6.80*	1, 15	34.16	0.12
2	Behavioural Control	.57	.33	.23	3.44	2, 14	22.77	0.44
3.	Attitude	.69	.48	.25	2.05	5, 11	-41.73	0.35
	Subj. Norm						-24.20	0.37
	Group Norm						-65.46	0.11

Table 4.10 (continued)

Hierarchical Regression Predicting Total Physical Activity for the Three Conditions at Time 3

<i>Step</i>	<i>Predictor</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>	<i>df</i>	<i>β</i>	<i>p</i>
PI								
1	Intention	0.32	0.10	0.06	2.18	1, 19	1.02	0.97
2	Behavioural Control	0.38	0.14	0.05	1.50	2, 18	14.41	0.49
3.	Attitude	0.48	0.23	-0.01	1.06	5, 15	-42.05	0.19
	Subj. Norm						-28.37	0.27
	Group Norm						-17.54	0.42

Note: For analysis on the SI_1iw, SI_2sw, and PI conditions, N=26; N=17, N=21 respectively. Beta coefficients computed after all variables in the equation.

*p<0.05. **p<0.01.

Summary

Although intention did add significantly to the prediction of physical activity for the strong independent woman condition at Time 2 and the spiritual caring woman condition at Time 3 when there were no other variables in the equation, intention did not, as expected, reliably predict physical activity. There were no instances when perceived behavioural control contributed significantly to the prediction of physical activity. Attitude, subjective norm, and group norm generally did not make significant contributions to the prediction of physical activity, and in some cases, the addition of these variables, reduced the percentage of variance accounted for by the model. With regard to this set of predictors, there was one exception. For the spiritual caring woman condition, the addition of attitude, subjective norm, and group norm doubled the adjusted R^2 at Time 2 and attitude and group norm obtained beta values that were very close to being significant. Similarly, at Time 3, for the spiritual caring woman

condition, group norm again obtained a beta value close to being significant. Other than these exceptions, the percentage of variance in physical activity accounted for by the predictors reduced as the study progressed.

Discussion

In this study, I examined the proposition that subjective norm can be a significant predictor of intention when defined in light of the social identity approach. I found that subjective norm was indeed a significant predictor of intention, but only for the SI conditions, which provides considerable support for the social identity approach to subjective norm. In terms of predicting intentions, despite challenging the TPB research on the influence of social factors, the results of this study were broadly consistent with the TPB. The TPB predicted intentions in both the SI and PI conditions, albeit through different variables. It was difficult to use a TPB explanation, however, to explain the intention and behaviour changes observed in this study. There was evidence, as expected, that the SI intervention conditions, in which I manipulated subjective norm from a social identity perspective, were more successful than the PI intervention condition in encouraging the maintenance of physical activity, but there was no evidence that intention, in either the SI or PI conditions, was enhanced by the intervention, or that intention predicted physical activity.

In the following sections, I discuss the results with regard to the predictors of intention for the SI and PI conditions in terms of the social identity approach and indicate the way in which these findings relate to current understanding of the TPB in the exercise domain. I then discuss in more detail the findings with regard to the changes, post-intervention, in intention and physical activity, and the implications the results have for understanding intention – behaviour relations in the TPB. Both the

TPB and other theories, including theories on self-regulation, the social identity approach, and the auto-motive model, are employed in explaining the intention – behaviour results. I then discuss the methodological issues and directions for future research.

Predicting Intention

In the TPB, it is expected that norms will have an influence on intention, but the research in the exercise domain shows that the personal variables of attitude and perceived behavioural control are more important (Symons Downs & Hausenblas, 2005). Norms have, however, been found to reliably predict intention, but only when they have been defined in a manner consistent with the social identity approach (Astrom & Rise, 2001; Johnson & White, 2003; Terry et al., 1999; Terry & Hogg, 1996). According to the social identity approach, when the self is defined in terms of the social group, the relevant reference group, the self is cognitively redefined causing many changes within the individual. In particular, no longer does a person define themselves in terms of their individual idiosyncrasies, rather, their self-perception, beliefs, and attitudes are all transformed to become aligned with those of the group (Terry, Hogg, & Duck, 1999). According to the logic provided by the social identity approach, if social self-definition transforms individual cognitions into group cognitions, group norms should have a significant effect on intention, of those defining themselves as group members. This means that norms should influence intention when individuals define themselves at a social level of self. When individuals define themselves at the personal level of self, however, it can be expected that norms will have a small influence.

In the SI intervention conditions, I encouraged women to define themselves at a social level of self. In the PI intervention condition, I encouraged women to operate at the personal level of self. Accordingly, I expected that norms would only have an influence on intention in the SI conditions. Before explaining the results with regard to the ability of subjective norm to predict intention in the SI and PI conditions, I will first describe the outcomes of the manipulations. In particular, whether the manipulations were successful at encouraging women to operate at the social level of self in the SI conditions and whether subjective norm was effectively operationalised from the social identity perspective as the perception of pressure from a relevant reference group.

Effectiveness of the Manipulation

The group norm for physical activity for spiritual caring women significantly increased post-intervention and was maintained at the follow-up, indicating that the intervention had successfully created a physical activity norm in a relevant reference group of “spiritual caring woman”. The results from the manipulation check I conducted immediately after the intervention workshop confirmed that the intervention for the spiritual caring woman condition significantly increased the perception of normative support for physical activity in comparison to the women in the PI condition. The manipulation also significantly increased the salience of the spiritual caring woman social identity in the spiritual caring woman condition in comparison to the women in the PI condition. Thus, it can be concluded that women in the spiritual caring woman condition were encouraged to operate at a social level of self, as spiritual caring women, rather than their individual selves, and they did perceive pressure to perform more physical activity from this relevant reference group of other spiritual caring women.

The group norm for physical activity for the women in the strong independent woman condition did not significantly increase post intervention, but results reveal that the group norm for physical activity was high at the start of the study and remained high throughout the study, and was significantly higher, post –intervention, than the norm for physical activity in the PI condition. This indicates that the women in the strong independent woman condition probably came into the study with a pre-existing connection between strong independent women and physical activity, a finding that is consistent with the results from Study 1 in which the physical activity norm scores were highest for the identity “strong independent woman”. Whilst the intervention for the strong independent woman condition may not have created a group norm, as it did in the spiritual caring woman condition, it is likely that the intervention reinforced the physical activity norm, keeping it at a high level throughout the study. The between-group results comparing the PI condition with the strong independent woman condition support this interpretation. The results showed that the strong independent woman intervention did not create significantly stronger perceptions of normative support for physical activity than the PI intervention. Examination of the means showed that this was because both the women in the PI and strong independent woman condition believed that physical activity was a highly normative behaviour for strong independent women. Thus, even without the assistance of a normative support manipulation, women generally believe that exercise is a normative behaviour for “strong independent women”. The salience manipulation results show, however, that the identity of strong independent woman was not made salient in the PI condition, so women in this condition were not encouraged to operate at this social level of self, and thus, the norms, although strong, were not in a position to influence. The strong independent

woman intervention, on the other hand, made the identity of strong independent woman more salient than in the PI intervention, indicating that women were encouraged to operate at the social level of self and thus be in a position to be influenced by the physical activity norm.

In general, the group norm and manipulation check results for both the SI conditions supported the proposition that the interventions produced the intended changes in social identity salience and group norms. This means that women in these conditions were probably operating at the social level of self and perceived a physical activity norm from their relevant reference group. It should be noted, however, that the difference in the salience levels between the strong independent woman condition and the PI condition was not as large as the difference in the salience levels between the spiritual caring woman condition and the PI condition. This is likely to be because the self-characteristic of strong independent woman was a more available identity to the woman in the PI condition than the self-characteristic of spiritual caring woman. Even without a salience manipulation focusing on strong independent woman, the women in the PI condition were happy to identify themselves as strong independent women. Thus, the difference in salience between the PI and strong independent women conditions was not as strong as between the PI and spiritual caring women conditions.

Effect of Subjective Norm on Intention

It was clear that by the 2-week post-test, the physical activity intentions of the women in both the spiritual caring woman condition and the strong independent woman condition were influenced more by norms than any other TPB variable. Both the standard subjective norm variable and the group norm variable contributed to the prediction of intention in the strong independent woman condition, but interestingly,

only the standard subjective norm variable, rather than group norm variable, provided the biggest contribution to intention in the spiritual caring woman condition. In contrast, the only significant predictor of intention for the PI condition was perceived behavioural control. At the 3-month follow-up, norms continued to be important in the prediction of intention for the SI conditions, but not for the PI condition. Perceived behavioural control was, again, the only predictor of intention for the PI condition. For the strong independent woman condition, the standard subjective norm variable, rather than group norm provided the contribution to intention, but group norm was the most significant norm variable contributing to intention in the spiritual caring woman condition. The alpha level of the group norm beta value for this condition did, however, fall just outside of significance (0.09) and perceived behavioural control was also a significant predictor. In this condition, I only had 17 participants. Tabachnik and Fidell (1996) recommend that there be at least 10 participants per predictor in a regression equation. In this regression equation, there were 4 predictors of intention, attitude, subjective norm, group norm, and perceived behavioural control, thus, ideally, there would have been 40 participants. The lack of a sufficient number of participants might be the reason group norm did not reach significance.

The results for the PI condition are generally consistent with the TPB research in the exercise domain. Specifically, one of the personal variables, in this case perceived behavioural control, rather than attitude, was more important in the prediction of intention, than the social variable of subjective norm (Symons Downs & Hausenblas, 2005). The finding that perceived behavioural control was more important in the prediction of intention for the young to midlife women in this sample is consistent with the argument I made in Chapter 2. In particular, that controllability is a

more important factor for women because of the complex social environments they operate in, which can practically inhibit their participation in physical activity. This finding is also consistent with the social identity approach because norms are not expected to exert any influence on the self when the self is defined at the personal level. The results for the SI conditions do, however, challenge the sweeping conclusion that norms are not influential at all. Since norms were only influential in the SI conditions in which individuals were encouraged to operate at the social level of self, the results provide support for the social identity explanation that norms can be influential, when individuals operate at a social, rather than personal level of self, and when the norms emanate from the relevant reference group. Notwithstanding the relatively small participant to predictor ratio in the regression analysis, these results have implications for the TPB. Specifically, they suggest that researchers should consider both the personal and the social level of self when making predictions about which of the TPB variables will contribute most to intention. Overall, although the relative importance of each of the TPB variables appears to be influenced by the level of self at which an individual is operating, the results of this study generally support the TPB because the TPB variables were able to successfully predict intention. The results with regard to the prediction of physical activity are, however, more problematic for the TPB.

Changes in Intention and Behaviour

The results show that both the SI and PI intervention conditions were successful in enhancing total physical activity (combination of walking, moderate activity, vigorous activity) in the short term, that is, at the 2-week post-test, but only the women in the SI intervention conditions were successful in the longer term maintenance of physical activity. The level of physical activity that the women in both the SI

conditions engaged in at the 3-month follow-up was the same as their enhanced 2-week level, showing that these women were able to maintain an improved level of physical activity, albeit at a lower level for the women in the spiritual caring woman condition. For the women in the PI condition, however, the amount of physical activity at the 3-month follow-up was significantly reduced from their elevated 2-week levels, and had dropped back to the insufficient pre-test levels. The same pattern of results was found in the SI and PI conditions when only a combination of moderate and vigorous activity was used as the physical activity measure. When walking was taken as the physical activity measure, however, there were no significant changes between the conditions, post intervention. Taken as a whole, in this intervention, the SI interventions were more successful in encouraging long-term physical activity maintenance in young and midlife women than the PI intervention.

Targeting the social level of self does appear to be an effective intervention strategy for young and midlife women, particularly in encouraging the long-term maintenance of physical activity, however, from a theoretical perspective, the underlying mechanism for the observed relationship between the interventions and physical activity, is more important. Despite the effect the interventions had on physical activity, the results are difficult to explain in terms of the TPB because there was no evidence that intention had been enhanced as a result of either the social or personal identity interventions. The intentions of the women in the SI conditions at the 3-month follow-up, despite maintaining an elevated level of physical activity, were reduced. The intentions of the women in the PI condition, on the other hand, did not change and remained high throughout despite a significant drop off in their physical activity at the 3-month follow-up. There was also no conclusive evidence that

intentions predicted behaviour for any of the intervention conditions at any time point.

I will now discuss the results with regard to intention, the intention – behaviour relationship, and the theoretical implications of the findings.

Intervention Effect on Intention

Recent meta-analyses on the TPB in the exercise domain (Symons Downs & Hausenblas, 2005) have shown intention to be a reliable predictor of physical activity, thus, I anticipated that any increases or decreases in physical activity as a result of the interventions, would be preceded by concomitant increases or decreases in intention. The pattern of results I obtained, in terms of intention and physical activity scores for the SI and the PI conditions are, however, opposite to the predictions of the TPB. Based on the TPB, I expected that the high intentions of the women in the PI condition at the 3-month follow-up would equate to high, rather than the observed reduced, levels of actual behaviour. I also expected that the lowered intentions of the women in the SI conditions at the 3-month follow-up would equate to a similar reduction in their level of physical activity, but I found that they maintained an elevated level of physical activity.

Although the pattern of intention and physical activity results I observed in this study was unexpected, and inconsistent with the TPB, it is not uncommon to see such a pattern in research on self-regulatory behaviour. Oettingen and Hagenah's (2005) review on the effect of fantasy on the self regulation of competence provides some explanations for my findings. Oettingen and Hagenah distinguished between beliefs and imagination when describing the way people think about future competence. Competence expectations, also known as efficacy expectations (Bandura, 1997), are beliefs about competence. This is a way of thinking about future ability based on factual information, such as a person's past performance, vicarious learning, and the

information they have from influential sources. Competence expectations provide valid information about the probability of actually being able to perform a given behaviour and have been found to predict strong investment in performing the behaviour and the eventual attainment of objective competence (Bandura, 1997; Pietsch, Walker, & Chapman, 2003).

According to Oettingen and Hagenah (2005), a person can also think about competence in a more imaginative way that is not at all limited by such factual information. They labelled this second way of thinking about competence as “competence fantasies” (p. 647). Competence fantasies are experienced as positive images of future capability and can be both glorious and unrelated to reality, like imagining being able to fly, or within the realms of possibility, like being able to engage in regular physical activity. Both glorious and possible fantasies are, however, disconnected from reality and probability because they are not based on the realistic and factual information contained in past performance and vicarious learning.

Unlike competence expectations, competence fantasies have been found to be unrelated to goal striving and objective competence (Oettingen & Mayer, 2002). In their study of the effect of fantasies on academic performance, Oettingen and Mayer asked students to indicate the grade they would like to obtain for a university subject, then asked them to imagine that they had completed exams and were on their way to pick up their grade. The actual grades of these students were subsequently recorded at the end of semester. Those students who had experienced positive feelings associated with the fantasy situation achieved lower actual grades overall than those with negative feelings associated with the fantasy.

According to Oettingen and Hagenah (2005), positive competence fantasies trigger little motivation to obtain the goal and result in lower competence attainment than competence expectations because, when engaging in competence fantasies, the competency to be achieved in the future is mentally enjoyed in the present. This mental attainment of the goal reduces the need to strive towards the goal and obscures the steps and skills required to achieve such a goal. The result is, thus, little motivation, less planning, and lower actual achievement. Consistent with this, Oettingen and Mayer (2002) showed that effort mediated the relationship between positive fantasies and performance. Those with positive fantasies obtained lower objective competence because they simply put in less effort than those with more realistic competence expectations.

Although I measured intentions in this study, rather than competence expectations or fantasies, it is possible that a similar principle can be applied to intentions. Just as competence can be construed in realistic or fantastic terms, intentions may also be realistic or fantastic and a similar relationship with behavioural outcomes may exist. Specifically, unrealistic or fantastic intentions may lead to lower behavioural attainment due to less effort being exerted in the goal acquisition process, whereas, realistic intentions should lead to greater behavioural attainment because more effort is exerted in the process of achieving the goal. Bagozzi and Yi (1989) made an analogous differentiation between fantastic and realistic intentions in their research on degree of intention formation. In their research, Bagozzi and Yi showed that intention formation moderated the intention – behaviour link, such that intentions that were poorly formed were less effective in predicting behaviour. Here, poorly formed intentions may be another way of describing unrealistic intentions. Similar to

Oettingen and Mayer's (2002) rationale, they argued that those who do not give adequate thought to their decisions will fail to anticipate the challenges involved in goal acquisition, and thus, will be less successful in achieving their goal. Although Bagozzi and Yi argument shares a great deal with the research of Oettingen Mayer, theirs is a moderation argument and makes no claims that effort would mediate the intention – behaviour relationship. Thus, in Bagozzi and Yi's argument, intentions are still the primary predictor of behaviour, but that they better predict behaviour when intentions are well formed. The concept of well-formed and poorly-formed intentions also shares a great deal with the concept of intention stability (Sheeran et al., 1999). There is substantial research showing that unstable intentions, similar to poorly-formed intentions, have a poorer relationship to behaviour than stable intentions, similar to well-formed intentions (See Chapter 2 for a review).

The differentiation between realistic and fantastic intentions or well-formed and ill-formed intentions is one way to explain the pattern I found in the current study. If the persistently high intention scores of the women in the PI condition were really an indication that they were engaging in highly unrealistic fantasies about their motivation to exercise, or had not fully thought through their intentions, it is not surprising that their objective performance was insufficient, or unable to be maintained in the long term. Consistent with Bagozzi and Yi's (1989) moderation argument, the reason that intention did not predict behaviour in this case might be that poorly-formed intentions, per se, weakened the intention – behaviour relationship. Alternatively, in keeping with the pattern of Oettingen and Mayer's (2002) results, it may be that the women in the PI condition did not put in sufficient effort, and effort mediated the intention behaviour relationship.

The less positive intentions I observed in the SI conditions at the 3-month follow-up, may have represented a move away from the fantasy of being a highly motivated regular exerciser and advancement toward a more realistic and fact-based assessment of the women's level of motivation to engage in physical activity on a regular basis. If this was the case, according to Bagozzi and Yi's (1989) moderation argument, I should have found that intention better predicted behaviour in the SI conditions, which, as I have outlined earlier, was not the case. In keeping with Bagozzi and Yi's argument, I would have to conclude, on the basis of my results, that the reduction in the intentions of the women in the SI conditions did not really indicate that their intentions had become more realistic or well-formed, and that they were still ill-formed intentions. Indeed, even though the intentions of the women in the SI conditions were less positive than the PI condition, they were still in the highly positive end of the intention scale, indicating that this is a possibility. The finding of no direct link between intention and behaviour when following Oettingen and Mayer's (2002) rationale, is not, however, problematic provided that realistic intentions operate in the same way that realistic competence expectations operate. Specifically, that effort mediates the intention – behaviour relationship. It could be that the intentions of the women in the SI conditions did become more realistic and this enabled them to exert more effort in achieving their physical activity goals than the women in the PI condition, who maintained unrealistic intentions. Thus, the reason that intention did not predict behaviour in the SI conditions was because effort mediated the intention – behaviour relationship.

On the basis of the current research, it is not possible to investigate either Bagozzi and Yi's (1989) proposal that intention formation moderates the intention –

behaviour relationship, or an extension on Oettingen and Mayer's (2002) research that effort mediates the intention – behaviour relationship. It may be possible to look for evidence of increased effort in the SI conditions as opposed to the PI conditions in my follow-up qualitative research, which will be described in the next chapter, but it is clear that more focused experimental work is needed to investigate these theoretical propositions.

Explaining Intention – Behaviour Relations

Although there is some support in the intention – behaviour research that intentions can be differentiated on the basis of being realistic or fantastic, well or poorly formed, the mediation effect of effort is not well supported in TPB-based literature. Based on the past TPB research, I expected the intervention conditions to enhance intentions to be more active and I expected intention to be the primary predictor of behaviour. Contrary to the recent meta-analysis of Symons Downs and Hausenblas (2005), however, my regression results show that intention to be physically active was not a significant predictor of physical activity for any of the intervention conditions post intervention and at follow-up. Statistical issues in the regression analysis to do with the small participant to predictor ratio may be to blame for the poor intention – behaviour relationship, but in the context of the intervention results, theoretical explanations must also be considered. The TPB and in particular, the effect of intention on behaviour, is well established in the research, thus, it is necessary to first consider TPB-based explanations for my findings before entertaining other theoretical explanations.

TPB-based explanation. Although intention is usually found to be a significant predictor of behaviour, in particular, physical activity (Hagger et al., 2002b; Symons

Downs & Hausenblas, 2005), it is generally accepted that there is a large portion of variance in behaviour that is unexplained by intentions. In Sheeran's (2002) meta-analysis of 10 meta-analyses, he found that around 70% of the variance in behaviour was unexplained by intention and that this was mainly due to what he called "inclined abstainers" (p. 7). The inclined abstainers are those people with positive intentions, who fail to act on their intentions.

The logic of the inclined abstainers might explain the intention-behaviour gap observed for women in the PI condition, particularly at the 3-month follow-up, and might also explain the intention – behaviour gap in the PI and SI conditions at the 2-week post test. The intention levels for the women in the PI condition were at a high level throughout the study and intentions were also high for the women in the SI conditions at the 2-week post test. At these particular stages, these women were all highly inclined to exercise. The finding that this intention was not related to physical activity could have been because it was very difficult for the majority of the women to convert their intentions into action. Thus, the majority of the women may have been inclined abstainers. The evidence is that, at the 2-week post test, the women in the SI and PI conditions were attempting to convert their intentions to action because the physical activity levels rose to sufficient levels, but the inclined abstainer effect seemed to be the most severe for the women in the PI condition at the 3-month follow-up test. At this point, their intentions were as high as ever, but their physical activity dropped below pre-test levels. Sheeran showed that 47% of people fail to act on their good intentions, and it is, according to Sheeran, this pattern, which generally leads to the large gap between intentions and behaviour.

In this study, however, it must be noted that there was more than just a gap between intention and behaviour – there was no relationship between intention and physical activity, so other explanations are needed. Furthermore, although the logic of the inclined abstainers may go some way to explaining the lack of relationship between intention and physical activity, particularly in the PI condition at the 3-month follow-up, this logic cannot be used to explain the results for the women in the social identity condition at the 3-month follow-up. For the women in the SI conditions, at this stage of the intervention, the intervention had the effect of significantly reducing intentions, while their physical activity participation remained high. According to Sheeran (2002), these women would be described as disinclined actors, people with low intentions for a behaviour, who nonetheless perform that behaviour. Sheeran found that only 7% of people acted despite low intentions and, thus, argued that this is not the main cause of the intention-behaviour gap.

The results I obtained for the social identity intervention at the 3-month follow-up, is a case of an intervention that did not produce a significant enhancement in intention, rather, a reduction in intention, but did nonetheless significantly improve the performance of the target behaviour. In a recent meta-analysis of the experimental evidence of the effect of intentions on behaviour, Webb and Sheeran (2006) found 15 studies in a wider group of 221, in which there was significant behaviour change despite no intention change. The results I have obtained, therefore, although atypical, are not entirely singular in showing no intention – behaviour relationship.

There is one possibility for the maintained enhancement of physical activity in the PI and SI conditions in the absence of an intention-based explanation that is still in keeping with the TPB. Ajzen (1985) indicated that intention is not the only direct

predictor of behaviour, but also that perceived behavioural control will have a direct influence. The TPB-based explanation would, thus be, that the intervention conditions increased perceived behavioural control, which had a direct effect on behaviour. Webb and Sheeran (2006) considered this explanation to be unlikely on the basis of mediation analysis of three studies which reported correlations between perceived behavioural control and behaviour. They found that, at best, perceived behavioural control only added a small amount to the prediction of behaviour after the effect of intention was controlled. In the current study, this explanation cannot be relied upon to explain the lack of intention – behaviour relationship in the SI conditions, but may provide an additional explanation for the lack of relationship between intention and behaviour in the PI condition. Perceived behavioural control was significantly increased in all conditions post-intervention and there were significant correlations between perceived behavioural control and physical activity, for the PI condition at both the 2-week post-test and 3-month follow-up. Although perceived behavioural control did not contribute to the prediction of physical activity in this condition at any time point, given more participants in the PI condition, perceived behavioural control might have achieved a significant beta weight. Other than one significant correlation between perceived behavioural control and physical activity in the spiritual caring woman SI condition at the 3-month post test, however, there were no other correlations between perceived behavioural control and physical activity for the SI conditions, and perceived behavioural control did not predict physical activity for either of the SI conditions at any time point.

