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HEALTH BEHAVIOUR CHANGE IN YOUNG CHILDREN: THE ROLE OF A PARENT-FACILITATED MOTIVATIONAL INTERVIEWING PREVENTION INTERVENTION PROGRAM

Submitted by

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Abstract

Increasingly, children are being diagnosed with chronic conditions, such as obesity, due to a change in lifestyle behaviours including poor activity and eating habits. This change has increased children's risk of developing adulthood diseases. Early prevention intervention programs are needed to deal with health behaviour change. Two studies explored this idea. Study 1 investigated whether an experimental program based on motivational interviewing (MEP) was more effective than an educational program (FWMP) in assisting 20 parents to support their children, aged between 7 and 12, to change unhelpful health behaviours that do not promote the maintenance of good health. It was predicted that, compared to the seven FWMP children, the 14 MEP children would demonstrate more helpful eating and activity habits post intervention that would be maintained at six months follow-up. It was also predicted that the MEP children would demonstrate greater improvement in self-esteem, mood, and body-image perception. Other variables examined included the children's motivation orientation and other family members' health behaviours. Both programs targeted the parent as the change agent, and were matched in number of sessions, program length, and facilitator contact. On completion of MEP, a focus group assessed its utility. In contrast to the expected outcome, intervention effects were demonstrated in both groups. For example, children's activity levels were significantly increased and sedentary hours decreased. They also demonstrated a significant decrease in eating whilst watching T.V., and a decrease in calories and carbohydrates. These main effects suggest that the parents were an important influence in their children's health behaviour change. The focus group results suggest that, despite the quantitative findings, MEP helped parents address their ambivalence to support change. The feedback also highlighted barriers to

participation and retention, which were limitations of Study 1. Study 2 was conducted to explore impediments to problem recognition, help-seeking, and treatment adherence. Semi-structured, audio taped interviews were conducted with nine MEP parents and nine parents who withdrew from the interventions. Content and thematic analyses were used to identify major and category themes. The qualitative results suggest that minor differences may influence intervention participation. The quantitative results showed that the parents who withdrew were significantly more depressed than the intervention group. It is suggested that future studies assess parents for learned helplessness to identify whether this is a significant factor that impacts on parents' active participation in interventions and in supporting their children to change their health behaviours.

Statement of Authorship

Except where reference is made in the text of the thesis, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis submitted for the award of any other degree or diploma.

No other person's work has been used without due acknowledgement in the main text of the thesis.

The thesis has not been submitted for the award of any degree or diploma in any other tertiary institution.

All research procedures reported in this thesis were approved by the Faculty of Science, Technology and Engineering Human Ethics Committee at La Trobe University (Project Number FHEC06/R72).

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Thesis Overview

Supporting health behaviour change in young children is a recognised challenge for many parents (e.g., Edmunds, 2005). Particularly given that our modern lifestyle, with its technological advances and fast food options, promotes sedentary behaviours and unhelpful eating habits (World Health Organization [WHO], 2002; 2006). The changes in our lifestyle behaviours over recent decades has contributed to a disease burden that is causing major health risks in adulthood (WHO, 2002). Increasingly, however, the health of our children is also being compromised.

Prevention of disease is important to allay its onset. Early intervention programs that encourage parents to support their children to change their unhelpful activity and eating behaviours are required. Although there are programs that have demonstrated effective outcomes in health behaviour change (e.g., Johnson & Nicklas, 1995; Luepker & Perry, 1991), a challenge for many families has been maintaining such changes over time (e.g., Epstein et al., 1990; Epstein, Valoski et al., 1994; Muller et al., 2004; Murray et al., 1987; Nader et al., 1989). This thesis explores a parent-facilitated motivational interviewing based intervention to encourage helpful health behaviours in young children. For this purpose, a motivational enhancement program was specifically developed. This is the first time such an intervention has been used in the manner proposed here. This thesis is organized as follows.

Chapter 1: Prevention Intervention and Children's Health Behaviour Change

The introduction reviews the literature on early childhood interventions. Initially, the biopsychosocial consequences of lifestyle health risk behaviours will be overviewed, with particular emphasis on the effects of such risks on children's health.

The benefits of prevention as an effective approach to good health will then be discussed. In addition, research will be explored on preventing health risk behaviours and related diseases in young children. The chapter ends highlighting parents as the ideal change agent to support children to change their unhelpful health behaviours.

Chapter 2: Motivational Interviewing as an Intervention Strategy

In this chapter, motivational interviewing (MI; Miller & Rollnick, 2002) is identified as an effective strategy to encourage health behaviour change in young children. It will then be defined, and its application within the framework of the transtheoretical stages-of-change model (Prochaska & Norcross, 2003) discussed. A literature review on the use of MI and its techniques in the area of health behaviour change will follow. This includes a discussion of its use with adults, adolescents, and its adaptation for use with children directly and indirectly. The use of MI relies on the evocation of intrinsic motivation from its recipient (Miller & Rollnick, 2002). So, whether intrinsic motivation can be elicited from young children will then be explored.

Chapter 3: Research Limitations, Empirical Methodology, and Study Rationale

Chapter 3 provides the rationale for Study 1. Limitations of previous studies will be addressed, including identifying the most effective means of supporting children to change their unhelpful health behaviours. That is, consideration will be given to the effects of educational, behavioural, family-based, and school-based interventions. The methodology of Study 1 will then be discussed.

Chapter 4: Study 1 - Exploring Motivational Interviewing as a Prevention Intervention Strategy for Health Behaviour Change in Young Children

The purpose of Chapter 4 is to explain how Study 1 proceeds. A brief summary supporting the study's inception preludes the aims and hypotheses. The method of the study follows, highlighting details about the participants, measures, and procedure. The details about a focus group are explained; its purpose was to explore the utility of the experimental intervention. The results of the study will then be reported for the participating and nonparticipating family members. Finally, a discussion of the Study 1 results, and reasons for Study 2, will be offered.

Chapter 5: Study 2 - A Qualitative Study on the Barriers to Health Behaviour Change and Help-seeking

A second study was conducted to explore the barriers to problem recognition, help-seeking, and treatment adherence. These were identified as impediments to parents' participation in Study 1. The chapter overviews the literature on the stated barriers. Three aims of Study 2 are highlighted. The main aim was to explore parents' ambivalence to supporting their children given that a number of parents withdrew from Study 1. An inductive qualitative semi-structured telephone interview was conducted to address the aims. The method section will then follow. Quantitative and qualitative results of Study 2 will be reported and then discussed. Few differences between the groups were noted. It is possible that what distinguished the groups was that the parents who withdrew might have felt helpless. Evidence for this is explored. It is suggested that, in future studies, assessing parents' sense of helplessness may provide insight into

some of the factors that impede parents' participation in health behaviour change interventions.

Chapter 6: Conclusion

The conclusion reinforces that the parents, independent of the intervention, may have been the influencing factor for the main effects of Study 1. It is suggested that how parents are supported is important, particularly since Study 2 highlights "helplessness" as a potential barrier for intervention participation. Recommendations are made on how to effectively support parents, which includes designing supportive interventions and training health professionals on relationship building.

Chapter 1

Prevention Intervention and Children's Health Behaviour Change

The maintenance of good health has been shown to improve the quality of life, prevent long term health problems, and increase life expectancy (Howard, 2007; MacFarlane, 2005; World Health Organization [WHO], 2002; 2006). In their 2007 report on *Understanding Global Health,* the WHO contrast the ten leading causes of death in the United States between 1900 and 1997. The top three in 1997 - heart disease, cancer, and stroke - replaced pneumonia, tuberculosis, and diarrhea enteritis, which were the top three in 1900. But, together, the new top three accounted for about 60% of the annual deaths compared to a much lower 30% of the former top three. The report shows that the major difference between what people were dying from in 1900 compared to now has a lot to do with a change in lifestyle behaviours. Sedentary behaviours have increased and eating habits have changed, both of which have become major risks to health. High blood pressure and cholesterol are increasingly related to an excess consumption of an unhealthy diet such as foods high in fat, sugar, and salt, and low in fibre (WHO, 2002). These eating habits are contributing to cancer, stroke, and obesity.

In addition, the sedentary behaviours people have adopted are associated with at least 15% of cancers, diabetes, and heart disease. Unhelpful sedentary and eating behaviours that do not promote the maintenance of good health have become known as *lifestyle health risks* and are contributing to at least one-third of the disease burden in industrialized countries today and, increasingly, in developing countries (WHO, 2002). Alarmingly, studies are showing that these health risks that contribute to disease outcomes in adulthood, are being noted in young children (Copeland, Becker,

Gottschalk, & Hale, 2005; Epstein, Wing, Steranchak, Dickson, & Michelson, 1980; Freedman, Dietz, Srinivasan, & Berenson, 1999; Hill & Silver, 1995; National Health & Medical Research Council [NHMRC], 2003a; Strauss & Pollack, 2003). To reduce this disease burden, prevention is crucial, and it needs to start as early as possible.

Implementing early intervention programs in childhood that deal with lifestyle behaviour change is going to be increasingly important to prevent health problems over the lifespan. Lifestyle health behaviour change includes increasing physical activity, modifying unhelpful behavioural habits such as eating in front of the T.V., and encouraging healthy food choices. With this in mind, in chapter 1 I briefly overview the biopsychosocial consequences of lifestyle health risk behaviours. Particular emphasis will be given to identifying prevention as an effective approach to good health, and to reviewing research that has explored intervention strategies that aim to prevent lifestyle risk behaviours and related diseases in children. I propose that the focus of intervention is more effective when parents are the agents-of-change in supporting their children to modify unhelpful health behaviours (e.g., Golan, Weizman, Apter, & Fairnaru, 1998). Further, I argue that Motivational Interviewing, an intervention originally developed to treat substance abuse (Rollnick & Miller, 1995), may be demonstrated to be an effective strategy in the prevention of lifestyle diseases in young children.

Biopsychosocial Consequences of Lifestyle Health Behaviours

The health-related problems and determinants of diseases associated with lifestyle behaviours such as inactivity, unhealthy food choices, and unhelpful behavioural habits have been well documented (e.g., WHO, 2002). The physical consequences include diabetes mellitus, cardiovascular disease, hypertension, cancer,

osteoarthritis, obesity, and reproductive health problems. In addition, psychological problems have been found to include low self-esteem, depression, and body image concerns (Bluher et al., 2004; Freedman, 2004; Gunther, 2004; Saenger, 2004; WHO, 2003; 2004). As indicated, these health problems are increasingly affecting children and adolescents (Copeland et al., 2005; Epstein et al., 1980; Freedman et al., 1999; Hill & Silver, 1995; NHMRC, 2003a; Strauss & Pollack, 2003). The subsequent effect of these health problems impact our health care systems (Kiess et. al., 2004). In particular, because some child and adolescent conditions, such as obesity and its associated health problems, often predict adulthood conditions (Ege & von Kries, 2004; Guo, Roche, Chumlea, Gardner, & Siervogel, 1994; Sinaiko, Donahue, Jacobs, & Prineas, 1999; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). To give evidence that early intervention is essential to disease prevention, a brief overview of the biological, psychological, and social consequences of developing unhealthy health behaviours in childhood follows.

Biological consequences of unhealthy health behaviours. Research in nutrition related disease has demonstrated a link between diet and health outcomes (Tershakovec & Van Horn, 2002). This link was initially observed as early as 1908, whereby it was noted that unhealthy food choices increased the risk of developing atherosclerosis in adulthood (Committee on Diet and Health, Food and Nutrition Board, Commission on Life Sciences, National Research Council, 1989). Numerous studies since then have provided further evidence that a diet high in saturated fat, deficient in nutrients and fibrous foods such as fruits and vegetables, or both, is associated with health problems in adulthood. Such health problems include high cholesterol, heart disease, Type 2 diabetes, and cancer (Fontham & Su, 2005; John & Ziebland, 2004;

Singletary, Jackson, & Milner, 2005). More recently, research has also demonstrated an adverse diet-health connection in children. For example, Type II diabetes is on the increase in children ranging from 6 to 11 years of age (Copeland et al., 2005; Scott, 2006), and the risks of developing cardiovascular diseases has been identified in children as young as 4 and 5 years of age (Freedman et al., 1999; Shea et al., 1991). Also, epidemiological data shows that childhood obesity has been rising worldwide since the 1980s (Chinn & Rona, 2001; de Onis & Blossner, 2000; Freedman, Srinivasan, Williamson, & Berenson, 1997), with prevalence rates in Australian children and adolescents estimated at about 20% to 25% (NHMRC, 2003a).

Such research highlights that recognised health problems in adulthood due to changes in dietary habits have been noted in childhood. Children are eating more fast foods, high energy pre-packaged foods, and less fruits and vegetables (WHO, 2006). Fast and high energy foods have more refined sugars and carbohydrates than nutritional content. Such regular, sustained eating patterns are likely to cause nutritional deficiencies due to inadequate intake of the necessary vitamins and minerals that the body needs to remain healthy and combat disease (Challen, 2007). Research shows that reduced consumption of fruits and vegetables are associated with esophagus, stomach, and other gastric cancers (Fontham & Su, 2005). Conversely, their inclusion in the diet has been shown to decrease the risk of many cancers (Singletary et al., 2005).

Furthermore, increased consumption of foods high in sugar and carbohydrates can promote hunger and overeating, compared to foods high in protein or fibre, due to a quicker drop in blood sugar levels (Challen, 2007). An imbalance in the amount of energy in versus energy out ultimately may lead to an increase in body fat (Challen, 2007). Excess body fat is related to Type 2 diabetes (Faith et al., 2005), hypertension,

high cholesterol, and cardiovascular disease (Dietz, 1998; Scott, 2006). Also, excess body fat can lead to obesity, which is an accumulation of fat in the adipose tissue (Krebs & Jacobson, 2003; Lahti-Koski & Gill, 2004). Increasingly, signs associated with the health problems of overweight and obesity are being identified in children (Dietz, 1998; Faith et al., 2005; Scott, 2006).

In addition to the problems associated with a change in nutritional intake, a change in other health behaviours have also been associated with the development of disease. In a study with adults that spanned nine years (Belloc, 1973; Belloc & Breslow, 1972; Breslow & Enstrom, 1980), the researchers found that physical inactivity was significantly associated with a higher mortality risk. Other studies have found that skipping breakfast promotes overeating during the day, such as eating bigger meals or snacking on high fat-sugar-salt foods between meals (Schlundt, Hill, Sbrocco, Pope-Cordel, & Sharp, 1992; WHO, 2004). In addition, snacking on high energy foods has been shown to be associated with a reduction in the number of fruits and vegetables children consume (WHO, 2004). Other unhelpful behaviours that have been shown to increase the risk of disease in children include increased sedentary behaviours (e.g., watching television, computer use), family eating habits (i.e., home prepared vs. takeaway), and consumption of high energy soft drinks (Dhingra, 2007; Havel, 2005). Socioeconomic status has also been identified as a risk (Hardy, Harrell, & Bell, 2004; Kittleson, 2006; Winkleby, Robinson, Sundquist, Kraemer, 1999; WHO, 2006). The danger is that unhelpful nutritional habits, physical inactivity, and behavioural patterns in childhood increase the risk of children maintaining these health behaviours in adulthood, where the likelihood of disease development is of the greatest risk (Tershakovec & Van Horn 2002; WHO, 2004).

Psychological consequences of unhealthy health behaviours. In addition to the adverse physical health consequences, poor nutrition and physical inactivity has been linked to adverse mood and behaviour outcomes. For example, mood can be affected by physical inactivity due to a reduction of natural feel-good endorphins in the body or due to imbalanced blood sugar and insulin levels resulting from decreased body muscle mass (Challen, 2007). This effect is also evident in individuals who consume large amounts of fast foods and soft drinks. Research has shown that nutritional deficiencies affect neurotransmitter functioning in the brain, which can lead to changes in mood such as depression (Challen, 2007).

Depression is also associated with symptoms of chronic conditions such as diabetes, heart disease, cancer, and overweight (Challen, 2007; Woolf, 1996). Goodman and Whitaker (2002) and Pine, Goldstein, Wolk, and Weissman (2001) found that obese adolescents and children were more likely to be depressed and, if depressed, less likely to engage in physical activity and more likely to remain obese. Goodman and Whitaker also noted that depressed mood may be a cause or an effect of obesity. Depressed mood as an effect of chronic illness such as obesity could adversely affect lifestyle choices and social interaction with others, thus increasing the likelihood of sustaining depressed mood (Anderson & Butcher, 2006; Southern & Gordon, 2003). Furthermore, Carpentier, Mullins, Wagner, Wolf-Christiansen, and Chaney (2007) found that greater depressive symptoms were associated with negative thoughts about their illness in children diagnosed with a chronic disease. Strauss (2000) reported that negative thoughts increase the likelihood of depressed mood, which influences physical inactivity.

Children with depressed mood also report low self-esteem and body image concerns. Stein and Hedger (1997) found that children who experienced low levels of self-esteem due to negative perceptions of body weight and shape, reported greater depressed mood and dieting behaviours compared to those children who had a more positive body image perception. The research shows that body image concerns become apparent in a culture that is weight and shape conscious (Cook-Cottone, 2010; Dunkley, Wertheim, & Paxton, 2001; Levine, Smolak, & Hayden, 1994; Strauss & Pollack, 2003; Taylor et al., 1998), and decreased positive feelings (Jansen et al., 2008) and low self-esteem (Grilo, Wilfley, Brownell, & Rodin, 1994) are related to body dissatisfaction. Studies that have looked at the role of depression, low self-esteem, and negative body image perceptions on wellbeing suggest that health problems are increased due to adverse changes to health behaviours such as inactivity or overeating (see Williams, 2005). Improvements to psychological wellbeing, such as self-esteem (e.g., French, Story, & Perry, 1995) and depression (e.g., Sahota et al., 2001), post an intervention can increase people's potential to engage in health-promoting behaviours (Woolf, 1996).

Social consequences of unhelpful health behaviours. In view of these physical and psychological health problems, the potential global financial impact to health care systems, due to the rising prevalence of chronic conditions has been reported to be substantial. For example, the costs resulting from medical expenses and lost income due to adult obesity in the USA have been estimated at approximately 70 billion dollars per annum (Kiess et al., 2004). The costs of coronary bypass, chemotherapy, and stroke rehabilitation resulting from chronic illnesses currently range from $25,000 to $250,000. In Australia, the direct medical costs of obesity and related illnesses were estimated at $1.3 billion in 2008-2009, loss in productivity $6.4 billion, and the burden

of disease costs were estimated at $30 billion. That is a total of $37.7 billion (Medibank, 2010). As the population grows older and life expectancy increases, the cost of treating such preventable diseases is only going to increase (Ernst & McGinnis, 2005), particularly if today's children establish unhelpful nutritional, physical, and behavioural health habits. Clearly, treating disease puts a burden on health care systems and the money spent on treating chronic conditions compromises the money available to prevent diseases (Woolf, Jonas, & Lawrence, 1996). Thus, given the reported health consequences and financial costs associated with treating chronic illnesses, disease prevention seems a more rational strategy so that good health can be promoted and problems associated with disease avoided.

Prevention: An Approach to Good Health

Traditionally, prevention approaches have been used to avoid physical illness by eradicating the causes of disease, preventing disease from spreading, and increasing people's resistance to disease such as through immunizations (Peters, 1988). This view of prevention is somewhat restricted when one considers that the WHO defines *good* as "all positive benefits of health care: an improvement in the quality of life or a prolongation of life" (Irwing, Zwarenstein, Zwi, & Chalmers, 1998, p. 17) and defines *health* as "not merely the absence of disease and infirmity but rather a state of complete physical, mental and social well-being" (WHO, 2001, p. 3). From this perspective, health is viewed holistically, thereby taking into account that attaining and maintaining wellbeing encapsulates more than just the physical or extending life; it includes the psychological and social influences on health, and experiencing a quality life.

An approach closely associated with prevention, is *health promotion*. This technique is predominately used to define activities that are designed to enhance the health of individuals who do not have an illness or are not at risk of contracting a disease (Peters, 1988). In this context, health promotion and prevention share similar goals in that they encourage people to gain control over their health (WHO, 2002). This notion aligns with Pransky's (2001) view of prevention. He argues that the best definition of prevention is one that promotes actions that create positive outcomes rather than one that invokes the avoidance or cessation of something bad happening, that is, accomplishing results before problems arise. He offers Lofquist's (1983) definition of prevention as one that appeals to the notion of being results-oriented: "an active, assertive process of creating conditions and/or personal attributes that promote the well-being of people" (p. 2). Health promotion as a means to prevent disease was not widely used as an effective strategy until the 1970s when risk factors for disease were associated with unhelpful behaviours such as inactivity and poor nutritional habits (Woolf et al., 1996). The role of healthy nutrition (Nestle, 1996), exercise (Jonas, 1996a), and weight management (Jonas, 1996b) as strategies to prevent chronic diseases became increasingly evident.

Different types of preventive intervention levels have been distinguished; primary, secondary, and tertiary (Pransky, 2001). The purpose of primary prevention is to avoid ill health and build resistance to disease through awareness and the promotion of good health. Secondary prevention strategies are implemented at the first sign of a health problem and generally targets those people at risk of disease. Tertiary prevention is actually more about treating or rehabilitating those already affected by disease and ill health so, in and of itself, is not true prevention (Pransky, 2001). Ideally, implementing

primary and secondary prevention intervention strategies in childhood are thus important to encourage helpful eating and activity patterns to allay the effects of chronic diseases developing. Research provides evidence that nutritional and activity habits established early in life continue into later life (Nicklas, Bao, Webber, Srinivasan, & Berenson, 1992; Singer, Moore, Garrahie, & Ellison, 1995) and that early intervention is important to increase quality of life over the lifespan (Howard, 2007). The WHO (2006) has identified that nutritional habits, lifestyle factors, and behavioural patterns are determinants of good health and reinforce the notion that healthy eating and activity habits need to be established in childhood to prevent adverse health outcomes in adulthood. Primary prevention strategies aim to control any health related problems from arising in the first place, whilst secondary prevention strategies target at risk groups, such as overweight or obese children, to impede any potential health problems from getting out of hand (Bergstrom & Hernell, 2005). The current study took both a primary and secondary view of prevention.