The TPB can partly explain the lack of an intention – behaviour relationship observed in this study through the perceived behavioural control relationship with

behaviour and the expected intention – behaviour gap. At best, however, this can only really explain the results in the PI condition at the 3-month follow-up. Thus, although the TPB may explain the effects observed in the PI condition, the TPB cannot adequately describe the effects in the SI condition. To understand the intention – behaviour pattern observed in the SI conditions it is, thus, necessary to consider other non TPB-based explanations.

Social identity-based explanation. Other direct predictors of behaviour have been investigated in the TPB, and according to Ajzen (1991) the TPB is “open to the inclusion of additional predictors, if it can be shown that they capture significant portion of the variance in intention or behaviour” (p. 199). In recent years, many additional direct predictors of behaviour have been investigated, but one that is relevant to my study, is that of group norm. In the TPB, it is expected that norms will have an influence on intention. This has been supported in my study, but there is also evidence that norms have the power to directly affect behaviour.

A direct relationship between norms and behaviour is not surprising, indeed, the social identity approach would actually predict this. Specifically, when the self is defined at the social level, a cognitive redefinition occurs whereby individuals no longer define themselves in terms of their individual attributes, rather, they begin to define themselves in terms of the group norms. Group norms include information not only about what attitudes to hold, but also what behaviour to perform. Based on this logic, it is not surprising that group norms will not only bring intentions of those defining themselves as group members, in line with that of the group, but also that behaviour itself is made consistent with those of the groups. Thus, according to the social identity approach, group norm should have a direct influence on behaviour.

Two recent studies have reported a direct effect of norms on behaviour. In the Okun et al. (2002) study, the descriptive norms of the peers of teenagers were more successful in directly predicting behaviour than they were in predicting intention. Rivas and Sheeran (2003) measured teenagers' perception of similarity to a prototype, and found that this also directly predicted physical activity. In both studies, the social identity approach to norms was likely to be in operation. In both studies, norms were linked with a specific group with which the individuals were likely to identify. For teenagers, due to their developmental stage (Erickson, 1950), peers can be expected to be a group that is also a chronically salient means of self definition. It is likely that in these studies, the teenagers were operating at a social level of self and it is, thus, not surprising, in light of the social identity approach, that the norms were influential to the point of directly affecting behaviour. Indeed, there is also evidence in the Renger et al. (2002) study, described in Chapter 2, that norms directly affected behaviour. Renger et al. found that townspeople who had been exposed to information about physical activity from other townspeople, engaged in more physical activity. It is possible that in this small town, being a "townsperson" was a valued social identity, and that many of the townspeople were operating at this social level of self, and were thus directly influenced by the information about physical activity by others perceived to be part of the social identity, that is, the norms of the relevant reference group. Although Renger et al. could not explain why behaviour was directly affected, and measured neither group norm or any of the TPB variables, it is possible that group norm was the mechanism by which physical activity was enhanced, rather than through intention.

In the present study, if group norm were to have an influence on behaviour, it is clear that it would only be in the SI conditions where the self was defined at the social

level. Indeed, the results largely reflect this. Group norm, in the spiritual caring woman SI condition, at both the post-test and follow-up, obtained strong beta values. These values were not significant, but were just above the 0.05 cut off and presumably, with more participants, it is likely that these beta values would have been significant. Also consistent with the social identity approach, group norm did not contribute to the prediction of physical activity in the PI condition. In this condition, neither the identity of strong independent woman nor the identity of spiritual caring woman was salient, thus, in the absence of any social basis of self-definition, and due to the PI intervention's focus on the women as individuals, the women were encouraged to operate at a personal identity level of self. Consistent with the social identity approach, at the personal level of self, norms are not expected to be influential. Even though the manipulation checks revealed that these women had a relatively strong perception that physical activity was normative for strong independent women, the norms did not influence behaviour because the women were not encouraged to operate at the social level of self. This also explains why norms did not influence intention in this condition.

There is some support, therefore, that the social identity approach is a useful framework to understand the results of this study. The finding that group norm was not important in the prediction of physical activity for the strong independent woman SI condition is seemingly inconsistent with the social identity approach. In this condition, women were encouraged to operate at a social level of self and, thus, I expected that the strong physical activity norms contained in that identity would be influential. Unlike the spiritual caring woman SI condition, however, the beta values for group norm in the regression equation predicting physical activity were not significant, indeed the alpha

levels indicated that they did not even approach significance. The regression results in this condition, however, must be placed within the context of the physical activity findings and methodological and statistical issues.

The major result in this study is that physical activity was maintained to Time 3 by only the women in the SI conditions, the highest level being achieved by the women in the strong independent woman SI condition. This means that it is likely that the social identity processes encouraged in these interventions induced this change. Specifically, the intervention encouraged SI condition participants to see that physical activity was part of who they were through the normative support of other members of the social identity (strong independent or spiritual caring women). It can be speculated, therefore, that it was the physical activity norms from the in-group in the SI conditions that were the drivers of behaviour change, thus, a direct norm – behaviour link. It is true that the regression analysis only marginally show this direct relationship between norms and behaviour in the spiritual caring SI condition, and not at all in the strong independent woman SI condition, but issues the such as the small number of participants and a lack of range in the group norm scores, they were all uniformly high, may well have created difficulties in the regression equation (Tabachnick & Fidell, 1996). It is important to note, as well, that women in the strong independent woman condition started the study with an existing perception of the link between their social identity as strong independent women and physical activity so the intervention, which sought to create a link between their identity and physical activity, would have had less of an impact on them than on the women in the spiritual caring condition for whom the link had not previously existed. Thus, the group norm measure in the strong independent woman condition may not have been as sensitive in the regression

analysis. Unfortunately methodological issues in the design of this study disallow a clarification of the regression results and prevent any firm conclusions to be drawn as to the direct relationship between norms and behaviour. A more systematic manipulation of the factors of social identity, salience, and message source would have produced more definitive findings in this regard and is an issue that should be addressed in future research.

Another approach to explaining the physical activity patterns observed in this study, that can run potentially alongside the social identity explanation of the findings in the absence of an intention-based explanation is provided by the auto-motive model (Bargh, 1990).

Auto-motive-based explanation. In the auto-motive model, Bargh (1990) suggested that goal-directed behaviour is sometimes carried out automatically, without the need for conscious intentions. According to Bargh, goal-directed behaviour can be carried out unconsciously when prior mental associations have been set up between the context and the goal directed behaviour. The finding in the present study, that intentions were reduced, despite the behaviour being enhanced in the SI conditions, and that intention did not predict physical activity, is not problematic, if the goal-directed behaviour was carried out unconsciously, thus, bypassing conscious intentions.

Prior mental associations, the basis for automatic goal activation, can be set up through two means: first, through past experience when two or more representations are consistently active in memory at the same time (Hebb, 1948), or second, through more strategic means (Gollwitzer & Bargh, 2005). In the first case, past experience, repeated pairing of a goal with a context can create a mental association, which leads to automatic goal activation. For example, through past experience a woman may create a

mental association between the goal of competing and other women of the same age. Thus, whenever the woman is in the company of women the same age as her, the goal of competition is automatically activated without her conscious intention to compete. In the second, more strategic case, a mental connection between a goal and a context is intentionally created, rather than through past experience, so as to activate a particular goal automatically in the specific context. This is typically done by forming an if/then statement, such as, “if I see my dog in the evening, then I will take him for a walk”. This more strategic form of mental association is known as implementation intentions. Rather than simply forming the intention to carry out a particular behaviour, implementation intentions also specify a plan for carrying out the behaviour. There is now extensive research to suggest that creating implementation intentions can close the gap between intentions and behaviour because people instructed to form implementation intentions are more able to convert their good intentions into action (Norman & Conner, 2005; Orbell et al., 1997; Sheeran, 2002).

Although there appears to be more research on the effect of implementation intentions on behaviour (see Gollwitzer & Bargh, 2005, for a review), regardless of how the mental association is formed, they are expected to operate in the same way. The first effect of forming the mental associations between a goal and a context is to create a heightened accessibility of the mental representation, which enhances attention towards detecting cues to action. The second effect is that, when cues to action are detected, action is executed immediately, efficiently, and without the need of conscious intention.

Gollwitzer (1996) considered that being able to perform goal-directed behaviour without conscious intentions would be useful because it bypasses many of the self-

regulatory hurdles one has to surmount when attempting to translate conscious intentions into behaviour. According to Gollwitzer, the first self-regulation challenge involved in converting intention into action is being able to act on a specific intention in the face of competing goal pursuits, internal ruminations, emotional issues, or tiredness. The second challenge is to stay committed to acting on the intention despite temptations, distractions, and self doubts. These self-regulatory challenges may be particularly potent for physical activity goals, which are typically physically gruelling and could be unpleasant. Thus, strong intentions alone, even with the aid of high levels of perceived behavioural control, may not be sufficient to effectively facilitate goal attainment. Sheeran (2002) has shown this in his studies of the intention – behaviour gap and the data in present study, particularly for the women in the PI condition, also supports this view.

When goals or intentions are activated automatically, however, the conscious considerations that could prevent getting started and encourage getting derailed are bypassed, attention is attuned to detecting cues to action, and in the presence of the environmental cues, action occurs immediately, efficiently, and without conscious intent. According to Gollwitzer and Bargh (2005) “the efficient nature of unconscious motivation makes it an especially effective means of goal pursuit in complex and busy social environments in which conscious attention is divided and in short supply” (p. 624). Automatic goal activation should be especially beneficial for difficult goals, such as physical activity, and for populations, such as young and midlife women, who clearly live in complex and busy social environments.

There is a great deal of recent research to support the main concepts in the automatic model. Specifically, it has been shown experimentally, that goals can be

activated automatically and that, once activated, they have the same effect on behaviour as a consciously activated goal. In experiments, goals are typically activated outside of conscious awareness through priming and this has been shown to affect subsequent performance on goal-related tasks. An example of a standard priming task is the scrambled sentence task (Srull & Wyer, 1979). In this task, the words that prime the concept are hidden in scrambled sentences which the participant must unscramble before performing the main performance task. If the experimenter wanted to encourage perceptions that a target person was honest, the words honesty and truthful would be hidden in the scrambled sentence task prior to an impression formation task. Bargh and Gollwitzer (1994) and Bargh, Gollwitzer, Lee-Chai, Barndollar, and Trötschel (2001) have shown that when goals of achievement and performance were implicitly activated in this way, participants tended to perform at a higher level and achieve more on subsequent verbal tasks than controls who had not received any priming. Similarly, when the goal of cooperation was primed, participants acted more cooperatively in a subsequent negotiation task, when they had the opportunity to be competitive compared to controls, despite reporting that they were not aware of behaving more cooperatively.

Research has also shown that goals do not need to be primed directly for them to be unconsciously activated (Fitzsimons & Bargh, 2003). Indirect priming can also happen through situational features and other people, if a mental association has been set up prior to the priming. When, for example, a particular goal has been related to a specific person, the presence of that person, or even thinking about the person has been found to automatically activate goals that have, through past experience, been related to that person. Fitzsimons and Bargh showed that participants who had a pre-existing goal to make their mothers proud, performed better on verbal tasks when they had been

primed previously with a representation of their mother, than controls who hadn't been primed, and compared to participants who had been primed with a representation of their mothers, but who did not have the pre-existing goal to make their mothers proud.

The experimental research has demonstrated that goals can be activated automatically through direct priming and through indirect priming when mental associations have already been formed in the past and that people are not always aware that they have been acting in a goal-directed way (Bargh et al. 2001). Although this experimental research has been conducted using relatively simple goals and the effects have been demonstrated in short follow-up tests of performance, based on this research, it is possible to imagine that a similar dynamic was in operation in the SI conditions of the present study.

In the SI conditions of this study, I paired the goal of regular and sufficient physical activity with a valued aspect of women's social selves, either strong independent woman or spiritual caring woman. The group norm results suggest that this association was made successfully at the intervention workshop for the women in the spiritual caring woman condition, but that the association probably already existed for the women in the strong independent woman condition. Given that the results indicate that a strong association between exercise and a social self-identity was in existence for the women in the social identity conditions, it can be expected on the basis of the auto-motive model, that situational cues in the environment, post intervention, which caused the women to think about that particular aspect of their identity, may have automatically activated the goal to engage in physical activity. Since the social identity, strong independent, or spiritual caring, woman, was a valued aspect of the women's social selves, and my prior research (Study 1), indicated that

young and midlife women operate at a social level of self relatively easily, it might be expected that there would be many potential cues in the women's environment that would have caused them to think about their identities as either strong independent, or spiritual caring, women. In a similar principle to the scrambled sentence test, described earlier, it can be speculated that even simply seeing the words "strong independent woman" or "spiritual caring woman" on their intervention materials may have unconsciously triggered the women's goal to exercise.

Research has shown that once goals are activated, regardless of whether they are conscious or unconscious, they have the same characteristics of motivated goal pursuit (Gollwitzer & Bargh, 2005). One characteristic of goal pursuit that is particularly important for explaining the present results is that of persistence and resumption after disruption. According to Atkinson and Birch (1970), goals stay active over time until the goal is reached, or an active and effortful disengagement from the goal is conducted. Bargh et al. (2001) showed that unconscious goal activation followed the same principle. Those who were primed were less willing to stop a task and more inclined to resume a task after a disruption, even when more attractive alternatives were available. The ability of automatically activated goals to stay active over time, which encourages persistence in goal striving, may potentially explain the discrepancy between the SI and PI conditions in the exercise levels at the 3-month follow-up. It is possible that the women in the SI conditions were able to maintain their high levels of exercise in the long term because they had the benefit of automatically-activated goals, which unbeknown to them, remained active over time encouraging their ongoing goal pursuit. The physical activity of the women in the PI condition, on the other hand, is likely to have dropped back to their pre-test levels, because, without the benefits of

automatic goal activation, they had to rely on their conscious intentions, which, as I have explained previously is a path beset with self-regulation challenges. For young and mid-life women, in particular, the self-regulation challenges might even be greater than in other populations due to the complexity of their social environments, which would create many distractions from a physical activity goal. The initial conscious activation of the goal in the intervention may have led to the increase in activity in the short term for the women in the PI condition, but these women may have ceased their goal pursuit or reduced the intensity of their striving due to difficulties overcoming the self-regulation challenges.

It can be speculated that women in the SI conditions are likely to have been more successful than the women in the PI condition in adopting and actively pursuing a physical activity goal over time because of the association between their social identity and physical activity laid down in the intervention and the various primes in their environment, post-intervention, which automatically activated their goal pursuit. The higher level of physical activity observed in the strong independent woman SI condition, as opposed to the spiritual caring woman SI condition, may have been due to the stronger and pre-existing association the women in this condition had between strong independent women and physical activity, which may have meant there were more environmental cues to action for these women. Furthermore, if the exercise goals were activated automatically, it is not surprising that intention did not predict the actual physical activity of the women in the social identity condition, because under this explanation, intentions are bypassed in the automatic goal acquisition process.

Methodological Issues

Despite being able to explain the lack of an intention – behaviour relationship in both the PI and SI conditions through a consideration of the research on intention – behaviour relations in the TPB, social identity approach, and auto-motive model, I still expected there to be at least some relationship between intention and behaviour in all the conditions. The weakness of the intention – behaviour relationship observed in this study is, therefore, a topic of concern, which may be explained on the basis of methodological issues, such as measurement, and recruitment procedures. Measurement issues could also have impacted other variables, such as physical activity, and study design characteristics may have distorted the manipulation effect results. Before talking about measurement and study design issues, I will first consider the methodological issues that may have contributed to the weakness of the intention – behaviour relationship.

Weakness of the Intention – Behaviour Relationship

It is accepted that there is usually a gap between intention and behaviour (Sheeran, 2002), but the finding in this study that intention did not contribute at all to the prediction of physical activity is highly unusual. Theoretical explanations provide part of the picture, but methodological issues must also be considered. There are three methodological possibilities for the weakness of the relationship. The first is the way in which I measured intention, the second is the time point at which I took the behavioural measures, and the third is a statistical issue, resulting from my recruitment strategy. I will now discuss each in turn.

Measurement of intention. I suggested earlier in this discussion that my measure of intentions could have encouraged women to engage in positive fantasies

about being able to engage in regular activity. It is possible that the wording of the intention items may have encouraged the women to imagine the future in a highly favourable and less realistic manner, and therefore, as ill-formed intentions or fantasies, which, as discussed earlier, may be responsible for the weak intention – behaviour relationship (Bagozzi & Yi, 1989; Oettingen & Mayer, 2002). I used three items to measure intention, all related to a specific, time constrained behaviour, as recommended by Ajzen (2002), that is; exercise that makes you breathe harder than normal for three days a week for the next three months. I used the words, “I plan”, “I intend”, and “I will try”, to access the women’s intentions. Research suggests that stronger intention – behaviour relationships are found when expectation, rather than intention, is used, and thus, words such as “probability” and “likelihood” are used (Symons Downs & Hausenblas, 2005). Using words like “probability”, rather than “I will try” may have created a more serious and realistic tone to the items, which may have produced more accurate and less fantastic ideas about the women’s level of motivation. The scale used to measure intention may also have exacerbated this fantastical appraisal. According to Webb and Sheeran (2006), the typical intention scale is measured from -3 to +3. I used a 7-point scale from 1 to 7. By failing to provide a negative range in the scale, I may have encouraged women to rate their intentions as stronger than they really were.

Time between measurement of intention and behaviour. The second measurement issue that may have impacted on the strength of my intention – behaviour relationship was the time at which I took the behavioural measure. According to Ajzen and Fishbein (1980), the behaviour should be measured as close as possible in time to the intention measure. This is because intentions may change over time, particularly

unstable intentions, and this might lead to a less accurate prediction of behaviour.

Meta-analytic research in the exercise domain has shown that the association between intention and behaviour was larger when behaviour was measured within one month of the intention measure (Symons Downs & Hausenblas, 2005). In this study, I measured behaviour concurrently with intention, thus, although it is considered good to measure behaviour as close as possible in time to the intention measure, in my study, there was no time difference. It may have been better, therefore, rather than using a cross-sectional prediction of behaviour, if I took the self-report of physical activity at least one day after the initial intention measure. The lack of any time between the measure of intention and the measure of behaviour is likely to have undermined the true relationship.

Statistical issues in intention measure. The third methodological reason for the lack of relationship between intention and behaviour is statistical. Participants were recruited to my study predominantly through a newspaper story in the local press. The women who participated, were, thus, self selecting. This may have resulted in a sample with a higher overall intentions than the general population and, therefore, lower variability in intention scores. The intention scores were indeed positively skewed and this can be expected to have weakened the regression results. In addition, as noted earlier, the participant to predictor ratio was relatively small, and this could have obscured the regression results somewhat.

Other Measurement Issues

The other measurement issue that could have distorted my results somewhat was the measure of physical activity. The measure was a self-test, and as with all self-tests, is open to falsification. The other issue with self-tests is misunderstanding the

measure. Although the test I used, the International Physical Activity Questionnaire (Booth, 2000) is a well-respected questionnaire and contained many examples of the various kinds of activities that participants had to assess, women still may have misunderstood the measure. In this instrument, women are asked to estimate the number of times they engaged in a specific type of physical activity over the previous 7-day period and then to indicate the amount of time they spent on *one* of those occasions. When indicating the amount of time they engaged in the activity, instead of indicating the time during one session, some women may have multiplied the time by the occasion. This may have inflated the physical activity scores. Due to the small number of participants in my study, I did ring to check any unusually high results, but it is possible that the time by occasion multiplication may have given the impression that more physical activity was engaged in than was actually the case. It must be assumed, however, that this issue would have affected women from all conditions equally, so the relative differences between conditions would still hold.

Study Design

A more pure comparison between the SI conditions and the PI condition could have been achieved had I employed a more randomised controlled design. In the actual design, I had three conditions, two SI conditions and one PI condition. Any women who met my age and physical activity criteria were placed in the PI condition regardless of which characteristic, strong independent woman, spiritual caring woman, or other, they identified with. This was the last group to be formed, and there were many women in this condition who had identified with the characteristic of strong independent woman. It was more common for the women I screened to identify with this characteristic than with the spiritual caring woman characteristic. As a result of

this, the women in the PI condition were probably very similar to the women in the strong independent woman SI condition prior to the intervention. This may explain the smaller difference between these conditions in terms of the manipulation checks than between the PI and spiritual caring woman SI condition.

Ideally, I would have compared the spiritual caring woman SI condition with a different PI condition comprised of women who identified with the characteristic spiritual caring woman, but who did not receive the normative support and salience manipulations. In the major analysis, however, rather than comparing the differences between each condition, I was more interested in the differences within the conditions over time. Other than the manipulation check data, I do not believe that caused any other difficulties in my analysis. Having said this, a fully crossed design whereby identity type (strong independent and spiritual caring) was crossed with salience (high and low) would have been ideal. Also adding another factor of message source (ingroup, outgroup, non-group) would have been able to clarify the social identity mechanisms discussed.

Summary

There were several methodological issues that could have affected my results. The measurement of intention may have contributed to the weakness of the intention – behaviour relationship, although it is clear from the data that the relationship was already weak. Other measurement and design issues may also have influenced the results. Although these issues must be considered, it is unlikely that these effects had a strong and overly adverse effect on the data.

Future Research

In this study, the TPB was insufficient to explain many of the results. In particular, the differential effect of norms in the PI and SI conditions and the lack of an intention – behaviour relationship. In this discussion, I have employed many other theoretical explanations for the effects observed, which require further research to examine them thoroughly. I now describe the future research that I believe should be conducted to clarify the main discrepancies I observed in my study.

Effect of Norms on Intention and Behaviour

The differential effect of norms on both intentions and physical activity in the intervention conditions was not consistent with much of the TPB research in the exercise domain (Symons Downs & Hausenblas, 2005). Rather than norms being a universally – weak predictor of intention, I found that they were strong predictors of intention for the SI, but not the PI, conditions. In addition, I also found some support for the direct predictive ability of norms, but only in the SI conditions. This research supports the research of Terry and her colleagues (Terry et al., 1999; Terry & Hogg, 1996) and provides further evidence that the TPB variables operate differently when social, rather than personal, identity is salient. Whereas the personal variables of perceived behavioural control and attitudes are the main predictors of intention when personal identity is salient, norms may be the most important predictors of intention and possibly also contribute directly to behaviour, when social identity is salient. Since personal identity is the default level of most TPB research, there is a need for more TPB research to be conducted in contexts that intentionally vary the salience of social identity. In this way, the relationships between the TPB variables and intention, and

intention and behaviour can be clarified and conclusions can be reached as to the organisation of the TPB variables under both personal and social identity salience.

Intention – Behaviour Relationship

Although the present study showed no relationship between intentions and behaviour, given greater participant numbers and methodological amendments, it is likely that I would have found some, rather than no, relationship. My finding of no relationship, rather than indicating a lack of support for the TPB is more likely to be an extreme example of a common observation in the recent TPB literature, that of a large gap between intentions and behaviour (Sheeran, 2002). This study highlights the need to understand the way in which the relationship between intention and behaviour is compromised or strengthened, and the other processes by which goal attainment occurs.

One explanation for the intention – behaviour gap observed in my study is provided by Oettingen and Mayer's (2002) research. It could be that intentions can be based on either realistic information or fantasy, but that only realistic, or well-formed, intentions lead to increased behaviour through the variable of effort. This argument is based on an assumption that intentions operate in a similar way to competence expectations and would require further research to examine firstly whether intentions can be realistic or fantastic and whether these have a differential effect on behaviour, and secondly, whether effort is a mediator of the intention – behaviour relationship. In terms of assessing the effect of realistic or fantastic intentions, Bagozzi and Yi's (1989) research is helpful. They operationalised well-formed, or realistic, intentions, by asking participants to indicate their intention to perform a novel task only after they had been instructed to carefully consider the consequences of performing the behaviour. Poorly-formed intentions were operationalised by asking participants to

indicate their intentions to perform a novel behaviour after a distracter task had been administered. Similar manipulations could be utilised in further research focused on health behaviours. Longitudinal research, like the present study, should be carried out in which the effort exerted on achieving the goal is also explicitly measured. Analysis of this type of research could determine if intention formation moderates the intention – behaviour relationship, such that ill-formed intentions weaken the relationship, as Bagozzi and Yi proposed, or similar to the Oettingen and Mayer research, if effort is a mediator between intention and behaviour.

The most compelling argument for the physical activity patterns observed in the present study, that is, lowered intentions but sustained elevated physical activity for the SI conditions, comes from a combination of the social identity approach and the auto-motive model. When goals are activated automatically, goal attainment can occur without the requirement of conscious intentions, thus explaining the lack of intention – behaviour relationship. It is likely that the groundwork for automatic goal activation was strategically set up in the SI intervention conditions in which, based on the social identity approach, I was able to successfully pair the goal of regular and sufficient physical activity with an existing and valued aspect of the women's identities, by providing normative support from a relevant reference group.

In this study, I could provide no specific evidence that the women in the social identity conditions were operating on the basis of automatic goal activation and the women in the personal identity condition were operating on the basis of their conscious intentions, other than the disparity in physical activity between the social and personal identity conditions, but some evidence may be found in my subsequent qualitative research. Given that the auto-motive explanation is the most likely, this study has

implications for future research. Gollwitzer and Oettingen (2000) claimed that mental associations, the basis for automatic goal activation, could only be created naturally through “frequent and consistent situation and response pairings” (p. 238), and that the only strategic method for building automatic goal activation was to create implementation intentions. The present research suggests other ways in which automatic goal activation can be strategically manipulated to enhance goal achievement. The efficacy of the association technique, based on the social identity approach, I used in this research to activate goals automatically and facilitate goal attainment, should be further investigated. Specifically, more controlled experimental research is needed which uses the same techniques used in this study. This means that a goal should be paired with a valued social identity by providing normative support for the behaviour from members of the relevant reference group. Behavioural outcomes should then be compared with participants who do not receive the association technique and these outcomes should be assessed for automatic goal activation, by measuring such things as how quickly the goal was carried out (immediacy), how aware the participants were of carrying out the goal (unconsciousness), and also whether the goal remained active after disruption. If this association technique can be shown to be a reliable method of automatic goal activation, this technique can be used for other health intervention research which seeks to encourage the adoption and maintenance of difficult, but necessary, health behaviours.

Final Comments

The SI intervention conditions were clearly more successful in encouraging the adoption and maintenance of regular and sufficient physical activity than the PI intervention condition. This indicates that targeting women’s social identities is more

effective than targeting their personal identities, but not through the mechanism that I expected. Despite the finding that norms influenced intention in the SI conditions, providing support for the social identity approach to the TPB, intentions did not predict behaviour. It is likely that the social identity manipulation, which created a physical activity norm in a valued social identity, increased the physical activity of the women in the SI condition in a manner than bypassed conscious intentions. In particular, in the SI intervention conditions, it is likely that a mental association was set up that allowed physical activity goals to be triggered automatically through environmental cues post-intervention. It might also be the case that the women in the SI conditions developed more realistic intentions, which enabled them to exert more effort in their goal acquisition, when they were relying on their conscious intentions, resulting in them having more success in achieving their goal to become regular exercisers. For the women in the PI condition, mental associations were not set up in the intervention and, thus, they did not receive the benefits of automatic goal activation. The only option for goal acquisition for these women was through the force of their own intentions. This is a path beset by difficult self-regulation challenges and research shows that the majority of people are not able to successfully convert their intentions into behaviour. These women may have also maintained unrealistic ideas about their own level of motivation to achieve their goals and this may have resulted in them exerting less effort to achieve them or could have simply weakened the intention – behaviour relationship. The difficult self regulation challenges the women in the PI condition faced, without the opportunity to bypass them through automatic goal activation, coupled with unrealistic intentions resulted in these women making initial attempts to engage in a sufficient level of physical activity, but ultimately giving up. Future research should focus on

investigating the efficacy of the association technique used in the SI conditions to create automatic goal activation. If shown to be a reliable method of automatic goal activation, this technique could then be used to assist people achieve difficult health goals.

CHAPTER 5: QUALITATIVE REVIEW OF THE 3-MONTH PHYSICAL
ACTIVITY STUDY: INVESTIGATING THE INTENTION – BEHAVIOUR
RELATIONSHIP

Introduction

This final study in the thesis is a qualitative review of the 3-month physical activity intervention study reported in Study 2. Since the intervention study did not provide clear support for the TPB, in Study 2, I employed several other theoretical explanations to account for the findings. The finding that was at most odds with the TPB was the lack of an intention – behaviour relationship. Although I was able to account for the patterns I observed, more evidence is needed to substantiate many of the arguments I made. In conducting a qualitative study based on focus group data from the one PI and two SI conditions, I aim to provide evidence for some of the theoretical explanations I made when discussing the results of my intervention study. I now explain the ways in which the qualitative data may provide support for some of the theoretical explanations I employed to describe the lack of an intention – behaviour relationship in my 3-month physical activity intervention.

Evidence for the TPB-Based Explanation

It is common to find a substantial gap between intention and behaviour in the TPB research. Indeed, Sheeran (2002) found that 70% of the variance in behaviour is typically unaccounted for by intention in TPB studies. Consistent with the TPB, Sheeran maintained that intention is a valid predictor of behaviour, but that a gap between intention and behaviour occurs because the majority of people could be described as inclined abstainers, those with good intentions who, for one reason or another, do not act on their intentions. One explanation for the lack of the intention –

behaviour relationship observed in my intervention study is, therefore, that there was simply a larger than normal gap between intentions and behaviour because most of the women in the study were inclined abstainers.

As I outlined in Study 2, this explanation may only be appropriate for the women in the PI condition of the intervention at the 3-month follow-up measure, rather than the women in the SI conditions. This is because the physical activity of the women in the PI condition dropped to insufficient levels at the 3-month follow-up whilst their intentions stayed high. Consistent with Sheeran's (2002) argument, it is likely that these women were inclined abstainers, people with good intentions who had difficulty translating their intentions into behaviour, and this was the reason for the intention – behaviour gap. The women in the SI conditions could not, however, be described as inclined abstainers because their intentions dropped despite maintaining high levels of physical activity. The pattern of the intention – behaviour results in these women, a significant reduction in intention despite maintained elevated physical activity levels is more similar to that of “disinclined actors” (Sheeran, 2002, p. 6), people who engage in a particular behaviour despite have little intention to do so. Different explanations are, thus, needed for the intention –behaviour results in the SI conditions.

The logic of the inclined abstainer is one probable explanation for the intention – behaviour gap in the PI condition, but the reason these women were not able to translate their intentions into action is unclear. Gollwitzer (1996) indicated that effective goal pursuit involves overcoming many self regulation challenges, such as dealing with competing goal pursuits, overcoming distractions and temptations, and the ability to rise above other day-to-day difficulties like tiredness, emotional turbulence,

and self-doubts. Thus, one reason for the inclined abstinence of the women in the PI condition is that they experienced great difficulty overcoming the self-regulation challenges involved in converting intentions into behaviour. If this is the case, I would expect to find evidence in this qualitative study that the women in the PI condition struggled greatly with the self-regulation challenges involved in converting their intentions into action.

Evidence for Differentiating between Realistic and Fantastic Intentions

Another explanation for the intention – behaviour results capable of explaining the pattern in both the PI and SI conditions is provided by drawing a comparison between the intention – behaviour findings in Study 2 and the research on the effect of competence expectations on behaviour (Oettingen & Mayer, 2002). In Oettingen and Mayer's research, they found that having unrealistically positive or fantastic expectations of competence led to poorer actual performance than having realistic expectations of competence because those entertaining positive fantasies engaged in less effort than those who were more realistic.

In Study 2, I drew a parallel between the intention results and Oettingen and Mayer's (2002) study on competence expectations. I proposed that intentions may function in a similar way to competence expectations and as such, could be either realistic or fantastic, and that only realistic intentions should lead to enhanced performance. I proposed that the significant drop in intentions in the SI conditions may have indicated that the women in these conditions were becoming more realistic whereas the unchanged highly positive intentions of the women in the PI condition may have been an indication that they were maintaining unrealistic or fantastic intentions. Based on this reasoning, it is not surprising that the women in the SI conditions were

able to sustain a sufficient level of physical activity but the women in the PI condition could not. Following on from this, I further proposed, in line with Oettingen and Mayer's research that the reason for the lack of a direct intention – behaviour relationship may have been because effort mediated the relationship. I hypothesised, therefore, that those with realistic intentions would be aware of the challenges involved in goal acquisition and exert more effort in achieving the goal than those with unrealistic intentions, who may not have anticipated or been aware of, the difficulties they would face, thus, exerted less effort. Some support for this argument can be found in Bagozzi and Yi (1989) intention – behaviour research. They found that intentions were less able to predict behaviour when they were poorly formed. Similar to Oettingen and Mayer's rationale, they attributed this to the inability those with ill-formed intentions have to detect the difficulties associated with goal acquisition. They did not, however, suggest that effort mediated the relationship between intention and behaviour, rather that intention formation, per se, moderated the intention – behaviour relationship, such that poorly formed intentions weakened the relationship, whereas well formed intentions strengthened the relationship.

More research is needed to understand whether intentions can be differentiated on the basis of being realistic or fantastic, well or poorly formed, and whether effort is involved in mediating the relationship between intention and behaviour, or whether intention formation moderates the intention – behaviour relationship. If realistic or fantastic intentions have a differential effect on behaviour that is mediated by effort, I would expect to observe a different pattern of responses in the PI and SI conditions. In particular, I would expect the women in the PI condition to be unrealistically positive about their level of intention to be physically active but show little effort in reaching

their physical activity goals. On the other hand, I would expect that the women in the SI condition to be less positive about their intentions to be physically active, but show more realism in their understanding of achieving a physical activity goal.

Consequently, I would expect these women to show evidence of exerting a great deal of effort in reaching their goal to be more physically active.

Evidence for the Auto-Motive-Based Explanation

Although arguing that intentions should be differentiated as either realistic or unrealistic, and suggesting that the effects of these realistic or unrealistic intentions are mediated by effort, explains the intention – behaviour results I found, the argument is tentative. It is possible that some evidence of this argument may be found in the qualitative data, but it is also important to consider other possibilities, particularly for the SI condition. There is another strong theoretical argument for the unusual effects found in the SI conditions, high levels of physical activity despite significantly reduced intentions, which can be further investigated in this qualitative study.

According to the Bargh (1990), goal striving can occur without the need for conscious intentions, that is, goal striving can be unconscious or automatic. If an association between a goal and a context is made mentally and exists in memory for an extended period of time, Bargh theorised that contextual cues will activate the goal automatically, leading to goal striving independent of conscious intentions. It is possible that the SI intervention conditions, which associated the goal of exercise with the context of a woman's own social identity, created the mental association needed for automatic goal activation. Contextual cues to the women's social identity post-intervention would, thus, be expected to have activated the goal to exercise automatically, and the women may have engaged in the behaviour without much

thought. According to the auto-motive argument, intentions were largely irrelevant in the goal pursuit of the women in the SI conditions because they were pursuing their goals unconsciously. This interpretation, thus, explains why intentions did not predict behaviour in the SI conditions, and the finding that the intentions of these women became less positive as the study progressed, while their physical activity remained at a high level, is not problematic.

The research on automatic goal activation has only documented one method for strategically setting up mental associations that underpin automatic goal activation. In this method, an intentional link between context and goal is mentally created through an if/then statement, such as, if I see my dog, then I will take him for a walk (see Gollwitzer & Bargh, 2005, for a review). Mental associations, such as the one I created in the SI intervention conditions, are generally only expected to be the basis for automatic goal activation if they have been attained through frequent and consistent situation – response pairings (Gollwitzer & Oettingen, 2000). Given the compelling nature of the auto-motive argument, and the consistency with the findings in the SI condition, it is possible that my research provides evidence of another way to strategically create the impetus for automatic goal activation and, as such, I expect to find evidence in this qualitative study to support this theoretical explanation. In particular, in the SI conditions, I expect to find that there was a strong mental association between the particular social identity, either strong independent woman or spiritual caring woman, and the goal to exercise regularly as well as evidence for automatic goal activation.

The features of automatic goal activation include a heightened awareness to the cues to action and immediate efficient action without the need for conscious intent

(Gollwitzer & Bargh, 2005). Automatic goal activation also has the characteristic of remaining active until the goal has been acquired or there is an effortful disengagement from the goal (Bargh et al., 2001). If the women in the SI condition were under the influence of automatic goal activation, I expect to see evidence that the women were attuned to the cues to exercise. This is likely to be manifested in awareness of the link between exercise and aspects of the women's sense of self. I also expect to see evidence that when physical activity was carried out, it was executed relatively effortlessly. This means that I expect to find that the women in the SI conditions did not struggle greatly with self regulation challenges such as difficulties prioritising goals, overcoming temptations and distractions, and conquering their tiredness, emotional turmoil, and self-doubts. In those women who had not yet fulfilled their goal to exercise regularly, I do not expect the women in the SI condition to show evidence of having given up or effortlessly dropping their goal to exercise, rather, I expect to see the goal to exercise remaining active, or alternatively, evidence of an effortful struggle to disengage themselves from the goal to exercise.

Since the women in the PI condition did not receive the mental association technique, I do not expect there to be a strong mental association between their identity and the goal to exercise regularly, or any evidence of automatic goal activation. Thus, compared to the women in the SI conditions, I expect that the women in the PI conditions will not display a significantly heightened sense of awareness of the relevance of exercise to themselves. I further expect that the goal to exercise for these women will be seen as effortful and difficult and there will be no evidence that they were able to bypass the self-regulation challenges involved in converting intentions into behaviour. I do not expect to see the goal to exercise remaining very active for those

women who did not reach their goal to exercise regularly rather I expect to see an effortless disengagement from the goal.

Summary

It is likely that different explanations are needed to account for the intention – behaviour gap in the PI and SI conditions. The most likely explanation for the gap in the PI condition is through employing the logic of the inclined abstainer. The qualitative data should provide some insight into the reason these women abstained from the goal of becoming a regular exerciser despite having good intentions. It could be that the women became aware of the difficulties in achieving the goal to become a regular exerciser through their own initial struggle to acquire the goal and were ultimately overcome by the difficulties in achieving the goal. Evidence along these lines would provide support for the argument that converting intentions into action is a difficult process, involving self-regulation mastery that the women in the PI condition were not able to achieve. Alternatively, I may find evidence that the inclinations of the women in the PI condition were highly unrealistic, and similar to Oettingen and Mayer's (2002) research on the impact of fantasy on behaviour and Bagozzi and Yi's (1989) research, these women may never have been fully aware of the difficulties they would face in achieving the goal to become a regular exerciser, which may have lead to them exerting less effort, but ultimately resulting in a poor intention – behaviour relationship.

This same explanation cannot be utilized, however, for the women in the SI conditions, because these women maintained high levels of physical activity despite significantly lowered intentions. They were, thus, more similar to Sheeran's (2002) disinclined actors. This unique intention – behaviour relationship may have been due

to either an effect similar to Oettingen and Mayer's (2002) finding that more realistic expectations enhanced behaviour through effort, or due to automatic goal activation, or both. If I find evidence that the women in the SI conditions became more realistic about their intentions and exerted more effort in achieving their goals, then I will be able to provide some support for drawing a parallel between Oettingen and Mayer's research on competence expectations and the intention research in the present thesis. Alternatively, or in addition to this process, these women also may have received the benefits of automatic goal activation due to the manipulations in their intervention condition, which made them more attuned to cues to action and enabled them to execute action in an immediate, efficient, and unconscious manner. Evidence of heightened awareness, less difficulty in achieving exercise goals, and persistent goal activation or effortful goal disengagement in the face of unmet goals in this condition would provide some evidence to support Bargh's (1990) auto-motive theory.

Method

Participants

The participants for this study were 38 women aged 25-45 who had recently participated in a 3-month physical activity study. Before being recruited to the 3-month physical activity study, I had classified all women as sedentary (participated in less than 150 minutes of physical activity over a 7-day period). In the 3-month physical activity study, women were assigned to one of three conditions, two SI conditions or a PI condition. In this study, some of the women participated in post-study focus groups assembled by study condition. There were 12 women (6 in a face to face focus group, and 3 in each of two phone focus groups) from the first SI condition, the strong independent woman condition. This condition was for women who identified as strong

independent women. In the 3-month physical activity study, their identity as strong independent women was made salient and they received normative support for physical activity from other strong independent women (see Study 2 for more details). There were also 12 women (6 in a face to face focus group, and 3 in each of two phone focus groups) from the second SI condition, the spiritual caring woman condition. This condition was for women who identified as spiritual caring women. In the physical activity study, their identity as spiritual caring women was made salient and they received normative support for physical activity from other spiritual caring women (see Study 2 for more details). There were 14 women (8 in a face to face focus group, 4 in the first phone focus group and 2 in the second phone focus group) participating in the post-study focus groups from the PI condition. In this condition in the physical activity study, women received standard health advice about physical activity and why they, as individuals, should engage in more activity. In this condition, the focus was on the women's personal identities, rather than social identities.

Design

I conducted nine focus groups, three with women from the strong independent woman condition, three with women from the spiritual caring woman condition, and three with women from the PI condition. For each condition, I organised a face-to-face focus group, comprising six to eight participants, and two phone focus groups, with between two and four participants.

Measures

I based the structure of the focus group interviews on the focus group theory of Kreuger (1994). According to Kreuger, focus groups should follow a particular question structure. The first question should be an open introductory question,

followed by two or three transition questions, which are designed to get discussion started. The final questions should be the key questions of the focus group. In this way, the discussion is similar to a funnel, getting more and more specific and focused as it progresses. I followed this general question structure.

Introductory question. I started all the focus groups with an open question, which all participants answered in a round robin fashion. In this open question, I first explained my own physical activity background and then asked each of the women to describe their physical activity history.

Transition questions. I asked two transition questions about what the women regarded as the main motivators and de-motivators of their participation in physical activity over the 3-month physical activity study.

Key questions. I had two pairs of key questions. In the first pair of key questions, I aimed to elicit women's attitudes to, and thoughts about, physical activity, after participating in the 3-month physical activity study. One of these questions was the same for all conditions, and one was tailored to the specific condition. The question that was the same for all conditions was:

What are your thoughts and attitudes towards physical activity now after participating in the 3-month physical activity study?

For the second question, one version was specifically for the women who participated in the SI conditions, and another version was for the women who participated in the PI condition. I asked the women in the two SI conditions:

Do you think your physical activity participation was influenced at all by your identity as a strong independent woman/ spiritual caring woman?

I asked the women in the PI condition:

Do you think your physical activity participation was influenced at all by your personal/individual sense of identity?

In the second pair of key questions, I wanted to obtain an evaluation of the 3-month physical activity study. I asked the same pair of questions in all focus groups across all conditions. They were:

What did you find helpful about participating in the 3-month physical activity study?

What suggestions do you have for ways to improve the 3-month physical activity study?

Procedure

I sent an invitation in the mail to all the women who had participated in my 3-month physical activity study ($n=64$) to participate in an end of study focus group designed to assist them to reflect on, and evaluate, the 3-month physical activity study in which they had just participated. To each of the participants in the strong independent woman condition ($n=26$), I sent an invitation inviting them to one of three focus group discussions. I sent a further 17 invitations to the women in the spiritual caring woman condition to participate in a different set of focus groups held on different dates. I then sent 21 invitations to the women in the PI condition, with different dates and times of the focus groups. The women were informed on the invitation of the time and place for the face to face focus groups and contacted me to book into these. Those who wanted to participate in the phone focus groups were instructed on the invitation to contact me so that I could inform them of the date and time of the telephone call and send them out a confirmation letter and a consent form with a reply paid envelope for the phone focus group.

At the beginning of the face-to-face focus groups, I welcomed women and put some time aside for drinks and light refreshments. I then seated the women in a circle

and gave them a nametag. I explained the purpose and procedure of the focus group and the ethical issues, and asked the women if they had any questions. After answering any questions the women had, the women signed a consent form to participate in the focus group discussion. Their consent forms were witnessed by the person sitting next to them, and then handed to me. I then commenced the focus group using my question protocol. I planned between 40-50 minutes for the face to face focus groups. I taped the conversations and then transcribed the audiotapes.

I used a teleconference service provider to conduct the phone focus groups. In this service, the operator of the teleconference provider rang each of the participants listed for participation in the phone focus group at the designated time and date and placed them on hold while other participants were contacted. When all participants were contacted, I was called and all participants were taken off hold and connected into the one telephone line. The operator informed the participants that the conversation was being taped, and to press # if they experienced any difficulties. As the focus group coordinator, I checked with participants that they had received their confirmation letter and consent form, and that participants had signed and returned the consent form via reply paid envelope. I explained the purpose and procedure of the focus group and addressed the ethical issues. I answered any questions the women had and then commenced the focus group following my question protocol. I allowed between 40-50 minutes for the phone focus groups. At the end of the discussion, I thanked the participants and instructed them to hang up the phone. The discussions were taped by the teleconference service provider and the tape was sent to me via express post the following day. Once I had received the audiotapes, I transcribed them.

Analysis

I analysed nine verbatim transcripts, three from each condition of the 3-month physical activity study. Focus group transcriptions 1-3 involved women who participated in the strong independent woman condition of the physical activity study, focus group transcriptions 4-6 involved women who participated in the PI condition of the physical activity study, and focus group transcriptions 7-9 involved women who participated in the spiritual caring woman condition of the physical activity study.

I used inductive content analysis to analyse the transcripts. In this analysis, I sorted the comments elicited from the key questions from women in each condition into dimensions based loosely on the key focus group questions. The statements made by the women constituted the first order themes, I then grouped these into second order themes. I was specifically interested in comparing the discussions, on the two sets of key questions, of the women in the two SI conditions with the discussions of the women in the PI condition.

In total, I conducted two inductive content analyses, each one centered on each pair of key questions. The first inductive content analysis was based on the women's thoughts and attitudes to physical activity after participating in the 3-month physical activity study. The second was based on the women's evaluation of the 3-month physical activity study. Having described the entire set of data for each set of key questions across the two SI and one PI condition, I then split the analysis by each condition. The aim of this analysis was to describe the results and then compare and contrast the content of the focus group discussions for the key questions in the three different conditions.

Results

I started the discussion with the round robin question and then used the transition questions about the general motivators and de-motivators of physical activity participation to advance the focus groups to the key questions. The first set of key questions was about the women's thoughts about physical activity after participating in the 3-month physical activity study and the second set of key questions was about their evaluation of the study. I now describe the inductive content analysis for each set of key questions, divided by the condition.

Women's Thoughts about Physical Activity

I grouped the discussion surrounding the two key questions regarding women's thoughts about physical activity after participating in the 3-month physical activity study and how their social or personal identities influenced their participation, into one general dimension, women's thoughts about physical activity. For all conditions, I found three second order themes, self-integration, self-questioning, and self-determination.

The self-integration theme refers to the sense women had after participating in the 3-month physical activity study, of the centrality of physical activity in their lives, their new awareness of their thinking about physical activity and the discovery of where physical activity fitted in their lives and self-concept.

The self-questioning theme relates to the sense women had of being psychologically challenged by being involved in the 3-month physical activity study. In this theme, women discussed issues to do with feelings of guilt about not exercising, feeling negative about themselves when they didn't exercise, and some questioned the concepts they had previously had of themselves.

The self-determination theme classifies the discussion women had about their more positive determined attitude about being able to maintain physical activity in their lives. Discussion under this theme centered on the women's experience of being able to take control, become more positive about taking control and about beginning to see change in their physical activity habits as possible and necessary.

For each second-order theme, there were three to four first order themes. Although women in all conditions discussed content that could be classified into each of the second order themes of self-integration, self-questioning, and self-determination, not every condition contained content in all of the first order themes. In the following sections, I describe the content in the first order themes for each condition separately. I then compare the three conditions, explaining the similarities and differences.