Preventive intervention strategies for children. The WHO (2002) promotes the implementation of effective, results-oriented preventive intervention strategies to impact the adverse effects of major health risks. They define intervention as "any health action - any promotive, preventive, curative or rehabilitative activity where the primary intent is to improve health" (p. 8). The WHO (e.g., 2002; 2006) encourages the development and delivery of intervention programs that promote health and wellbeing principles for children.

Evidence suggests that intervention programs that target those factors that influence ill health, such as sedentary behaviours and unhealthy eating patterns, are more successful in encouraging good health outcomes than those that target the risk

factors, such as heart disease (Spencer, 2000). Focusing on influencing factors that reinforce primary and secondary prevention strategies are particularly relevant when dealing with children. Research in the area of adolescent health behaviour change suggests that highlighting health risks does not necessarily reduce their hazardous behaviours as young people are focused on short-term gains and perceive they are impervious to danger (Rohwer, 2001). In addition, negative health messages in intervention approaches could cause more harm than good to eating patterns, self-esteem, and body image (Carter & Bulk, 2008; O'Dea, 2005). So, it is reasonable to presume, that the emphasis on program design for children should be to encourage desirable health behaviours and minimise potential harm. These factors have been taken into account when designing the experimental intervention program for the current study. Weiss (2000) supports the notion of implementing prevention intervention strategies with children that focus on increasing activity levels because research shows that active children become active adolescents and adults. Similarly, Williams (2005) emphasizes the importance of initiating prevention measures that establish healthy eating habits early in childhood to promote good health in adulthood, thereby inhibiting disease development.

Several studies have demonstrated good outcomes using prevention interventions to encourage desirable health behaviour change in children. A five year community research project entitled the "Hearty Heart and Friends" program aimed to reduce fat and sodium from the diet of young children to prevent the potential development of coronary heart disease. The school and home-based educational program was designed to encourage children to include physical activity in their routine, to promote the consumption of healthy foods, and avoid those foods high in fat and salt

(Luepker & Perry, 1991; Murray, Perry, & Davis-Hearn, 1987; Perry et al., 1989). The results showed an increase in the children's health knowledge and a change in their parents' shopping patterns, which resulted in a change in the children's fat and carbohydrate intake (Luepker & Perry, 1991; Perry et al., 1989). Another school and family-based intervention program, entitled "Heart Smart", also targeted young children in an effort to prevent heart disease in both non-risk and at-risk children (Downey et al., 1987). Similar to the "Hearty Heart" program, the findings of the "Heart Smart" program showed an increase in the children's health knowledge, a change in school lunch choices, and a significant change in unhealthy health behaviours at home (Johnson & Nicklas, 1995; Johnson, et al., 1991; Nicklas et al., 1989; Nicklas, Johnson, Webber, & Berenson, 1997). Muller, Danielzik, and Spethmann (2004), who reviewed 25 controlled studies targeting obesity prevention in children and adolescents, also found that school and home-based interventions improved children's health knowledge. Interestingly, all three of these studies found that the most positive effects were seen when children's parents were involved as the agents-of-change.

Parents as Agents-of-Change

A major influence on children's health behaviours is the family. Families can build positive perceptions of health, they can promote appropriate health behaviours, and they can equip children with tools that are likely to contribute to resilient health behaviours later in life (Pransky, 2001). Parents play a major role in modeling and promoting desirable health behaviours that impact wellbeing in a positive and constructive manner (Pender & Stein, 2002). They play a role in impacting children's perceptions of competence in many areas of health, including shaping children's eating

and activity patterns (Campbell & Hesketh, 2007; Golan & Crow, 2004; Ventura & Birch, 2008; Weiss, 2000).

Harter (1985; 1999) described five competency areas that provide an understanding of a child's and adolescent's level of competence in scholastic, athletic, social acceptance, physical appearance, and behavioural conduct. For example, youth who have a higher level of athletic competence, are more likely to participate in physical activities. Those who perceive their physical appearance as attractive, are more likely to have increased self-esteem. So, if parents play an important role in reinforcing helpful health behaviours and in affecting children's perceptions of competence, it is likely that such influence may help children to develop a higher level of health competence. Research suggests that social support is a strong predictor of young people adopting helpful health behaviours such as physical activity, good nutrition, and preventive practices (Barrera & Prelow, 2000; Pender & Stein, 2002; Yarcheski, Mahon, & Yarchevski, 1997). Research also suggests that parents who are active have more active children (Sallis, Prochaska, & Taylor, 2000). In addition, supportive and involved parents can foster good mental health and encourage healthy eating behaviours.

Interventions that support parents to encourage and promote helpful health behaviours at home can impact their family's activity levels and food choices (Pender & Stein, 2002). Parents need to be equipped to promote healthy development in their children to prevent disease before any signs appear (Bergmann et al., 2003; MacFarlane, 2005). Often, parents are reactive to signs of ill health and seek to resolve a presenting health problem rather than exercise preventive measures to avoid potential problems

arising. However, knowing how to promote or develop children's health is not a given skill for parents.

Training parents to influence behavioural change in their children is increasingly recognised as an effective intervention strategy (Briesmeister & Schaefer, 2007). This idea of training parents to intervene in their children's wellbeing was found to be effective in the 60's (Wahler, Winkel, Peterson, & Morrison, 1965) through to the 80's in studies where parents were encouraged to reduce their children's conflicts (e.g., Blechman, 1985; Flanagan, Adams, & Forehand, 1979; Forehand & McMahon, 1981; O'Dell, Flynn, & Benlolo, 1979; Nay, 1975). Research since then (e.g., Braswell, 1991; Collins, Macoby, Steinberg, Hetherington, & Bornstein, 2000; Ducharme & Van Houten, 1994; Sanders & Dadds, 1993; Webster-Stratton & Herbert, 1994) has provided evidence that parenting practices directly influence children's behaviours and development. Furthermore, using parents as agents-of-change to intervene in their children's undesirable behavioural patterns can increase parents' confidence that they have the skills to influence their children's behaviours (Briesmeister & Schaefer, 2007). This in turn positively influences parents' self-esteem and mood (Barlow, Powell, & Gilchrist, 2006; Treacy, Tripp, & Baird, 2005). Zacker (1978) noted that parents are quick to learn how to apply behavioural modification principles because it is natural and observable. Relying on parents as the agents-of-change means that the individual behavioural needs of the family members can be addressed. Through this process the parent is coached on how to communicate, interact, and encourage behavioural change.

Studies suggest that influencing change in children's behaviours is best achieved in their own environment (Moreland, Schwebel, Beck, & Wells, 1982) and in the context of the family (e.g., Haley, 1976; Minuchin, 1974). In doing so, effective parent

programs thus aim to account for individual family values and cultural views so that lifestyle factors can be adapted to these (Bergmann et al., 2003). Given that parents are the ones who make all the important decisions about their children's lives, such as the school they attend, then why not agents of behavioural change in health matters. The relationship between the child and the parent is central to effecting behavioural change and its maintenance over time since skills learnt by the parent can be generalized to a number of situations (Briesmeister & Schaefer, 2007). Using parents as agents-of-change means that intervention strategies can be implemented as required at the earliest possible time in a child's life, thereby impacting adolescent and adulthood behaviours. Effective parent intervention strategies should aim to change or remove risk factors to wellbeing, reinforce parents' skills, increase parents' confidence and sense of competence, and impart a belief that they can shape their children's unhelpful behaviours (Briesmeister & Schaefer, 2007; Weiss, 1989; Weiss & Halpern, 1988).

The efficacy of focusing on the parent as an agent-of-change was particularly highlighted by Golan et al. (1998). They argued that imposed dietary and cognitive behavioural interventions have often been associated with adverse psychological and physiological effects such as eating disorders, self-esteem problems, or resistant to change issues. Eating problems (e.g., Epstein, Valoski et al., 1994; Lawrence & Thelen, 1995), self-esteem issues (Collins, 1991), and resistance to change (DISC Collaborative Research Group, 1995a; Epstein et al., 1990; Epstein, Valoski et al., 1994) have also been highlighted by other studies. Given the potential for children to develop eating problems and resist behavioural change, Golan et al. proposed using parents as the sole agents-of-change to influence children's health behaviours. They found that the children whose parents were the sole change agents, showed significantly greater health

behaviour change than the children who were the agents-of-change. Golan et al. attributed the better results in the parent only group to the children's diminished resistance to change since the decisions for health behaviour change were not theirs alone.

Family-based interventions. A number of family-based studies have demonstrated a connection between parents' involvement in modeling, encouraging, or reinforcing helpful health behaviours and their children's health behaviour outcomes. For example, Brustad (1993, 1996a, 1996b) found that parents who enjoyed being physically active, encouraged their children to be more active. In addition, the children of these parents reported greater perceived competence and enjoyment in physical activity. Kimiecik and colleagues (Dempsey, Kimiecik, & Horn, 1993; Kimiecik & Horn, 1998; Kimiecik, Horn, & Shurin, 1996) also demonstrated a link between parents' beliefs on children's physical activity perceptions. Dempsey et al. (1993) and Kimiecik and Horn (1998) found that parents who believed that their children had a high level of physical competence, had children who reported being more active and at a greater level of physical intensity. Conversely, Kimiecik et al. (1996) found that children who believed that their parents valued physical fitness reported a higher level of fitness for themselves.

With regards to dietary behaviours, Perry et al. (1989) compared the effects of a school-based health promotion program to a home-based one in the "Hearty Heart" intervention discussed earlier. The researchers found that at posttest follow-up, the children in the home-based program reported greater reduction of dietary fat and sodium. Nader et al. (1989) also investigated the effects of a family-based program on both dietary and physical activity behaviours in their efforts to reduce the risk of

cardiovascular disease in fifth and sixth grade children. After the year long program, the intervention group gained significantly more knowledge and skills in changing their dietary and physical activity behaviours than the no-intervention group. Some significant reductions in fat and salt intake were also found. Epstein, Nudelman, and Wing (1987) also demonstrated intervention effects when using parents as agents for change in childhood obesity prevention. Their goal was to ascertain whether the effects of a family-based behavioural dietary and exercise intervention program could be generalized to nonparticipating family members. At five years follow-up, they found significant weight reduction in the nonparticipating siblings of the parent and child group.

The family-based studies discussed above reinforce the notion that involving parents is an important strategy in supporting young children with health behaviour change.

Target Population: At Risk vs. the Public Health Approach

In selecting a target population to study disease prevention, the question of which approach to take is raised: Targeting the child and family with identifiable risk factors or directing preventative programs to the general community with the view of reducing public health risk? When dealing with children an important aim is to promote helpful health behaviours early in life to prevent disease developing over time. In terms of how prevention has been defined in this paper, the ideal intervention program is one that has a primary and secondary prevention focus because the former aims to avoid disease, whilst the latter targets those at risk of disease. So, it could be argued that both the non-risk and at-risk groups are important targets for change. This two-pronged

approach is supported by Wing (2000), who advocates the implementation of health behaviour change interventions for children at risk of disease as well as those not at risk. In the "Heart Smart" program, Berenson, Arbeit, Hunter, Johnson, and Nicklas (1991) conducted disease prevention research targeting primary school aged children who were either at-risk and not-at-risk of developing health problems. The results showed that the intervention encouraged both the at-risk and not-at-risk families to adopt healthier lifestyles. In addition, a more intensive component of the program helped to improve the risk factors for the at-risk group. The researchers attributed much of the program's success to its behaviourally based design, to involving the parents in supporting health behaviour change in their children, and to targeting both at-risk and not-at-risk children for change.

Behaviour Therapy

Over the years there has been a lot of education through the media, schools, and the community promoting the idea that lifestyle health problems are preventable by increasing activity levels, changing behavioural habits, and making healthier food choices (Hughes & Reilly, 2008; Jimenez-Pavon, Kelly, & Reilly, 2010; Kemper, 2002; Tershakovec & Van Horn, 2002; WHO, 2006). Even so, it seems that unhelpful health behaviours persist (Woolf et al., 1996). Pransky (2001) argues that prevention is about behavioural change because education and an appropriate attitude in and of themselves do not create change. That is, knowing what to do and wanting to change unhelpful eating and activity habits do not necessarily lead to actual behaviour change. Thus, interventions are needed to translate healthy lifestyle messages into health behaviours (MacFarlane, 2005).

Studies that have demonstrated health behaviour change in children using behavioural interventions include the following. The Dietary Intervention Study in Children (DISC) Collaborative Research Group (1993a, 1993b, 1995a, 1993b) targeted 8 to 10 year old healthy children with elevated low-density-lipoprotein cholesterol (LDL-C). Their aim was to identify whether a change in dietary behaviours could lower the children's cholesterol and their potential risk of developing heart disease. The results showed that the family-oriented, educationally and behaviourally-based intervention program, significantly lowered LDL-C in the children. However, it was unclear whether it was the educational or behavioural component of the program that was the predominant cause of behaviour change.

In overviewing obesity interventions, Epstein, Myers, Raynor, and Saelens (1998) reported that behaviour therapy, compared to education, is an important strategy to change children's health behaviours. They cited Epstein et al.'s (1980) study as evidence that behavioural strategies were effective in demonstrating positive long-term health outcomes in obesity prevention. A perusal of other obesity-related research reviews (e.g., Barlow, 2007; Davis, et al., 2007; Oude Luttikhuis, et al., 2009; Stewart, Reilly, & Hughes, 2009) and studies (Epstein, McKenzie, Valoski, Klein, & Wing, 1994; Epstein, Valoski, Wing, & McCurley, 1990; Epstein, Valoski, Wing, & McCurley, 1994; Israel, Stolmaker, & Andrian, 1985; Lansky & Vance, 1983; Wheeler & Hess, 1976) revealed better health behaviour outcomes in young children when the intervention was a behaviourally based program compared to education alone. Amongst these studies, Oude Luttikhuis, et al.'s (2009) review of 64 randomised controlled studies revealed that the most effective strategies on treating childhood obesity were those behaviourally based interventions that combined dietary, physical activity, and

behaviour change, along with parental involvement. In addition, Wheeler and Hess emphasized the importance of gradually changing children's problem health behaviours according to their needs, as opposed to emphasizing weight loss through the prescription of imposed dietary or exercise regimes. Wheeler and Hess noted that a success of their intervention included a motivated mother as an agent-of-change due to repeated contact, focusing on families' needs, and providing flexibility in their readiness to change. That is, changes to families' eating patterns and behaviours were identified and introduced according to families' needs and when they felt ready to take on the changes rather than the changes being imposed upon them.

In summary, it is evident from the research that a change in lifestyle behaviours has contributed to a disease burden that is potentially compromising our children's health. Such lifestyle behaviours have contributed to biological, psychological, and social health consequences. Therefore, early intervention programs are required that target children who are not-at-risk of disease to prevent its onset, and those children who are at-risk to prevent potential health problems becoming worse. Studies have shown that behavioural interventions that encourage parents to support their children to change their health behaviours have demonstrated the most effective outcomes. Identifying interventions that will maintain health behaviour change over time is important.

Chapter 2

Motivational Interviewing as an Intervention Strategy

To change health behaviours, individuals need to change their internal perception about health and wellbeing. A part of this internal perception is understanding what motivates people to change (Pransky, 2001). Without motivation or a lack of understanding about what instigates and maintains action toward health behaviour change, resistance to change prevails (Westberg & Jason, 1996; Woolf et al., 1996). A strategy that has been effectively used to deal with individuals' resistance to change, and to maintain health behaviours over time, is motivational interviewing (MI; Britt, Blampied, & Hudson, 2003; Hettema, Steele, & Miller, 2005; Miller & Rollnick, 1991). It has been defined as "a directive, client-centered counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence" (Rollnick & Miller, 1995, p. 323). Motivational interviewing's central purpose is to examine and resolve individuals' ambivalence about behaviour change. It has been shown to change health behaviours after only one to three brief sessions (Miller & Rollnick, 1991).

Rollnick and Miller (1995) conceptualized motivation as a state that is open to change. They argued that the therapist's counselling style affects a client's motivation to change, suggesting that MI "is a method of communication" (Miller & Rollnick, 2002, p. 24), and "a way of being with people" (p. 34). The therapist's directive style should aim to recognize clients' ambivalence to change and support them to explore and resolve their ambivalence. To do so, therapists are encouraged to draw on the spirit of MI. That is, being collaborative, acknowledging that responsibility and choice for change lies with the client rather than being imposed by the therapist, and evoking intrinsic motivation from the client. An up to date definition offered by Miller and

Rollnick (2009) that explicates the latter points, is that MI "is a collaborative, person-centered form of guiding to elicit and strengthen motivation to change".

Miller and Rollnick (2002) argued that intrinsically motivated behaviour occurs as a result of an individual's autonomously derived, self-determined reasons and desires to change. Thereby, causing longer lasting changes than extrinsically motivated behaviour, where change occurs as a result of external or non-autonomous reasons. They also emphasized the importance of distinguishing the spirit of MI from its techniques that can be used to influence change, such as the importance-confidence rating scale. In addition, they outlined four broad principles that underlie MI: i) Express empathy and facilitate change through reflective listening; ii) develop discrepancy by allowing the client to differentiate between current versus desired behaviours; iii) roll with resistance and recognize it as a signal to shift approaches; and iv) support self-efficacy by enhancing a client's confidence to cope with obstacles toward change.

Originally developed to treat substance abuse such as alcohol, MI and its strategies have been used to change behaviours related to other illnesses such as diabetes (Rollnick & Miller, 1995). In recent years, MI has also been used to address lifestyle changes such as diet and exercise (Rubak, Sandboek, Lauritzen, & Christensen, 2005; Thorpe, 2003). In a review of the efficacy of MI, Burke, Arkowitz, and Dunn (2002) found that MI has been successfully used with groups and individuals, in conjunction with other clinical services, as a follow-up to residential care, as a prelude for further treatment, and as a stand alone intervention. They found it to be superior to no-treatment and to treatments that were informationally based such as pamphlets. They also found it equally effective to comparison treatments such as a skills-based

counselling approach, and to longer interventions such as cognitive behavioural therapy and the twelve-step facilitation therapy.

Furthermore, in their paper, Walters, Ogle, and Martin (2002) discussed both the pros and the cons of group-based MI. They reviewed a number of studies that used MI with groups to change other health behaviours, such as addictions. Walters et al. identified that some of the MI techniques and principles might be suited to groups. For example, group interactions increase the potential for participants to weigh up the reasons for change, diffuse discrepancies, and resolve ambivalence. The group format may also minimise resistance to change because of its potential as a supportive network. Although they indicated that it was still early days to make a definitive decision about whether MI was effective with groups or not, they acknowledged that its success with groups or individuals was based on such factors as the therapist (discussed further in Appendix A.9). In a meta-analysis of MI related studies conducted over 25 years, Lundahl, Kunz, Brownell, Tollefson, and Burke (2010) also acknowledged that there was insufficient data to properly answer the question of MI's effectiveness in groups. Walters et al. suggested that keeping groups small would be best, with no more than 10 to 12 participants at a time, and screening participants to ensure few are in the precontemplation stage-of-change to avoid difficulties with those at the advanced stages, who are likely to be more motivated to change.

Transtheoretical Stages-of-Change Model

Motivational interviewing can be applied within the framework of the transtheoretical stages-of-change model (TTMC), which was developed by Prochaska and colleagues (Prochaska & Norcross, 2003). To allay confusion, MI is neither based

on the TTMC (Miller & Rollnick, 2009) nor does MI's effectiveness rely on it being used with the TTMC (Littell & Girvin, 2002; Wilson & Schlam, 2004). In the current study, the TTMC model was used to provide a basis for assessing the participants' readiness (or motivation) to change. The TTMC allows for the idea that in their endeavors to change behaviours, people go through various cognitive stages - precontemplation, contemplation, preparation, action, and maintenance – and that at each stage they may need different interventions. In precontemplation, people have no intention to change behaviours in the foreseeable future; in contemplation, people are thinking about change but are not yet committed to taking action; in preparation, people have an intention to change and may report plans of action; in the action stage, people are involved in behavioural change; and in the final stage, maintenance, people have been demonstrating changed behaviours for at least six months, and are working to prevent relapse and consolidate behavioural change (Prochaska & Norcross, 2003).

The process of change is viewed as a spiral rather than a linear pattern. This takes into account that in an attempt to modify their behaviours, people are likely to relapse to earlier stages, where they are likely to have the greatest level of ambivalence to change (Prochaska, DiClemente, & Norcross, 1992). Using MI within this framework allows therapists to enhance individuals' intrinsic motivation to change their health behaviours and to facilitate their progress (DiClemente & Velasquez, 2002).

Motivational Interviewing and Health Behaviour Change

Several studies have reported positive health outcomes using MI as an intervention strategy to influence health behaviour change. A sample of these studies will be discussed here but for a more comprehensive review please see Martins and

McNeil (2009). Resnicow et al. (2001) employed brief telephone-based MI in their "Eat for Life" study to increase adults' fruit and vegetable consumption from baseline to one-year follow-up. Participants were randomly allocated to a health education group, a group that received a self-help kit and one telephone reminder, and a self-help with reminder group that included three MI based counselling calls. The MI intervention was solution-focused to help participants resolve their ambivalence to change their health behaviours. The results showed that the MI group significantly increased the participants' fruit and vegetable intake compared to the control groups.