The Thoughts about Physical Activity of Women in the Strong Independent Woman Condition

For the women in the strong independent woman condition, most discussion around their thoughts about physical activity was concentrated on themes of self-questioning and self-determination. There was a small amount of discussion around the topic of self-integration. The inductive content analysis for women's thoughts about physical activity in the strong independent woman condition is displayed in Table 5.1.

Table 5.1

Hierarchical Development of the Thoughts about Physical Activity for the Women in the Strong Independent Woman Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Awareness of own thinking/ attitudes to exercise (3) Changing thoughts about exercise (0) Seeing exercise as something important to self (0) Making changes to fit in exercise (0)	Self-Integration (3)	Thoughts about Physical Activity (15)
Feelings of guilt (1) Self-reprimanding and disappointment with self (0) Questioning identity (4)	Self-Questioning (5)	
Taking control (7) Positive about being able to take control in the future (0) Seeing change as possible and necessary (1)	Self-Determination (8)	

Self-integration. There was limited discussion of this theme by the women in the strong independent woman condition and only one of the first order themes listed, an awareness of how physical activity related to women's sense of self, was touched upon. In this theme, one woman commented,

I think I have integrated it more into myself, that awareness that it has to come from the self somewhere. (Focus Group 2)

I think I still associate it as being unpleasant and too hard... (Focus Group 2)

Self-questioning. The discussion of the women in the strong independent woman condition in the theme of self-questioning, could only be classified into two of the three first order themes. The women in the strong independent woman condition did not engage in discussion to do with feeling disappointed with themselves for not participating in enough activity, but they did express guilt and engaged in a great deal of self-questioning. In terms of feelings of guilt, one woman said,

I am trying to do stuff now, but I am also feeling the guilt about wanting to do something. (Focus Group 1).

The majority of the discussion under this first order theme was about women questioning their self-concept,

I feel like I have, you know, failed in my attempts to exercise more. I've been unable to control my life enough to fit it in, so I feel that maybe I am not as strong as I thought I was. (Focus Group 1)

I think it has really caused me to question my view of myself. It has been a bit confronting. (Focus Group 2)

Yes I feel like I am strong independent woman in some spheres of my life, but I really feel like I am kidding myself in the exercise stakes. (Focus Group 2)

I don't really like being reminded of describing myself as a strong independent woman at this stage, because I feel like, I guess, because if I was that, I should be able to maintain regular exercise, and I didn't really. Obviously, I am not strong enough! (Focus Group 3)

Self-determination. In the strong independent woman condition, women mostly discussed their perceptions of their ability to take control,

With a bit of extra prodding, or a bit of extra motivation, it is not impossible to do it, even though you've got kids. (Focus Group 1)

The one thing I've gained is that you do really have time for exercise. (Focus Group 1)

I just thought, if I put my mind to this, I'm not sure how strong independent woman figured in there, I suppose, except that I thought I could do it. I should be able to achieve what I had set out. (Focus Group 3).

The thoughts of the women in the strong independent woman condition about physical activity tended to shift between having an enhanced sense of control over being able to participate in activity and achieve what they had set out to do, and having serious doubts about their own identities as strong and independent women, when they were not able to achieve what they had set out to do.. Those that were able to exercise felt empowered and a sense of validation in their identity as strong independent women, and those that did not exercise as much as they had intended, questioned their identity as strong independent women.

The Thoughts about Physical Activity for Women in the Spiritual Caring Woman Condition

For the women in the spiritual caring woman condition, there was a great deal of discussion around the themes of self-integration and self-determination. In contrast, there was not as much discussion surrounding the self-questioning theme. The inductive content analysis of the thoughts about physical activity for the women in the spiritual caring woman condition is displayed in Table 5.2.

Table 5.2

Hierarchical Development of the Thoughts about Physical Activity for the Women in the Spiritual Caring Woman Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Awareness of own thinking/ attitudes to exercise (4) Changing thoughts about exercise (6) Seeing exercise as something important to self (6) Making changes to fit in exercise (2)	Self-Integration (18)	Thoughts about Physical Activity (33)
Feelings of guilt (1) Self-reprimanding and disappointment with self (4) Questioning identity (0)	Self-Questioning (5)	
Taking control (3) Positive about being able to take control in the future (5) Seeing change as possible and necessary (2)	Self-Determination (10)	

Self-integration. The discussion by the women in the spiritual caring woman condition under the theme of self-integration was far ranging and covered all the first order themes listed. There was evidence of heightened awareness and understanding of their thinking about physical activity,

Exercise for me has always been a very hard activity and it is actually in this, having to think about it in this study, that I've actually understood that. (Focus Group 7)

There was some recognition of the need to change thinking about, and indeed, a changed way of thinking about exercise,

I thought, well, I've got to change my thinking, so now I'm trying to do things that I actually find enjoyable, rather than doing it just for the purpose of exercise. (Focus Group 7)

Some women discussed exercise as being something that could legitimately be linked to their psychological sense of self after being involved in the study,

I suppose I had quite fixed beliefs about what exercise was and who was entitled to do it really. Me being unfit and uninitiated, I didn't feel that it was something accessible, I think, whereas now, it is more psychologically accessible. (Focus Group 8)

There was also a recognition that exercise was important enough to their sense of self that they needed to make time to be more active,

I find when I don't allow myself "me" time, I get sick. (Focus Group 9)

It made me reconsider and cut back on some things, less subjects, so I can fit a bit more of my life back into my day. (Focus Group 1)

Self-questioning. There was some discussion amongst the women in the spiritual caring woman condition relating to the self-questioning theme, such as feeling guilt at not doing enough exercise, and feeling disappointed with the self for not doing more exercise, but there was no evidence of questioning their identities. In terms of feeling guilt, one woman reported,

I am feeling more guilty because I haven't done it [exercise] and I am aware of the fact that I should be doing it. (Focus Group 9)

There was a lot of self-annoyance and disappointment expressed when the women felt they didn't do enough exercise,

I trash my body, I am terrible to it, I just keep expecting it to go on and on. (Focus Group 8)

I've been missing the aerobics and I'm really disappointed about that, and I am conscious of having to do something all the time. (Focus Group 9)

Self-determination. Most of the discussion around the theme of self-determination was focused on feeling more positive about being able to take control over their exercise habits in the future and making realistic plans to do so,

I'm going to get myself a bike and ride to work, I'm going to try and do that.

(Focus Group 7)

My plan now is that I am always going to fall back into bad habits, but if I can get back in there, you know I can do it. (Focus Group 9)

I know it is going to happen at some point, I know it is going to happen. (Focus Group 9)

There were some women who had already experienced a sense of control over their exercise habits,

It has made me think I can fit it in, if I just show a bit of determination and control. (Focus Group 9)

Whereas before it was hard, but now, I've got to do it, so [I think] how can I do it. (Focus Group 7)

I was getting up at 6 every morning and doing an hour's walk, and it was fantastic while I was doing it. It was just the frame of mind, and it was like I was brainwashed. (Focus group 9)

Some women, who had not yet sufficiently increased their exercise, acknowledged that change was possible and necessary,

As my life slows down a bit, and it is starting to get to that point now, I will have more time to reflect on it and deal with my own blocks to exercise. (Focus Group 8)

The women in the spiritual caring woman condition discussed their thoughts about physical activity in a very positive self-reflective manner. In this condition, the women made strong attempts to understand where physical activity fitted in their lives and with their own sense of self, and were open to changing their thoughts about exercise. The women in this condition did express some self-disappointment, when they did not engage in sufficient physical activity, and some guilt, but they seemed to maintain a positive and realistic attitude about their ability to exercise in the future and they continued to see change in this area as both possible and necessary.

The Thoughts about Physical Activity for Women in the Personal Identity Condition

The women in the PI condition discussed topics that could be classified under each of the second order themes, but there was not a large amount of discussion in any of them. The inductive content analysis of the thoughts about physical activity for the women in the PI condition is displayed in Table 5.3.

Table 5.3

Hierarchical Development Thoughts about Physical Activity for the Women in the Personal Identity Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Awareness of own thinking/ attitudes to exercise (2) Changing thoughts about exercise (0) Seeing exercise as something important to self (2) Making changes to fit in exercise (0)	Self-Integration (4)	Thoughts about Physical Activity (8)
Feelings of guilt (1) Self-reprimanding and disappointment with self (1) Questioning identity (0)	Self-Questioning (2)	
Taking control (0) Positive about being able to take control in the future (1) Seeing change as possible and necessary (1)	Self-Determination (2)	

Self-integration. There was some discussion amongst the women in the PI condition about their awareness of their thinking and attitudes to exercise, and a couple of women alluded to exercise as being an important aspect of their self concepts, but there was no other discussion that could be classified into any of the other first order themes. Some of the comments women in the PI condition made about feeling more aware of their attitudes and thoughts about exercise were,

I thought, oh yes, just being involved will be the push I need, and I'll do it and that will be easy. But I was surprised at how difficult it has been. So I guess I am more aware of how difficult it [regular physical activity] is. (Focus Group 5)

I came into this study going, oh complete control you know, it's all up to me, and I suppose ultimately it is, but in a realistic sense, it's not really. (Focus Group 5)

In terms of relating exercise to their self-concept, women noted that,

It makes me feel as though I've actually done something for myself. (Focus Group 6)

With exercise, you have to make it about you, not about everyone else, it's for you, not them. (Focus Group 1)

Self-questioning. In the self-questioning theme, a couple of women in the PI condition discussed feelings of guilt and self-disappointment when they did not engage in sufficient physical activity, but there was no evidence of questioning their identities. In the first order theme of guilt, one woman commented,

I found I didn't like seeing how much time [on the exercise tracker] that I actually did. (Focus Group 4)

In the first order theme of self-disappointment, another woman commented,

I'm feeling really pissed-off at myself because I haven't done anything for two weeks. Yeh, um, it's very annoying. (Focus Group 5)

Self-determination. The discussion around the theme of feeling more determined to exercise as a result of participating in the 3-month physical activity study for the women in the PI condition, centered around the first order themes of being positive about changing their behavior, and trying to see change as necessary. In terms of feeling positive about changing behaviour, one woman expressed positive views about her capacity to fit exercise into her life,

I must do it, and you have just got to find a part of your life. (Focus Group 6)

Also under the general theme of self-determination, one woman discussed the necessity she felt to change,

I'm really trying to absorb myself with information and change the thought of, it's nice to exercise, to, actually, I must! (Focus Group 4)

The women in the PI condition discussed topics that related to each of the second order themes of self-integration, self questioning, and self-determination, but the discussion was not extensive in any of these themes. There was evidence in some women of a heightened sense of awareness of how hard it was to maintain regular exercise and recognition of exercise being something for them personally and not others, indicating some deeper thinking about the topic. There were also some data suggesting that when the women in this condition did not engage in sufficient exercise, they felt uncomfortable, and when they did, they felt more in control.

Comparison of the Thoughts about Physical Activity between the Three Conditions

In their discussion about their thoughts about physical activity, the women in each condition discussed content that could be categorised under each of the second-

order themes of self-integration, self-questioning, and self-determination. In terms of the overall amount of discussion that took place in this general dimension, the women in the SI conditions had more say than the women in the PI condition, but the SI conditions were conspicuous in other ways. The spiritual caring woman condition stood out because the discussion around the second order theme of self-integration was more extensive and diverse than the discussion around this theme for the other conditions. The strong independent woman condition was noticeable because it was the only condition in which the women questioned their identity when they did not perceive that they had done enough physical activity. The women in the other two conditions felt guilt and self-disappointment, but they did not question their own sense of self. The two SI conditions were also set apart from the PI condition by the participants' discussion around the theme of self-determination, both in the amount and quality of the discussion that took place. I now describe each of these differences.

Self-integration differences. The women in the spiritual caring woman condition discussed at great length how physical activity had been integrated with their sense of self. In their discussion, they covered all the first order themes listed for this general theme. They talked at a self-reflective level about their personal struggle with exercise and how their thoughts and attitudes were changing at a deep level. One woman, for example, talked of exercise being more psychologically accessible to her after participating in the study, and other women demonstrated that they had actually made changes in their lifestyles to accommodate exercise. The discussion of the women in the strong independent woman and PI conditions, on the other hand, was relatively limited and only covered one or two of the first order themes.

Self-questioning differences. Women from all conditions engaged in discussion under the theme of self-questioning, such as expressing guilt and self-disappointment when they did not exercise. Only the women in the strong independent woman condition went one step further and questioned their sense of self. When the women in the strong independent woman condition did not engage in sufficient physical activity, they spoke about questioning their view of themselves, they believed as a strong independent woman they were kidding themselves, and they didn't like to be reminded of their identity as strong independent women. The women in the PI condition simply felt annoyed with themselves and didn't like to count up the small amount of exercise they had done over the week. Although not going as far as questioning their identities, the women in the spiritual caring woman condition expressed more guilt and self-disappointment than the women in the PI condition, speaking more openly about "feeling guilty" and also more animatedly about the subject. One woman expressed disappointment with herself because of the way that she constantly "trashed" her body. Although the women in all conditions seemed to feel some level of discomfort when they did not exercise enough, the women in the strong independent woman condition seemed to feel the most discomfort. The women in the PI condition appeared to feel the least amount of discomfort of all the conditions.

Self-determination differences. There was more discussion around the topic of self-determination amongst the women in both the SI conditions, compared to the women in the PI condition. The content of their discussion was also detectably different. Only the women in the SI conditions spoke about their experience of actually gaining control over their exercise behaviour, although the women in the strong independent woman condition made more control-based comments. The women in

both SI conditions spoke about their sense of control in a specific way, indicating that they did actually have a positive experience of gaining control over their exercise habits. Women in both SI conditions suggested that they realized they could do it if they showed some determination, that it was not impossible, even with kids, that they did really have time for exercise. The women in the spiritual caring woman condition also spoke about not yet having gained control over their exercise habits, as did one woman in the PI condition. Women in the spiritual caring woman expressed very positive views about being able to gain control in the future. In addition, whereas one woman in the PI condition spoke generally about having to find time in her life for exercise, the women in the spiritual caring woman condition were making solid plans, like getting a bike to ride to work and planning for setbacks. In terms of self-determination, it appeared that only the women who had achieved their goal to exercise more reported their thoughts in the strong independent woman condition. Many women in the spiritual caring woman condition also talked about achieving their goal, but those who didn't, seemed to be still actively striving to reach the goal in a realistic way, more so than the women in the PI condition.

Evaluation of the 3-Month Physical Activity Study

I asked two evaluation-based questions of the women participating in the focus groups. I asked the women how helpful they had found participating in the 3-month physical activity study, and what suggestions they could make for improvements. Each question created a general dimension and there were three second-order themes under each. Receiving social support, being accountable, and being provided with information were the three areas that the women found helpful in the 3-month physical activity study. Being provided with more social support, having to be more

accountable, and adequate addressing of the barriers women had to exercise were the three suggestions women had for improvements to the study. In the following sections I describe and critique how the women in each different condition discussed the two evaluative dimensions, and then compare the similarities and differences.

The Evaluation of the 3-Month Physical Activity Study from the Women in the Strong Independent Woman Condition

The women in the strong independent woman condition discussed the social support and information provided by the study as being helpful. They thought that more social support would have been beneficial, as would an increased level of accountability and more adequate addressing of the barriers they had to physical activity. The inductive content analysis of the women in the strong independent woman condition's evaluation of the 3-month physical activity study is displayed in Table 5.4.

Helpful Aspects of the Study for Women in the Strong Independent Woman Condition. The most helpful aspect of participating in the 3-month physical activity study for the women in the strong independent woman condition was the social support they received. In particular, simply knowing that other women who were similar to them struggled with exercise, was valuable,

The support and motivation of each other, we're all trying to reach the same goals. (Focus Group 3)

I just though, oh this is an issue at much the same level for a lot of people.

(Focus Group 2)

Women in this condition also felt that having to track their exercise habits and report on them in follow-up surveys, was helpful because it kept exercise at the forefront of their minds,

I think definitely having a sheet of paper that you are writing on every day, or not, um, does give you an added level of awareness. (Focus Group 2)

Table 5.4

Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Strong Independent Woman Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Hearing other women's situations/ struggles (solidarity) (4)	Social Support (4)	Helpful Aspects of the Study (6)
Credibility and validity (0) Tracking/ recording exercise (3)	Accountability (3)	
Learning facts about exercise (1) Hearing alternative points of view about exercise (1) Reinforcing knowledge (0) Stimulated thought (0) Freebies (0)	Information (2)	
More 'get togethers' and interaction with the women on the study (4)	More Social Support (4)	
More tools and information (pedometers/ enforced exercise tracking submission/ examples of exercises to do) (1) Regular prompts/ reminders/ encouragement (2) Deeper workshop discussions (0) Buddy System (0)	More Accountability (3)	
Addressing guilt and known/ unknown psychological barriers to exercise (2)	More Addressing of Barriers (2)	

The information participants received about physical activity as part of the 3-month physical activity study was helpful for the women in the strong independent

woman condition, in two ways. Firstly, it provided some basic facts about physical activity that women may not have been educated about,

I sort of, initially, learnt more about what sort of exercise we should be doing, other than just walking. (Focus Group 1)

Secondly, being involved in the study allowed women to hear the points of view and experience with exercise of other people, who they considered similar to themselves,

The lady [on the video], with the children. I thought if she can do something, then I should be able to do something. (Focus Group 1)

For the women in the strong independent woman condition, the interaction with, and information provided by other, similar women about exercise, was very helpful. Being held accountable and learning some facts about exercise in the study were also somewhat helpful.

Suggestions for Improving the Study from Women in the Strong Independent Woman Condition. The main way that women in the strong independent woman condition thought that the study could have been improved was through providing more social support. The women in this condition would have been happy to simply meet the other women in their condition on a more regular basis to discuss their struggles,

I just expected more interaction, more encouragement. It was something that was difficult for me, so I was expecting some sort of additional motivation in terms of interaction with others. (Focus Group 2)

In addition to more regular meetings, the women in the strong independent woman condition also expressed a need for a more regimented, stricter system of accountability to keep them on track with their exercise goals,

If we had more regular meetings and we had to submit our questionnaires more regularly. (Focus Group 2)

Yeh, I think I expected something a bit more regimented, having to do the questionnaire more regularly would be good. (Focus Group 2)

Additional tools that would help the women track their exercise, like pedometers were also cited as a way to increase accountability,

Finally, one woman thought that the study would have been more effective if the psychological barriers women had to exercise were specifically addressed,

I think it gets back to the guilt that we were talking about. When trying to motivate people to exercise, maybe that's the area that needs to be addressed, rather than convincing people that it's a healthy thing to do, because I am already a true believer on that front. (Focus Group 1)

According to the women in the strong independent woman condition, the study would have been more effective if there was a higher level of social support provided, as well as a stricter regimen that held them accountable to their exercise intentions.

One woman also had the sense that there were deeper psychological reasons for her lack of exercise than simply developing positive attitudes that needed to be addressed.

The Evaluation of the 3-Month Physical Activity Study from the Women in the Spiritual Caring Woman Condition

The women in the spiritual caring woman condition did not consider accountability to be a factor of the 3-month physical activity study that assisted them to exercise more, rather, the women in this condition felt that being provided with information about physical activity from other women like them, was the most beneficial. Social support was also considered to be helpful. Although the women in

the spiritual caring woman condition did not discuss accountability as a helpful aspect of the study, they did suggest that providing more systems of accountability in the study could be beneficial, as well as providing more social support. The inductive content analysis of the women in the spiritual caring woman condition's evaluation of the 3-month physical activity study is displayed in Table 5.5.

Table 5.5

Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Spiritual Caring Woman Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Hearing other women's situations/ struggles (solidarity) (5)	Social Support (5)	Helpful Aspects of the Study (15)
Credibility and validity (0) Tracking/ recording exercise (0)	Accountability (0)	
Learning facts about exercise (0) Hearing alternative points of view about exercise (7) Reinforcing knowledge (1) Stimulated thought (2) Freebies (0)	Information (10)	
More 'get togethers' and interaction with the women on the study (2)	More Social Support (2)	Suggestions for Improving the Study (7)
More tools and information (pedometers/ enforced exercise tracking submission/ examples of exercises to do) (2) Regular prompts/ reminders/ encouragement (2) Deeper workshop discussions (1) Buddy System (0)	More Accountability (5)	
Addressing guilt and known/ unknown psychological barriers to exercise (0)	More Addressing of Barriers (0)	

Helpful Aspects of the Study for Women in the Spiritual Caring Woman

Condition. The most helpful feature of the 3-month physical activity study for the women in the spiritual caring woman condition was being able to obtain information particularly from the women in the videos. The women in this condition referred regularly to the videos that they had been shown at their initial workshop, featuring other spiritual caring women talking about exercise,

They [the women in the video] talked about it like it was a pleasant experience, and I thought, well I've got to change my thinking. (Focus Group 7)

Yeh, and somebody said in the video, I think it was the lady with the weights, that she can give more by exercising. (Focus Group 7)

They [the ladies on the video] were not too concerned about the body shape, it was about general well-being. I found that really encouraging to see on the video. (Focus Group 7)

I found the video recordings you had done, particularly one woman who did a lot of weights, I found that quite motivating. (Focus Group 9)

In addition to being inspired by the information provided by the women in the videos, the women in the spiritual caring woman condition also found that the information provided in the study was helpful because it stimulated thought and reinforced existing knowledge. In terms of stimulating thought, one woman commented,

I guess I feel that you have planted a seed and that is just going to niggle away and niggle away. (Focus Group 8)

In terms of reinforcing knowledge, another woman commented,

But it has been actually very good to make me think that it is actually beneficial and I have to make time for it. (Focus Group 7)

In terms of social support, the women in the spiritual caring woman condition found that being able to talk to, and interact with, other similar women in their condition was motivating,

Just talking now and being able to express ourselves is really helpful, so having that group atmosphere is very helpful. (Focus Group 8)

I was quite motivated you know. There was a kind of energy or something there. I felt a lot more comfortable identifying as a group of spiritual women and I was definitely motivated to do some more exercise. (Focus Group 9)

For the women in the spiritual caring woman condition, the most helpful aspect of being involved in the 3-month physical activity study was being connected with information and support from other women who they considered similar to themselves.

Suggestions for Improving the Study from Women in the Spiritual Caring Woman Condition. The women in the spiritual caring woman condition could think of more reasons why the study was helpful than making suggestions for improving the study. Some women felt that more social support, in the form of getting together with the women in the study outside of the study to exercise together, could have been beneficial,

Maybe one of the things could have been to set up a few women in a group to train together. (Focus Group 9)

The majority of the suggestions for improvement, from the women in this condition, were around creating more accountability, firstly in terms of providing better ways to track and account for their exercise,

I was a bit uncertain as to what was light exercise and what was moderate, and what was expected of our exercise levels. (Focus Group 7)

Secondly, in terms of accountability, some women thought that more structure could have been provided within the study to hold the women more accountable to their intentions,

Maybe more of a plan, more structure. Different activities to do each day that you would like, walk on this day for this long at this pace, and do aerobics on another day, and maybe if it was on the tracker what you should be doing instead of just blank, some ideas. (Focus Group 9)

Finally, one woman believed that a deeper level of discussion at the workshop would have been more beneficial,

I found in our group, it just ended up being a bit of a chin wag.. I don't think we had the right focus. (Focus Group 7)

The women in the spiritual caring woman condition did not have many suggestions for improving the study. The discussion that there was centered on providing more support from the members of the study in exercising outside of the study, and also in providing additional tools and information to make women more accountable regarding their intentions and allow them to exercise more.

Evaluation of the 3-Month Physical Activity Study from the Women in the Personal Identity Condition

The women in the PI condition considered social support, accountability, and information provision, to be helpful aspects of the 3-month physical activity study. In terms of suggestions for improvement, the women in the PI condition mostly expressed a need for more accountability. They also mentioned additional social support and

addressing of psychological barriers as being potentially important. The inductive content analysis of the women in the PI condition's evaluation of the 3-month physical activity study is displayed in Table 5.6.