In a later study that included measuring physical activity behaviours, Resnicow et al. (2005) also demonstrated that, compared to the control groups, increasing fruit and vegetable intake was significantly greater in the MI group. This time the group received four telephone counselling calls. Although the MI group showed greater activity levels than the self-help only group, the effects were not significant. The researchers suggested that MI interventions may be more effective in changing dietary rather than activity behaviours. This notion regarding physical activity behaviours might be possible. For example, Harland et al. (1999), who investigated the use of MI in the promotion of physical activities in adults at risk of cardiovascular or respiratory disease, found that although the use of six MI interviews increased participants' physical activity behaviours compared to one brief MI interview, the difference was not significant.

Another study that investigated the effects of MI on physical activity behaviours was conducted by de Blok et al. (2006). In the study, MI was used to increase lifestyle physical activities in adults with chronic obstructive pulmonary disease. The rehabilitation program included information on exercise, diet, and psychoeducation. In addition, the MI participant group received four individual MI based exercise

counselling sessions to motivate them to increase their lifestyle activities such as walking, cycling, or gardening. The MI group showed an increase in daily steps compared to the control group; however, the difference was not statistically significant. Even so, the effect was deemed to have clinical relevance given the MI group's increase in steps and large effect size (d = >.80). It seems, that when considering the effects of MI on physical activity levels, the trend seems to be in the MI direction.

On a different point, Resnicow et al. (2005) queried whether the MI effects in both Resnicow et al.'s (2001; 2005) studies may have been related to the MI group's increased therapist-participant contact. They suggested that this "social desirability bias" (p. 346) be accounted for in future studies. In their Women's Health Initiative Dietary Modification Intervention study, Bowen et al. (2002) also queried whether their successful results in reducing dietary fat consumption of the participants in the MI based intervention might have been due to the three additional client-dietician contacts. The women participants were randomly assigned to the experimental and control groups. In addition to the 5-month intensive intervention, the experimental group received three MI contacts, which involved assessing their readiness to change, addressing resistance and ambivalence issues, and planning action for change. The results showed that the MI group significantly reduced their fat intake whilst the control group significantly increased their fat intake. The researchers attributed these results to the MI component of the study. Like Resnicow et al., Bowen et al. also recommended that future studies account for any therapist-participant contact bias.

Other studies have also found effects in health behaviour change when using MI and its strategies. Smith, Heckemeyer, Kratt, and Mason (1997) investigated the effects of MI on 22 obese women, who were assigned to either a standard program or the

experimental intervention that included three individual MI-based interview sessions. The MI sessions addressed ambivalence to change, discrepancies in behaviour vs. goals, and sought solutions and reasons for change. The results showed no significant weight reduction, although the differences between the groups were in the hypothesised direction. However, as expected, the MI group's adherence to the program was significantly greater as was their glucose control after the intervention. The researchers concluded that MI enhances program adherence and glycemic control, and may impact weight loss, which may have been detected with a larger participant sample.

The studies discussed above demonstrated that MI and its strategies are effective in contributing to health behaviour change, particularly with regards to dietary change. Rollnick (1996) illustrated how MI could be used in encounters to improve the general health outcomes of people with or at risk of developing chronic diseases due to unhelpful health behaviours. Essentially, he suggested that they should be encouraged to participate as active decision-makers in setting behaviour change agendas; that working to improve their self-efficacy can aid in enhancing their motivation and confidence to change; and that the motivation to change should be elicited from the client by collaboratively exploring possibilities and establishing small targets for change.

Motivational Interviewing with Adolescents and Children

Suarez and Mullins (2008) provides a review of MI related studies, some of which are discussed here, that aimed to change child and adolescent health behaviours. Most of the literature, however, on the use of MI seems to be associated with either adults, such as described in the previous section, or adolescents. For example, with

regards to health behaviour change, Berg-Smith et al. (1999) integrated TTMC with MI and used a brief MI model to improve adolescents' adherence to a healthy diet. This study extended the DISC (1993a; 1993b; 1995a; 1995b) study discussed in chapter 1. They recruited adolescents to participate in the MI intervention. The purpose of the MI program was to increase participants' motivation to change their dietary habits and adhere to a healthy diet. The counselling sessions were tailored to the participants' readiness to change level, and aimed to address and resolve ambivalence to change (see the article for a detailed outline of the MI program protocol). The results showed a significant increase in dietary adherence, and a significant decrease in dietary fat and cholesterol. The researchers were unable to report whether this change was significant to the intervention given there was no control group. Nevertheless, they reported that the adolescents were responsive to the MI-based program due to their involvement in the change process. This study suggests that MI shows promise as an intervention for use in health behaviour change with a younger cohort.

Other studies that investigated adolescent health behaviour change by using MI include the following. Brennan, Walkley, Fraser, Greenway and Wilks (2008) investigated the effects of MI and cognitive behaviour therapy (CBT) on overweight and obese teenagers. Before the participants commenced the family-based CBT intervention, they were interviewed in a pre-treatment assessment. Twenty-nine families received a motivational interview that aimed to change the adolescents' activity and eating behaviours, whilst 34 families received a standard semi-structured interview that collected health behaviour information. A maintenance phase followed the intervention. Unfortunately, the results of the Brennan et al. study were unavailable prior to submission of this thesis. Contact with the author at the time indicated that an

article on the effects of MI was being prepared for submission. The findings of her study will provide valuable information about the use of MI in a CBT adolescent obesity intervention. Pollack et al. (2009) also investigated the effects of MI on the health outcome overweight adolescents. After participating in a telephone based survey, the adolescents met face-to-face with a physician to discuss health behaviour status. The aim of the intervention was weight loss through health behaviour change. The results showed that higher quality MI skills demonstrated by the physicians during discussions was associated with greater health behaviour change in the adolescents. This study highlighted that training physicians in the spirit of MI can help improve the health outcomes of adolescents.

A review of the MI bibliography website (www.motivationalinterview.org), covering MI research between 1983 to 2009, revealed no research related to the use of MI with young children directly. The search did reveal, however, that some studies focused on influencing children's health-risk behaviours by motivating change in the parents. An example of using parents as the agent-of-change to influence children's health-risk behaviours was demonstrated by Weinstein, Harrison, and Benton (2004; 2006). The researchers used MI to encourage parents to prevent caries in the teeth of their infant children and found an effect compared to health education alone. Only the MI group participated in an MI based counselling session and monthly follow-ups thereafter. The results showed significantly less caries in the children of the MI group at both one-year (2004) and two-year (2006) follow-up. Another study that used motivational strategies with the parents as the agents for change was by Emmons et al. (2001). They aimed to reduce passive smoke exposure in households with healthy

children and found that the use of MI with the parents to cease or reduce smoking led to significant reductions in household smoke.

With regards to preventing health behaviour problems in children, Schwartz et al. (2007) investigated the outcome of an MI based intervention in a pediatric setting. The pediatricians and dieticians in the experimental groups received MI training but the pediatricians in the control group did not. At-risk and non-at-risk children and their parents were recruited. The participating parents were allocated to a standard care control group, a pediatrician only MI group, and a combined pediatrician-dietician MI group. Schwartz et al. found that the children in the pediatrician only MI group demonstrated a significant within-group decrease in snack intake compared to the control group. The combined pediatrician-dietician MI group showed a significant decrease in dining out compared to the other MI group. No within or between group differences were found for sweetened drinks, intake of fruit and vegetables, and television viewing. Similarly, although there were mean decreases in BMI in all three groups, no significant differences between the groups were found. Nevertheless, parent evaluation of the MI intervention programs indicated that 90% of the parents reported having been helped with changing their family's eating habits.

Tyler and Homer (2008) also investigated the effects of a family-based intervention on obesity prevention in children, with the difference that the children were directly involved in the study with their parents. The collaborative negotiation intervention promoted healthy behaviours and incorporated brief MI techniques similar to Berg-Smith et al. (1999), discussed earlier. An aim of the intervention was to identify parent and child health concerns, and then implement strategies that complemented the family lifestyle and available resources. The intervention involved a collaborative

discussion between parents, their children, and a healthcare facilitator about changing the children's health behaviours. The facilitators used MI related techniques that Rollnick (1996) identified for behavioural change, including agreeing on which health behaviours to change, setting change goals, assessing confidence and importance ratings to increase motivation, and strategies on overcoming barriers. The findings were a descriptive, qualitative analysis of the intervention process between the participant-facilitator interactions. They revealed that many of the families made changes to their eating and activity behaviours, and that the MI techniques helped to reduce resistance to change. The afore-mentioned studies indicate that MI has been effective in influencing health behaviour change in young children when their parents are involved.

Applying motivational interviewing with children. From the studies cited here, it is unclear whether MI and its techniques may or may not influence health behaviour change in young children directly if facilitated by their parents. DiGiuseppe, Linscot, and Jilton (1996) proposed that a therapeutic alliance can be developed with children to use MI (and TTMC) to change their behaviours, depending on their cognitive development level. They argued that young children, who might be resistant to change, may consider positive change if motivational intervention is employed to build agreement on the goals and tasks for change. Lask (2003) suggested that motivational enhancement therapy (MET), a feedback based intervention adapted from MI to treat alcohol problems (Rollnick & Miller, 2002), could be used with children to promote adherence to treatment of chronic illnesses. He draws on the successful use of MET with adolescents in the contexts of smoking, drug abuse, and eating disorders as evidence for its adaptation with children when assessing adherence difficulties. In his paper, he summarizes the techniques characteristic of MI, and more specific to MET,

that aid to enhance children's motivation to change. These include the use of open-ended questions, reflective listening, eliciting the advantages and disadvantages of poor adherence, and varying the techniques according to the child's stage of readiness to change. Further, Lask emphasizes a comprehensive approach in the assessment and management of poor adherence by involving the parents. He suggested that the parents need to understand the MET principles so that they can support their children's progress and enhance their motivation rather than impede it. Thus, he proposed the use of MET in conjunction with parental counselling or family therapy.

The use of MI with children and their parents is further supported by Gance-Cleveland (2005). Gance-Cleveland argued that MI could be used to increase parents' adherence to supporting their children to maintain treatment regimes, such as medication, or to change their health behaviours. In her article on family-centered care, Gance-Cleveland offers an MI algorithm as a tool for nurses who work with parents, to help identify parents' stage-of-change readiness to support their children. In doing so, Gance-Cleveland argues that a stage-relevant intervention can be applied to promote behavioural change in the parents to support their children to change or maintain health-related regimes. Howard (2007) also supports assessing parents' readiness to support health behaviour change in their children so that stage-relevant interventions can be applied to increase parents' readiness to support their children to change their unhelpful health behaviours. Whilst, Waldrop (2006) suggests that MI can be used to overcome barriers to address health behaviour change.

Schmidt (2005) acknowledges the challenges associated with translating the MI techniques for use with children. In particular, given that they are often coerced by significant others to attend treatment or to change their health behaviours, thus

aggravating their resistance to engage in interventions. He suggested that adapting the motivational strategies with children would involve maximizing their autonomy, curiosity, and openness; maintaining an equal balance of power; making sessions more structured and not relying on open-ended questions; including expert guidance; communicating understanding of the problem; facilitating a collaborative approach; presenting advantages and disadvantages about the problem in chart or written form; addressing personal responsibility and choice to change in the context of societal constraints and rules relating to the care and wellbeing of young people; dealing with disparities between the parent's and child's goals by teaching parents the basic MI principles and how to reinforce desirable behaviours whilst lessening attention to undesirable behaviours; and incorporating written exercises and activities such as imagining themselves in the future with and without the problem.

Intrinsic vs. Extrinsic Motivation

An important component of MI's success is the evocation of individuals' intrinsic motivation (Miller & Rollnick, 2002). The preceding supporters of MI's application with children, do not address whether intrinsic motivation can be elicited from them. Stipek (1988) draws on psychological theories (e.g., self-determination theory, achievement motivation theory, cognitive evaluation theory, Harter's motivation theory) to support her argument that children can be intrinsically motivated, and as a result, embrace and maintain behaviour change. She suggests that intrinsic motivation in children is affected by the nature of the tasks and the context of learning. To enhance or evoke intrinsic motivation in children, she suggested the following: Providing children with difficult yet attainable challenges; promoting curiosity and interest;

encouraging them to make choices; and assisting them to identify autonomously derived solutions and goals.

Weiss (2000) also supports the idea that children can be intrinsically motivated to change and maintain helpful health behaviours, specifically, physical activity levels. She argues that perceptions of physical competence, enjoying physical activities, and social support can influence a child's motivation to engage in activities. Similar to Stipek (1988), Weiss draws on Harter's (1987) model of self-esteem to reinforce the notion that these three factors are major reasons why children participate in physical activities. Some children, particularly if they are older, may be influenced by competitiveness. Furthermore, involving them in the decision making and in setting goals may also reinforce perceptions of competence.

The principles that Stipek (1988) and Weiss (2000) noted as evoking intrinsic motivation in children are similar to the principles that evoke intrinsic motivation in MI. As noted earlier, Miller and Rollnick (2002) argued that intrinsically motivated behaviour results when individuals are involved in the decision making process and choose to change their health behaviours. They further argue that intrinsic motivation is enhanced when individuals identify autonomously derived reasons for change and are encouraged to work through the discrepancies that impede change. In addition, individuals need to be supported by an empathic facilitator who believes in them, understands that ambivalence is normal, provides positive feedback and a positive environment, and enhances their confidence, enjoyment, and competence to change by encouraging the achievement of target goals. From this perspective, MI can be generalized to elicit intrinsic motivation from children as long as developmental factors are taken into account when addressing health goals for change.

From the noted research, it seems that MI has been demonstrated as an effective behavioural intervention that deals with resistance and maintains health behaviour change over time. The research suggests that MI could be adapted for use with parents to encourage health behaviour change in young children (e.g., Gance-Cleveland, 2005; Lask, 2004). Its success has been demonstrated with adults and adolescents, and through its use with parents as a way of contributing to good health outcomes for their children.

Chapter 3

Research Limitations, Empirical Methodology, and Study Rationale

The studies cited here suggest that implementing early intervention programs in childhood that deal with health behaviour change, such as increasing physical activity, modifying behavioural habits, and encouraging healthy food choices, is important to prevent health problems over the lifespan. The following outlines the limitations identified in previous research and the rationale of the current study.

Encouraging Desirable Health Behaviours

Ideally, program design in health behaviour change for children should encourage the adoption of desirable health behaviours rather than highlighting the health risks (Spencer, 2000; Weiss, 2000; Williams, 2005). Research has shown that highlighting health risks does not necessarily reduce young people's unhelpful behaviours (Rohwer, 2001). Studies with children that have encouraged desirable health behaviours have demonstrated positive results. For example, the "Hearty Heart" (Luepker & Perry, 1991) and the "Heart Smart" (Downey et al., 1986) educational programs discussed earlier, were designed to encourage physical activities and the consumption of healthy foods. Given that studies suggest emphasizing desirable behaviours for greater behavioural change, programs that encourage the adoption of helpful behaviours for the maintenance of good health have been used for the current study.

The Vehicle for Change: Family-Based Interventions

Family-based interventions have been demonstrated as effective vehicles of change. For example, the "Hearty Heart" and "Heart Smart" programs compared both a school and home based program. The home based component of the intervention involved the children's parents. The results of both programs suggest that although school-based interventions improve children's health knowledge (e.g., dietary intake, physical activity, sedentary behaviour), the most positive effects were evident when children's parents were involved in supporting them to change their health behaviours. In the "Hearty Heart" study, the home-based group showed a significant decrease in saturated fat and carbohydrate intake (Perry et al., 1988; 1989), and a change in the families' shopping patterns (Luepker & Perry, 1991; Perry et al., 1988). The home-based program in the "Heart Smart" study showed that, compared to controls, both the children and their parents increased their physical activity levels, changed their eating habits, and showed a decrease in their blood pressure levels. These changes were statistically significant for the parents and in the predicted direction for the children. In addition, the children's weight remained stable compared to the control children whose weight increased (Hunter et al., 1990; Johnson & Nicklas, 1995; Johnson, Nicklas, Arbeit, Franklin, & Berenson, 1988; Johnson et al., 1991).

The notion that parents' involvement is critical in supporting children to change their health behaviours is also evidenced by other studies. Muller et al. (2004) reviewed twenty-five controlled studies targeting obesity prevention in children and adolescents and concluded that better effects in children's health behaviour change occurs when their parents are involved in family-based interventions. Epstein, Valoski, Wing, and McCurley (1990; 1994) also found, in their ten year long study that involved obese

children and their obese parents, that the best health behaviour change was attained from those children who participated with their parents. Parents can build positive perceptions of health, they can promote appropriate health behaviours, and they can equip children with tools that are likely to contribute to resilient health behaviours later in life (Pender & Stein, 2002; Pransky, 2001; Sallis et al., 2000; Weiss, 2000). Besides, the researchers of both heart programs highlighted that implementing school-based programs can be a logistically expensive exercise when one considers design, training, and delivery factors compared to parent or family-based programs (Berenson et al., 1991; Perry et al., 1988). Since the research shows that family-based interventions are more effective than school-based programs, I chose to compare an experimental and control program that were both family focused and involved the parents in supporting their children to change their health behaviours.

Achieving and Maintaining Change: Education and Behaviour Based Interventions

Findings on behaviour change in young children have been inconsistent. From the evidence cited here, it has been noted that research using health promotion or educational strategies as the vehicle for behaviour change have demonstrated an increase in children's health knowledge with little effect on changing children's behaviours (e.g., Epstein et al., 1990; Epstein, Valoski et al., 1994; Muller et al., 2004; Murray et al., 1987; Nader et al., 1989). The DISC (1993a, 1993b, 1995a, 199b) study, used a family-based group model to influence the eating habits of young children. The healthy children with elevated LDL-C were targeted to identify whether a change in dietary behaviours could lower their cholesterol and, ultimately, their risk of developing

heart disease. They and their parents were randomly allocated to either a dietary intervention group or a usual-care control group. The results showed that over the initial three years of the trial, diet change using a family-oriented, educationally and behaviourally-based prevention program can be effective and safe in significantly lowering LDL-C in children and improving depressed mood. However, the researchers did not account for whether it was the educational or behavioural component of the intervention that had an effect on the children's behaviour change.

Epstein et al. (1998) overviewed childhood obesity interventions and found that behaviour therapy made a difference to health behaviour change compared to education alone. Epstein et al.'s (1980) study provides evidence that behavioural strategies are effective to encourage participant adherence to change, to promote helpful eating and exercise behaviours, to slow down the rate of eating, and to support behaviour change. The results of their behavioural modification group showed a significant reduction in weight over a five month period compared to a control group that received nutrition education only. Furthermore, in another family-based study, Epstein, McKenzie et al. (1994) revealed that coaching children and their parents to master behaviour change, demonstrated better health behaviour outcomes at one year follow-up than a control group that was not required to demonstrate mastery in behaviour change. The outcomes of the Epstein and colleagues studies (Epstein, McKenzie et al., 1994; Epstein et al., 1980) are supported by other studies. For example, Johnson et al. (1997) found better behavioural change in children whose diet and exercise intervention included a cognitive behavioural program, and Hart, Bishop, and Truby (2003) reinforced the notion that behavioural techniques over education alone are more effective in helping parents promote health behaviour change in their children.

Genetically, humans are wired to eat when food is available and to be active only when required for purposes of survival, so health behaviour change necessitates a level of determined control over instinctual actions (Bergstrom & Hernell, 2005; Chakravarthy & Booth, 2004). It seems that behavioural strategies and techniques can help to bridge the instinctual versus willpower gap. That is not to say that health education in and of itself does not produce effective results. Studies that compared an educationally based program with a no-intervention or wait-list group found an intervention effect (e.g., Epstein, Valoski et al., 1994). With this in mind, and to determine whether a behavioural intervention can produce effects over and above an already effective educational intervention, in the current study I compared an MI based behavioural program (i.e., motivational enhancement program; MEP) to an education based program (i.e., the Westmead Children's Hospital Family Weight Management Program; FWMP) that had been used successfully in the community for several years.

Participant-Therapist Contact Bias

An additional anomaly that has been highlighted as potentially affecting research findings in children's health behaviour change includes discounting any bias associated with participant-therapist contact. For example, in their family-based study that aimed to reduce the risk of cardiovascular disease in children, Nader et al. (1989) noted that they did not account for the possibility that any positive intervention-effects found might have been attributable to the additional participant-therapist contact the participants received. The DISC Group (1993a, 1993b, 1995a, 199b) also did not account for any participant-therapist contact bias in their study. Their experimental group participated in a number of group and individual family sessions over a 12 month

period compared to the control group, which received little contact. In addition to attending program sessions, the progress of each intervention child was monitored by a case manager at five individual visits scheduled during the first year. Contact with the children in the control group was limited to the four data collection appointments. Leventhal and Cameron (1987) suggest that behaviour change is challenged or restricted when contact with interventionists is reduced. Thus, it is difficult to ascertain whether studies that found an intervention-effect was due to the intervention or the participant-therapist contact. To account for this bias in the current study, the participants in both the experimental and control programs received the same amount of contact with the program facilitator. That is, the same number of sessions, length of session times, and opportunity to engage with the facilitator during the sessions.

Number of Program Sessions and Length of Session Times

Regarding the number of program sessions and length of sessions, the research has varied. For example, in the "Hearty Heart" study, a 15 session intervention program was delivered over five weeks (Luepker & Perry, 1991), whereas in the "Heart Smart" study, the 11 session intervention program spanned over 12 weeks (Johnson et al., 1991). In the former program, it is unclear how long the sessions were, but in the latter program, the sessions were 90 minutes long (Johnson et al.). In contrast, the DISC (1993a, 1993b, 1995a, 199b) study delivered 90 to 120 minute sessions on a weekly to bi-weekly basis over a period of six months, whilst Golan et al. (1998) delivered its 14 hour long intervention sessions over 12 months. For the purposes of the current study, it was important that the experimental and control programs were comparable in number of sessions and length to appropriately address the hypotheses. Thus, the experimental

MEP intervention was designed to match the control FWMP intervention, given that the FWMP was an already established community delivered program.

Agent-of-Change and Resistance Issues

It seems that research in children's health behaviour change has particularly focused on involving them as agents-of-change, imposing health regimes on them, or both. Researchers such as Golan et al. (1998) highlighted the potential adverse effects to children's psychological wellbeing when they are the agents-of-change and when dietary or activity regimes are imposed. They argued that dieting and focusing on weight loss may predispose children to an eating disorder. Concern about body weight in adolescence and its effects on wellbeing, self-esteem, and potential to develop eating disorders is well known (e.g., Pender & Stein, 2002). However, research is showing that children are becoming concerned about their weight or body image as young as 6 and 7 years old (Collins, 1991). Even Epstein, Valoski et al. (1994) reported that 4% of the children participating in their 10 year long study sought treatment for bulimia nervosa (note that it is unclear whether it was the effects of their study that influenced the children's eating disorder).

Other studies have also shown that some children are employing unhelpful dieting behaviours (Lawrence & Thelen, 1995; Mendelson & White, 1982; Thelen, Powell, Lawrence, & Kuhnert, 1992). This has implications for normal growth and development (Epstein et al., 1998) let alone the potential to develop eating problems. Other research has also reinforced the notion that focusing on changing children's eating behaviours through restrictive dietary interventions has the potential to affect

development such as height (Figueroa-Colon, von Almen, Franklin, Schuftan, & Suskind, 1993; Lifshitz & Moses, 1989).

Golan et al. (1998) further argue that involving children as agents-of-change may affect their self-esteem and make them resistant to change. Resistance issues were reported by the DISC Group (1995a) and Epstein and colleagues (Epstein et al., 1990; Epstein, Valoski et al., 1994). As discussed earlier, the children in the DISC study participated as change agents in a family-oriented dietary change program. Although the researchers did not assess the effects of their intervention program on the children's self-esteem, they did report attendance difficulties from some children who found the program activities disinteresting. Epstein et al. (1990) also involved the children as agents-of-change in their study and reported better results from children participating with their parents compared to those who were their own change agent. In view of the potential for children to develop eating problems or resist behavioural change, Golan et al. proposed a new approach, whereby the parents are the sole change agents of their family's eating and exercise habits. This approach is likely to benefit children's health outcomes, particularly given that parents influence children's eating and activity related behaviours (Rhee et al., 2005).

To this end, Golan et al. (1998) recruited obese children and their parents, who participated in the experimental intervention on their own. In the control group, the children were the agents-of-change. The results showed that the parent only group's attrition rate was 3% compared to 30% in the child only group; the difference was significant (Golan et al., 1998; Golan, Weizman, & Fainaru, 1999). Also, compared to baseline, parents in the experimental group showed significantly more changes in their eating and activity patterns at 12 months follow-up than the parents in the control group.

The same was revealed for weight reduction and some physiological changes (e.g., lower glucose levels), especially for the fathers. The children's adherence to the intervention, and subsequent health behaviour change, was also significantly greater in the experimental group. The children in the control group showed less weight reduction, and reported feelings of frustration and stress. The researchers (1998) argued that the better results in the parent only group were due to the children's diminished resistance to change given that the decisions about health behaviour change were not theirs. In view of Golan et al.'s (1998) results, in the current study I used intervention programs whereby the parent was the sole agent-of-change.

Motivation to Change

Golan et al.'s (1998) results also suggest that motivational factors need to be taken into account when dealing with influencing children's health behaviour change. Pransky (2001) argues that to change behaviour, people need to understand what motivates them otherwise they are inclined to resist change (Westberg & Jason, 1996; Woolf et al., 1996). Motivational interviewing has been demonstrated as an effective intervention strategy in addressing individuals' motivation and resistance to change, and in maintaining health behaviour change over time. The studies cited here agree that early intervention is crucial for the prevention of disease. To the experimenter's knowledge, parent-facilitated MI has not been used in the prevention of disease in young children. In the treatment of eating disorders, Treasure and Schmidt (2008) used a manualised program in combination with a skills-based workshop to teach MI to carers and parents. They found that such coaching helped to improve communication between the significant others and their eating disordered adolescent. It is possible that

parent-facilitated MI may also be demonstrated to be an effective strategy in the area of children's health behaviour change. As noted in chapter 2, this argument is supported by Lask (2003), Schmidt (2005), Gance-Cleveland (2005), and DiGiuseppe et al. (1996). DiGiuseppe et al. suggested that agreeing on goals for change, and therefore resolving any ambivalence to achieving these goals, is the element missing in the therapeutic alliance with young children, given that decisions for change are usually imposed upon them by significant others.

Furthermore, the use of MI to influence children's health-risk behaviours indirectly was shown to be successful by addressing parents' motivation to support change (e.g., Emmons et al., 2001; Schwartz et al., 2007; Weinstein et al., 2004). The studies cited here seem clear that parental involvement is paramount in the successful outcome of children's health behaviours, particularly when the parent is the agent-of-change. Targeting parents as the change agent, addressing their ambivalence to influence change in their children's health behaviours, and then supporting them to apply MI and its techniques with their children, may close the gap in the prevention of lifestyle related diseases in children. This was a focus of the experimental program in the current study.

Methodology of Current Study

The above research reinforces a number of factors for effective health behaviour change. That is, to design behavioural interventions that are family focused, account for the participant-therapist contact bias, and encourage desirable health behaviours. In addition, programs that use the parent as the agent-of-change and address motivational factors have been demonstrated to be the most effective. In view of the outlined

rationale, the current research project involved two studies. In the first study I investigated an MI behaviourally based intervention (the experimental MEP program) compared to an educationally based intervention (the control FWMP program). This initial study was predominately quantitative in nature but included a qualitative investigation of the utility of MI as an intervention strategy in the prevention of lifestyle related diseases in young children. The second study was a qualitative based interview. I examined the barriers that impeded problem recognition, help-seeking, and treatment adherence of the parents who withdrew after they inquired or commenced an intervention compared to the parents who participated in MEP. In conclusion, a final discussion of the findings and implications of the two studies will then be presented.

Chapter 4

Study 1: Exploring Motivational Interviewing as an Intervention for Health Behaviour Change in Young Children

Study 1 was conducted to investigate whether MI, and more specifically its facilitation by parents as the agents-of-change, could be demonstrated as an effective intervention strategy to deal with children's health behaviour change. The studies cited in chapter 2 suggest that MI could be used indirectly to influence children's health problem behaviours, and maintain the changes over time, by addressing parents' motivation to support them to change (e.g., Emmons et al., 2001; Schwartz et al., 2007; Weinstein et al., 2004). In the first instance, I sought to address parents' ambivalence to influence change in their children's health behaviours. Then, during the course of parents' attendance in a motivational enhancement program (MEP), I coached the parents to use MI and its techniques to influence a change in their children's unhelpful health behaviours. As noted earlier, unhelpful health behaviours were defined as those behaviours that do not promote the maintenance of good health such as nonphysical activities, eating patterns such as emotional eating or missing meals, and nutritional intake high in fat, salt, and sugar, and low in fibre (Chiarelli & Verrotti, 2004; Czerwinski-Mast & Muller, 2004; Lahti-Koski & Gill, 2004; Tauber & Jouret, 2004). Following each MEP program, I examined the utility of MI as a preventive intervention strategy facilitated by parents.

Given that at the time of implementing this research, MI had not been used as a parent-facilitated prevention strategy to influence health behaviour change in young children as I propose in this paper, no appropriate program was available. Thus, I developed the experimental program MEP (see CD accompanying this thesis) to

specifically meet the needs of this study. A number of resources (e.g., Miller & Rollnick, 2002; Rollnick, Mason, & Butler, 2002) were used to develop the program. In designing MEP, the aim was to assist the parents to explore and resolve their ambivalence about supporting their children to change their unhelpful health behaviours through the application of MI and its strategies. The parents were then supported to enlist these strategies to influence their children's motivation to change. To this end, MEP was designed as a behavioural program given that studies (e.g., DISC, 1993a, 1993b, 1995a, 199b; Epstein et al., 1998; Epstein et al., 1990; Epstein, Valoski et al., 1994; Epstein et al., 1980; Wheeler & Hess, 1976) suggest that behavioural therapies influence treatment adherence, encourage behaviour modification, and promote longer-term health outcomes in the prevention of lifestyle related diseases. As a behavioural program its aim was to reinforce the adoption of desirable health beahviours by helping parents to change their limiting thinking patterns and actions about eating and activity behaviours. Appendix A.9 summarises the components of MEP.

In contrast, the control program, the Westmead Family Weight Management Program (FWMP; The Children's Hospital at Westmead, 2002), was chosen due to its educationally based design. Studies suggest (e.g., Epstein et al., 1990; Epstein, Valoski et al., 1994; Epstein et al., 1980; Johnson et al., 1997; Weinstein et al., 2004; 2006) that education alone is ineffective for lasting health improvement. The main aim of the FWMP program was to educate the participating parents on what constitutes healthy nutritional foods (as per NHMRC, 2003b) and on the benefits of increasing physical activities and decreasing sedentary behaviours (as per NHMRC, 2003a). In doing so, the parents were supported to educate their participating children on the benefits of

healthy eating and activity habits. The program did not address motivational issues to encourage behaviour change. Appendix A.10 summarises the FWMP program.

It was also intended to include a no-treatment or wait-list control group as per previous studies (e.g., Epstein, Valoski et al., 1994; Israel et al., 1985). But, it was consistently difficult to get parents to attend the research centre with their families to complete questionnaire packs (as per Golan et al., 1998) at the various time points or for parents to return the packs by mail. So, the idea of a wait-list group was abandoned (only three parents actually completed wait-list packs, which were later excluded from the study). In addition, it was intended to measure the intervention effects over four time periods (i.e., pre, post, 6-month, and 12-month follow-up). But, again, because of the drop out rates and parents' reluctance to complete the packs due to family demands, it was decided to reduce the time periods to three. Parents were informed of this change at their 6-month follow-up as an incentive to complete their final packs.

In terms of what was measured, the participating children's eating and activity habits were assessed because the research highlights these behaviours as important determinants of health (e.g., NHMRC, 2003a; WHO, 2002). The children's psychological wellbeing was also investigated because the research has shown that low self-esteem and depression (e.g., Anderson & Butcher, 2006; Goodman & Whitaker, 2002) affect health behaviour change. Studies that accounted for these factors (e.g., DISC, 1995b; French et al., 1995) demonstrated an improvement post intervention. Also, children's self-esteem and mood have been shown to be influenced by body image disturbances (e.g., Stein & Hedger, 1997), thus its inclusion.

In addition to addressing the gap related to the maintenance of health behaviour change as stated above, other variables were examined to explore the effects of the

interventions. The participating children's motivation orientation was assessed because, from the cited research, it has been argued that motivation affects changed behaviours (Stipek, 1988; Weiss, 2000). The participating parents' readiness to support change, psychological wellbeing, and health behaviour changes were examined to ascertain whether: Parents' readiness to support change can be predicted from a change in their ambivalence (as per Miller & Rollnick, 1991; Prochaska & Norcross, 2003); whether participation in a preventive intervention program affects parents' self-esteem, mood, and health behaviours given that research indicates that parent training in children's behaviour change increases parents' confidence (Briesmeister & Schaefer, 2007), self-esteem, and mood (Barlow et al., 2006; Treacy et al., 2005); and whether any changes in parents' psychological wellbeing and health behaviours is reflective of changes in their children's self-esteem, mood, and health behaviours since the research suggests that parents influence children's health outcomes (e.g., Pender & Stein, 2002; Sallis et al., 2000). Finally, data was sought from the alternate parents and siblings to explore if the intervention effects could be generalized to nonparticipating family members (as per Epstein et al. 1987; Epstein, Valoski et al., 1994; Golan et al., 1998).

Hypotheses

Based on the study findings that behavioural and psychosocial interventions, such as MI, are more effective in influencing health behaviour change than educational interventions, and that MI has been demonstrated as an effective strategy to address individuals' motivation to change their health behaviours, the following was hypothesised.

i) From pre to post intervention, the participating children in the MEP group would demonstrate significantly more helpful health behaviour changes than the children in the FWMP educational control group. That is, the MEP children would show an increase in helpful eating habits and physical activities, and a decrease in unhelpful eating habits and nonphysical activities.

ii) Compared to the FWMP children, the MEP children would also show significantly improved changes in mood, body-image perception, and self-esteem relating to athletic competence, physical appearance, and global self-worth.

iii) The children in the MEP group would maintain the changed health behaviours and psychological changes at six months follow-up and be significantly different to the FWMP group.

Secondary to addressing the hypotheses, the following variables were investigated to ascertain whether the interventions had any effect on them, and if so, how the effects might be related to the outcome of the hypotheses. The variables were: The children's motivation orientation (intrinsic vs. extrinsic); the participating parents' motivation (i.e., readiness to support change), mood, self-esteem, and health behaviour changes (i.e., eating and activity habits); and the eating and activity patterns of nonparticipating family members.

Regarding the Focus Group, an aim of Study 1 was to explore the utility of MEP through a qualitative group discussion. The focus group, conducted after each MEP program, was included because this is the first time such a program has been used to initially support parents to increase their motivation to support their children to change their unhelpful health behaviours and then to train the parents to use MI and its techniques to increase the children's motivation to change. Because MI has been used

effectively with parents to help them support health behaviour change in their children (e.g., Weinstein et al., 2004), and studies that have evaluated its use with parents have demonstrated good feedback (e.g., Schwartz et al., 2007), it is expected that parents in the focus group would indicate that MEP was helpful in supporting them to influence change. A focus group was not conducted with the FWMP participants because, as explained earlier, this program was an already established intervention that had demonstrated to be effective.

Method

Participants

Inclusion criteria: The participants were parents of children ranging between 7 and 12 years of age. These children's age ranges compare with other studies already discussed (e.g., the "Hearty Heart" and "Heart Smart" programs, the DISC program, Golan et al., 1998). Both at-risk and non-at-risk children were recruited (as per Berenson et al., 1991). That is, recruitment targeted parents who had concerns about their children being overweight. Parents of non-overweight children were also included in the study if the parents had concerns that overweight or lifestyle related diseases ran in their family, or that their child demonstrated persistent unhelpful health behaviours. As noted in the FWMP program, exclusions included participant children with a reported complicated co-morbidity such as Prader Willi Syndrome, overweight as a secondary condition to a medical problem such as a head injury or chemotherapy, family dysfunction that might impact participation negatively, and or poor English skills.

Response, retention, participation, and attendance rates. For an effect to be detected at power .80 and at a significant level of .05, 62 parent participants were required in each of the two intervention groups (Hinkle, Wiersma, & Jurs, 1994). However, over the course of the recruitment period that spanned about 18 months, only 62 parents responded to the recruitment advertisements promoting the research program. Table 4.1 summarizes the response, retention, participation and attendance rates.

Table 4.1

Study 1 Response, Retention, Participation, and Attendance Rates of Participating Parents and Children

	Gender	*n*	%
Total recruitment responses	Female	61	98.38
	Male	1	1.62
Exclusions from Study 1	Female	6	9.68
	Male	0	0[a]
Dropouts before a program commenced	Female	31	50.00
	Male	0	0
Dropouts after MEP commenced	Female	5	8.06
	Male	0	0
Parents in MEP	Female	13	20.97
	Male	0	0
Parents in FWMP	Female	7	11.29
	Male	0	0
Children in Study 1	Total	21	100.00
Children in MEP	Female	5	23.81
	Male	9	42.85
Children in FWMP	Female	4	19.05
	Male	3	14.29
Parents completed MEP		13	100.00
Full attendance in MEP		4	30.77
Partial attendance in MEP		9	69.23
Missed 50% of sessions		1	
Missed 37.50% of sessions		1	
Missed 25% of sessions		2	
Parents completed FWMP		7	100.00
Full attendance in FWMP		4	57.14
Partial attendance in FWMP		3	42.86
Missed 12.50% of sessions		3	

[a] Although a male parent inquired, his wife participated in a program, thus the zero male response.

As can be seen from Table 4.1, all inquiries were from female parents except one, which was from a male parent. Of these inquiries, three were deemed unsuitable to participate; two due to their children being over the age of 12 and one due to an inability to speak or read English, which was a condition of the study. Of the remaining 59 parents, 31 withdrew from the study prior to commencing a program. It was evident early on in the recruitment process that attracting and retaining parents in the study was challenging. Field notes suggest that some parents, who were unwilling to participate themselves, would have readily brought their children to undertake a program on their own or with the parent. They would also have approved of their children participating in a school-based program. Other parents were unable to adjust their busy lifestyles around attending a program. This recruitment issue was investigated in Study 2.

The remaining 28 parents were allocated on the basis of when they could participate in a program (explained further under Procedure). This totaled 19 parents in MEP and nine parents in FWMP. Further withdrawals and exclusions from the research were as follows. Three parents withdrew after completing the first MEP session due to work commitments and two parents withdrew after completing the second MEP session due to personal circumstances. Two FWMP parents were excluded at the end of the research period due to not completing the questionnaire packs at T2 and T3, and one MEP parent was excluded for not completing the questionnaire pack at T3. This left 13 female parents in MEP and seven female parents in FWMP. Regarding the children, in MEP there were five female and nine male participating children; one parent completed questionnaires for both her male and female children. In FWMP there were four female and three male participating children.

Table 4.1 also shows attendance rate percentages. More than half of the FWMP parents attended every session compared to a third of the MEP parents. Of those parents who partially attended FWMP, three (42.86%) missed only one session each. However, of the two-third of parents who partially attended MEP, three (30%) missed more than one session, one (7%) missed four sessions, one (7%) missed three sessions, and two (14%) missed two sessions. Field notes indicate that poor attendance was predominately related to time, childcare, illness, lack of support, and or work issues. Some of these attendance barriers were discussed in the Focus Group and were further investigated in Study 2.

Family demographic information. A summary of the demographic baseline analyses obtained from the family demographics questionnaire (see Measures section) is presented in Table 4.2 (Appendix A.1). The table provides information about baseline differences between the MEP and FWMP participating and nonparticipating family members. A number of variables are reported including language spoken at home, country of birth, education level, parents' marital status, occupational details, annual income level, mean age, height, weight, and body mass index (BMI). The parents' BMI was determined by dividing body weight (kg) by height squared (m^2) (Lahti-Koski & Gill). The calculation used for the children was the BMI-for-age and z scores (BMIz). The children's BMI-for-age and BMIz were determined using a computer program (The Children's Hospital of Philadelphia, http://stokes.chop.edu/web/zscore/index.php) that adjusted these calculations for age and gender using United States based norms from the Center for Disease Control and Prevention (CDC) 2000 growth charts (http://www.cdc.gov/growthcharts/). Age- and sex-specific reference percentile charts indicate that a BMI between the 85th and 95th percentiles suggests overweight, whilst a BMI

above the 95th percentile suggests obesity (Dietz & Robinson, 1998; Lahti-Koski & Gill; NHMRC, 2003a). For children, the BMI-for-age between the 85th and 95th percentiles suggests at risk of overweight, whilst a BMI-for-age above the 95th percentile suggests overweight. Overweight rather than obesity is the preferred term for children (CDC, http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/module1/text/module1print.pdf). It is acknowledged that the BMI should only be used as an indicator of overweight, particularly in children given changes associated with growth and development.

A series of t-tests were conducted to determine the *p*-value for the continuous variables (i.e., age, height, weight, and BMI) to ascertain any differences between the groups. As can be seen from the table, the analyses showed that the groups did not significantly differ on any of these variables prior to the interventions.

Measures

In Study 1 a range of measures for data collection were used. The parent's questionnaire assessment pack consisted of: (1) An introductory letter to parents about the pack; (2) an information sheet about the research; (3) a statement of informed consent; (4) a family demographics and eating and activity questionnaire; (5) a parent's stage-of-change questionnaire; (6) the Beck Depression Inventory Shortform; and the (7) Rosenberg Self-esteem Scale. The child's questionnaire pack consisted of: (1) An instruction sheet for parents on how to complete and administer the child's pack; (2) the Self-Perception Profile for Children; (3) the Delighted-Terrible Faces Scale; (4) the Health Self-Determinism Index for Children; (5) the Children's Body Image Scale; (6) the Eating and Me Scale III; and (7) a four-day dietary and activity diary.

Parent Questionnaire Assessment Pack

Parent introductory letter. The introductory letter to the parents (Appendix A. 2) acknowledged their inquiry and highlighted both the assessment packs. It alerted them to the information sheet about the study and to the consent form. In the letter, the parent was asked to read the instructions carefully before administering the child's pack and to note that the questionnaires were double sided. My contact details were also provided.

Information sheet and statement of informed consent. The Information Sheet (Appendix A.3) provided data about the researchers, the aims of the study, the procedure for participation, details about data collection, and issues of confidentiality. The Statement of Informed Consent (Appendix A.4) informed the parents of their rights as a participant of the study and requested their consent.