Table 5.6

Hierarchical Analysis of the Evaluation of the 3-Month Physical Activity Study for the Women in the Personal Identity Condition

1 st Order Themes	2 nd Order Themes	General Dimension
Hearing other women's situations/ struggles (solidarity) (3)	Social Support (3)	Helpful Aspects of the Study (15)
Credibility and validity (4) Tracking/ recording exercise (1)	Accountability (5)	
Learning facts about exercise (2) Hearing alternative points of view about exercise (3) Reinforcing knowledge (1) Stimulated thought (0) Freebies (1)	Information (7)	
More 'get togethers' and interaction with the women on the study (1)	More Social Support (1)	Suggestions for Improving the Study (8)
More tools and information (pedometers/ enforced exercise tracking submission/ examples of exercises to do) (2) Regular prompts/ reminders/ encouragement (2) Deeper workshop discussions (0) Buddy system (2)	More Accountability (6)	
Addressing guilt and known/ unknown psychological barriers to exercise (1)	More Addressing of Barriers (1)	

Helpful Aspects of the Study for Women in the Personal Identity Condition.

There was some discussion amongst the women in the PI condition about the helpfulness of the social support offered in the 3-month physical activity study. What

the women in this condition found particularly helpful was seeing that other women struggled with exercise as well,

I thought it was good to see so many other women who didn't think that they were doing enough exercise. (Focus Group 6)

Accountability was also considered to be a valuable aspect of the study. One woman thought that tracking her exercise levels on the study was motivating, I think having to track it, as you suggested. I put the sheet on the fridge and ticked it off. (Focus Group 5)

In terms of accountability, most women in the PI condition thought that the study was helpful because it legitimised and made necessary the need to exercise regularly,

It gave it credibility, and it's like, oh good, that is the ultimate aim. (Focus Group 4)

It was a commitment. I didn't want to be embarrassed at the end of the study that I had done nothing. (Focus Group 6)

I thought being in your study made it quite valid. I would say to my husband that I was going out for a walk, because, you know, I'm on the study. (Focus Group 6)

Finally, in terms of women's views about the helpful aspects of the 3-month physical activity study, there was a lot of discussion about the value of the information provided. There were varied ideas about why the information presented on the study was helpful. One woman felt that she learnt some facts about exercise, which were beneficial,

In the video, I think the doctor was talking about lowering cholesterol and increasing bone density and lowering high blood pressure, and the three or four points of the benefits of exercise. (Focus Group 6)

Another woman believed that hearing alternative views about the value of exercise at the initial workshop was interesting and valuable,

The thing that stood out was not to focus on the body image/weight loss thing with it. (Focus Group 5)

One woman thought that she didn't learn anything new, but that it reinforced her knowledge,

It's not rocket science, but it's good to hear it again. (Focus Group 6)

Finally, in terms of information, one woman thought that the information pack provided with the free gym passes was the most beneficial for her,

All the lovely free handouts you gave us. (Focus Group 5)

The discussion amongst the women in the PI condition of the helpful aspects of the 3-month physical activity study, was far ranging and covered all three topics. Social support, and in particular, knowing that other women also struggled with exercise was seen as valuable, as was the credibility that being on a scientific study offered, and the many different types of information they received as part of the study.

Suggestions for Improving the Study from the Women in the Personal Identity Condition. The women in the PI condition made suggestions for improving the study that fitted under the category of providing more social support,

Maybe a mid-way meeting would have been good. (Focus Group 6)

There was also one woman who wanted the study to address the psychological barriers women had to exercise,

You weren't interested at all in what barriers there were. (Focus Group 6)

Most of their discussion was centered on the theme of providing more accountability. Women wanted more tools to track their exercise and keep them committed,

Maybe you could have given us some ideas in terms of time constraints, maybe some exercises to do at home. (Focus Group 5)

They wanted more structure and regular prompts to exercise,

Maybe just a thought for the week, or a prompt occasionally, or, you know, some facts and figures about, you know, just a reminder. (Focus Group 5)

A phone call at six in the morning. (Focus Group 4)

Finally many women thought that a buddy system would have been more motivating,

If we could have buddied up, because that way you would have felt more committed. (Focus Group 4)

Maybe if you matched people up, like with a buddy system. So in a way, someone who is a bit objective and nothing to do with my life, but I am answerable to that person. (Focus Group 4)

The women in the PI condition had many suggestions for improving the study.

Most were around the idea of creating more accountability and in particular, ideas like a buddy system that would help the women feel more committed to regular exercise.

Comparison between Evaluations of the 3-Month Physical Activity Study by the Three Conditions

Women in all conditions believed the 3-month physical activity study was helpful in some ways and they all had their suggestions for improving the study. In

terms of the helpful aspects of the study, the SI conditions talked more about the motivating aspect of the social support than the women in the PI condition. There were also differences between the conditions in their discussion of the role of accountability, most notably, the women in the spiritual caring woman condition did not mention accountability as being at all helpful. Differences were also apparent in the women's discussion about the value of the information provided in the study. The discussion amongst the women in the PI condition was broad, covering most of the first-order themes, whereas the women in the spiritual caring woman condition focused mostly on the value of the information provided by the women in the video presentations. There were also some differences between the conditions in their suggestions for improving the study. Social support appeared to be a more important area to enhance in the study for the women in the SI conditions, than for the women in the PI conditions. Increasing the level of accountability in the study was cited by women in all the conditions, but was spoken about in more detail amongst the women in the PI condition. Finally, only women in the strong independent woman and PI conditions talked about addressing psychological barriers as a potential enhancement to the study. In the following sections, I will expand on the differences between the conditions in the perceptions of the helpful aspects of the study and the suggestions for improvements.

Differences between the Conditions in the Helpful Aspects of the Study. In the initial workshop all women attended, they met the other women in their condition and were encouraged to discuss the role that physical activity played in their lives. Women in all conditions cited this aspect of social support, interacting with other women and hearing their difficulties with physical activity, as being helpful. Nevertheless, there were differences in the way the women discussed social support. Whereas the women

in the PI condition said it was “helpful” and “good” to see other women also having the same difficulties they had, the women in the SI condition talked about being motivated and about the energy of the workshop. The women in the SI conditions also seemed to have an enhanced sense of their connection to the women in their condition and spoke about supporting each other to reach the same goals and the solidarity of the group. The women in the PI condition simply referred to the “other people” in their condition.

Accountability was a feature of the study that only the women in the strong independent woman and the PI conditions found helpful. There was no evidence that the women in the spiritual caring woman condition viewed accountability as a helpful aspect of the study. Within the two conditions in which accountability was discussed, there were differences in the focus. The women in the strong independent woman condition mainly discussed the heightened awareness of the necessity to exercise that resulted from having to track their exercise habits in the study. The women in the PI condition did not refer at all to a heightened awareness, rather they seemed to appreciate being on a study that they thought would force them to exercise and would make them more committed to an exercise routine. One woman in the PI condition said that she did not want to be embarrassed at the end of the study if she had done nothing. Another woman believed that just being on the study would be the motivation she needed. For the women in the PI condition, there was a sense that when they had stopped their involvement in the study, their exercise would also stop, whereas, the deeper thought processes evidenced by the women in the strong independent woman condition suggested that they would continue, at the very least, to be aware of their need to exercise more, even after the requirement to track their exercise habits had stopped.

Information was another important aspect of the study, and an area where the three conditions differed. Whereas the discussion amongst the women in the PI condition about the helpful aspects of the information provided was wide-ranging and covered almost all of the first-order themes, the women in the SI conditions, and in particular, the women in the spiritual caring woman condition, seemed to base their discussion on the information provided in the videos. The women in the spiritual caring woman condition referred back to the women in the videos as being motivating, getting them thinking, and changing their perspectives. This type of analysis of the video information was also evident in the strong independent woman condition as one woman stated that if the woman on the video could do it, she believed she too could do it. The women in the PI condition felt the information was useful, but didn't really teach them anything they didn't already know. As one woman in the PI condition said, "it's not rocket science". There was none of this cynical sentiment in the SI conditions, and it seemed that the women in these conditions really felt that they learnt something new.

Differences between the Conditions in Suggestions for Improvement. It was clear that the women in the SI conditions found the social support aspect of the study, motivating. It is not surprising that the women in these two conditions believed that providing more social support in the form of more interaction with the women in their conditions would enhance the study. There was some evidence that the women in the PI condition would have also appreciated more interaction with their condition members, but in terms of their overall discussion, they added that social support was not a dominant feature.

The point about increasing the level of accountability in the study was canvassed by women in all conditions, but the women in the PI condition had the most to say and had more far-ranging suggestions for improving this aspect of the study. Whereas the women in the SI conditions suggested some additional exercise tracking tools like pedometers, more check-ups during the study, and some suggestions for different exercises to do, the women in the PI condition wanted daily phone calls, weekly prompts with facts and figures, information about how to manage their time, and members of the study to hold them accountable and force them to exercise. The women in the PI condition seemed to believe that developing stricter and more regimented processes would be the thing they needed to exercise more. The women in the SI conditions thought that more structure would be good, but did not make this their primary focus.

The final suggestion for improvement was to do with addressing the psychological barriers women had to exercise. The women in the spiritual caring woman condition did not comment on this issue. There was evidence in the PI condition that the women were aware that there was more to adopting exercise than creating stricter regimens, and one woman suggested that finding out the barriers that women had to exercise was probably important. The women in the strong independent woman condition had a somewhat stronger sense about this topic. Women in this condition seemed to know that their own personal and psychological issues were what stopped them from exercising, not because they lacked information or because they had negative attitudes, and thus, they believed that a study that could assist them in addressing their psychological issues, would have been more beneficial.

Summary

In comparing the discussions of women in the three conditions of Study 2 on the two sets of key questions, I found differences both in the thoughts that the women had about physical activity and in their evaluations of the study. There were a few differences between the women in the strong independent woman SI condition and the women in the spiritual caring woman SI condition, but most of the differences I detected were between the women in the PI condition and the women in the SI conditions.

In terms of the thoughts women had about physical activity, after participating in the 3-month physical activity study, it was clear that the women in the SI conditions not only had more to talk about than the women in the PI condition, but their discussions were focused on certain key areas. Whereas the women in the PI condition discussed most of the topics covered by the women in the SI conditions, they did so in a general manner giving no sense of any strong experiences. The women in the SI conditions, however, focused in on a few of the topics, which provided evidence that they had had very particular experiences as a result of participating in the 3-month physical activity study. In particular, the data from the women in the strong independent woman condition revealed that these women were deeply challenged by the study to the point that they questioned their own identities when they failed to exercise as much as they had intended. The data from the women in the spiritual caring woman condition did not indicate that they were challenged in the same way as the women in the strong independent woman condition, but the extent of their discussion under the topic of self-integration showed that they were challenged to think differently about exercise and themselves. In addition, data from the women in both the SI

conditions demonstrated that many of these women had experienced gaining control over their exercise habits and where they had not yet gained control, were positive and realistic about being able to do so, more so than the women in the PI condition.

In terms of the women's evaluation of the 3-month physical activity study, there were also some differences between the conditions. The most conspicuous difference between the SI and the PI conditions was the emphasis on the social aspect of the study. The women in both the SI conditions discussed the social support provided in the study as being motivating and experienced integration and solidarity with their condition members, whereas the women in the PI condition mentioned this aspect of the study only briefly and referred to it simply as "helpful", rather than "motivating". When talking about the information provided in the study, the women in the SI conditions, particularly the women in the spiritual caring woman condition, referred to the inspirational nature of the videos presented, and the ways in which their thinking had changed as a result. The women in the PI condition, on the other hand, spoke in a more general, possibly even in a cynical, manner about the information provided in the study. This gave the impression that they did not learn anything new. When discussing ways to enhance the study, the main focus for the women in the SI condition was on providing more chances to meet with and interact with the other women on the study. In contrast, the women in the PI condition had a strong focus on creating more structure and accountability in the study. In doing so, the women in the PI condition gave the sense that they were searching for external methods to make them more committed to exercising because they could not find it within themselves to change their habits.

Discussion

The aim of this study was to find support for the theoretical arguments I made to explain the intention – behaviour results found in Study 2. I found evidence that realistic intentions should be differentiated from unrealistic intentions and that intention formation may influence the strength of the intention – behaviour relationship. I could not, however, provide any evidence that effort affected the intention - behaviour relationship. There was a great deal of support for the auto-motive model and the results suggest that the women in the SI condition were able to reach their goals through automatic goal acquisition, whereas the women in the PI condition could only rely on the conscious intention route. In the next section, I describe how the qualitative data provides evidence for these theoretical arguments. I will then outline the methodological issues and discuss future research possibilities.

General Findings

I was able to provide some support for the argument that intention formation moderates the intention – behaviour relationship such that poorly formed, or unrealistic, intentions create a weaker intention – behaviour relationship. There was no evidence that effort mediated the intention – behaviour relationship, so, although the pattern of intention – behaviour relationships I observed in Study 2 were aligned with Oettingen and Mayer's (2002) research on the effect of competence fantasies on behaviour, I could not draw the added conclusion that the reason for the lack of an intention – behaviour relationship was because the relationship was mediated by effort. It is likely that intention was unable to predict behaviour in both the PI and SI conditions due to poorly formed intentions, even though the women in the SI condition did appear to become more realistic in their intention formation. The evidence suggests that the reason the

women in the SI conditions were able to achieve long-term maintenance of physical activity was not because they put in more effort than the women in the PI condition, but because they had the benefit of automatic goal activation, which was set up in their intervention workshops. Before discussing the evidence for automatic goal activation in the SI conditions, I will first discuss the evidence that intention formation moderates the intention – behaviour relationship.

Intention Formation

Based on the intention – behaviour pattern I found for the PI condition in Study 2, strong intentions to be physically active, despite a reduction in physical activity, I expected that the intention – behaviour gap was most likely to be because the women were inclined abstainers. My analysis in this qualitative study, suggests that the reason for their abstinence was not because the women in the PI condition were overcome by the self-regulations challenges of acquiring a physical activity goal, but because they had ill-formed intentions and they did not anticipate the difficulties they would face in becoming regular exercisers. The women in this condition commented that they were “surprised at how difficult it has been” and indicated that they came into the study with unrealistic ideas about how easy it would be and how much control they would have. They thought that just being involved in the study would be enough to push them to exercise. There was no clear evidence, however, that these women put insufficient effort into the goal acquisition process and hence little support for the proposition that effort mediated the intention – behaviour relationship, a prediction I made based on drawing a parallel with Oettingen and Mayer’s (2002) research on the effect of competence fantasies on behaviour. Consistent with Bagozzi and Yi’s (1989) research, poor intention formation, on its own, is likely to have lessened the intention –

behaviour relationship, providing support for their argument that intention formation moderates the intention – behaviour relationship.

The intentions of the women in the SI conditions are likely to have been more realistic than those of the women in the PI condition. There was evidence in this study, that these women had reflected more on the challenges they would face. Women in both SI conditions commented that they had become aware of how hard exercise is for them and recognised that they needed to change their thinking and integrate physical activity more in their life. Along these lines, one woman in the spiritual caring woman condition indicated that she had actually made changes to her study and work schedule to fit in more exercise. The finding in Study 2, that the intentions of the women in the SI condition dropped, is, thus, likely to have been because they became more realistic and formed more well-thought out intentions. It was not clear from this study, however, whether these well thought out intentions allowed the women in the SI conditions to put in more effort in the goal acquisition process than the women in the PI condition, thus, the proposition that effort mediates the intention - behaviour relationship is, again, not supported. If Bagozzi and Yi's (1989) moderation argument was to stand, these well-formed intentions should have led to a greater intention – behaviour relationship in the SI conditions, but as I documented in Study 2, there was no relationship between intentions and behaviour for the SI conditions.

It may be that, although the qualitative data indicates that the intentions of some of the women in the SI conditions did become more realistic, and the quantitative data in Study 2 indicates that there was a reduction in the strength of their intentions, there were probably many women in the SI conditions who maintained unrealistic and poorly formed intentions and, although their intentions were less positive than the intentions of

the women in the PI conditions, they were still in the highly positive range. Thus, the women in the SI conditions were probably as ill prepared for the challenge of becoming regular exercisers as the women in the PI condition and, therefore, consistent with Bagozzi and Yi's (1989) research, the consequence of poorly formed intentions is that the intention – behaviour relationship was still very weak. The reason the women in the SI conditions were able to maintain an enhanced level of physical activity, while the women in the PI condition were not, and the reason intentions did not predict behaviour in these conditions, is more likely to be because of the effect of other non-intention based processes. In particular, I anticipated that the main reason the women in the SI conditions achieved the goal to become regular exercisers and the women in the PI condition did not, was because the women in the SI conditions had the benefit of automatic goal activation, a mechanism which bypasses conscious intentions.

Automatic Goal Activation

According to Bargh (1990), goals can only be activated automatically if a strong mental association between a context and a goal has been created. In Study 2, the results of the normative support manipulation in the SI conditions and the enhancement and maintenance of group norm at a high level, in the SI conditions, in comparison to the PI condition suggested that a mental association had been set up between an aspect of the women's self, strong independent woman, or spiritual caring woman, and the goal to become a regular exerciser. In the current study, I found more support for the proposition that the women in the SI conditions had a strong mental association between exercise and a social identity. This was evidenced by the finding that many women in both these conditions had vivid recollections of the video presentations, in which the association was made and cited this as being one of the most helpful aspects

of the study. Women from both SI conditions referred back to particular women in the videos and talked about how this had caused them to change their thinking about exercise. One woman in the PI condition also referred back to the video presentation, but did not indicate that it had caused her to change her thinking, and there was not as much video-based discussion in the PI condition as there was in the SI conditions. It is likely that the manipulations in the SI condition did successfully create a mental association between exercise and the women's identities, which was still active 3-months after the intervention and probably set up the basis for automatic goal activation.

In discussing the results of Study 2, I was unable to provide any specific evidence that the women in the SI conditions were operating on the basis of automatic goal activation, rather than the more effortful path of conscious intentions, but in this qualitative study, I found evidence to suggest that this was the case. According to Bargh (1990), there are three main characteristics of automatic goal activation. The first is heightened awareness of cues to action. The finding, described earlier, that the women in the SI conditions appeared to engage in deep self-reflective thoughts about themselves and exercise may indicate that they were in a state of heightened awareness to physical activity cues. One woman in the spiritual caring woman condition also explicitly commented that she now believed exercise was more "psychologically accessible".

There is also evidence, in the current study, of the second characteristic of automatic goal activation, immediate, effortless, and unconscious action (Bargh, 1990). Women in both SI conditions, who had clearly been able to achieve their exercise goals, did not remonstrate about how difficult and arduous the process of acquiring

their exercise goals had been. Instead, they made comments, such as “it was like I was brainwashed” (Focus Group 9) “whereas before it was hard, but now, I’ve got to do it, so [I think], how can I do it” (Focus Group 7). They indicated that they realised that they could do it, that they did have the time, and that even with kids, it was possible. These kinds of comments indicate that the process of achieving their goal was not difficult, even effortless, and therefore, may indicate that these women had bypassed the self-regulation challenges, such as dealing with competing goal pursuits, temptations, and distractions, that usually go hand-in-hand with consciously converting intentions into action (Gollwitzer & Bargh, 2005).

It is also telling that the women in the spiritual caring woman condition did not mention accountability as being an aspect of the study that they found helpful. The theme of accountability included women’s perceptions of the tools provided by the study that assisted them in sticking to their intentions. In other words, accountability was the women’s way of describing self-regulation strategies. The women in the spiritual caring woman condition may not have thought this was necessary because they were able to achieve their goals without a great deal of self-regulation, that is, through automatic goal activation. The women in the strong independent woman condition did mention accountability as a helpful factor and women in both SI conditions suggested that more accountability may have assisted them further when thinking about ways to improve the study, but the discussion was not extensive, and much more attention was paid to other aspects of the study. The women in the SI conditions appeared to value the information and social support they were given in the intervention workshop, and wanted more of this, rather than more accountability. Thus, the women in the SI conditions appeared to recognise that being around other similar women and

discovering how exercise is relevant to their sense of self was somehow more effective in getting them to exercise than relying on the force of their own or another's will. This was likely to be because these aspects of their intervention condition created the basis of automatic goal activation, which, according to Gollwitzer and Bargh (2005), can be a more effective means of goal pursuit than relying on conscious intentions, especially in busy social environments in which "conscious attention is divided and in short supply" (p. 624).

For those who had not reached their exercise goals, consistent with the third feature of automatic goal activation, the goal to become a regular exerciser was not simply dropped, but either remained active, or the women evidenced very effortful attempts to disengage from the goal (Bargh et al., 2001). There was evidence that the goal to be a regular exerciser was still active for the women in the spiritual caring woman condition who had not reached their goal. They mentioned that they were still "conscious of having to do something all the time" (Focus Group 9), that at some point they "knew it was going to happen" (Focus Group 9), and that they were still making plans to achieve the goal. Along these lines, one woman stated that she was going to get a bike and was planning to ride to work. Rather than the goal remaining active, there was more evidence of effortful disengagement from the goal for the women in the strong independent woman condition who did not achieve their goals. This was the only condition in which the women showed evidence of questioning their identity. One woman stated that she felt like she had failed in her attempts to exercise more, and, thus, did not believe she was the strong independent woman she thought she was. Another simply said that she was forced to question herself and that was very confronting. One woman took a more defensive stance and stated that she didn't want

to be reminded about being a strong independent woman anymore because she had not achieved her exercise goals. It seemed as though these women were considering giving up, or had already given up, their identity as strong independent women because they had not been able to exercise. This is clearly an extreme decision and one, which caused difficult emotions for these women, thus, evidencing effortful disengagement.

There was very little evidence of the three characteristics of automatic goal activation in the PI condition. There was no sense that these women had engaged in any deeper reflection of the link between exercise and their life, indicating that there probably was not a heightened awareness to exercise cues. The evidence suggests that they did not find the intervention workshop particularly inspiring and that it did not change their thinking or tell them anything they didn't already know. As one woman commented, "its not rocket science" (Focus Group 60). The quantitative findings in Study 2 showed that the women in this condition had been able to achieve their goal to exercise, and consistent with this, in the current study, there was no evidence that reaching the goal was effortless and attained through unconscious goal pursuit. In stark contrast to the SI conditions, the women in the PI condition focused almost exclusively on the accountability aspect of the study, as, firstly, being one of the most helpful aspects of the study, and, secondly, as being something of which there should have been more. Thus, the women in this condition valued being on a study that made exercise valid and forced them to commit to an exercise goal, they greatly appreciated the exercise tracker provided, and they had many suggestions for creating more accountability like weekly prompts, wake-up calls, and a buddy system. All of this indicated that these women valued the self-regulation tools given them by being in the study and needed more self-regulation tools to achieve their goals. This suggests that

the only option for goal acquisition was through the conscious intention pathway, rather than through automatic goal activation, which was clearly an unsuccessful strategy for them.

Since the manipulation in this condition did not encourage the women to form a mental association between themselves and exercise, there was no basis for automatic goal activation, thus, no way for these women to achieve their goal through any other means than the conscious intention route. Further support that the women were not under the influence of automatic goal activation is that there was neither the impression that the goal remained active in those who had not achieved their goal, or that any effortful disengagement from the goal had occurred. The women in this condition chided themselves and spoke in the negative about being able to achieve their goal, but there was no evidence of positive plans for their future ability to achieve the goal or any confronting self-questioning, as in the strong independent woman condition. It is likely that the majority of these women had simply given up the goal to be a regular exerciser because they didn't have enough will-power, and the study was over.

Summary

The results of the current study suggest that the lack of an intention – behaviour relationship in both the PI and SI conditions was likely to be due to poorly formed intentions, which weakened the relationship. Despite having equally poorly formed intentions as the women in the PI condition, the women in the SI conditions were still able to maintain a sufficient level of physical activity. I proposed in Study 2 that this was probably due to the effects of automatic goal activation, which enables people to achieve their goals without the need of conscious intentions. In the current study, I found that the data for the women in the SI conditions was consistent with all three of

the features of goal activation, that of heightened awareness, effortless and unconscious action, and sustained goal activation or effortful goal disengagement. The data for the women in the PI condition, on the other hand, showed none of these features of automatic goal activation suggesting that these women were still relying on the conscious intentional route to goal achievement, which, as the quantitative data in Study 2 shows, was not an effective strategy to enable the acquisition of physical activity goals.