Family demographics and eating patterns & activity questionnaire. Demographic data was collated from both participating and nonparticipating family members to determine the sample characteristics and frequency of specific health behaviours. Data from nonparticipating family members was obtained (as per Epstein, Valoski et al., 1994) to determine any factors that might influence the participating child's health behaviours. The demographic questions included age, sex, country of birth, height, weight, marital status, education, family size, child's living situation, and socioeconomic factors (i.e., parents' employment status and income level).

The frequency of health behaviour questions sought to identify behavioural habits and patterns. That is, the type of physical activities that were undertaken (e.g., football) in the preceding fortnight, the average weekly activity duration during this

period, if this average was typical for the preceding six months, average estimate if not typical, and when physical activities were undertaken (i.e., weekdays/nights, weekends, or both). The same questions were then asked for sedentary activities over the same time period. Information about not engaging in physical activities was also sought from the participating parent, the nonparticipating parent, and their participating child by ticking up to five statements that might explain why they did not participate (e.g., I am too tired).

A number of questions followed, asking for the family members' and participating child's eating patterns and behaviours. That is: What meals were eaten throughout the day during the preceding week (i.e., breakfast, snacks, lunch, dinner) and whether the meals were home prepared, take away, or missed; the eating pace each family member displayed most of the time (i.e., slow, average, fast); how often second helpings were asked for in the preceding fortnight; how often the family ate dinner together (i.e., daily, most days, some days, few days, rarely); and how often family members displayed up to 20 eating patterns, for example, eating whilst watching T.V., when bored, or after exercise. See Appendix A.5 for this combined, ten page questionnaire.

This questionnaire was specifically designed to satisfy the needs of the current study as an appropriate questionnaire was unavailable at the time. Collaboration was undertaken with the Senior Psychology Researcher who supervised the initial development phase of this research. Reliability data is discussed in the Results section. However, it is acknowledged that validity was not assessed due to the time constraints imposed on this research.

Parents' stage-of-change questionnaire. In collaboration with the same Senior Psychology Researcher noted above, a questionnaire (Appendix A.6), adapted from Rhee et al.'s (2005) parents' stage-of-change questionnaire, was administered to participating parents. Rhee et al.'s questionnaire assessed parents' readiness to make health behaviour changes for their at-risk or non-at-risk overweight children aged between 2 to 12 years of age. Their questionnaire was based on an algorithm and asked general (e.g., how likely parents were to make lifestyle changes) and specific (e.g., increase fruit and vegetable consumption) behaviour change questions to determine the frequency of parents' support. Rhee et al. used the TTMC to ascertain parents' level of ambivalence in supporting their children's health behaviour change. The questions aimed to identify parents' readiness to support or resist change, and to identify their current stage-of-change.

In the current study, Rhee et al's (2005) algorithm was adapted as a questionnaire and the questions remained general. There were three main questions asking whether parents had been supporting their children to i) choose healthier food options, ii) increase the child's physical activities, and iii) reduce the child's nonphysical activities. In each question parents were asked to circle a number from 1 to 5 that indicated how long they had been supporting their child to change the specific health behaviours, e.g., *for more or less than six months*. It also asked for when they intended to support their child, that is, *in the next 30 days*, *in the next six months*, or *not at all*. In terms of scoring, each numbered statement represented a stage-of-change level: 1 represented the *maintenance stage*, 2 the *action stage*, 3 the *contemplation stage*, 4 the *planning stage*, and 5 the *precontemplation stage*. Reliability data is

discussed in the Results section. Again, it is acknowledged that validity was not assessed.

The Beck Depression Inventory Short-form (BDI). The BDI (Beck, Rial, & Rickels, 1974) was used to assess parents' mood. They were asked to select a response to each of the 13 items presented that best described the way they felt during the preceding two weeks. Each item consists of four statements, in order of increasing severity, each of which carries a value of 0 (*low*) to 3 (*high*). To score, the item responses are summed. Cut-off scores are indicated as follows: 16+ indicates severe depression, 8-15 moderate depression, 5-7 mild, and 0-4 nil or normal. Internal consistency for the BDI ranges from .73 to .91. Concurrent validity with the Hamilton Depression Rating scale was found to range between .58 to .82 and with the MMPI Depression scale .75 (Bowling, 2005).

Rosenberg Self-esteem Scale (RSE). Participating parents' self-esteem was measured using the RSE (Rosenberg, 1965). The RSE is self-administered and measures how an individual feels about themselves at the time of completing the scale. The responses are reported on a four-point Likert scale and are scored from 1 (*strongly agree*) to 4 (*strongly disagree*). The items are summed, with low scores indicating high self-esteem (Bowling, 2005). No cut-off scores define high and low self-esteem (University of Maryland website, 2011). The scale has been reported to have high reliability (2 week retest $r = .85$) and acceptable convergent validity ranging from $r = .56$ to $r = .83$ (Silber & Tippet, 1965).

Participating Child's Questionnaire Assessment Pack

Parent instruction sheet on administering child's pack. A step-by-step instruction sheet (Appendix A.7) was designed for participating parents to guide them on how to administer the various questionnaires and inventories to their participating children. The purpose of the sheet was, as much as possible, to ensure consistency of parents' administration of the child's pack.

Self-Perception Profile for Children (SPPC). The children's self-esteem was measured using Harter's (1985) SPPC. The SPPC is entitled "What I am Like" and contains six separate subscales. That is, scholastic competence, social acceptance, athletic competence, physical appearance, behavioural conduct, and global self-worth. Whilst the first five subscales tap into specific domains, the latter represents a child's global judgement of his or her worth as a person. Each subscale contains six items, thereby totaling 36 items for the profile. An additional practice sample item is included but not scored. In the profile, the six subscale items are presented in the order listed above for the initial six items and are then repeated. In each subscale, items are counterbalanced so that three of the items are worded to reflect high competence on the left and low competence on the right. Then, three items are worded to reflect low competence on the left and high competence on the right.

The question format is devised in a "structured alternative format" whereby two paired statements comprise an item. With each statement pair, the children are asked to make a decision about which kind of kid they are most like. They are then required to mark or tick a box indicating whether the statement is *really true* or *sort of true* for them. Harter (1981) reported that such a format reduces the potential for socially-desirable responses. Each item is scored on a scale from 1 to 4, where 1 indicates low

perceived competence and 4 indicates high perceived competence. The scoring is reverse-scored to reflect the counterbalancing of the items as explained above.

Harter (1985) reports the subscale internal consistency reliabilities, based on Cronbach's Alpha, are acceptable for all six subscales across four samples. The reported subscale reliabilities range between .71 to .86. The intercorrelations among the subscales across three samples range between .33 to .82. Harter reports a tendency for the scores to be more highly related among the third and fourth grade children compared to the children in years 5 to 8. The convergent validity for the measure has been found to be satisfactory with correlations ranging from .59 and .62 (Harter, 1982).

Delighted-Terrible Faces Scale for Children (D-TF). The children's negative and positive affect was assessed using the D-TF. This non-verbal scale was developed by Andrews and Withey (1976) to measure subjective wellbeing. The scale asks a series of questions to measure children's current affective evaluations about various aspects of their life pre and post testing. The children were asked to answer each question or statement of affect by marking or ticking one of six face diagrams that best represented how they felt at the time of completing the scale. The faces depict perceived mood ranging from very happy to really sad.

The first three categories, that is, *very happy*, *happy*, and *good*, constitute positive affect and the last three, *little sad*, *very sad*, and *really sad*, constitute negative affect. These categories and the questions were adapted from the original scale to ensure language appropriateness for the children population. Each category or face is scored from 1 (*very happy*) to 6 (*really sad*). To score, the item responses are summed, with high scores indicating low mood. In comparison to other life scales, the reliability has been reported as .80 and the median validity coefficients ranged from .70 to .82.

Correlations between the D-TF scale items have been reported as ranging from .30 to .59, whilst the average test-retest reliabilities has been reported as .70 (Andrews & Withey, 1976).

The Health Self-Determinism Index for Children (HSDI-C). To determine children's motivation orientation, the HSDI-C (Cox, Cowell, Marion, & Miller, 1990) was used. This 29-item scale, adapted from the Health Self-Determinism Index for Adults, contains four subscales: Behaviour and goals, competence, internal-external cue responsiveness, and judgement. Its structure is based on Harter's (1985) SPPC in that it is a structured alternative format and each item presents two statements whereby the children first decide which kid they are most like and then select the statement that is *sort of true* or *really true* to them. No two consecutive items are from the same subscale and no more than two items are in the same direction. Items are scored on a 4-point scale with 4 signifying high levels of intrinsic motivation and 1 signifying high levels of extrinsic motivation. Items are summed to form subscale and total scores, with the latter ranging from 27 to 108.

A moderate correlation of .36 was reported between the HSDI-C and Harter's (1981) Intrinsic vs. Extrinsic Orientation in the Classroom, thus supporting construct validity (Naar-King, Ellis, & Frey, 2004). Internal consistency ranged between .87 and .88 for the total scale. For the respective subscales, internal consistency ranged as follows: .92 to .90 (behaviour-goal), .84 to .88 (competency), .84 to .88 (internal-external), and .63 to .77 (judgement). Two-week test-retest reliability ranged from .63 to .88 for the subscales and the total score. Criterion-related reliability was dealt with by comparing the original sample to a nominated sample of similarly aged children who were known to practice positive health promotion behaviours. Total mean scores

between the samples were 106.5 for the nominated sample versus 76.5 for the HSDI-C sample (Naar-King et al.).

Children's Body Image Scale (CBIS). The CBIS is a body figure rating scale and measures 7 to 12 year old children's body size perceptions and body size dissatisfaction (Truby & Paxton, 2002). The figures represent separate photographic depictions of a female and male child whose body shape ranges from very thin to very large. Each figure is associated with a gender relevant BMI range. To assess children's body size perceptions, which was the measure used in the current study, the children are asked to choose the figure or body shape that most looks like their own bodies. The discrepancy between their actual BMI and the chosen body shape is used to identify the accuracy of the children's body size perceptions. Body size dissatisfaction can also be assessed to determine the degree of dissatisfaction. This was not used in the current study as body satisfaction was addressed using the Eating & Me III Scale (see below).

The reliability of whether children are able to match their own body size perception with a figure on the CBIS that depicts a similar BMI as their own was demonstrated to be generally good. The correlation for the figure selected most as the self showed a large $r = .56$ ($p < .001$) for girls and a small $r = .29$ ($p < .001$) for boys. This correlation was higher for boys aged between 8 to 10 years old at a moderate $r = .34$ ($p < .01$) and $r = .35$ ($p < .01$) for boys aged between 10 to 12 years. For older girls aged between 10 to 12 years, the correlation was a large $r = .60$ ($p < .001$). The younger girls were still in the moderate range, showing a $r = .52$ ($p < .01$) for those aged less than 8 years old, and a $r = .50$ ($p < .001$) for those aged between 8 to 10 years. It was with the youngest boys aged less than 8 years old that the reliability was questionable $r = -.08$ (Truby & Paxton, 2002).

Eating & Me III Scale (E&MIII). This scale was designed for pre-adolescent children and is a measure of disordered eating (Tricker & McCabe, 1999). It evaluates whether body satisfaction and self worth influences children's eating behaviours and attitudes. Children are asked to choose one of six options available in the Likert scale range. The E&MIII is a 12 item measure, which is a shortened version of the 18-item E&MII scale. Two items (4 and 8) are reverse scored. Although shortened, when psychometrically tested the E&MIII showed better internal reliability, with a moderate to high Cronbach Alpha of .75, than the E&MSII (Tricker & McCabe). The E&MIII has three subscales, all demonstrating good reliability with Cronbach Alphas as follows: Body satisfaction was .86, bulimic eating was .72, and food restriction was .67. The scale is designed to be used as separate subscales and as a total score of body dissatisfaction and disordered eating.

When compared to other measures, the validity of the measure was demonstrated. Spearman's rank correlations between the E&MIII's food restriction and bulimic eating items compared to the Children's Eating Attitudes Test (ChEAT; Maloney, McGuire, Daniels, & Specker, 1989) was $r = .28$ ($p < .001$). The body dissatisfaction correlations between the E&MIII and Body Image Scale (BIS; Huon, Morris, & Brown, 1990) was $r = .52$ ($p < .001$). Although the correlation between the E&MIII and ChEAT was a small relationship, a correlation of the total scores of both scales showed a large $r = .61$ ($p < .001$).

Participating children's food and activity diary. A four-day food and activity diary (2 weekdays and a 2 day weekend; see Appendix A.8) was devised to ascertain children's food intake and frequency of physical and sedentary activities over four days. Food and activity diaries are common measures of dietary intake and activity levels due

to being inexpensive and due to their reduced difficulty in self-administration (Dale, Welk, & Matthews, 2002). The diary was adapted from Sizer and Whitney's (1994) Food Diary and Activity Manual. Standard instructions were provided. A four-day diary was chosen over a 24-hour recall diary because it has been noted that the latter does not necessarily capture the variability in activity levels or dietary intake (Perry et al., 1988).

The food and activity portions of the diary were recorded on separate sheets and both sections included space for date, time, location of eating/ activity, and type of food/ activity. The food intake section included space for amount eaten or portion size (e.g., 1 apple, ½ cup cereal) and beverages consumed. The activity section included space for frequency and duration of activities, and an example list of physical and sedentary behaviours.

As per Wheeler and Hess (1976), this diary drew attention to children's patterns of behaviour with the aim of identifying possible points where a child's health behaviour could be targeted for change.

Program intervention handouts. Copies of session handouts of both the MEP and FWMP (The Children's Hospital at Westmead, 2002) programs were provided to parent participants. See CD that accompanies this thesis for session handouts of the MEP program. Pens and blank note paper were also made available for handout activities.

Additional intervention equipment. A training room was used to conduct the intervention programs. Tables and chairs were required for participating parents in each of the MEP and FWMP programs. Light refreshments were also provided such as coffee, tea, sugar, milk, cups, and spoons. For identification purposes, stick on labels

and a thick marker were used for parents and the facilitator. Each training room was provided with relevant equipment to run a PowerPoint presentation for MEP, such as a laptop and accompanying lead attachments. Or, an overhead presentation for FWMP, such as overheads and a projector. A screen was available to view the presentation, and a whiteboard and markers were provided for the facilitator to write on.

Focus group equipment. Audio equipment was used to record the outcome of the focus groups. For each focus group, a tape recorder and a blank tape was used. Paper, pens, and Handout 32 (see CD of MEP intervention manual) were also made available to participants to explore some of the discussion questions.

Quantitative Investigation

Taking a quantitative research approach in Study 1 allowed for a myriad of descriptive data to be collated and analysed so that the cause and effect of the different variables could be examined (Walker, 2005). The descriptive information attained for the current study reflected other similar studies already mentioned in this thesis. For example, Nadar et al. (1989), who investigated dietary and physical activity behaviours in a family-based program, sought: Demographic information; dietary data through a three-day food diary (two weekdays, one weekend day), a food frequency questionnaire; and activity data through a seven-day diary. Such data was also obtained by several other studies (e.g., Berenson et al., 1991; DISC, 1993a; Epstein, McKenzie et al., 1994; Golan et al., 1998; Perry et al., 1989; Schwartz et al., 2007). In addition, some of these studies explored the intervention effects on other factors such as mood (e.g., DISC, 1995b), weight and family members' activity patterns (e.g., Epstein, McKenzie et al., 1994; Epstein et al., 1987), and eating patterns (e.g., eating when not hungry, in front of

T.V.; Golan et al., 1999). The measures used by the current study allowed for conclusions to be made about the effects of the interventions. However, unforeseen factors that compromised the sample size affected the validity of this research, thereby reducing the predictability of the results to the general population. Although this will be discussed further in a later chapter, it is pertinent to address issues of validity and how it can be affected and controlled.

Validity issues. There are a number of factors that threaten the validity of a study and these include the reliability of the procedures or measures used, ethical issues such as withholding intervention from control participants, recruitment or sample selection issues, sample size, drop out rates, the non-random allocation of participants to conditions, and the effects of being observed or paid attention to. Such participant-therapist bias was accounted for in the current study as discussed earlier. Regarding the reliability of the measures used and any ethical issues about withholding interventions, the current study ensured that the measures were reliable and valid, whilst no participants were withheld from an intervention. However, the other factors were compromised, thereby impacting its power and risking a Type 1 or Type 2 error (Pallant, 2005). The issue of the non-random allocation of participants was described in the Method section under *Participants* and *Procedure*. This validity issue may have been averted if more participants could have been recruited and retained in the study. To increase participant recruitment and retention, it may sometimes be necessary to implement engagement methods such as program reminders, family support, reimbursement of deposits paid, and or to offer incentives (Ingoldsby, 2010; Morowska & Sanders, 2007). The practice of offering incentives is becoming common place in research. For example, the researchers of the “Hearty Heart” study reinforced the

benefits of offering incentives to attain and maintain their participant numbers (Perry et al., 1988). To increase participant numbers, the current study also offered incentives.

Intervention Programs

The intervention programs, a summary of which is outlined in Appendices A.9 (MEP) and A.10 (FWMP), were conducted at the La Trobe University Psychology clinic at prearranged times and dates. The facilitators were appropriately trained, details of which are also covered in each of the respective Appendices. Table 4.3 highlights the main session headings of each intervention.

Table 4.3

The Main Session Headings of the MEP and FWMP Interventions

Session number	MEP session	FWMP session
Session 1	Rapport Building & Information Gathering	Introduction
Session 2	Assess & Enhance Importance & Confidence to Support Change	Healthy Eating
Session 3	Identify Behaviour Change Goals & Establish an Action Plan	Parenting and Limit Setting
Session 4	Skill Building & Enhancing Children's Motivation to Change	Sharing Family Food Tasks
Session 5	Motivational Principles That Support behavioural Change	Becoming More Active
Session 6	Eliciting Intrinsic Motivation From Children	Overeating Versus Hunger
Session 7	Relapse Prevention	Family Food Habits
Session 8	Review and Program Termination	Meal Planning for Busy Families

As can be seen from the table, both interventions were matched for number of sessions and the content was relevant to each respective program. Parents in both programs participated in separate 90 minute sessions conducted weekly over eight weeks. Throughout the research period, which lasted five school terms from October 2006 to December 2007, one MEP and three FWMP programs were offered after hours, and four MEP and one FWMP programs were offered during the day. Generally, those parents who participated during the day received the MEP intervention, whilst those parents who participated in the evening received the FWMP intervention. The reason for this anomaly was due to the FWMP facilitator's restricted availability. The FWMP program was designed to be delivered by a facilitator trained in dietetics. Due to inadequate funds to pay trained FWMP facilitators, I sourced a volunteer, who was only available one evening per week. The volunteer was a secondary school teacher, who taught nutrition and home economics and had a degree in dietetics. I attended every FWMP session as an observer only.

For both interventions, a small group methodology of eight participants was chosen. The FWMP was designed as a small group intervention, so the MEP was designed to match it. As indicated in the Introduction, Burke et al. (2002) reviewed the efficacy of MI and found that it had been successfully used with individuals and in groups. Walters et al. (2002) also noted that some of the MI principles and techniques are suited to groups. Conducting the programs in a group format ensured that expectations of group support were a feature of the sessions. It was also important that parents interacted and engaged in the group discussions. Research suggests that small group interventions provide increased opportunities for participants to engage more personally and to address their concerns (Northern Melbourne Institute of TAFE, 2003).

Prior to each MEP and FWMP session, tables and chairs in the pre-booked training room were arranged to encourage discussion and active participation. As participating parents arrived at each session, they were asked to write their name on a stick on label with a thick marker, and to adhere it on themselves. The facilitator did the same. They were also asked to take a copy of the relevant pre-prepared program handouts. Parents were informed that light refreshments, pens, and paper were available during the sessions. Parents were informed at the first session that the presentation would commence relatively on schedule each week. The MEP program was developed and delivered as a PowerPoint presentation as it was the preferred mode of delivery at the time. However, the FWMP program was delivered as overheads because this is how this program was designed. In developing the MEP presentation, I ensured that the PowerPoint was designed similar to the overheads; that is, similar font size, amount of information on each PowerPoint, and comparable creativity. The facilitator used a whiteboard and markers to reinforce any learnt material, to write exercise responses on, and so forth.

For those parents who missed a MEP or FWMP session (attendance rates were discussed in Participants section), the relevant session handouts were mailed out. In addition, the facilitator contacted the parent by phone a few days later to discuss what was covered in the missed session. The parents were brought up to speed, their goals discussed in the context of the session activities, and home activities set so that they were able to participate fully at the next session.

Focus Group

Qualitative research. An inductive qualitative methodology design, using a semi-structured discussion (Liamputtong & Ezzy, 2005), was used to investigate the utility of MI as an intervention strategy to assist parents to support their children to change their unhelpful health behaviours. Qualitative methods allow researchers to explore people's perceptions, understanding, and knowledge gained from their participation in research (Giles, 2002). Thereby providing quality experience not usually obtainable via quantitative methods (Liamputtong & Ezzy, 2005; Sommer & Sommer, 2002). Furthermore, such methods are often used to generate hypotheses that can then be tested using quantitative methods (Liamputtong & Ezzy; Shaughnessy & Zechmeister, 1997). Some of the information obtained from the qualitative, focus group style discussion provided data that was used to generate experimental questions for Study 2, which addressed recruitment and retention issues in Study 1.

Focus group discussion. To explore the utility of MEP, a focus group methodology was chosen over individual interviews mainly due to the time constraints imposed on this research. In spite of that, focus groups are a recognised alternative to individual interviews to explore people's thoughts, feelings, and ideas about a particular topic, including a program (Heary & Hennessy, 2002). During the initial phases of study design, it was intended that the Focus Group would constitute session 9 of the intervention. However, after the first MEP program commenced, the parents requested that the Focus Group be tagged onto session 8 to minimize the number of weeks they needed to work around family and work commitments. This request was agreed upon. So, after each group program thereafter, those parents who had volunteered to participate in a Focus Group remained at the end of session 8. Of the 13 parents who

participated in MEP, all signed the consent form agreeing to volunteer in a focus group. However, only 12 parents participated; one parent left after session 8 due to work commitments.