Methodological Issues

The methodological issue to consider in this study is primarily the bias that me, as the researcher, might bring to the data collection and analysis process. In terms of the data collection process, it is possible that I obtained the answers I wanted from the participants by asking questions in a particular way and leading the participants in a specific direction. Although, this is a possibility in any qualitative research, it is unlikely to have been a factor in this data collection process. When formulating the key questions, I took care to ensure that the questions were general and accessed women's thoughts about physical activity and their evaluation of the 3-month physical activity. I asked no leading questions about whether the women believed their intentions were realistic and well formed, or any questions probing the effects of automatic goal activation. Accessing information on any potential automatic, and therefore unconscious, processes, through the women's own conscious discussion and self-report is, however, a conundrum that only the most ingenious designs can overcome.

In terms of the data analysis process, it is possible that I looked for and found evidence to support my claims in the focus-group transcripts. My data analysis process was, however, methodical and involved distinct steps. Firstly, I transcribed the focus

groups verbatim, secondly, I elicited the main themes emerging from the data, and thirdly, I displayed the data in matrices for each focus group. In the results, I attempted to describe the results as completely as possible. Although the results do show a great deal of support for my theoretical arguments, they are not completely consistent, indicating that I have not only presented evidence for one side of the argument.

Future Research

The results of this study provide support for the conclusion that intention formation moderates the intention – behaviour relationship. More evidence of this should be investigated in more controlled experimental research which compares the effect on the intention – behaviour relationship of groups who are encouraged to develop well thought out, realistic intentions with groups who are encouraged to give little thought to and develop unrealistic intentions.

This study also provides further evidence that automatic goal activation was the primary mechanism by which the women in the SI condition were able to maintain their elevated levels of physical activity. The technique I used to create the basis for automatic goal activation was based on the social identity approach, in which a valued aspect of a person's social identity is associated with particular goals by promoting these as a normative behaviour. This technique has not received any attention in the literature on the auto-motive model and, thus, should be further investigated as an additional means to create behavioural outcomes in the absence of, or in addition to, conscious intention.

Final Comments

Although further research is needed to account for the lack of an intention – behaviour relationship found in my intervention study, the results of this qualitative

study suggest that the most likely reason physical activity intentions did not predict physical activity is because both the women in the PI and the SI conditions had poorly formed intentions which weakened the relationship. Thus, although intentions were positive, these women may not have anticipated or been prepared for the challenges they would face in converting their intentions into action. For the women in the PI condition, this resulted in a drop in their physical activity. Fortunately, the women in the SI conditions were able to maintain their physical activity, but it is unlikely that this effect had anything to do with their intentions, which were also likely to be poorly formed and, thus, also ill prepared them for the challenges ahead. The results of this study show that a probable reason for the maintained enhancement of physical activity in the SI conditions despite a poor intention – behaviour relationship is because of the effects of automatic goal activation, the basis for which was set up in their intervention condition by creating a mental association between a valued aspect of their social identity and the goal of physical activity which was promoted as a normative behaviour.

CHAPTER 6: GENERAL DISCUSSION

In this thesis, I implemented a physical activity intervention aimed to be successful in encouraging the adoption and maintenance of physical activity in sedentary young and midlife women. I used the TPB (Ajzen, 1985) as the basis of my intervention. Although the TPB has not been used extensively in physical activity intervention research, I argued, in line with Symons Downs and Hausenblas (2005) that intervention research should utilise the TPB because of the large amount of current knowledge about the theory. In addition, the use of social cognitive models in physical activity intervention research, of which the TPB is one, may offer a more parsimonious approach than the stage-based approaches, such as the TTM (Prochaska & DiClemente, 1983), that are traditionally used in physical activity intervention research. This is because the TTM includes five stages of physical activity change, but researchers have argued that there are only two qualitatively distinct stages in behaviour change. There is a motivational stage, in which a person develops the motivation to execute, or cease, a particular behaviour, and a volitional stage, in which a person begins to act on their intentions (Armitage & Conner, 2000; Bandura, 2000). The social cognitive models, and in particular the TPB, contain both of these stages, and are, therefore, sufficient.

Initially, I argued that physical activity interventions for sedentary women should focus on the motivational stage of behaviour change, rather than focusing on the volitional stage. I anticipated that sedentary women would be in a pre-motivational stage, and would require assistance in first developing physical activity intentions before they required assistance in the volitional process of converting intentions into action. Thus, my focus was on the socio-cognitive variables that predict intention. In line with the TPB, I predicted that by enhancing intentions, interventions would also

create behaviour change because, according to Ajzen (1985) and the most recent meta-analysis in the exercise context (Symons Downs & Hausenblas, 2005), intentions are the strongest predictor of behaviour.

In attempting to enhance motivation for physical activity in sedentary women, I aimed to intervene at the social level of self, rather than the personal level of self. I theorised that women in the early to mid-adulthood would operate more at the social level of self than the personal level. Research shows that this is a time in a woman's life when social concerns may take over from personal concerns (Brown et al., 2001; Drew & Paradise, 1996). Research utilising the social identity approach suggests that the self is indeed a multi-level construct (Tajfel, 1978; Turner, 1982) including both a personal and social selves. At the social level of self, evidence suggests that the determinants of intention are different to the determinants at the personal level of self. Whereas attitude and perceived behavioural control are the most important determinants at the personal level of self (Hagger et al., 2002b; Symons Downs & Hausenblas, 2005), Terry and her colleagues have suggested that the social determinant, subjective norm, is of predominant importance at the social level of self (Johnson & White, 2003; Terry et al., 1999).

Thus, for the reason that the social self may be a more dominant level of functioning for young and midlife women and because the social determinant, subjective norm, is more important than the personal determinants of attitude and perceived behavioural control in predicting intention at this level, I predicted that manipulating exercise subjective norms at the social level of self would be more effective in enhancing the intention of sedentary young to midlife women to engage in physical activity than an intervention aimed at women's personal level of self. I further

predicted that since intention predicted behaviour, the enhanced intention that would result from a social-level intervention would also result in greater adoption and maintenance of physical activity than in a personal-level intervention.

In this thesis, I conducted three studies. Since I aimed to intervene at the social level of self for young and midlife women, the first study was designed to understand the different social selves that young and midlife women have and to identify the most common self-characteristics that had the potential to be the strongest source of a social identity in intervention research. The second study was an intervention study in which I utilised the two of the most common self-characteristics identified in Study 1 that would be the best basis for a social identity, that of strong independent woman and spiritual caring woman. In the intervention study, I manipulated subjective norm for physical activity at the social level of self. I compared the outcomes on intention and physical activity of the social-level interventions with a personal-level intervention. The third study was a qualitative review of the intervention study designed to better understand the psychological dynamics underlying the changes in intention and physical activity in the social and personal-level interventions. I now discuss my main findings in these studies and how they relate to the theoretical perspectives of the TPB (Ajzen, 1985) and intention – behaviour relations (Bagozzi & Yi, 1989), the social identity approach (Tajfel, 1978; Turner, 1991) and the auto-motive model (Bargh, 1990). I then go on to discuss the methodological issues, future research, and implications for practice.

General Findings

In the following sections, I discuss the various conclusions I have drawn. In particular, my first study provides an insight into whether the social level of self is an

important level of self for young and midlife women at which to intervene compared to the personal level of self. The second and third studies prompt many conclusions, some of which are well supported by my data, some, which require more research. It was clear that the TPB is effective in predicting intention, but that, consistent with the social identity approach, different predictors are important at the social, rather than personal, level of self. The results with regard to the ability of intention to predict behaviour, however, were not as clear and required other non-TPB-based explanations.

Women and the Social Level of Self

Study 1 provided evidence that intervening at the social level of self is appropriate for young and midlife women. I found that most of the characteristics women in this demographic used to describe themselves had high “group-formation potential” (Simon, 1999). This meant that women saw themselves as similar to other women who shared the characteristic and different to women who did not share the characteristic and were, thus, willing to group themselves with other similar women on most of their self-characteristics. This finding suggested that women are accustomed to operating at the social level of self, which indicated that intervening at the social level of self should be influential for women in this age group. As expected, characteristics associated with motherhood, caring, family, and career, dominated, but interestingly, it was the personality-based self-characteristics in these general categories, such as spiritual caring woman in the category of motherhood, caring and family, and strong independent woman in the career category that had the most group-formation potential, rather than the role-based self-characteristics in these categories, such as wife or professional. In this study, I established that the social level of self may, indeed, be a level of functioning that women are very comfortable operating within, but more

importantly, I identified two self-characteristics, which could form the basis of a salient social identity in the right intervention conditions, namely, spiritual caring woman and strong independent woman. In Study 2, the intervention, these two self-characteristics formed the basis of the social identity (SI) conditions. I also showed that the physical activity norms associated with these self-characteristics were not strong and could be enhanced in physical activity interventions.

Predicting Intention

Study 2 showed that, at the social level of self, subjective norm is more influential in the prediction of intention than the personal variables of attitude and perceived behavioural control. I manipulated both salience and normative support in the two SI conditions, which, firstly, encouraged the women to operate at the social level of self, either as spiritual caring women, or as strong independent women, rather than as their individual selves, and secondly, permitted them to perceive that physical activity was normative for women with these social identities. In this way, I operationalised subjective norms from the social level of self, as the perception of pressure from a relevant reference group, rather than from the personal level of self, as the perception of pressure from other important individuals. This was consistent with Terry and Hogg's (1996) re-conceptualised definition of subjective norm, which they derived from an understanding of the social identity approach (Tajfel, 1978; Turner, 1982). I measured subjective norm in both the standard way and in the re-conceptualised way (group norm).

I found that both subjective norm and group norm were more important in predicting intention in the two SI conditions post-intervention, whereas, only the personal variable of perceived behavioural control was important in the prediction of

intention for the personal identity (PI) condition. I found, therefore, that norms were important in predicting intention when the women were encouraged to operate at the social level of self, in the SI conditions, but not when the women were encouraged to operate at the personal level of self, in the PI condition. This finding provides more evidence consistent with the research of Terry and her colleagues (Johnson & White, 2003; Terry et al., 1999; Terry & Hogg, 1996), to suggest that the TPB variables operate differently, depending on whether personal or social identity is salient. In line with the social identity approach, I concluded that norms can be a powerful determinant of intention, but only at the social level of self. At this level of self, instead of defining the self in terms of unique idiosyncratic qualities, the self is defined in terms of group norms, and, thus, can be a self-relevant variable.

Research has indicated that self-relevant variables relate to internal values and goals, and are, thus, more motivationally adaptive (Deci & Ryan, 1985). Hagger et al. (2002a) suggested that it is for this reason, that only the self-relevant variables in the TPB are able to successfully and consistently predict intention. Typically, only the personal variables of attitude and perceived behavioural control, rather than subjective norm, have been considered to be self-relevant variables, but my research indicates that this is only true when the self is defined at the personal level. When the concept of self is extended to also include a social level, the opposite pattern is observed, subjective norm, rather than attitude and perceived behavioural control, becomes the self-relevant variable.

Intention – Behaviour Relations

In this study, although the TPB successfully predicted intentions, neither the PI or SI conditions enhanced intention. I found that women from both the social and

personal intervention conditions had high levels of intention to be physically active, and that these intentions remained at a high level throughout the study. There was a significant drop in intentions at the post-intervention follow-up for the women in the SI conditions, but their intentions were still in the highly positive range. Contrary to my expectations, therefore, I found that sedentary women may not require assistance in developing motivation for physical activity and that many women who are not sufficiently active have strong intentions to be physically active. Unfortunately, I found that these highly positive intentions to be physically active had very little to do with the actual physical activity of these women. There was, therefore, a weak intention – behaviour relationship.

Although I expected there to be at least some relationship between intentions and physical activity, it is not uncommon to find a large gap between intentions and behaviour. Studies show that at least 70% of the variance in behaviour is unaccounted for by intention (Sheeran, 2002). Converting intentions into behaviour is a difficult process and involves overcoming many obstacles to goal achievement, such as dealing with competing priorities, resisting temptations and fighting off self-doubts. Thus, the majority of people are what Sheeran (2002) described as inclined abstainers.

Factors influencing the strength of the intention – behaviour relationship.

Researchers have identified many factors that may contribute to the inclined abstainer effect and, thus, influence the strength of the intention – behaviour relationship, including planning (Orbell et al., 1997; Sheeran, 1997) and intention stability (Sheeran & Abraham, 2003). One factor that I found may be relevant is intention formation. Bagozzi and Yi (1989) found that intention formation moderated the intention – behaviour relationship such that, poorly formed intentions would lead to a weaker

intention – behaviour relationship. As a result of the findings in Study 2, I surmised that the highly positive intentions of the women in that study, particularly, those in the PI condition, were poorly thought out and, thus, ill-formed, which weakened the intention – behaviour relationship. I found support for this argument in Study 3. The women in the PI condition did not appear to give a great deal of thought to the challenges they would face in attempting to become regular exercisers and indicated that they were surprised about how difficult it was. Their intentions, being poorly-formed and unrealistically positive, were, thus, unrelated to their physical activity, which explains the lack of an intention – behaviour relationship. The finding that these women were unable to maintain a sufficient level of physical activity in the long term is a logical outcome of being ill-prepared to face the challenges of acquiring such a difficult goal.

Although the lack of an intention – behaviour relationship in the SI conditions may also have been due to ill-formed intentions, the results showed that the intentions of the women in these conditions dropped at the 3-month follow-up and unlike the women in the PI condition, the women in this condition were able to maintain an enhanced level of physical activity. In Study 2, I explored the research of Oettingen and Mayer (2002) to explain the unusual finding in the SI conditions, high levels of physical activity, despite lowered levels of intention and no intention – behaviour relationship. Their research, although focused on competence expectations followed the same pattern as my results. They found that highly positive perceptions of competence were often related to low levels of objective performance, whereas, less positive and more realistic perceptions of competence were related to higher performance. Importantly, they found that the relationship was not direct, but was

mediated by effort, such that higher performance outcomes occurred in those with realistic competence expectations due to additional effort being applied to the task. In the SI conditions, assuming that the reduction in intentions indicated that intentions were becoming more realistic, I can draw a parallel with Oettingen and Mayer's research. In particular, I argued that the less positive intentions of the women in the SI conditions were a sign that the women had become more realistic about their intention to be physically active and as a consequence, they put in more effort in achieving their goals, which resulted in better performance outcomes. The unchanging positive intentions of the women in the PI condition, on the other hand, may have been an indication that these women were still being unrealistically positive about their intention to be physically active, which meant they exerted less effort in the goal acquisition process, and thus, were not able to achieve sufficient levels of physical activity in the long term. The lack of an intention – behaviour relationship would, thus, be because effort mediated the relationship.

I came to many conclusions in this argument and in Study 2 I could not provide substantial data to support the claims. I did look, however, for evidence in Study 3 that the women in the SI conditions were more realistic about their intention levels and exerted more effort in acquiring their goal than the women in the PI condition. As mentioned previously, I did find evidence that the women in the PI condition had not fully thought through the challenges that would be involved in acquiring their goal, indicating, perhaps, that they harboured unrealistic intentions. I also found evidence to suggest that the women in the SI conditions were more thoughtful about the challenges involved, indicating that they may have been more realistic, but there was no evidence

that the women in the SI condition exerted more effort in acquiring their goal to become regular exercisers than the women in the PI condition.

Although effort may be a mediator of the competence expectation – behaviour relationship (Oettingen & Mayer, 2002), given the extent of TPB research demonstrating the direct link between intentions and behaviour (Hagger et al., 2002b; Symons Downs & Hausenblas, 2005), it is unlikely that effort was a mediator of the intention – behaviour relationship in Study 2. I concluded, therefore, that, although the intentions dropped for the women in the SI condition, this did not necessarily mean that their intentions had become more realistic. Their intentions, although less positive than the women in the PI condition, were still very positive, and may still have been ill-formed, resulting, as Bagozzi and Yi (1989) suggested in their moderator argument, in a weakened intention – behaviour relationship. I concluded, therefore, that the relationship between intention and behaviour in Study 2 was indeed direct, as outlined in the TPB, but that the relationship was significantly weakened by ill-formed intentions.

Non-intentional influences on behaviour. One difficulty in coming to the conclusion that ill-formed intentions weakened the intention – behaviour relationship in both the PI and the SI conditions, is explaining why the physical activity level for the women in the SI conditions was maintained at a sufficient level and did not fall off in the long term, as it did for the women in the PI condition. If the women in both the PI and SI conditions had ill-formed intentions and were equally ill-prepared to face the challenges of acquiring the goal to become a regular exerciser, women from the PI condition and from the SI conditions should have displayed similar reductions in their physical activity over the long term. The result for the two SI conditions suggests that

other factors were influencing the behavioural outcome for these women. In explaining this result, I firstly considered the possibility that there were other direct predictors of behaviour in operation in the SI conditions that were not operating in the PI condition. Because I found that perceived behavioural control, the other direct predictor of behaviour in the TPB (Ajzen, 1985), was not involved in the increase in physical activity in these women, I considered other direct predictors.

The only difference between the SI and PI conditions was the salience and normative support manipulation, which encouraged the women in the SI conditions to operate at the social level of self (salience manipulation) and to perceive that exercise was normative for their social identity (normative support). I proposed, therefore, that group norm may be responsible for the maintained enhancement of physical activity in the SI conditions. As mentioned previously, the research based on the social identity approach suggests that norms are very influential at the social level of self (Oakes et al., 1994; Terry & Hogg, 1996; Terry et al., 1999; Turner & Oakes, 1989). Consistent with this research, Study 2 showed that at the social level of self, norms have a strong influence on intention. Other research has also shown that norms can directly affect behaviour (Okun et al., 2002; Ravis & Sheeran, 2003b). A direct effect of norms on behaviour would not be out of keeping with the social identity approach because when norms are internalised as an aspect of a social self, both attitudes and behaviour should be brought in line with the social group (Terry et al., 1999).

I found some evidence that group norm directly affected the behaviour of the women in one of the SI conditions, the spiritual caring woman condition, but the statistical results were not strong and were likely to be weakened by the small number of participants in the condition. As expected, group norm played no part in the

prediction of behaviour for the women in the PI condition, but there was also no evidence that group norm affected the behaviour of the other SI condition, the strong independent woman condition. Although statistical issues may have played a part in this finding, as well as concerns regarding the effectiveness of the manipulation in the strong independent woman condition, it was clear that other explanations were needed to explain why the SI interventions enabled women to maintain an elevated level of physical activity despite there being no link with intention. The finding, based on the auto-motive model (Bargh, 1990), that goal directed behaviour can occur independently of intention, was particularly interesting in this regard.

According to Gollwitzer and Bargh (2005), the gap between intentions and behaviour will always exist because converting intentions into behaviour is an extremely effortful task that requires superior self-regulation. Despite our best intentions, we may fail to act because we have prioritised other goals and given in to our own ruminations, emotional issues, and tiredness. Even if we do begin to act, we tend to get distracted from our goal pursuit and fall prey to temptations and self-doubts. Alternatively, as I discovered in my research, and consistent with Bagozzi and Yi (1989), we may not form well thought-out intentions. This prevents us from anticipating the challenges that will be involved in achieving the goal and leaves us ill-equipped to translate our intentions into action. The solution, according to Gollwitzer and Bargh, is to find a path to goal achievement that is less fraught with obstacles and difficulties than the conscious intention path. This path is provided through automatic goal activation whereby goals are achieved in an unconscious, efficient, and immediate manner, but which does not require conscious intentions.

The conditions for automatic goal activation are expected to occur when a goal and context are associated in memory in a meaningful way. Goal pursuit is then able to be activated automatically through contextual cues in the environment, without the need for conscious awareness or intention. Without the need for conscious intention, there is no requirement for any self-regulation or intention formation skills because the behaviour is given over to environmental control. The features of automatic goal activation, thus, include heightened awareness to cues to action and effortless and immediate action in the presence of those cues. Bargh et al. (2001) also showed that when a goal is activated automatically, it stays active until achieved, or there has been an effortful disengagement from the goal. In explaining the results from Study 2, I argued that automatic goal activation was a possible reason for the maintenance of an enhanced level of physical activity in the SI conditions, despite these women having similarly ill-formed intentions to the women in the PI condition. Gollwitzer and Bargh (2005) propose that automatic goal acquisition was an especially effective means of goal pursuit for people who operate in busy and complex social environments in which attention is frequently divided and in short supply. For busy women, who are mothers, carers, and career women, therefore, being able to achieve exercise goals, which may frequently be relegated to the bottom of the priority list, with little need for conscious attention, would be particularly useful.

In Study 3, the data showed that many of the characteristics of automatic goal activation were in operation in the SI conditions, but not in the PI condition. In particular, the women in the SI condition showed heightened awareness to the link between exercise and the aspect of their identity that I had made salient in the intervention, whereas the women in the PI condition did not engage in any deeper

thoughts about the link between themselves and exercise. There was also much data in the focus group discussions of the women in the SI condition, indicating that those who had been able to reach their goal had found the process to be relatively easy, providing evidence that goal acquisition was effortless and automatic. These women reported that once they had set their mind to the task, it just happened. There was no such data provided in the discussions of the women in the PI condition, however, these women did focus on the accountability aspects of the study and suggested that this was the main area in which the study was lacking. This discussion about accountability showed that the women in the PI condition recognised that they needed more self-regulation skills than they possessed to achieve their goal. This indicated that the only path to goal acquisition for these women was through effortful translation of intentions into action in which many self regulation skills would be needed, rather than through the less effortful path of automatic goal activation. Finally, there was evidence that those women in the SI conditions, who had not achieved their goal, were still actively striving to reach it, evidencing persistent goal activation, or they had begun the process of effortfully disengaging from the goal, which for these women was a very confronting and uncomfortable process, causing many negative emotions. The women in the PI condition, on the other hand, most of whom did not reach their goal, as the quantitative data showed, neither discussed any plans for their future goal acquisition, indicating that the goal was not active, nor showed any effortful disengagement from the goal.

Creating a meaningful mental association between a goal and a context, the basis for automatic goal activation, is generally believed to occur only after several years of experience in which the goal and the context have been frequently paired (Gollwitzer & Oettingen, 2000). The research does show, however, that creating an

implementation intention, an “if/then” statement about where and when an activity will be carried out, is a strategic way to create a basis for automatic goal activation because a specific goal is intentionally paired with a particular context (Orbell et al., 1997; Sheeran, 2002). It is possible, therefore to strategically set up the basis for automatic goal activation. In the SI intervention conditions in Study 2, I did not utilise the implementation intention methodology, and it is clear that I was not able to provide several years of goal and context pairings. Given the evidence, suggesting that the women in the SI conditions were operating on the basis of automatic goal activation, it is, nevertheless, likely that one of the effects of participating in the SI intervention conditions was to create the basis of automatic goal activation.

I argued in the discussion of the results in Study 2, that the methodology I used in my SI manipulations, which were based on the social identity approach, was highly effective in creating a meaningful mental association between a goal and a context. By promoting physical activity as a normative behaviour within a valued aspect of a woman’s social identity, I paired the goal of regular and sufficient physical activity with a salient part of the women’s self. Since the “self” that I was targeting was a social self, thus, more likely, for women, to be a dominant level of functioning, it is possible that after the intervention, these women encountered many cues to that aspect of their “self” and thus, were automatically prompted to participate in some form of physical activity. This meant that these women were able to reach their goal relatively effortlessly, without having to rely on their conscious intentions, which were probably ill-formed anyway and would have been of very little help. The women in the PI condition, however, without being provided with any meaningful mental associations between themselves and physical activity in their intervention condition, were required

to rely solely on the more effortful route of attempting to consciously convert their intentions into behaviour. Since their intentions were also probably ill-formed, they were unprepared to face such a challenge, the result being, they were not able to reach their goal.

Summary. Although the women participating in the 3-month physical activity study did not appear to need assistance in developing their motivation for physical activity, their highly positive intentions were no indication that they would adopt and maintain sufficient physical activity. The weakness in the intention – behaviour relationship was likely to be because the intentions of these women were ill-formed, suggesting that women may need help in formulating well thought out intentions that would assist them in realistically planning for the challenges that a goal to become a regular exerciser would involve, thus, successfully translating their intentions into behaviour. It is likely, therefore, that the motivational stage of the TPB is still the most appropriate point at which to intervene for sedentary women in early to mid adulthood.

An unexpected finding was that achieving goals through the conscious intentional route may not be the most effective means of goal acquisition for women, particularly for physical activity goals. Further evidence is needed to support this claim, but the findings in Study 2 and Study 3 indicate that the women in the SI condition were able to achieve their exercise goals through automatic goal acquisition, meaning that their poorly-formed intentions did not reduce their ability to engage in physical activity as ill-formed intentions did for the women in the PI condition. Although manipulating subjective norm at the social level of self, in the SI conditions did not work in the way I expected, that is, through enhancing intention and as a result, physical activity, the manipulation in these conditions did seem to create the basis for

automatic goal activation, which was highly effective in enabling the women to achieve their exercise goals.

Methodological Issues

There were three main methodological issues in this thesis. In both Study 1 and Study 2, there were issues to do with the self report measure of physical activity, which tended to over-inflate the physical activity scores. In both these studies, there were also recruitment issues which worked in many different ways to influence the results. The issues to do with variable measurement and bias were potentially problematic for Studies 2 and 3, and may have weakened key relationships between variables or caused particular interpretations to be made. I now discuss each of these methodological issues.

Self Report of Physical Activity

In both quantitative studies in this thesis (Studies 1 and 2), I measured physical activity via self-test. I used the IPAQ (Booth 2000) in the second study and a variation of it in my first study. In this measure, physical activity is split into three parts, moderate, vigorous, and walking activity, and participants are asked to indicate the number of times they engaged in each over a 7-day period. This gives the number of occasions on which each type of physical activity has been undertaken. Participants were then required to estimate in minutes, the time they would have spent on each type of physical activity on one of the occasions, which gives the time. The time is then multiplied by the occasion for each activity to give the level of moderate, vigorous, and walking activity. Total physical activity is computed by combining these three times. The IPAQ can be administered over the phone or as an individually completed

questionnaire. I used the latter in Studies 1 and 2, and experienced methodological issues in both.

In the first study, the extremely high standard deviation suggested that the walking measure was exaggerated by some women, indicating that they may have misunderstood what was meant by walking, and took it to mean any time they were on their feet during the day. In the second study, in which I administered the complete version of the IPAQ, it became clear that some women had become confused by the differentiation in the questionnaire between the occasion and time. Instead of indicating all the occasions and the amount of time on one occasion, some women indicated all of the occasions and calculated the amount of time in total they had spent across all occasions, the effect of which was to inflate the physical activity results. Fortunately, my participant number was low in this study and I was able to ring participants to validate what I considered to be unusually high results, but this highlights another difficulty with this measure.

Both types of confusion could have been averted had I administered the IPAQ over the phone and spoken directly to participants. In this way, any misunderstandings would be able to be clarified and a more precise measure would have been obtained. Obviously, objective measures of physical activity are still preferable in order to overcome participants responding in a socially desirable manner, but in future research where self-tests are the only viable method, I would be inclined to use the phone administration of the IPAQ.

Recruitment

Recruitment issues were common to both Studies 1 and 2 and influenced the results in one of three ways. In the first case, recruitment issues limited the

generalisability of my research, in the second case, they may have created some statistical issues in which the relationships between variables were weakened, and, in the third case, they could have affected the study design.

The first case, generalisability, was an issue for Study 1. In this study, I recruited participants through emails sent by human relations managers in large organisations. Using this method enabled me to obtain a large sample size, but the sample was biased in favour of younger, well-educated, professional women. This is because it is generally these women who work in large companies in administrative and managerial roles where they have access to internet and email.

The second case, statistical issues, was a matter for Study 2. I recruited the majority of the participants through a story in a local newspaper. Interested participants contacted me to be involved in the study, so in this way, my participants selected themselves for the study. It is likely, therefore, that I obtained a sample with higher levels of motivation than the general population of sedentary women. This meant, firstly, that there was lack of variability in my intention scores, which, from a statistical perspective, would have weakened the regression results. Secondly, the sample of sedentary women may have been unrepresentative, which, in a similar way to Study 1, would have limited the generalisability of the study to all sedentary women.

The third case, study design, was also an issue for Study 2. Recruitment issues affected the study design because, although I found it easy to recruit women who considered themselves “strong independent women”, it was more difficult to achieve the target numbers in the spiritual caring woman SI condition. I placed women in the SI conditions before creating the PI condition, but the differential between women identifying themselves as “spiritual caring women” and women identifying themselves

as “strong independent women” meant that I placed many more women in the PI condition who considered themselves “strong independent women” than “spiritual caring women”. As a result, the PI condition was more psychologically similar to the strong independent woman SI condition, which is likely to have affected the between groups effects in my ANOVA analyses. Fortunately, I was more interested in the within groups effects, thus, other than for the manipulation check data, this recruitment issue had a minimal impact on the results.

Variable Measurement and Researcher Bias

The way in which I measured certain variables and my own bias as a researcher may have influenced the results to some degree. The finding of no relationship between intention and behaviour highlighted a potential error in the way in which I measured intention and took the crucial self-report of physical activity behaviour. It is possible that the way in which I worded and scaled the intention measure encouraged the women to indicate higher than usual intentions. In particular, I used words such as “I will try” to engage in regular physical activity rather than asking participants to indicate the “probability” that they would engage in regular physical activity, which research has shown to result in a stronger intention – behaviour relationship (Symons Downs & Hausenbla, 2005). In addition, I scaled the intention items from 0 to +7, when Sheeran (2002) has indicated that the typical intention measurement is scaled from -3 to +3. Failing to provide a negative range on the scale could have encouraged the women to be more positive about their intentions than was the case. My measurement of intention may have, thus, contributed to the ill-formed intentions, which weakened the intention – behaviour relationship. Also potentially contributing to the weakness of the intention – behaviour relationship was the time point at which I

took the self-report of physical activity. I measured intention and physical activity concurrently, rather than measuring physical activity a short time, i.e., a day after measuring intention, which may have further undermined the true relationship. It is necessary to measure behaviour as close as possible in time to intention (Ajzen, 1991), but this does not include concurrent measurement.

Another way that I could have influenced the results is due to my own bias, although this was most likely in Study 3 where I interacted with and interpreted the reports made by participants. In this study, my theoretical perspective may have led me to either elicit certain responses from my participants when collecting the data, or it could have influenced my data analysis. Since I developed very general questions and did not lead participants directly into discussions about the extent of their intention formation or the effects of automatic goal acquisition, it is unlikely that this greatly influenced my data collection. I safeguarded myself as much as possible from bias in the data analysis by engaging in a systematic data analysis process, although I concede that it is never possible to be completely objective when analysing research in which one has an intellectual investment.

Although there were a variety of methodological issues which were likely to have affected the data in all three studies, the research design and variable measurement was generally successful and resulted in meaningful results. In particular the methodology I used to elicit social identities in Study 1 was an adaptation of Simon's (1997) experimental research and was highly successful in enabling me to identify social identities for women that would be meaningful in intervention research. Furthermore, the manipulations based on the social identity approach to subjective norms have not, to my knowledge, been applied in physical activity intervention

research, and although the results were not quite as I expected, the manipulation was effective in enhancing the physical activity of young to midlife women and may be an effective means of creating the basis for automatic goal activation, which, as I have shown, may be particularly useful in encouraging participation in difficult health behaviours.

Future Research

There were three main findings in this thesis, which create the impetus for further research. One finding, that of the differential effects of the TPB variables under personal or social levels of self, requires further research to either replicate or expand on. The findings with regard to the intention – behaviour relationship deserve further research to examine the theoretical perspectives that I have used in this thesis to explain the results. I now discuss each of these findings and then propose related future research.

The TPB at the Social Level of Self

In this thesis, I provided evidence that the TPB variables operate differently at the social, rather than the personal, level of self. In particular, at the social level of self, subjective norm, rather than attitudes and perceived behavioural control appears to be the most important predictor of intention. This is in opposition to most TPB research in the exercise domain, but I have argued, that this discrepancy arises because most of this research is conducted at the personal level of self. There is scope, therefore to conduct more TPB research at the social level of self by identifying people's social identities, making them salient and manipulating or testing the TPB variables at this level, rather than the personal level, which appears to be the default level.

Intention – Behaviour Relationship

There were two findings that draw attention to the intricacies of the intention – behaviour relationship, that require further research to substantiate. I found, firstly, that the strength of the intention – behaviour relationship may have been compromised by the level of intention formation, such that poorly-formed intentions undermined the relationship, leading to a lack of ability of intention to predict behaviour. Future research should investigate further the potential moderator effect of intention formation on the intention – behaviour relationship. If this effect can be well established in the physical activity context, it may become important to develop a measure of intentions that is sensitive to whether intentions are well or poorly formed. The second finding with regard to the complexity of the intention – behaviour relationship, is that behaviour can be enhanced without the need for conscious intentions. I found that the women in my SI conditions were able to maintain an elevated level of physical activity despite there being no relationship between their activity levels and their intention levels. I have argued in this thesis that this was because the women were operating on the basis of automatic goal activation in which goals can be achieved independently of conscious intentions. I found support for this argument in Study 3, but more research is needed firstly, to validate that physical activity goals can be achieved independently of intentions, and, secondly, to examine the claim that the techniques I used in this research created the basis for such automatic goal activation. In particular, research should test the technique I used to operationalise subjective norm from the social level of self in which the goal to engage in regular physical activity was paired with a valued aspect of women's social self. Further research utilising this association technique

would be helpful in establishing whether it is another strategic way, in addition to implementation intentions, for creating automatic goal acquisition.

Implications for Practice

The aim of this thesis was to discover an effective way to encourage the adoption and maintenance of physical activity in sedentary women. In this thesis, I have concluded that the TPB is a useful framework in this regard, but that to maximise the chances of success, there are some qualifications and exceptions to consider. In terms of qualifications, my research has shown that a person's intentions cannot always be taken at face value and must be qualified as being either well-formed or poorly-formed in order to enhance the ability of intentions to predict behaviour. My research has also shown that the level of self at which the person is operating is a factor to consider when deciding which socio-cognitive variables, the personal variables or the social variable, will influence intention formation the most. In terms of exceptions, I have shown that the best path to behaviour change may not always be via conscious intentions, and that creating the basis for automatic goal activation is a potentially useful strategy for encouraging health goal acquisition. I now consider how these three main findings can inform the practice of encouraging positive health behaviour.

Intention Formation

In general, it can be assumed that intentions will predict behaviour. In terms of practice, this means that enhancing intentions to engage in health behaviours will enhance the occurrence of in those health behaviours. In my research, I discovered that highly positive intentions are not necessarily related to behaviour, if intentions have not been well thought through and are, thus, poorly-formed. It cannot be assumed, therefore, that a person who presents with very positive intentions to engage in physical

activity, lose weight, or stop smoking will be able to follow through. When they have formed intentions without thinking about what is realistically involved in achieving a health goal, people are likely to be ill-prepared to meet the challenges, and as such, they may be unable to achieve their goal. Practitioners should, thus, check positive intentions, and seek to develop realistic and well-formed intentions. Oettingen, Park, and Schnetter's (2001) research on realistic and fantastic competence expectations may be useful in this regard. They found that contrasting highly positive and potentially unrealistic perceptions of competence to achieve an ambitious goal with the negative aspects of the reality required to meet the goal created greater levels of energy and effort, and higher objective performance than if participants were left to simply indulge in their positive fantasies. In the same way, highly positive intentions that have not been fully thought through could be contrasted with the negative aspects of converting intentions into reality in order to enable the development of realistic and well thought through intentions, which will ultimately strengthen the intention – behaviour link.

Enhancing Intention

In terms of enhancing intentions in people who have little motivation to engage in health behaviour, my research indicates that practitioners need to differentiate between the personal and the social self. At the personal level of self, the most effective ways to enhance motivation are through attitudes and perceived behavioural control. This means the development of more positive affective and instrumental attitudes, and increasing people's perceptions of control, both internal (self-efficacy) and external (control over resources and time) will be effective in enhancing motivation. At the social level of self, my research shows that the social variable, subjective norm, is potentially the most important variable to manipulate. It must not

always be assumed that the personal level of self is dominant. In my research, I showed that for young and midlife women, it is the social level of self that is potentially more dominant, thus, operating at the social level can sometimes provide a more effective approach than targeting the personal level.

There are three important principles to understand in order to effectively manipulate subjective norm at the social level of self. One must first understand the many different social identities in an individual's repertoire. I found helpful in this regard, the questionnaire I used in Study 1, in which I identified the group formation potential of various self-characteristics people use to describe themselves. After identifying potential social identities, one must understand that any particular social identity will remain latent unless made salient by the features of the context. In order to operate at the social level of self, therefore, one must make a particular social identity salient. According to self-categorisation theory (Oakes et al., 1994; Oakes et al., 1991), both the comparative and normative features of the context combine to make a particular social identity salient. This means that contrasting the person's social identity with a relevant out-group, or opposite group, who differ in stereotypical ways from the individual's group will enhance salience. In Study 2, I asked participants to imagine a woman who was not a strong independent woman or spiritual caring woman and asked them to think about the characteristics of this woman and how she differed from them. In this way, I utilised comparative and normative fit to enhance salience. Finally, norms must be perceived to emanate from other individuals who share the social identity, that is, from the relevant reference group. Health information is, thus, best presented by people who are members of the salient social identity, as a behaviour that is expected of others who belong to that social identity. In following these three

principles, individuals can be encouraged to operate at the social level of self. At this level norms will be a powerful influence on motivation.

Increasing Behaviour

The result of enhancing motivation to engage in health behaviours is ultimately, to enhance participation in the health behaviour. According to the TPB research in the physical activity context, intention is the main predictor of physical activity (Symons Downs & Hausenblas, 2005). Perceived behavioural control has also been found to be a direct predictor, but in my research, I found that the path to successful adoption and maintenance of health behaviours is not always through the intentional or perceived behavioural control path. I found that the women in my SI interventions were able to achieve their goal of regular and sufficient physical activity despite there being no relationship with their intentions. It is likely that these women achieved their goal through automatic goal acquisition and were thus, able to participate regularly in physical activity without a great deal of effort and self-regulation skill in an unconscious or non-intentional manner. I have argued that the techniques, just outlined, that I used to operationalise subjective norm at the social level of self were not only effective in influencing intention, but also created the basis for automatic goal activation. This is because I created a strong mental connection between a valued and salient aspect of the women's selves, and the goal to engage in regular exercise. More research is needed to validate the ability of this association technique to create the basis for automatic goal acquisition, but ultimately, this could be a highly effective means for encouraging health goal achievement. Generally, health goals are valued by people, but are often the lowest priority, and thus, superior self regulation skills would be required in order to overcome the temptations of not engaging in the health behaviour and

prioritising achieving the particular health goal over the many other competing goal pursuits. Automatic goal activation, however, bypasses all of these difficulties and is, thus, an exciting method to explore in attempting to enhance behaviour.

Final Comments

In using the TPB as the basis for my intervention, I have discovered that although intention may well be the strongest predictor of behaviour, it does depend on the level of intention formation, and that there are other processes that can be utilised to enhance behaviour, such as automatic processes. Further research is needed to provide additional evidence for these conclusions, but the findings provide some exciting avenues for future interventions seeking to improve adoption and maintenance of health behaviour. When intentions are well-formed, and when automatic process are not available, however, improving intentions is still likely to be the most effective means of enhancing behaviour. In this case, my research shows that it is important to take a multi-dimensional view of the self, and understand that the self can be both personal and social, and that different TPB predictors may be important at these different levels of self. I hope that the interesting methods and results reported in this thesis will stimulate other researchers to study the social approach to physical activity promotion.

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LIST OF APPENDICES

Appendix A: Adapted International Physical Activity Questionnaire.....	319
Appendix B: Elicitation of Self-Characteristics	320
Appendix C: Rating of Self-Characteristics	322
Group Formation Potential	322
Salience.....	323
Physical Activity Norm	323
Appendix D: International Physical Activity Questionnaire	324
Appendix E: Theory of Planned Behavior Questionnaire	327
Attitude	327
Subjective Norm	327
Perceived Behavioural Control.....	328
Physical Activity Intention	330
Group Norm.....	330
Appendix F: Salience Manipulation	332
High Salience	332
Low Salience.....	332
Appendix G: Normative Support Manipulation	333
High Normative Support – Strong Independent Woman.....	333
High Normative Support – Spiritual Caring Woman	338
Low Normative Support	343

Appendix H: Information and Consent Form for 3-Month Physical Activity Study ..	349
Participant Information Form	349
Participant Consent Form	352

Appendix A: Adapted International Physical Activity Questionnaire

Level of Physical Activity

Please indicate the number of times in the last week you spent in each activity category below (0-7) and the approximate time you spent on each occasion (e.g., 0 mins. , 20 mins.).

	Number of occasions	Average time spent each occasion
<p><i>Vigorous activity</i></p> <p>hard physical effort such as heavy lifting, aerobics, fast bicycling or running.</p>		
<p><i>Moderate Activity</i></p> <p>activity causing you to breathe harder than normal such as moderate bicycling or doubles tennis – Do NOT include walking.</p>		
<p><i>Walking</i></p> <p>for at least 10 minutes at a time. This includes at work, traveling to and from places (e.g., train station to work), and recreational walking.</p>		

Appendix B: Elicitation of Self-Characteristics

Step 1

Start by reflecting on all the different hats that you wear during an average week (e.g., sales manager, friend, tennis player, dancer). Please list these in the space provided.

Hats

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.
13.	14.	15.

Step 2

Next, think about the specific social groupings that you could categorise yourself as belonging to (e.g., professional, self employed, mother of young children, business woman, home-owner). Please list these in the space provided.

Social Groupings

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.
13.	14.	15.

Step 3

Do you feel as though you have fully expressed who you are in the previous two steps? If so, go to step 4. If not, what other words would you use to describe the sort, the type, and quality of person that you are? You may find it helpful to think of how the people who know you best would describe you (e.g., family orientated, creative).

Please list these in the space provided.

Other Self-Descriptions

1.	2.	3.
4.	5.	6.
7.	8.	9.
10.	11.	12.
13.	14.	15.

Step 4

Look back on all the items you have listed in step 1, 2 and 3. In the summary table below, list the only the items that you consider the most important. These are the items that you think most define who you are as a person. Choose a minimum of 5 and a maximum of 10.

Summary Table

1.	2.
3.	4.
5.	6.
7.	8.
9.	10.

Appendix C: Rating of Self-Characteristics

Group Formation Potential

1. Rate how SIMILAR you think you are to other women with this characteristic

1	2	3	4	5	6	7
Not very similar						Very similar

2. Rate how DIFFERENT you think you are to other women with this characteristic

1	2	3	4	5	6	7
Not very different						Very different

3. Rate how SIMILAR you think you are to other women who DO NOT have this characteristic

1	2	3	4	5	6	7
Not very similar						Very similar

3. Rate how DIFFERENT you think you are to other women who DO NOT have this characteristic

1	2	3	4	5	6	7
Not very different						Very different

Saliency

1. How often in your every day life do you think about the fact that you have this characteristic?

1	2	3	4	5	6	7
Not very often						Very often

1. Rate how important this characteristic is to your self image

1	2	3	4	5	6	7
Not very important						Very important

Physical Activity Norm

8. Think about the following behavior: *Exercising on a regular basis, three or more times a week, for 30 minutes or more.* Rate on the scales provided, what other women or people who also have this characteristic would think about it:

1.

1	2	3	4	5	6	7
Not very appropriate						Very appropriate

2.

1	2	3	4	5	6	7
Not very acceptable						Very acceptable

3.

1	2	3	4	5	6	7
Not very relevant						Very relevant

Appendix D: International Physical Activity Questionnaire

We are interested in finding out about the kinds of physical activities that people do as part of their everyday life. The following questions ask you about the time you spent being physically active in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the **vigorous** activities that you did in the **last 7 days**. **Vigorous** physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for more than 10 minutes at a time.

During the **last 7 days**, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, or fast bicycling?

_____ days per week

No vigorous physical activities → **skip to question 3**

How much time did you usually spend doing **vigorous** physical activities on one of those days?

_____ hours per day

_____ minutes per day

Don't know/ Not sure

Think about all the **moderate** activities that you did in the **last 7 days**.

Moderate physical activities refer to activities that take moderate physical effort and

make you breathe somewhat harder than normal. Think only about those physical activities that you did for more than 10 minutes at a time.

During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking

_____ days per week

No moderate physical activities → **skip to question 5**

How much time did you usually spend doing **moderate** physical activities on one of those days?

_____ hours per day

_____ minutes per day

Don't know/ Not sure

Think about all the time you spent **walking** in the **last 7 days**. This includes at work and at home, walking to travel from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

During the **last 7 days**, on how many days did you do **walk** for at more than 10 minutes at a time?

_____ days per week

No walking → **skip to question 7**

How much time did you usually spend **walking** on one of those days?

_____ hours per day

_____ minutes per day

Don't know/ Not sure

The last question is about the time your spent **sitting** on **weekdays** during the **last 7 days**. Include time spent at work, at home, while doing course work, and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting/ lying down to watch television.

During the **last 7 days**, how many days did you spend **sitting** on a weekday?

_____ days per week

No sitting → **skip to question 7**

How much time did you usually spend **sitting** on one of those days?

_____ hours per day

_____ minutes per day

Don't know/ Not sure

Appendix E: Theory of Planned Behavior Questionnaire

Attitude

Please indicate by marking on the scale below how you feel about the following: For me to engage in *exercise that made me breathe harder than normal for 30 minutes or more, three times a week for the next three months* would be:

	1	2	3	4	5	
Pleasant						Unpleasant
Good						Bad
Harmful						Beneficial
Enjoyable						Un-enjoyable
Worthless						Valuable

Subjective Norm

Indicate by marking on the four scales below, your thoughts about what the people who are important to you would think of you engaging in *exercise that makes you breathe harder than normal for 30 minutes or more, three times a week for the next three months*.

1. *Most people who are important to me think that I should engage in exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months*

1	2	3	4	5	6	7
Strongly Agree						Strongly Disagree

2. It is expected of me that I engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months*

1	2	3	4	5	6	7
Strongly Agree						Strongly Disagree

3. The people in my life whose opinion I value most would approve of me engaging in *exercise that makes you breathe harder than normal for 30 minutes or more, three times a week for the next three months.*

1	2	3	4	5	6	7
Strongly Approve						Strongly Disapprove

4. Most people who are important to me engage in *exercise that makes them breathe harder than normal for 30 minutes or more, three times a week*

1	2	3	4	5	6	7
Completely True						Completely False

Perceived Behavioural Control

Indicate by marking on the four scales below, your thoughts about how much control you have over engaging in *exercise that makes you breathe harder than normal for 30 minutes or more, three times a week for the next three months.*

1. For me, to engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months is:*

1	2	3	4	5	6	7
Impossible						Possible

2. How much control do you believe you have over engaging in *exercise that makes you breathe harder than normal for 30 minutes or more, three times a week for the next three months?*

1	2	3	4	5	6	7
No Control						Complete Control

3. If I wanted to, it would be easy for me to engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months?*

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

4. It is mostly up to me whether or not I engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months?*

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Physical Activity Intention

Indicate by marking on the three scales below, your intentions to engage in *exercise that makes you breathe harder than normal for 30 minutes or more, three times a week for the next three months*. 1. I intend to engage in exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months?

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

2. I plan to engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months*?

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

3. I will try to engage in *exercise that makes me breathe harder than normal for 30 minutes or more, three times a week for the next three months*?

1	2	3	4	5	6	7
Completely False						Completely True

Group Norm

1. Rate how many other *Strong Independent Women/ Spiritual Caring Women* would think that *exercise* is a good thing to do.

1	2	3	4	5	6	7
None						All

2. Rate how much other *Strong Independent Women/ Spiritual Caring Women* would think that *exercise* is a good thing to do.

1	2	3	4	5	6	7
Disagree			Agree			

3. It is expected of me as a *Strong Independent Woman/ Spiritual Caring Woman* that I *exercise*.

1	2	3	4	5	6	7
Disagree			Agree			

Appendix F: Saliience Manipulation

*High Saliience**Reflection Exercise*

In what ways are you a Strong Independent Woman/ Spiritual Caring Woman? This is your own personal reflection, and you are not required to show this to anyone. Please take the time to reflect on your characteristics as a *Strong Independent Woman/ Spiritual Caring Woman*, and why you would see yourself in this way. Think about how you differ from women who are *dependent/ non-spiritual caring woman*. Write your thoughts as they come to mind; do not be constrained by spelling, grammar, neatness etc.