Ninety minutes was allocated to conduct the Focus Groups. The MEP facilitator also conducted the focus groups. It is acknowledged that this may limit the validity of the focus group results; however, restricted funds precluded employing an independent facilitator. Before commencing each group, the participants were given 10 minutes break after session 8. During this break, the facilitator prepared for the Focus Group: The relevant PowerPoint presentation introducing the new session was displayed; the audiotape was positioned close to the participants; a 90 minute tape was placed into the recorder; and pens, plain paper, and handouts were distributed on the tables. When the parents were seated, the facilitator asked them to retrieve the distributed material, and reminded them that the session would be audio taped so that the facilitator could focus on the discussion rather than on taking notes. Audio taping also allows for the detail and accuracy of a discussion to be maintained for later transcription and analysis (Liamputtong & Ezzy, 2005). Before commencing the discussion, the facilitator tested the audiotape by asking the parents to engage in general banter for a few seconds. When the facilitator was assured that the audiotape was in an appropriate position to record voices clearly, she rewound the tape and commenced recording.

The facilitator informed the parents that the intention of the Focus Group was to generate free flowing discussion so that their thoughts and feelings about MEP could be discerned in a relatively informal way. She then commenced the discussion by asking the first question on Handout 32 (see CD for MEP manual). The handout questions were used as a guide to keep the discussion going, as were the facilitator's probing

questions and gestures. At the end of the focus group discussion, the facilitator thanked the parents for participating and ended the session.

I transcribed all four of the MEP focus group audiotapes. The transcription included only the participants' responses, almost word for word, including most pauses and 'uhms'. In the transcript, pauses were signified with a series of dots (e.g., ...) and participants were identified as "Parent 1, Parent 2," etc. Parent 1 represented the first parent who spoke and was referred to as Parent 1 thereafter in the transcript, Parent 2 was the second parent who spoke, and so forth. During the transcription, any unstated words, unfinished statements, or confusing sentences were qualified in brackets. For example, "I'm not growling at my daughter [about having breakfast]". This ensured that the parents' meaning was retained. The facilitator's prompts and questions were ignored.

The transcripts were analysed using thematic analysis (Liamputtong & Ezzy, 2005). In examining the focus group data, I was interested in understanding how the MEP program may have impacted on the parents, whether MEP made a difference or not to the families' health behaviours, the way the parents utilized the MI strategies into their everyday lives, and their challenges and concerns in supporting their children to change unhelpful health behaviours. Thematic analysis allows the text data to be classified and coded so that categories and themes emerge. It is an inductive form of analysis in that the themes are abstracted from the text (Liamputtong & Ezzy, 2005). The utility of MEP was of interest in the current study. In identifying patterns in the participants' communicated experiences, recommendations on improving the program could be made. In addition, emerging experiential patterns can provide insight into

addressing people's needs and concerns. The patterns that emerged from this focus group provided data that was helpful in generating experimental questions for Study 2.

Coding, sorting, and organizing are important aspects of the thematic analysis process. A three-step coding procedure that involved open coding, axial coding and selective coding, provided the framework from which the final core categories were identified (Liamputtong & Ezzy, 2005). Drawing on thematic analysis, I initially read the transcripts to develop an understanding of the issues. From this initial reading, open coding was used to search for similarities and differences in responses that focused on the parents' general experiences from having participated in MEP. These statements of interest were highlighted, and the patterns, relationships, and themes that emerged were noted. I then re-read the transcripts. During the re-reading, axial coding was used to categorise the dialogue into major themes by highlighting similar concepts in the same color. Major themes were identified by their frequency and by the degree to which the data was associated in meaning. If a statement or block of text pertained to more than one theme, the statement, or elements of the text, was categorised into all the relevant themes. Selective coding was then used to code the themes into core categories (Liamputtong & Ezzy, 2005). The transcripts were re-read a third and final time to identify themes, issues, and experiences that may have been missed.

An independent inter-rater, who had prior coding experience, was given 25% of the transcripts and a list of the core and sub-core categories associated with the major themes. The inter-rater was a postgraduate student who was completing her second year of a Doctorate in Clinical Psychology, and had 12 years experience working in research. Without referring to the transcripts, I had a brief discussion with the inter-rater about the types of statements that might represent the pre-identified themes and categories. The

inter-rater then coded the transcriptions by highlighting statements in different colors to represent a major theme or category. Together the inter-rater and I checked the transcriptions against the original coding to compare consistency. For each highlighted statement, a 'yes' or 'no' was marked against a theme or category signifying if the coding was consistent or not. Of those statements highlighted, the inter-rater's identification rate of the major themes was about 85% consistent. However, coding of the categories was complicated by the *MEP Factors* category; an understanding of MEP was required to code this appropriately. Clarification of the categories took place, this time using example statements from the transcripts. In reviewing the transcripts, the inter-rater was asked to evaluate those statements that had been initially excluded (i.e., not highlighted) due to uncertainty. The inter-rater and I again collaborated. The inter-rater's identification rate of the categories after clarification was about 96% consistent (an improvement from 59%), whilst that of the major themes was 100%. Discrepancies in coding were discussed, and minor revisions amended.

Procedure

Recruitment sources. Ethics approval was sought from La Trobe University Human Ethics Committee to conduct the research. Upon receipt of ethics approval, parent participants were recruited from four main sources: (1) State government primary schools located in the northern and north eastern regions of Melbourne, (2) recruitment advertisements placed in the “What’s on” section of the Leader Community Newspapers that covered the inner city and outer suburbs of Melbourne, (3) health professionals such as Dieticians and General Practitioners, and (4) from advertisements placed in two family leisure and recreational centres in the northern regions of Melbourne.

Recruiting participants from state government primary schools was achieved as follows. Initially, ethics approval was sought from the Research and Development Branch of the Department of Education and Training (DE&T) to contact the primary schools for permission from Principals to advertise the research in the schools' parent newsletter. An email response was received from DE&T confirming that the Principals' permission would suffice as the research would not take place in the schools and did not involve direct contact with students or teachers. Subsequently, at the beginning of the research period, and prior to conducting the first program, initial telephone contact was made with about 106 government primary schools to seek permission to advertise. The schools targeted were in close proximity to La Trobe University's Bundoora Campus where the research was conducted. Each contact with a school was followed up with a written request to the Principal (see Appendix A.11) and a copy of the advertisement (Appendix A.12), both of which were forwarded as attachments in an email. Thereafter, email reminders about upcoming programs were forwarded to each of these schools at the end and beginning of each school term. Throughout the research period, additional primary schools were contacted and added to the list to receive email reminders. By the end of the research period, a total of 196 state government primary schools had been contacted.

Participants from the general community were recruited from advertisements placed in the "What's on" section of the Leader Community Newspapers. At the beginning of the research period, telephone contact was made with the Diamond Valley Leader Newspaper. Upon request, an email with the advertisement attached was forwarded to the editor. This contact gained the interest of a journalist, who arranged an interview, and then wrote a short story. A number of the Leader Newspapers chose to

print the story several weeks before the first program commenced. Following this, an email reminder with advertisement attached was sent to the editor of the Diamond Valley Newspaper at the end of each school term requesting that the details be included in the "What's on" section a fortnight prior to a program commencing.

Participant recruitment from health professionals and the two family leisure and recreational centres involved the following. Initially, a list of Dieticians and General Practitioners in and around La Trobe University was completed using the on line Yellow Pages as a source. The list of names totaled 42 Dieticians and 216 General Practitioners. At the beginning of the research period and then at the end of each school term thereafter, the advertisement and a letter (see Appendix A.13) informing them of the research program were forwarded to them. In relation to the recreational centres, contact about the research program was initially made by them after they had seen an advertisement in a Leader Newspaper. Both offered to post copies of the advertisement in their centres.

Parent inquiries. Throughout the recruitment period, parent inquiries were received either by email or telephone. I responded to the email inquiries via an email thanking parents for their inquiry and addressing their questions. If the parents indicated that they wished to be contacted by telephone, I called them within 24 hours or at a time specified by them. If the parents did not wish to be contacted, I replied thanking them for their interest. For the few parents who did not respond to the email within a week, I made one more offer to contact the parent by phone. If no response was received after this final offer, no further attempts were made to contact that parent.

I introduced myself and provided a brief explanation of the purpose and aims of the study. I initially assessed a parent's eligibility to participate in a program by

asking about her child's age and the parent's reasons for inquiring. If the child and parent were deemed eligible (see Participant section), I informed the parent about the study. I answered the parent's questions and informed her that she could withdraw from the study at any time even after signing the consent form.

The eligible parents who agreed to participate were offered times to attend. They could choose between a day or evening program that commenced at the beginning of the next school term. Although most parents nominated a preferred option, some parents reserved their judgement until the end of term break due to mitigating factors (e.g., work schedules, children's after school activities). It became evident with each new inquiry that, given family constraints, allocation to a program was contingent on when a parent could participate. Each parent who agreed to participate, was invited to complete the questionnaire packs at La Trobe University. Every parent declined this offer due to time constraints. Some parents did not want to draw attention to their children by bringing them into the University. The parents agreed to receiving the questionnaire packs by mail; they provided their address details. It was explained that the packs would need to be returned prior to participating in a program. They were also informed that they would need to complete the parent questionnaires and to administer the child questionnaires. The self-administration of parent and child questionnaires is common amongst studies (e.g., Epstein et al., 1987). Also, allowing parents to collect sensitive information from family members, such as height and weight, reduces potential stigmatization of children with overweight concerns (see Golan et al., 1998). The parents were informed that an instruction sheet would help them administer the child questionnaires.

Each parent inquiry was recorded on a running sheet. The sheet was designed in a table format and displayed: The parents' name, contact, child details, and participant code; where parents found out about the study; the date they made contact; the date the questionnaire packs were mailed; the date the packs were received; and a comments section for recording general information such as which program they would attend. As noted in the Information Sheet, and as per the Information Privacy Principles of the *Victorian Information Privacy Act 2000* (Victoria, 2002), each parent was informed that all their information would be kept confidential and identifiable by a unique participant code to ensure their privacy. The running sheet was stored separately from the questionnaire packs. At the end of the phone conversation, each parent was offered to contact me with any further queries. Each parent was again thanked for their interest.

Assessment: Time 1, 2 and 3. Parent and Child Assessment Questionnaire packs, along with an introductory letter and consent forms, were mailed to parents within 24 hours of them agreeing to participate in a program (Time 1; T1). A suggested return date of a fortnight was indicated in the letter. If a program was commencing shortly after the parent agreed to participate, questionnaire packs were received relatively quickly. However, most packs were not received by the suggested due date. In view of this, a week after the nominated return date, I called those parents whose packs had not yet been received, to give them a gentle reminder and to check if they wanted to continue with the study. Most parents responded after this reminder by returning the packs within another week or two. I instigated another reminder at the end of two more weeks. Those parents who chose not to continue with the study were offered to go on a list to be advised of upcoming programs throughout the research period. Generally, parents who withdrew due to mitigating circumstances agreed to go

on this list. Those few parents who withdrew completely were thanked and offered to call me if they changed their mind. Any parents who did not return their packs following the second reminder were followed up a third, and final time, a fortnight later.

At the end of session 8 of each program, the participating parents were provided assessment packs to complete (Time 2; T2). Parents were asked to return the packs within a fortnight. Six months post intervention (i.e., Time 3; T3), additional assessment packs were forwarded to parents by mail. Packs that were not received within a fortnight, were followed up using the protocol explained earlier.

Results

Data Treatment

All questionnaires and scales were complete at the time of analysis therefore no individual missing values required attention. Some participants failed to complete entire sections and this will be reported within the relevant analyses below. For the parent who completed data for two of her children, the youngest child's data was removed before running the relevant parent quantitative statistics to avoid doubling up on common family factors. Scale totals were calculated as described in the Method section and each variable was checked for outliers through scatter plots and box plots. Where it was deemed necessary and appropriate, and based on recommendations by Tabachnick and Fidell (2001), those figures were brought in to 1+ the next acceptable figure to keep the distribution. If outliers were handled in any other way, it is noted in the relevant results sections below. No participants were deleted due to the small sample size. Normality was checked using standardized skewness and kurtosis; all were

less than 3.10. For the data presented, all assumptions were met except where specified (see Table 4.14, Appendix A.21 for analysis).

It is worth noting that given the number of independent variables being examined in Study 1, a multiple analysis of variance (MANOVA) would have been more appropriate to examine the study's results. However, due to the low sample size, insufficient power precluded conducting a MANOVA. Thus, a series of analysis of variance's (ANOVA) were conducted. In doing so, it is acknowledged that this runs the risk of obtaining an inflated Type 1 error. A common tradition is to use .05 with small sample sizes regardless of the Type 1 error rate (Cowles & Davis, 1982; Pallant, 2005). So, for purposes of observing differences in the following analyses, .05 has been used. In doing so, the number of analyses have been kept to a minimum and interpretations will be made cautiously. In addition to reporting significance levels, effect sizes (partial eta-squared; ηp^2) are also reported for the ANOVAs to ascertain the magnitude of any effects found (Pallant, 2005). Pallant suggests interpreting the effect sizes according to Cohen (1988), whereby .01 is considered a small effect size, .06 is medium, and .14 is a large effect. Cronbach alpha analyses were conducted to assess the internal reliability of the scales and subscales used in this study. Coefficients were all above .7 except where stated.

Following the analyses of the variables, a number of non-significant results were noted. In view of this, the following section will only report the significant results. The non-significant outcomes are reported in Table 4.4 (Appendix A.14).

Participating Children's Eating & Activity Questionnaire (forms part of the Family Demographics and Eating & Activity Questionnaire)

Type of activities. The type of physical and nonphysical activities that the participating children in both groups undertook and when they were undertaken at T1, T2, and T3 are presented in Table 4.5 (Appendix A.15). The table indicates the number of children who undertook each of the listed activities at the various time points. Table 4.6 (Appendix A.16) lists reasons why the children may not have exercised during the research period.

What is evident from Table 4.5 is that the children in both groups increased the average number of physical activities from T1 to T3. The MEP children averaged four activities each at T1 and T2, with an increase to 4.6 activities each at T3. The FWMP children averaged three activities each at T1 and T2, with an increase to four each at T3. The activity "walking" increased the most for both groups; most children were walking at T3.

A different effect seems to be evident for the nonphysical activities. That is, the FWMP children averaged 5.6 nonphysical activities at T1, five at T2, and four at T3. The MEP children averaged six nonphysical activities at T1 and T2, with an increase to 6.6 at T3. The most popular sedentary activity for both groups at T1, T2, and T3 was T.V. watching. The next most prominent sedentary behaviours for both groups were homework, reading for leisure, and computer use. For both groups, physical and nonphysical activities were undertaken during the week and weekends.

Activity data. For the activity data, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to determine whether the MEP group had an effect over and above the FWMP group in increasing the

participating children's mean physical activity hours and decreasing their mean nonphysical activity hours at T1, T2, and T3. Table 4.7 provides the standard deviations and mean activity hours that the MEP and FWMP children undertook.

Table 4.7

The Average Mean Activity Hours That the MEP and FWMP Participating Children Undertook per Week at Time 1, 2, and 3

	MEP group			FWMP group		
Family members & activity habits	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*
Participating Children (MEP *n* = 14 FWMP *n* = 7)						
Physical activity	5.58 (2.78)	7.54 (3.71)	9.00 (4.67)	5.10 (2.42)	7.36 (4.14)	6.62 (3.54)
Nonphysical activity	22.95 (11.81)	23.70 (12.77)	17.94 (8.69)	27.31 (12.93)	18.43 (13.06)	15.60 (10.40)

The activity means for both groups in Table 4.7 indicate a general increase in physical activity hours over time and a decrease in sedentary hours. The analyses for the physical activity hours showed a significant main effect was found for time, $F(2, 38) = 4.81$, $p = .014$, $\eta p^2 = .202$. Post hoc analyses revealed that there was a significant increase in physical activity hours from T1 to T2 ($p = .013$) with no change from T2 to T3 ($p = .678$). No significant interaction effect was found between the groups and time, $F(2, 38) = 0.954$, $p = .394$, $\eta p^2 = .048$.

For the nonphysical activity hours, a significant main effect was found for time, $F(2, 38) = 7.61$, $p = .002$, $\eta p^2 = .286$. Post hoc analyses revealed that there was no change in nonphysical activity hours from T1 to T2 ($p = .105$) but there was a

significant decrease in hours from T2 to T3 (p = .029). No significant interaction effect was found between the groups and time, $F(2, 38) = 2.65$, $p = .084$, $\eta p^2 = .122$.

Eating behaviours. For the eating behaviours, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean frequency of displayed behaviours between the MEP and FWMP groups at T1, T2, and T3. Table 4.8 (Appendix A.17) provides the standard deviations and means for the selected eating behaviours. No significant results were noted for a change in eating pace, the frequency with which the children ate dinner with the family, and for any of the main meal analyses. The children's significant results revealed the following.

The frequency by which the children asked for second helpings (i.e., daily, most days, some days, few days, rarely), showed a significant main effect for time, $F(2, 38) = 4.08$, $p = .025$, $\eta p^2 = .177$. Post hoc analyses revealed no significant differences between the groups from T1 to T2 (p = .210) or T2 to T3 (p = .134). However, there was a significant decrease in how often the children asked for second helpings from T1 to T3 (p = .011), which although worth noting, it is not in a hypothesised change period. No significant interaction effect was found between the groups and time, $F(2, 38) = .072$, $p = .931$, $\eta p^2 = .004$.

Eating patterns. Field notes indicated that participating parents were consistently confused about the meaning of some of the eating pattern items on page 9 of the family demographics questionnaire (see Appendix A.5). For example, *unsupervised by parents, in parents presence, standing up, out of pot/bowl, when is offered food.* In addition, some items (e.g., in the bedroom, when reading) were responded to at the minimal level of the Likert-scale (i.e., rarely) for all respondents at T1. This suggests that these eating patterns were not a problem for this sample, making

the items unsuitable for analysis. Given the noted anomalies, it was decided to best explore those eating patterns that the field notes suggest were the most important to this sample (e.g., watching TV). Some of these items were also highlighted in the literature as unhelpful health behaviours.

Three (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare mean differences on how often (i.e., rarely, few days, some days, most days, daily) the participating children in the MEP and FWMP groups displayed various eating patterns at T1, T2, and T3. Table 4.8 (Appendix A.17) shows the means and standard deviations for the selected eating patterns. No significant results were noted for a change in the frequency with which the children ate when they were angry, bored, or not hungry. The significant analyses revealed the following.

For the frequency with which the participating children watched T.V whilst eating, a significant main effect was found for time, $F(2, 38) = 3.55$, $p = .039$, $\eta p^2 = .157$. Post hoc analyses revealed that there was no change from T1 to T2 ($p = 1.00$) but there was a significant decrease in how often the children ate whilst watching TV from T2 to T3 ($p = .032$). No significant interaction effect was found between the groups and time, $F(2, 38) = 1.66$, $p = .204$, $\eta p^2 = .080$.

Participating Children's Four-Day Food Diary

For the four-day food diary, one participant from the FWMP group omitted recording serving portions on the food diaries from all T1 and T3 data. This made it difficult to interpret appropriately. So, this child's food diary data for all time periods was excluded from the data analyses. Also, as one participant from the MEP group did not forward a diary for T2, this child's data was also excluded from the analyses

because comparisons were focused on changes from T1 to T2 and T2 to T3. Note that the activity diary data was similar to the activity type and data reported earlier so was not presented.

Food diary nutritional values. Each participating child's food diary for the three time periods was collated and condensed into a single report for ease of reference. Every item of food and drink was then converted into nutritional values; that is, calories, carbohydrates, fat, fibre, and salt content. A sample of a participating child's converted food diary is presented in Appendix A.18. This conversion provided a basis for identifying a change in the participating children's food intake over time. Two main websites were used to undertake this nutritional conversion: The ninemsn Health & Wellbeing website (http://health.ninemsn.com.au/tools/calorie-counter/) in the first instance and then, if the item could not be found, The Daily Plate website (http://www.thedailyplate.com/) was referred to secondly. For any food or drink items that could not be found in either of these websites, alternative websites were used. Note that "dinners" were excluded from this report and from any analyses because, generally, parents omitted recording portion sizes for this main meal, making the accurate identification of nutritional values difficult.

In identifying nutritional values, some assumptions were made. For example, many food items in the diaries were recorded as "a sandwich" with a particular spread such as jam. It was assumed that "a sandwich" constituted two slices of bread. This assumption was corroborated with the stated websites. That is, if "sandwich" was sourced, then nutritional values for a sandwich constituting two slices of bread was consistently given. Regarding the amount of spread assumed, the ninemsn website gave minimal values for spreads, such as a tablespoon of jam. In the food diaries, it was

assumed that one tablespoon was used per slice of bread. Appendix A.19 shows a glossary sample of food and drink items with their respective nutritional values adjacent. The glossary also provides a list of assumptions that were made for some food and drink items where the portion sizes were unclear. All assumptions were corroborated by the websites.

To determine the participating children's daily intake of each nutritional value, the raw scores were computed as an average over the four days. In checking the data, two MEP children and one FWMP child were identified as outliers. Their pattern of results varied quite differently from the other participating children over the time periods; that is, their results increased from T1 to T2 and then decreased from T2 to T3. Thus, they were excluded from the analyses. Three (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the average nutritional values between the MEP and FWMP groups at T1, T2, and T3. Table 4.9 provides the average mean and standard deviations for the four-day intake for each of the nutritional values.

Table 4.9

Participating Children's Mean Average Nutritional Intake Values at Time 1, 2, and 3

	MEP children (n = 14)	FWMP children (n = 7)
	Four days *M (SD)*	Four days *M (SD)*
Baseline (T1)		
Calories	1305.89 (162.68)	1186.88 (262.66)
Carbs	187.18 (26.49)	169.33 (41.02)
Fat	46.27 (10.77)	44.17 (11.68)
Fibre	11.64 (2.98)	10.04 (2.71)
Salt	1575.66 (374.70)	1620.88 (441.41)
Post intervention (T2)		
Calories	1075.75 (329.69)	1020.54 (222.36)
Carbs	157.50 (56.97)	134.00 (19.27)
Fat	35.84 (14.62)	35.92 (16.87)
Fibre	10.66 (5.05)	8.63 (1.74)
Salt	1434.52 (234.08)	1578.88 (272.27)
Six month follow-up (T3)		
Calories	1121.66 (226.86)	1120.79 (242.64)
Carbs	161.43 (41.40)	149.96 (34.32)
Fat	40.55 (8.92)	42.46 (8.10)
Fibre	11.02 (3.35)	8.08 (2.88)
Salt	1649.00 (515.64)	1514.21 (243.58)

For both groups, the means in Table 4.9 showed a decrease in all of the nutritional values between baseline and post the interventions, which was the desired effect except for fibre. Whereas, from post intervention to follow-up, the tendency was slight increases for most of the values. The analyses showed no significant results for a change in fat, fibre, or salt. The significant results showed the following.

Calories. For the average number of calories the participating children consumed, a significant main effect was found for time over the four-days, $F(2, 30) = 4.99$, $p = .013$, $\eta p^2 = .250$. Post hoc analyses revealed a significant decrease in calories

consumed from T1 to T2 (p = .015), with no change between T2 to T3 (p = .282). No significant results were found between the groups and time the four-days, $F(2, 30) = .434$, $p = .652$, $\eta p^2 = .028$.

Carbohydrates. For the average number of carbohydrates the participating children consumed, a significant main effect was found for time over the four-days, $F(2, 30) = 6.23$, $p = .005$, $\eta p^2 = .294$. Post hoc analyses revealed a significant decrease in carbohydrates consumed from T1 to T2 (p = .008), with no change between T2 to T3 (p = .299). No significant results were found between the groups and time over the four-days, $F(2, 30) = .203$, $p = .817$, $\eta p^2 = .013$.

Participating Children's Psychological Measures

The mean scores and standard deviations for the MEP and FWMP children's psychological measures were calculated for T1, T2, and T3; see Table 4.10.

Table 4.10

The Means and Standard Deviations of the MEP and FWMP Participating Children's Psychological Measures at Time 1, 2, and 3

	MEP children *n* = 14			FWMP children *n* = 7		
Psychological measures	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six mth follow-up T3 *M(SD)*	Baseline T1 *M (SD)*	Post int. T2 *M(SD)*	Six mth follow-up T3 *M(SD)*
Delighted-Terrible Faces Mood Scale	1.84 (0.55)	1.89 (0.67)	1.80 (0.54)	2.22 (0.64)	2.16 (0.51)	1.86 (0.44)
Body Image Discrepancy with BMI Scores	2.22 (2.49)	2.63 (3.03)	2.94 (3.29)	2.43 (4.74)	2.55 (2.74)	2.66 (4.36)
Self-perception Profile for Children						
Physical appearance esteem	3.04 (0.87)	3.15 (0.88)	3.25 (0.78)	2.67 (0.91)	3.00 (0.67)	3.10 (0.66)
Global self-worth esteem	3.35 (0.60)	3.69 (0.40)	3.58 (0.47)	3.02 (0.78)	3.48 (0.46)	3.36 (0.40)
Athletic competence esteem	3.36 (0.44)	3.35 (0.46)	3.33 (0.58)	2.57 (0.50)	2.81 (0.80)	3.10 (0.53)
Total Eating & Me III Scale	29.43 (11.33)	27.29 (6.53)	29.07 (11.59)	36.57 (12.34)	24.71 (4.79)	28.57 (4.24)
Bulimic eating	8.50 (4.38)	8.07 (3.41)	8.29 (4.14)	10.57 (4.35)	7.29 (2.14)	9.00 (5.26)
Body dissatisfaction	13.43 (8.30)	14.00 (8.48)	12.93 (7.08)	18.86 (8.25)	10.43 (3.82)	12.29 (2.29)
Food restriction	7.50 (1.74)	7.93 (1.82)	7.50 (1.95)	7.29 (1.80)	7.00 (1.63)	7.29 (1.50)
Total Health Self-Determination Index	78.50 (14.91)	80.71 (14.78)	81.07 (10.43)	68.43 (15.08)	73.14 (6.57)	78.43 (8.56)
Competency in health matters	16.00 (6.13)	15.50 (5.02)	16.36 (5.77)	16.00 (6.19)	14.71 (5.65)	16.86 (5.01)
Self-determination health goals	38.50 (8.52)	40.21 (7.46)	38.50 (5.00)	32.00 (9.06)	34.00 (5.80)	35.00 (4.08)
Internal-external cue responsiveness	18.21 (5.00)	16.21 (4.37)	16.43 (3.86)	14.57 (5.83)	16.86 (3.08)	17.71 (3.45)
Health judgement	7.57 (2.59)	8.36 (3.23)	8.64 (3.69)	7.71 (1.80)	7.57 (2.30)	8.86 (2.79)

Overall, the mean scores of the psychological measures in Table 4.10 did not vary a great deal between the groups except for a few measures. For example, the global self-

worth mean scores showed an increase for both over time, and the FWMP eating and me III total baseline scores varied notably from the MEP baseline scores, as did the body dissatisfaction means. Three (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean scores between the groups. No significant results were noted for a change in mood, the SPPC physical appearance and athletic competence subscales, the E&MIII bulimic eating subscale, body image perception, and most of the HSDI-C subscales. The significant results showed the following.

Self-Perception Profile for Children. For the subscale global self-worth, the assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used. A significant main effect was found for time, $F(1.05, 28.5) = 5.60$, $p = .015$, $\eta p^2 = .227$. Post hoc analyses revealed that there was a significant increase in global self-worth from T1 to T2 ($p = .001$) with no change between T2 and T3 ($p = .311$). No significant interaction effects were found between the groups and time, $F(1.05, 28.5) = .114$, $p = .835$, $\eta p^2 = .006$.

Eating and Me III Scale. For the total scale of disordered eating, a significant main effect was found for time, $F(2, 38) = 7.93$, $p = .001$, $\eta p^2 = .295$, and a significant interaction effect was found between the groups and time, $F(2, 38) = 4.19$, $p = .023$, $\eta p^2 = .181$. Post hoc analyses revealed that there was no change for the MEP group across time but the FWMP group showed a significant decrease in disordered eating from T1 to T2 ($p = .002$), with no change between T2 and T3 ($p = .151$).

For the body dissatisfaction subscale, a significant main effect was found for time, $F(2, 38) = 10.2$, $p < .001$, $\eta p^2 = .350$, and a significant interaction effect was found between the groups and time, $F(2, 38) = 11.5$, $p < .001$, $\eta p^2 = .378$. Post hoc

analyses revealed that there was no change for the MEP group across time but the FWMP group showed a significant decrease in body dissatisfaction from T1 to T2 ($p < .001$), with no change between T2 and T3 ($p = .161$).

There was a food restriction subscale, and although it was included in the total scores above, the Cronbach alpha coefficient of the individual subscale was unreliable, suggesting that the two item questions combined in this subscale were invalid.

The Health Self-Determinism Index for Children. For the children's responsiveness to intrinsic vs. extrinsic cues subscale, no significant main effect was found for time, $F(2, 38) = .304$, $p = .740$, $\eta p^2 = .016$, but a significant interaction effect was found between the groups and time, $F(2, 38) = 4.26$, $p = .021$, $\eta p^2 = .183$. Although there was a significant interaction effect, post hoc analyses revealed no significant changes for either group. Even so, there was a trend showing the MEP group becoming more extrinsic between T1 to T2 ($p = .080$), with no change between T2 and T3 ($p = .154$). There was also a trend showing the FWMP group becoming more intrinsic from T1 to T3 ($p = .080$).

Participating and Nonparticipating Family Members' Eating & Activity Questionnaire (forms part of the Family Demographics and Eating & Activity Questionnaire)

Note that for the nonparticipating siblings data, 70.4% of the participating children had either one or no siblings so, to reduce the number of analyses, only the information for sibling one was analysed for the family members' activity and eating behaviours.

Type of activities: Participating and nonparticipating parents. The type of activities that the parents in both groups undertook and when they were undertaken at T1, T2, and T3 are presented in Table 4.5 (Appendix A.15). The table shows that the participating parents in both groups averaged about two physical activities each at T1 and T2. The MEP parents, like their children, increased their physical activities at T3, averaging 2.5 each. There was a similar effect for the nonphysical activities; both groups averaged about four sedentary activities each at T1 and T2. But, similar to the participating children's sedentary results, at T3 the MEP parents increased their average of 4.6 nonphysical activities each, whereas the FWMP parents decreased their average to about three each.

For the nonparticipating parents, the results varied a little. The MEP group, like their children and participating parents, demonstrated slight increases in physical activities from T1 to T3, averaging 1.6 activities each at T1 and two at T3. The FWMP group started with an average of 2.5 activities each at T1, then reduced to two each at T2 and T3. These results are similar to those of the FWMP participating parents. With the nonphysical activities, again, the results are similar to those of the children and participating parents. The MEP group increased their sedentary activities from an average of 3.5 each at T1 and T2, to about four each at T3, whereas, the FWMP group decreased their average from four sedentary activities each at T1 to about 3.4 each at T3. Again, for both participating and nonparticipating parents, "walking" was the most popular activity for both groups, as were the sedentary activities T.V. watching, reading for leisure, and computer use.

Table 4.6 (Appendix A.16) lists the reasons why the parents may not have undertaken any physical activities during the three time periods. The nonparticipating FWMP parents provided more reasons for not engaging in exercise.

Activity behaviours. For the family members' activity data, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean hours between the MEP and FWMP groups at the three time periods. Table 4.11 (Appendix A.20) provides the standard deviations and mean activity hours for both groups. No significant results were noted for a change in physical activities for the participating parents and for the nonparticipating siblings. The significant results were as follows.

Activity data for participating parents. For nonphysical activities, a significant main effect was found for time, $F(2, 36) = 4.73$, $p = .015$, $\eta p^2 = .208$. Post hoc analyses revealed that there was no change between T1 and T2 ($p = .653$), but a significant decrease in nonphysical activity hours was found from T2 to T3 ($p = .027$). No significant interaction effect was found between the groups and time, $F(2, 36) = .784$, $p = .464$, $\eta p^2 =.042$.

Activity data for nonparticipating parents. For physical activity, a significant main effect was found for time, $F(2, 36) = 3.35$, $p = .046$, $\eta p^2 = .157$. Post hoc analyses revealed that there was a significant increase in physical activity hours from T1 to T2 ($p = .015$), with no change between T2 to T3 ($p = .739$). No significant interaction effect was found between the groups and time, $F(2, 36) = 2.52$, $p = .095$, $\eta p^2 = .123$.

For nonphysical activity, a significant main effect was found for time, $F(2, 36) = 6.05$, $p = .005$, $\eta p^2 = .252$. Post hoc analyses revealed that no significant differences were found between T1 to T2 ($p = .097$) and T2 to T3 ($p = .084$). However, there was a

significant decrease in nonphysical activity hours from T1 to T3 (p = .004), which was not in the hypothesised direction. No significant interaction effects were found between the groups and time, $F(2, 36) = 3.05$, $p = .060$, $\eta p^2 = .145$.

Activity data for nonparticipating sibling children. For nonphysical activity, no significant main effect was found for time, $F(2, 32) = 3.17$, $p = .056$, $\eta p^2 = .165$, but a significant interaction effect was found between the groups and time, $F(2, 32) = 3.34$, $p = .048$, $\eta p^2 = .173$. Post hoc analyses revealed no change for the MEP group over time. Although the trend for the FWMP group showed a decrease in nonphysical activity hours from T1 to T2 (p = .060), it was only significant from T1 to T3 (p = .009).

Eating behaviours. For the participating and nonparticipating family members' eating behaviours, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean eating pace or frequency of displayed eating behaviours between MEP and FWMP at T1, T2, and T3. Table 4.8 (Appendix A.17) shows the means and standard deviations of the family members' eating behaviours over time. No significant results were noted for a change in any of the eating behaviours.

Eating patterns. For the eating patterns, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare how often the family members in the MEP and FWMP groups displayed various eating patterns at the three time points. Table 4.8 shows the means and standard deviations of the family members' eating patterns over time. The significant analyses revealed the following.

Eating patterns for the participating parents. For the frequency with which the parents watched T.V. whilst eating, no significant main effect was found for time, $F(2, 36) = .568$, $p = .572$, $\eta p^2 = .031$. A significant interaction effect was found between the

groups and time, $F(2, 36) = 3.53$, $p = .040$, $\eta p^2 = .164$. Post hoc analyses revealed that there was no change in eating in front of the T.V. for the FWMP group at any time, but for the MEP group there was a gradual decline of eating in front of the T.V. over time, which was only significant from T1 to T3 ($p = .027$). This decline showed that the MEP group was eating in front of the T.V. significantly less often than the FWMP group at T2 ($p = .039$) and at T3 ($p = .018$).

Eating patterns for the nonparticipating parents. For the frequency with which the nonparticipating parents watched T.V whilst eating, no significant main effect was found for time, $F(2, 36) = .131$, $p = .878$, $\eta p^2 = .007$, but a significant interaction effect was found between the groups and time, $F(2, 36) = 4.26$, $p = .022$, $\eta p^2 = .191$. Post hoc analyses revealed that there was no change in eating in front of the T.V. for the FWMP group at any time, but for the MEP group there was a gradual decline of eating in front of the T.V. over time, which was only significant from T1 to T3 ($p = .041$). This decline showed that the MEP group was eating in front of the T.V. significantly less often than the FWMP group at T3 ($p = .002$).

Participating Parent Stages-of-Change and Psychological Data

For the stages-of-change data, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean scores between MEP and FWMP groups at T1, T2, and T3. The aim was to determine whether the participating parents had been supporting their participating children to choose healthier food options, to increase their activity levels, and to decrease their nonphysical activities. For the psychological data, 3 (time) x 2 (intervention group) mixed ANOVAs with repeated measures on time were conducted to compare the mean mood and self-

esteem scores between the groups over time. Means and standard deviations for the stages-of-change and psychological data were calculated; see Table 4.12.

Table 4.12

The Mean Mood, Self-esteem, and Stages of Change Scores for MEP and FWMP Participating Parents at Time 1, 2, and 3

	MEP children *n* = 13			FWMP children *n* = 7		
Psychological measures	Baseline T1 *M (SD)*	Post inter-vention T2 *M (SD)*	Six month follow-up T3 *M(SD)*	Baseline T1 *M (SD)*	Post inter-vention T2 *M(SD)*	Six month follow-up T3 *M(SD)*
Stages-of-Change Total	1.26 (0.45)	1.18 (0.38)	1.05 (0.18)	2.00 (0.69)	1.81 (0.47)	1.33 (0.64)
Food	1.38 (0.77)	1.08 (0.28)	1.00 (0.00)	2.57 (1.13)	1.71 (0.49)	1.43 (0.79)
Physical	1.23) (0.60)	1.08 (0.28)	1.00 (0.00)	1.71 (1.11)	1.86 (0.69)	1.14 (0.38)
Nonphysical	1.15 (0.38)	1.31 (0.63)	1.15 (0.55)	2.14 (1.21)	1.86 (0.38)	1.43 (0.79)
Beck Depression Inventory shortform	1.92 (1.61)	0.92 (0.95)	1.00 (1.47)	3.43 (3.15)	3.00 (2.16)	3.29 (2.93)
Rosenberg Self-esteem Scale	25.00 (1.08)	26.08 (1.55)	25.00 (2.04)	24.00 (2.31)	25.43 (1.27)	25.14 (1.86)

The mean scores of the psychological measures in Table 4.12 showed that the stages-of-change scores were higher at each time point for FWMP compared to MEP. This was also the case for the mood scores. The analyses showed no significant results for a change in the parents' mood, or in supporting a change in physical and nonphysical activities. The significant results were as follows.

Stages-of-change data. For the total stages-of-change score, a significant main effect was found for time, $F(2, 36) = 5.12$, $p = .011$, $\eta p^2 = .222$. Post hoc analyses revealed no change in motivation level from T1 to T2 ($p = .288$) but there was a significant increase in readiness to support change from T2 to T3 ($p = .040$). No significant interaction effect was found between the groups and time, $F(2, 36) = 1.48$, $p = .240$, $\eta p^2 = .076$.

For the stages-of-change for supporting healthier food options, a significant main effect was found for time, $F(2, 36) = 10.46$, $p < .001$, $\eta p^2 = .368$. Post hoc analyses revealed a significant increase in motivation to support a change to healthier food options between T1 to T2 ($p = .003$), with no change between T2 to T3 ($p = .209$). No significant interaction effect was found between the groups and time, $F(2, 36) = 2.52$, $p = .095$, $\eta p^2 = .123$.

Rosenberg Self-esteem Scale. Analyses showed a significant main effect for time, $F(2, 36) = 4.45$, $p = .019$, $\eta p^2 = .198$. Post hoc analyses revealed that there was a significant decrease in self-esteem from T1 to T2 ($p = .003$). However, although there was an increase in self-esteem from T2 to T3, which was not significant ($p = .142$), the T3 self-esteem score was not significantly different from the T1 self-esteem score ($p = .222$). No significant interaction effect was found between the groups and time, $F(2, 36) = .968$, $p = .389$, $\eta p^2 = .051$.

Focus Group Analysis: Qualitative Analysis

In exploring the parents' understandings and interpretations of how they experienced the MEP program, two major themes emerged: i) Evaluation of the MEP intervention and ii) barriers to supporting change and help-seeking. Within these major

themes, core categories and sub-core categories were identified. See Table 4.13 for a summary list.

Table 4.13

Major Themes, Core Categories, and Sub-core Categories That Emerged from the Study 1 MEP Focus Group

Major themes / Core categories	Sub-core categories
Theme 1: Evaluation of the MEP intervention	
What was helpful	A. Connecting with the participating child due to communication B. Connecting with the participating child due to involving in decision making C. Change with nonparticipating family members D. Confidence E. Parent role-modeling F. Parent as agent-of-change G. Motivational factors H. MEP factors due to group support I. MEP factors due to facilitator support, J. MEP factors due to generalizability
What was unhelpful	K. Complicated due to homework formality L. Improvement
Theme 2: Barriers to change and help seeking	
M. Harm to children N. Problem recognition and uncertainty O. Problem recognition and feeling overwhelmed P. Problem recognition and complacency Q. Treatment adherence R. Social support	

Note: The alphabetic code distinguishes the categories and sub-core categories.

Parent quotations were labeled P1 to P12, signifying the 12 MEP parents who participated in the focus group. Table 4.13 shows that each quote was further labeled with an alphabetic code that distinguished the relevant category (e.g., P2A, P5Q).

Theme 1: Evaluation of the MEP Intervention

What was helpful. All 12 parents provided positive feedback about how MEP was helpful and how it contributed to a change in health behaviours, either in themselves, their child, or other family members. Given that the analysis revealed a number of core categories, each will be addressed sequentially in no particular order.

Connecting with the participating child. Eleven parents reported a sense of connection with their participating child in their efforts to influence health behaviour change; eight of them due to communicating with their child and six due to involving them in the decision making process. Of those parents who reported that communication was important, one found that talking to her child helped to resolve her own ambivalence to support change (P10A), another found that she was able to support her son to take responsibility for change (P7A), and another reconnected with her daughter (P2A). Some parents found that talking brought them closer to understanding their children (P5A) or to themselves (P3A). In addition, communicating helped to increase the participating children's awareness of what behaviours are healthy (P11A).

The notion of influencing change by involving children in the decision making process and respecting their health food choices appeared to be a foreign idea to some parents. Three parents (P3B, P6B, P9B) acknowledged that respecting their children's choices helped them connect with them as individuals, whilst four parents acknowledged that involving their children to make decisions about health behaviour

change helped to educate them about where food comes from (P7B, P9B) and ease tension in the household (P4B, P10B).

Change with nonparticipating family members. Seven participants reported that their participation in MEP helped influence changes with other family members. For example, two parents commented that their husbands had become conscious of their own weight (P6C, P7C). Two parents commented that their older daughters had made changes (P1C, P9C). More generally, a parent reported that "The whole family has changed in the way they're eating" (P12C), whilst another stated that "as a family too, we're trying to do more activities together" (P11C). A participant grandmother who attended the program to support health behaviour change in her grandson because she cared for him when her daughter worked, became a support for her daughter. The daughter also embraced change for herself and her son (P8C).

Confidence. At least nine parents referred to confidence building statements. One parent's confidence was reinforced by participating in MEP because she was unsure whether she "had been doing the right thing" (P1D), another felt reassured that her struggle to support change was reduced (P2D), another "got very confident about approaching the problem" (P4D), and another realized that "there are real possibilities here to make some positive changes" (P3D). One parent wondered whether she was "going to achieve anything" at all from MEP until she had a breakthrough in the latter part of the intervention (P6D). Another parent was encouraged with the techniques she learnt (P9D), and another became more realistic about her concerns (P10D). Two parents, particularly, summarised the general feeling that most of the parents felt from having participated in MEP due to their increased confidence to influence change (P11D, P12D).