*Low Saliience**Reflection Exercise*

What makes you unique? This is your own personal reflection, and you are not required to show this to anyone. Please take the time to reflect on your own *unique personal characteristics*. Write your thoughts as they come to mind; do not be constrained by spelling, grammar, neatness etc...

Appendix G: Normative Support Manipulation

High Normative Support – Strong Independent Woman

In this video, I showed information about physical activity from three women who presented themselves as “strong independent women”. The video lasted for approximately 10 minutes and was presented as excerpts from interviews between me and each woman. The video was called “Where does Exercise Fit in with your Life?” The following is the script from the video.

Interviewer

I interviewed three women who all regarded themselves as capable, determined, strong, ambitious and independent women. I talked to them about the role physical activity plays in their lives.

Question 1: How do you see yourself as a Strong Independent Woman?

Interviewee 1 (P). For me I suppose it’s about being able to do things by myself and not having to rely on other people, or certainly not all the time. Being able to do things like carry my own shopping and also my job is also very stressful and I have to fit a lot in. I am a career woman so in addition to the job, which is very demanding, there is life isn’t there? There are other things to do, there are other people in my life who I want to be there for, so being independent is about being able, not needing to rely on other people all the time and certainly being able to pack a lot in.

Interviewee 2 (J). Well, I am an independent, strong woman because I make choices for myself and my children. Some people think it is strange that I regard myself as a strong independent woman because I am a mother of three and I don’t work. But I feel that with three kids being strong and independent is about not

worrying about what everyone is thinking, about making decisions that suit you and your children not other people and other people's children.

Interviewee 3 (K). Except for brief periods when I had my children I have pretty well worked all my life. You know I have taken a brief time out when they were tiny but I returned to work fairly soon and I have always worked and have always contributed to the family's income and assets and so I feel that I am not supported. I am not a supported woman, in a financial sense, so I am a string independent woman.

Question 2: Why do you Exercise?

P. Well exercise to me is essential for independence and I am over forty now and I think about what it will be like when I get older. I certainly want to be independent when I get older, so I still want to be strong enough to lift things and to be able to go out and do things. I certainly do want to be sitting down, sitting in a chair all the time, not being able to get up from the chair without assistance, things like that. The fitter you are, the more energetic you are. It's also about being able to keep going. It's about endurance. So exercise is very important in that regard.

J. I made a decision to go to the gym and get fit for myself and it's not just for myself it's actually for my kids. It's very important that I am still here when I am in my 50's because my mother wasn't. That's the thing - the gym costs a lot of money, but to go to the doctors and pay for your medical bills for heart disease and obesity and all this – that costs a lot more.

K. I guess I see myself as the type of woman who is capable, efficient, organised, and I certainly live a hectic life! I need my body to keep up with me! I simply must exercise. I seem to be able to do ten times more when I exercise, I couldn't do what I do – work, be a parent, manage a house and a husband without it.

Question 3: Do you think other People Exercise for these Reasons?

K. Certainly! All the other ladies who come to this gym would be the same. We all have a million things to do and a million more we want to do, and although exercise seems to be an extra activity, more things to do – in a strange way it helps you get more things done.

J. You do feel more independent when you have made that decision to exercise and you're doing something for yourself and I know that other women have the same experience. I've made a rule that when my kids are sick, I don't go, but then I have bought myself some dumbbells. I have a gym ball at home and I exercise at home, as long as I've done something. The other day I had to take my car to ultra-tune on Burwood Rd, and I drove there and I ran home. So I do things like that. My daughter is also so strong-headed... that's why I need the energy – to cope with her! Any woman with kids needs to exercise – they need the energy!

Question 4: Do you think it Matters what Type of Exercise you do?

P. I think it matters from the point of view of having a balance of kinds of exercise you do. Obviously aerobic capacity – you know your heart and lung function is one element of physical fitness. But for me personally, I like to do other things too. Like for example, it is very important for me to be physically strong. So because of that I will do things that will help me with my body strength, so I go to the gym and do weights. I think what we also have to bear in mind is that exercise is hard work and for a lot of people it is not easy to do and for me it is not easy to do, so for me, it is about what I enjoy. In the eighties there was all this stuff about going out jogging, well, for me, that is just so unpleasant!

J. I started running. I didn't just start running. I didn't go out and just run full ball. I was taught to interval run, run for 40 seconds at one level then slow down for 20 seconds. I have also heard that interval running, walking, jogging, whatever, is so important for women because you are making your heart rate go right up and then you are bringing it down and then pushing it back up, so you are actually giving yourself bursts.

K. I think it is important to be very physical. The whole point of exercise is to get stronger, so I think it is important to do things that are different sorts of activities for the normal day to day activities that women engage in. It is very important to work up a sweat and to breathe harder.

Question 5: What about the Health Benefits and Body Shaping Aspects of Physical Activity?

P. I think it is important to pretty much all of us how we look. We do want to look good, and I accept that, and I want to look good as much as the next person does. One of the things that I suppose bothers me about that is that being thin doesn't necessarily mean that you are healthy. What is more important are all of the real indicators of health, like having a healthy heart rate, normal blood pressure, low cholesterol - those sorts of things. I think it is more important to exercise for those reasons. If you have normal blood pressure, if you have good lung and heart function, and your muscles are strong, then you can do more, and you can be more independent and strong. That is more important to me as an independent woman, than whether I'm thin or not.

J. I think fitness is a better motivator than losing weight and being skinny. I think to do something for yourself, to achieve something, like a fun run, that is more

important. I think you should also set goals. Not just goals, like I am going to lose weight by my birthday, and then that's it, you should set yourself fitness goals, like I'm going to run in the next 5km fun run.

K. Well, yes, the health benefits are very important. When you think about it, the single most important thing in life is your health. Exercise helps you to remain healthy, and that then helps you to remain efficient and organised in getting all the things you need to get done. As I said before, if you've got a healthy body your body is more efficient, and you can start as soon as you need to as an efficient system. I also like to be able to walk into a clothing store and buy things that fit me, and I don't really want to be traipsing around trying to find things that fit me, I don't have time for that, I've been there before and you do waste a lot of energy when you are worried about how you look. It is better to have a set body shape, and you maintain it. Very few of us have perfect body shapes, but I must say that with exercise, I feel good about my body and I feel happy being inside my own skin.

High Normative Support – Spiritual Caring Woman

In this video, I showed information about physical activity from three women who presented themselves as “spiritual caring women”. The video lasted for approximately 10 minutes and was presented as excerpts from interviews between the researcher and each woman. The video was called “Where does Exercise Fit in with your Life?” The following is the script from the video.

Interviewer

I interviewed three women who all regarded themselves as spiritual, reflective, caring, and balanced women. I talked to them about the role physical activity plays in their lives.

Question 1: How do you see yourself as a Spiritual Caring Woman?

Interviewee 1 (P). To me spirituality is about ... it's kind of hard to explain, it's about ... balance and harmony in my life. Balance between my mind and my body and my soul. By soul I don't mean the religious concept of soul, I mean an inner life force. In Chinese culture, which is my culture, we call it 'chi' we call it a balancing of ying and yang. So it's about things like that and being in tune with all those aspects of myself or trying to get in tune with all aspects of body, mind and soul, the 'chi'.

Interviewee 2 (J). I think it adds greater meaning to us as we are all connected. So to me it's really important to live by a set of values and to consider other people in those values, so to never hurt other people and just to be the best way I can be and grow into the best person I can be, so that my time here has meaning.

Interviewee 3 (K). When I think of the word 'spiritual' I think of 'spirit', and I think spirit is that quality in a person that is energy and joy. It's identifiable feeling of

being human. Its something important with inner self and I think I am interested in exploring what that inner self is.

Question 2: Why do you Exercise?

P. Well, exercise helps me to maintain awareness of those different things, who I am, how I can care for others. I think that the kind of lifestyle that most of us lead now in the western world is all in the mind, it's all brain work, it's all in the head. Its work, work, work, it's achieve, achieve, achieve, it's go, go, go and never stop and don't think about what you or others are really thinking or feeling. So I suppose to me exercising is about making sure that I don't lose focus from the physical and emotional, I suppose, the link between spiritual and the body and the mind. So by exercising I am aware of my body and what its doing and how it functions, how it works and aware of not just the health benefits of what I am doing in exercise but the more spiritual and emotional benefits that I get, like relaxation, being able to give more. I like to be reminded that I still have muscles, that I am a physical being and not just about what is in my head.

J. Exercise is a time out really. It's time out of the daily grind, time to bring back into focus the here and now, rather than just my mind scattered off everywhere. I can then bring this back into my day to day life and I can give to my family, my work much more than if I hadn't taken that time.

K. Well partly it's because I spend a lot of my time giving to others. This issue of spirituality and giving to others, expending energy on giving and I think that exercise is a very good way of putting that energy back into me. I mean giving is very important, but I think you can only give if you have the energy yourself to give back.

Question 3: Do you think other Women Exercise for these Reasons?

J. Definitely. I think exercise is a way of bringing some sort of balance to your life. We've all heard of the saying "your body is your temple". It's just a way of bringing the physical and mental and spiritual altogether into one, and just really caring for your body, taking time out. If I can't keep going because I am unfit or unwell, other people suffer, so it is my responsibility to look after myself and my body.

K. I think many people, particularly women like me, have busy lives with families, spouses, relatives, the workplace to cope with which can be very draining, and it's important to prepare oneself for that, particularly, as I said, for giving. You have to have the reserves of energy for giving, and exercise is very important for that. Of course we know that, and I think many women like me have the same feeling that it helps them cope.

Question 4: Does it Matter what Type of Exercise you do?

P. Yoga comes to mind very easily because it contains a meditative component and I do yoga for that. It's about meditation it's about connecting with your inner being and your senses and feelings and so on. But people can get spirituality in and feel connection with spirituality in different ways. When I am out walking in the bush and I see beautiful green trees and I hear birds singing in those trees and see lovely animals, to me that is very spiritual because I am connecting with nature. I also scuba dive and to go underwater and see the beautiful reefs and swim with the fish, that's a very spiritual experience for me as well. I am connecting with nature, I am connecting with me, physically and what I am feeling inside me as well. I try to keep a heightened awareness of all these different aspects of me and that I can make sure I am in balance and harmony, that I am not all in my head and doing work, work, work things, but that I

am also doing physical things, I am also doing harmony things, I also doing energetic things.

J. I don't think it matters whether you are swimming, doing yoga or running or walking, but I think the intensity does matter. I think if you are just having that quiet stroll along you can still be distracted and not get that benefit of the here and now. Challenging yourself and really feel the intensity of it, I think that really does bring your mind back to the here and now and then it becomes a part of the meditation. During life your mind is scattered everywhere and I think most religions have some kind of meditation or prayer, and even people who are not spiritual or religious feel they want to take time out and come back to you and think about what's important.

K. I do think it's important to get a little sweaty. I think you have got to get your heart pumping and to get a little bit sweaty. I actually think that lifting weights is very good for the strength. I've talked about energy and strength, I've been lifting weights for some time now and gradually built it up. I'm certainly not a body builder, but I lift reasonably heavy weights and it's very good for the strength, which all gets back to that ability to be able to give of yourself. If you are strong, you can give more.

Question 5: What about the Health Benefits and Body Shaping Aspects of Physical Activity?

P. Spirituality in lots of ways in about accepting who we are and who others are, that's how I think of it. For me what's more important is how my body works and making sure that I feed it healthy food and that I exercise it enough so that it will function properly and that I am actually healthy. I hope that by caring for myself, I am a good role model for the people in my life. Also, being thin does not mean that one is healthy. Things that indicate that you are healthy are that you have a low resting heart

rate, that you have normal blood pressure, that you have low cholesterol. All those things that we know about. The fact you are thin doesn't actually mean that you are necessarily healthy. I think it is more important to focus on the real health benefits of exercise as opposed to the appearance side.

J. Body shaping is lovely and I am sure that a lot of people enjoy the bonuses from that, but for me it's really just about getting my mind clear and my head straight and in the right zone, if you will. The bonuses of changing my body and being healthier and fitter that's all fantastic, and how I look is not as important but is just a bonus. I don't demand that of myself and I don't demand that of others. I think it makes you a more well rounded person, more able to accept yourself and others.

K. I don't do exercise so that I will fit into a swimsuit. It's not primarily for vanity reasons that I do exercise. I do it to replace the energy that I spend giving to others and having said that one finds that with exercise one does get better, one carries oneself better, one's posture is better and the thing about strength it gives you more confidence, so you have energy and confidence to carry yourself better and that actually does change your physical appearance.

Low Normative Support

In this video, I showed information about physical activity from three general health professionals. The video lasted for approximately 10 minutes and was presented as excerpts from interviews between the researcher and each professional. The video was called “Physical Activity and Your Health”. The following is the script from the video.

Interviewer

I interviewed three women all working in the health profession. I talked to them about the importance of physical activity and where this fits in with people’s lives.

Interviewee 1: Health Psychologist

My specialisation, or one of my specialisations, is women’s health, particularly in relation to sport and exercise. So some things that I look at are how exercise can benefit our health and our body and our psychological health.

Interviewee 2: Health and Wellness GP

I am a medical doctor and work in a health and wellness clinic. My interest is on wellness promotion and the whole person.

Interviewee 3: Personal Trainer

I am a personal fitness trainer so that incorporates core group fitness training as well as one-on-one individual, personal fitness consultations.

Question 1: Why is Exercise Important?

Health Psychologist. We are all very well aware of the physical, medical benefits of physical exercise and how important it is to exercise regularly in order to have good cardio vascular function or aerobic function, as some people might know it. Exercise is good for other things like normal blood pressure, slow resting heart rate,

and it is also good for low cholesterol. Exercise is also very very important for normal function in addition to, let's say, avoiding ill health if you like. We need to have enough energy to be fit enough to do things, be it just walking to the park with our children. We need to be strong enough to do lots of things like carry our shopping and do gardening and housework and whatever it is that people do with their time. And, thirdly, it is really, really important for mental health, or psychological health or emotional health, whatever you want to call it. Exercise has tremendous health benefits in terms of stress relief and then I also think it is very, very good for self esteem because if one is capable and able to carry home shopping without it being a problem, is able to go to the park and play with the children and maybe keep up with them for a while, then we feel good about ourself being able to do that.

Health and Wellness GP. Physical activity is one of the key things I talk to my patients about. It will not only help them live longer but it will help prevent diseases such as osteoporosis, cardio vascular disease, diabetes, even cancer, obesity, a range of those diseases. And fundamentally it makes them feel better, it gives them a better quality of life.

Personal Trainer. The most important benefit of physical activity is quality of life, so being healthier, like feeling stronger and healthier and in terms of the future, so reducing the chance of disease and also healthy ageing.

Question 2: What is the Right Amount of Exercise to be doing?

Health and Wellness GP. An accumulation of 150 minutes of moderate to vigorous activity over a seven day period, and that works out to be 30 minutes, five times a week, or about an hour three times a week.

Interviewer. So what do you mean by moderate to vigorous?

Health and Wellness GP. Moderate to vigorous is when you are breathing a little more heavily when you feel your breathing and you can't necessarily talk normally. Over 50% of our population do not have sufficient physical activity. Alarmingly it's women and older people who figure most strongly in this group of the population. So I guess you could say that our population is predominantly sedentary.

Question 3: What Stops People from Exercising?

Health Psychologist. Look, there are an awful lot of reasons for that, and one is that our society is becoming more sedentary, like we have more machines to do things for us. You know, everything is automated now, a lot of our jobs are not as physical as they used to be. We are also a more affluent society so we are more likely to have cars, so therefore don't bike or walk places, things like that. I also think there are more sedentary activities to be done, there is a lot of television now, there are computer games which stop kids from being active, there is just so much more to be done which involves sitting.

Health and Wellness GP. Our society is increasingly focussing on the quick fix. The latest one is the instant beauty treatment, the botox injection, where exercise is more a commitment to a lifestyle, to a long term lifestyle change. That can be hard work, it's not easy and is certainly not a quick fix.

Personal Trainer. Firstly, a lot of people think it is too hard, that is beyond them, it's too hard or they are not an "exercising type of person". I think a lot of people see gym and fitness people as "gym freaks" or "exercise freaks". But most of my clients are just your general everyday sort of people who just want to feel fitter and have a better quality of life. Another reason is that people see it as something really difficult and hard and that is because exercise is something you have to build up slowly,

so really you just have to push yourself slowly and build up your achievements that way.

Question 4: Why do People Start Exercising?

Health Psychologist. Well people start exercising for different reasons and what the research shows is that for a lot of people its, first of all, the medical benefits and then they start to realise the additional benefits that there are to that and they get sold on it.

Personal Trainer. Most people come, to tell you the truth, because they want to look better, want to lose a bit of fat or increase their muscle size. A lot of people come to me after New Year, that sort of thing, they have goals in mind, before a wedding, that type of thing, to look better. Often that is where they start, to look better, but generally they like how they feel and how they look becomes less of a priority and they enjoy how they feel.

Question 5: Is Body Shaping an Effective Motivator in Getting People more Active?

Health Psychologist. It certainly is a very strong motivator. It is stronger in respect to women as opposed to men. Exercising to improve the body, but evidence now shows that men are also becoming more concerned with their body and they want to be more muscular, whereas women want to be slimmer. But, yes, it certainly is a factor, but my research has shown that that is actually not a good reason. We have all of these ideals in our minds that we want to achieve, from pictures in magazines and other media, but we are not going to be able to achieve them because what those pictures are like, they are just not what the ordinary person in the street is ever going to be able to look like. So I think a much more important way of motivating oneself to

exercise is to focus on those health benefits, the medical health benefits, the psychological benefits and the personal benefits like self esteem and that sort of thing.

Personal Trainer. It can only be ... short term. People become very frustrated with it. The body doesn't change quickly either, so it can become very frustrating for people. Feeling fitter and being able to run up stairs and being able to play you're your children and those sorts of goals are much more important and more motivating for people.

Question 6: What Advise would you Give People who want to Start Being More Physically Active?

Health Psychologist. I think the most important thing is to set small goals and continually review those goals and then change them or increase them or whatever. So start off with a small goal, supposing you were completely sedentary and you are not very fit at all, a small goal might be to walk around a local park once, two or three times a week and then when that is within your capability, and no longer difficult, to increase that to maybe walk around it twice, three times, you know just building it up slowly. It can be stuff that doesn't cost a lot of money or require a big pay-out, also very importantly it has to be something someone really enjoys. There is no point in them embarking on a running program if you know that you are just going to hate the thought of running. It is not easy to get yourself fit and when you are fit you have to keep challenging yourself to stay fit, you have to make it harder and harder, so it is never easy. So choose something you enjoy so that will in someway make up for it not being easy.

Personal Trainer. Start small and enlist help. It can be with a professional or a family member, dog, kids, anyone to help motivate. But also to start small, don't think

that you have to exercise every day, or you have to run. Start really small by doing little bits and pieces and then keeping it as a regular thing, it's got to be regular and built up slowly over time.

Health and Wellness GP. Well the most important thing is to get started! First get your body moving, don't try and be too ambitious, just get started. You can start by exercising and getting your heart pumping faster for over 20 minutes a day and that can be anything, swimming, walking, playing tennis, dancing, tai chi, anything, just as long as your heart is working harder.

Question 7: What is your Ultimate Message about Physical Activity?

Health Psychologist. I suppose the ultimate message is that it is about health, the true indicators of health. It's not about being slim or being muscular if you are a man, but about true indicators of health such as heart rate, etc.

Health and Wellness GP. I think I emphasised that physical activity is so important for your health and wellbeing and even though you don't see the results immediately, it is doing you good, it is making you healthy, it is making you stronger, and more energetic - if you do the exercise regularly.

Personal Trainer. Exercise doesn't have to be running or aerobics. There are so many things that are exercise incorporated. Some people love bush walking, some people like just getting out and rowing on a lake, there are so many different ways to move the body and they don't have to be your general "going to the gym". If you think a little bit outside the box and not just think that you have to join a gym to get fit, because it is not for everyone and there are different things out there for everyone.

Appendix H: Information and Consent Form for 3-Month Physical Activity Study

Participant Information Form

Project title

3-month Physical Activity Study (women and activity)

Researchers

Professor Tony Morris

Professor Terry Seedsman

Ms Erin Pearson

Australian Research Council and VicHealth

Purpose of the study

This study involves a physical activity workshop designed to assist you in becoming more active, followed by a 3-month follow-up on your physical activity levels.

Your involvement

You will be involved in this study for a period of 3 months. There will be two formal two-hour physical activity workshops, one at the beginning of the study, and one 12 weeks later. At the first workshop, you will watch a series of video interviews showing people discussing physical activity. You will be encouraged to reflect on these interviews in discussion with other study participants. You will be contacted two weeks after this workshop and asked to complete questionnaires on your relationship to physical activity and how much physical activity you participated in during the previous 7 days. There will be a check-up about 7 weeks after the initial workshop. About 10 weeks after the initial physical activity workshop, you will be contacted and invited to the final workshop. At this workshop, you will be asked to again complete

questionnaires on your relationship with physical activity and how much physical activity you participated in during the previous 7 days. At this session, the researchers will explain more about what your involvement in the study means and give you a chance to discuss your experiences being involved in the study with the researchers and other participants.

Confidentiality

No record of your participation in this study will be kept, and all responses you give in the questionnaires will remain confidential. The contact details you have supplied are for the researchers to contact you and provide you with the follow up questionnaires. Your responses in the questionnaires will not be linked to you personally and will be used for this research only.

It is expected that the results from the study will be published in academic journals in the form of general patterns only.

Potential Risks and Safeguards

The questionnaires you are asked to complete may require some level of concentration, and may be complicated. If, through the course of completing the survey, you experience any stress, or do not understand something, please do not hesitate to contact me (see contact details below). Also, during the course of the workshop/ seminars, if you feel any discomfort due to the discussion topics or the issues raised, you may speak to a psychologist who is not connected with this study (contact details provided below).

Freedom of consent and withdrawal

Participation in this research is entirely voluntary. You are free to withdraw at any stage. Your participation, or refusal, will not influence your present or future

association with Victoria University, VicHealth, the Australian Research Council, or any other organisation or institution.

Potential Benefits

Your participation will allow us to understand the best ways to encourage women aged between 25 and 45 to be more physically active.

Inquires

Questions related to this project are welcome at any time. Please direct them to Erin Pearson (erin.pearson@research.vu.edu.au) or Professor Tony Morris (ph: 9688 5353; Email: Tony.Morris@vu.edu.au). If any complaints or queries have not been answered to your satisfaction, you may contact the Ethics Liaison Officer, Human Research Ethics Committee, Victoria University (ph: 9688 4710; Email erika.moreno@vu.edu.au).

Acknowledgement

Thank you for taking the time to read this information. We hope that you enjoy the workshops and find the surveys interesting.

If you have any complaints about this study, you may contact the Secretary, Human Research Ethics Committee, Victoria University, PO Box 14428 MC, Melbourne, 8001 (tel: 9688 4710, email erika.moreno@vu.edu.au).

Participant Consent Form

I confirm that I have volunteered to take part in the '3-month Physical Activity Study (women and activity) research that is being conducted by Erin Pearson and Professor Tony Morris of Victoria University.

I have read the Participant Information Form. My involvement in the research has been fully explained to me by the researcher and I have had an opportunity to ask questions.

I agree to take part in the two-hour physical activity workshop by viewing the video information presented and afterwards being involved in a group discussion. All information I provide and others provide in discussion will be strictly confidential. I agree that the researcher will contact me two weeks after I have participated in the physical activity workshop in order to complete questionnaires on my thoughts about physical activity and my actual physical activity levels. I agree that I will then be invited to attend a final workshop 12 weeks after the original physical activity workshop in order to complete one final questionnaire package on my thoughts about physical activity and my actual physical activity levels, and to discuss my experience of being involved in the research.

I understand that my participation is up to me, I do not have to talk about anything that I do not want to, I do not have to complete any of the subsequent questionnaires sent to me or answer any of the questions I do not want to, and I may withdraw from the study at any time without any effect on me.

Name Signature

Witness name Witness signature

(other than researcher)

Date