Parent role-modeling. Three parents reported a change in their own behaviours that helped them realise the importance of role-modeling. One parent became aware how her ambivalence got in the way (P3E), another managed to involve her husband in the role-modeling goals (P7E), and another increased her physical activities in an area that would include her daughter (P10E).

Parent as agent-of-change. Nine of the parents gave feedback that provided evidence that they were the precipitators of change for their families (P2F, P4F, P7F, P8F, P9F, P10F, P12F, P11F). One parent particularly summed up her excitement at having a breakthrough with her son's eating behaviours by acknowledging the part she played in the change (P6F).

Motivational factors. Seven parents expressed insight in understanding how motivation can be of value through the elicitation of intrinsic factors (P1G, P5G, P7G, P9G, P10G, P11G) and extrinsic factors (P6G). Three of these parents used their understanding by focusing on goal setting (P2G, P3G, P4G).

MEP factors. Ten parents commented about the benefits of participating in a group, having the facilitator's support, and the generalizability of the MEP strategies. Some parents indicated that the group discussions helped to clarify the material and to conceptualize the strategies practically (P1H, P2H, P4H). Other parents indicated that they attained ideas through the discussions (P6H, P7H, P8H, P11H). One parent reinforced the value of keeping intervention groups small (P12H); and two others admitted that it was good not to feel alone in the behaviour change struggle (P9H, P10H). Four parents gave examples on how the facilitator helped them with breakthroughs (P4I, P6I) and with feeling understood (P9I, P12I). Eight of the parents

agreed that the MEP strategies could be applied to various health behaviour problems (P6J, P9J, P10J, P11J) and family or work challenges (P2J, P3J, P5J, P12J).

What was unhelpful. Eight of the participants provided feedback about how MEP was unhelpful. The two sub-core categories that are covered next were the ways MEP seemed complicated and suggestions on improving it.

Complicated. A consistent message from many parents was that Session 6 was difficult to apply. Parents' comments included that it was challenging (P2K, P10K) and that the importance-confidence rating scales were confusing to apply with the children (P6K, P9K). One parent felt that the home activities were written too formally (P1K) and another that the discussion on goals was too tedious (P7K).

Improvement. Some interesting suggestions were offered by five of the parents. Three parents wondered whether a flow chart depicting various health behaviour challenges and respective MEP strategies on how to approach the problems might increase their use (P1L, P2L, P3L). Some parents commented that they found the home activities challenging or time consuming (more on time issues below) and offered suggestions to alleviate these challenges. For example, one parent suggested putting the home activities on-line to increase practice effort (P2L). Two parents wondered whether increasing the group sessions and spending more time doing the role plays might help to consolidate the material better (P1L, P2L). Other suggestions included supporting parents to problem solve their time management issues so they could increase their commitment to completing home activities (P2L), working on a mutual group goal to achieve by the end of the program (P7L), and providing a list of hard copy reference material that would further their understanding of what was learnt in MEP (P8L).

Theme 2: Barriers to Supporting Change and Help-seeking

A number of barriers to change and help-seeking became evident over the course of MEP. These barriers, discussed below, emerged in the focus group and included fear of causing harm to the children, problem recognition concerns, adhering to the intervention, and challenges associated with support networks.

Harm to children. Three parents particularly summed up the general consensus about whether encouraging health behaviour change might lead to bigger problems for their children later in life. One parent worried that focusing on food would lead to eating problems (P1M), another had difficulty being honest to her daughter about her own unhelpful behaviours for fear that it would cement the daughter's unhelpful eating patterns (P10M), and another parent's fear was unmistakable - that her daughter would be damaged irreparably (P2M).

Problem recognition. Some parents felt challenged in identifying what the specific problem was that they needed to focus on for change. There seemed to be an inclination to focus on the obvious concerns such as food (P1N), or not recognizing that parents' self-imposed restrictions limited problem resolution (P6N, P9N), or complacency based on genetic factors (P10P). Other barriers included thinking that the health behaviour problem was bigger than it really was (P10N), or assuming that problem resolution lies with the parent alone rather than involving the child (P11N, P12N). Five parents expressed feeling overwhelmed with the challenge of supporting health behaviour change that it got in the way (P4O, P6O, P10O, P12O). One parent echoed the thoughts and feelings of other parents when she acknowledged the overwhelming challenge she faced (P11O).

Treatment adherence. Barriers associated with treatment adherence weighed heavily around time. Two parents who missed sessions due to personal commitments acknowledged that not being at the sessions was a disadvantage (P6Q, P10Q), as did those parents who did not read the handouts (P7Q). A common theme amongst the parents was not having time to do the home activities because of work commitments (P1Q), fatigue (P3Q), and conflicting priorities (P9Q). One grandmother who came to support her grandson with health behaviour change because her adult daughter was unable to attend due to work commitments, reportedly told her daughter that she had to make time (P8Q). Two parents particularly reverberated what most of the parents felt about finding the time to do the home activities and about the challenge of consistently supporting health behaviour change given time constraints (P1Q, P11Q).

Social support. Another common theme that was the challenges associated with social support. Two parents particularly complained about a lack of support from significant others (P6R, P7R).

Discussion

It was expected that the MEP children would demonstrate a significant increase in helpful eating and physical activity habits and a decrease in unhelpful eating and nonphysical activity habits than the FWMP group post intervention. It was also expected that the MEP children's changed behaviours would be maintained at six months follow-up. With regards to the Focus Group, it was predicted that the parents' feedback would be positive about MEP's helpfulness in supporting them to influence health behaviour change in their children. The qualitative results from the focus groups showed that this expectation was supported.

Although the quantitative results supported the notion that the participating children demonstrated helpful health behaviour change over time on some variables, in contrast to the expected results, most effects were demonstrated on both groups. This suggests that the children's health behaviour change relied on other factors independent of the intervention. For example, studies have highlighted that an impediment to health behaviour change in young children is using them as the agents-of-change. So, to avoid this anomaly in Study 1, it was ensured that both programs used the parent as the sole change agent, particularly given that such programs (e.g., Golan et al., 1998) have demonstrated better outcomes compared to child agent-of-change interventions. The following discussion of the results addresses some of the health behaviour variables, and ultimately considers the possibility that the "parent" factor was pertinent for supporting, and maintaining, health behaviour change in the participating children. In any event, the non significant results for the MEP group is supported by Lundahl et al. (2010) whose meta-analysis on MI studies showed that although MI increases individuals' potential to change behaviours, MI related interventions do not tend to show statistically significant results. The results of the secondary variables pertaining to the participating parents and the nonparticipating family members will also be discussed as relevant.

Examination of the Participating Children's Eating & Activity Behaviours

Activity behaviours reported on the family demographics questionnaire. To demonstrate a change in physical activity levels, an increase in hours was expected for the MEP children post intervention. The prediction that the hours would increase was supported; however, this increase was found for the participating children overall. This

finding suggests that both the MEP and FWMP children increased the number of hours they spent in physical activities as a result of their parents participating in the intervention programs. This increase was maintained at six month follow-up. Although the interaction effect was not significant, the mean scores showed that the MEP group continued to increase their activity hours over time compared to the FWMP group.

To demonstrate a change in nonphysical activity levels, a decrease in hours was expected post intervention. Similar to the physical activity findings, the prediction that the hours would decrease was also supported for both groups. The results of the activity levels differ in that the decrease in sedentary hours was only significant from time two to three. When looking at the mean scores, it appears that the sedentary hours of the FWMP children showed a marked decrease from time one to two, whereas the sedentary hours for the MEP children remained steady during this same period. This observation seems to be supported by the "Types of activities" data, which shows that the MEP children's average number of nonphysical activities undertaken at time one and two remained unchanged, whereas there was a decrease for the FWMP group. This lack of change for the MEP group may have resulted in the overall non-significant effect at time two.

It is possible that the results of the activity hours are significant for the participating children overall because they were all motivated to change. The HSDI-C results, which measured the children's motivation orientation (discussed further below), show a large effect size in the predicted direction for the total score and the independence of judgement subscale. These results suggest that the children in both groups showed a trend in becoming more intrinsically motivated and more confident over time in making health related decisions for themselves. In becoming more

intrinsically motivated, it is possible the children were reinforced by internally derived decisions to be more active and less sedentary because they felt more confident in their judgement to do so. In addition, the children's athletic competence esteem was noted to have a large effect size. This gives evidence to Weiss' (2000) argument that children can be intrinsically motivated to be physically active if they have a sense of physical competence. She also argued that encouragement from significant others can also influence children's intrinsic motivation. From this perspective, it is possible that the parents in both groups chose activity levels as priorities of change for their children.

Both programs encouraged the individual parents to choose what unhelpful behaviours they wished to focus on for change. The FWMP program was more overt in its design to educate parents on specific health behaviour change. That is, the FWMP parents, regardless of their priorities for change, were educated on all aspects of activity and eating habits. This may have resulted in more wide spread change for the FWMP children, as the educational information may have highlighted areas of health behaviour improvement that the parents may not have previously considered. Whereas, the MEP program was more focused on skilling parents with motivational strategies on health behaviour change rather than on specific behaviours to change. This difference may explain the differing patterns of results between the groups. It may also explain the lack of significance for the nonphysical activities from time one to two, or for the lack of interaction effect.

Eating behaviours and patterns. The prediction that the MEP children's eating behaviours (i.e., eating pace, second helpings, dinner with family, breakfasts had/missed, home prepared meals, takeaway meals, and main meals had/missed) would change over time was not supported for any of the behaviours except for how often the

children in both groups asked for second helpings. The analysis revealed that the significant change was from time one to three. Although this is not in the hypothesised change period, the effect size was large, suggesting that the MEP and FWMP children's decrease in frequency with which they asked for second helpings was in the predicted direction.

The prediction that the MEP children's eating patterns (i.e., eating whilst watching TV, when angry, when bored, and when not hungry) would change over time was not supported for any of the patterns except for the frequency with which the children ate whilst watching TV. Again, this was for both groups. The analysis revealed that although the participating MEP and FWMP children significantly decreased the frequency with which they ate whilst watching T.V. only from time two to three, the effect size was large. A reduction in eating whilst watching T.V. suggests a reduction in T.V. watching; however, this is not necessarily the case. The "Type of activities" results show that, at all time points, T.V. watching was the most popular sedentary behaviour for the majority of the children. So, it seems, that reduced eating in front of the television may have been an effect of the interventions.

A reason why T.V. watching was the most popular sedentary activity may be because some of the questionnaire packs might have been completed during school holidays. The interventions were specifically conducted in the middle of a school term because this is when parents were available to attend. This meant that baseline and post intervention packs coincided with the midterm breaks. Field notes suggest that some parents completed and administered the packs during school holiday breaks because that was when they had more time. What this may also mean is that the recorded eating behaviours and patterns might not be representative of what is typical for the children;

thus, affecting the eating and the activity results. The notion that health behaviours may not be typical during school holidays is supported by Tyler and Homer (2008). They found that some of the parents' in their obesity study reported feeling challenged in supporting healthy eating and activity behaviours during school holiday breaks because of the changed routine.

Food diary nutritional values. The prediction that the participating children would demonstrate an increase (i.e., fibre) or decrease (i.e., calories, carbohydrates, fat, and salt) of the various nutritional values according to the desired effect, was not significantly supported for the MEP children. This might be due to the lack of precision reported by the parents of the food types consumed, such as the exact type of bread or muesli bar eaten. More precision may have detected a statistically significant change. Nevertheless, there was a significant effect for both groups on some values after the intervention, which was maintained at follow-up. Both groups demonstrated a decrease in calories over time and a decrease in carbohydrates. In addition, the children in both groups showed a trend in the predicted direction, with a large effect size, for a reduction in fat. These results support the "Hearty Heart" program, whose results also showed a decrease in the children's fat and carbohydrate intake (Luepker & Perry, 1991; Perry et al., 1989). Although it is acknowledged that the results of the current study need to be read cautiously given the small sample, the effects obtained were noteworthy because it suggests that both interventions supported the parents to influence a change in their children's eating behaviours.

Explaining the eating behaviours and dietary outcomes. The absence of intervention effects in some of the eating and dietary behaviours seems to be consistent with the findings of other studies. For example, Schwartz et al. (2007) found no

significant group differences in any of the assessed eating behaviours and patterns, which were similar to those measured in the current study. Research that did find some dietary behaviour effects post intervention, were not maintained at one-year follow-up (Perry et al., 1989). Whilst the effects of some studies were not evident among all participants; Nader et al. (1989) found a reduction in the nutritional values fat and salt only in one of their experimental groups even though both received the same intervention.

So, to explain the eating behaviour and dietary results, it might be useful to understand them in terms of motivation. The MEP and FWMP children demonstrated a trend towards becoming more motivated to embrace health behaviour change over time. This trend can be discerned in the activity results already discussed. It is possible that this age group's motivation can be influenced to change activity levels more than eating related behaviours. Weiss (2000) argues that children can be motivated to change and maintain physical activities. The factors that influence such motivation are varied and can be applied to supporting children to change unhelpful eating behaviours and patterns. Competence in choosing healthier food options or changing unhelpful eating patterns may be more complex for children given their inclination to prefer sweet foods (Bergstrom & Hernell, 2005; Chakravarthy & Booth, 2004; Challen, 2007). With our modern lifestyle comes readily available sweetened and processed foods, which may compromise making helpful nutritional choices, particularly if healthier food options are not provided by parents.

Participating Children's Psychological Outcomes

The prediction that the MEP children's mood would improve was not significantly supported. However, the findings were in the predicted direction with a large effect size for both groups. Research suggests that mood is influenced by poor nutrition and physical inactivity due to reduced natural feel-good endorphins in the body or due to imbalanced blood sugar levels (Challen, 2007). The lack of significant mood results suggests that the children's nutritional and activity levels may not have been so unbalanced at baseline to affect their mood detrimentally. It is possible that the mood findings were in the predicted direction because of the significant shift in activity levels as noted earlier. The research shows that an increase in activities and or a decrease in sedentary behaviours affects mood positively (Challen, 2007). Besides, the children in both groups did not represent a clinical population so, a significant change in mood may not necessarily have been expected.

In addition, it is possible that the children came from families who were interested and involved in their wellbeing. The research shows that supportive and involved parents can foster good mental health in their children (Barlow et al., 2006; Briesmeister & Schaefer, 2007; Treacy et al., 2005). The parents' voluntarily participation in the current study, and stage-of-change they reported at baseline (i.e., maintenance for MEP, action for FWMP), gives evidence that they were interested parents. More on the effects of parental support will be discussed in the *Parent as agent-of-change* section below.

Regarding self-esteem, the prediction that the participating children's self-esteem would increase was significantly supported for global self-worth overall. This indicates that the MEP and FWMP children's self-esteem may have improved as a result

of their parents attending an intervention. This improvement was maintained over time. No significant results were observed for the physical appearance and athletic competence esteem; however, the findings were in the predicted direction with large effect sizes. Harter (1985; 1999) reports that an increase in these subscales suggest a higher likelihood that children will participate in physical activities and have increased self-esteem. These findings were evident in the current study.

Research shows that low self-esteem is also related to body dissatisfaction (Grilo, Wilfley et al., 1994; Stein & Hedger, 1997). It seems that with an improvement in self-esteem, there was an improvement in body satisfaction. The E&MIII results revealed that the FWMP children felt significantly more satisfied with their bodies over time. This result may be due because their baseline body satisfaction scores were higher than the MEP children's scores at baseline and so there was more room to improve. These results do not seem to be corroborated by the CBIS outcomes, which suggest that the children overall had a balanced view of their body image from baseline. It is possible that the increase in self-esteem, as noted above, may have influenced a positive effect on body satisfaction for the FWMP children.

The prediction that the MEP children's motivation orientation would become more intrinsic over time was not supported for the total scale or any of the subscales. Nevertheless, the large effect sizes for the total scale and the independence of judgement subscale were in the predicted direction for both groups. These effects suggest a trend that the children became more intrinsically motivated over time in making autonomously derived decisions about their health, and more confident in judging their state of health. The principles of MI suggest that intrinsically motivated health behaviour change is more likely to be maintained over time (Miller & Rollnick,

2002). The effects of this trend in motivation can be discerned from the children's significant activity results discussed earlier.

In addition, there was a significant interaction effect for the responsiveness to internal vs. external cue subscale. Post hoc results revealed no significance for either group, although the results for the MEP group showed a trend that the children became more responsive to external cues over time. The post hoc results for the alternate group, on the other hand, showed a trend that the FWMP children became more responsive to intrinsic cues over time. This suggests that, in making decisions about their health, the children were being reinforced by internally derived reasons. It is possible that the participating FWMP parents' significant shift from the action stage to the maintenance phase increased their readiness to support their children, thereby influencing their children's responsiveness to health matters. The effects of the participating parents' involvement will be discussed next.

Parent as Agent-of-Change and Effects to Family Members

Using the parents as the agents-of-change worked well. Studies suggest that the parent is the ideal agent to influence health behaviour change in young children (e.g., Golan et al., 1998). So, to avoid this anomaly, it was ensured that both programs were focused in this way. It seems that the results of the current study generally indicate that either program is likely to effect health behaviour change. From this perspective, it is useful to wonder if the real difference that effects change in children is the parent.

The "Hearty Heart and Friends" school based program showed that involving parents changed their shopping patterns, which resulted in a change in the children's food intake compared to not involving the parents (Luepker & Perry, 1991; Murray et

al., 1987; Perry et al., 1989). The "Heart Smart" program also showed more behavioural change in the participating children when their parents were involved in the school based program (Johnson & Nicklas, 1995; Johnson, et al., 1991). Support for involving parents in family-based interventions as being more effective than not involving the parents is corroborated by Muller et al. (2004), who reviewed 25 studies on the prevention of obesity.

Pransky (2001) argues that prevention is the ideal strategy because the aim is to make a difference to wellbeing before health problems arise. Involving the parents is a preventative strategy as they are the best role models to promote helpful health behaviours in their children and equip them with resilient, lifelong skills. Parents who reinforce helpful health behaviours are likely to have children who develop a higher level of health competence. Research suggests that social support is a strong predictor of young people adopting helpful health behaviours (Pender & Stein, 2002; Yarcheski et al., 1997). In the current study, the participating children in both groups significantly increased their activity levels and decreased their sedentary hours during the experimental period. The children also demonstrated some changes in their eating habits, such as significant decreases in second helpings, eating whilst watching T.V, and calorie and carbohydrate intake. These changes provide evidence that the MEP and FWMP participating parents supported their children by using the learnt strategies from their respective interventions to reinforce helpful behaviours.

These results suggest the possibility that the parents focused on supporting their children to change specific health behaviours. Both the MEP and FWMP interventions were designed to encourage parents to choose for themselves those health behaviours they wished to reinforce or change in their children. Unfortunately, no formal notes

were collated on the parents' change goals and on the behaviours each parent chose to focus on, which may have provided some insight into the outcome of the results. It is possible that changing the children's eating habits was not as important to the parents as the activity levels. Or, maybe, they were less confident in influencing change to the children's eating habits compared to the activity levels because diet might be more difficult to influence since it is typically a family behaviour. This notion is elucidated in Study 2 on the effects of change on other family members.

The principles of MI indicate that behavioural change is dependent on the degree of importance people place on changing specific behaviours or how confident they are to change (Miller & Rollnick, 2002). Importance and confidence factors perse` were not measured in this study even though they were addressed in MEP. Specific evidence for what health behaviours were important to parents, or how confident they were in supporting behavioural change in their children, could be deduced from the qualitative focus group results, discussed below. Alternatively, a measure that may provide some evidence for what was important to parents is the stages-of-change questionnaire. Generally, even though the MEP and FWMP parents were already in the maintenance stage post intervention and at follow-up, the results indicate that for the total score, the parents' readiness to influence change in their children's health behaviours significantly increased from time two to three. Analysis of the categories indicated that, compared to activities, parents' motivation to influence change was only significantly different in their support of the children choosing healthier food options. This suggests that dietary change may have been more important for the parents. However, post hoc analyses for the healthier food option category revealed that the MEP parents were significantly different from the FWMP group at time one and two.

The mean scores at time one indicate that the MEP parents had already been supporting their children to choose healthier food options for more than six months (i.e., maintenance stage) compared to the FWMP parents who had been supporting their children for less than six months (i.e., action stage) prior to commencing an intervention. Despite these differences in stage-of-change level, both groups achieved similar changes to their children's eating and activity behaviours.

This information provides some evidence in attempting to explain the children's results. That is, because the MEP parents seemingly were already in the maintenance stage when it came to supporting their children with choosing healthier food options prior to commencing MEP, and the FWMP parents were in the action stage, it makes sense that the MEP parents' focus may have been on influencing change on the children's activity levels. Whereas, given the significant shift from the action stage at baseline to the maintenance stage post intervention and at follow-up, the FWMP parents' priority may have been to support their children to choose healthier food options. It may be helpful in future studies to more specifically measure what health behaviour change goals the parents choose to support in their children, how important these goals are for the parents, how confident they feel that they can influence change by achieving these goals, and to what degree the goals are actually achieved post intervention.

Research also suggests that parents who are active have more active children (Sallis et al., 2000). In comparing the activity results for the participating and nonparticipating parents as reported on the family demographics questionnaire, the findings showed the following. For the participating MEP and FWMP parents overall, their increase in physical activities was in the predicted direction with a large effect size

and their decrease in sedentary hours was significant from time two to three. For the nonparticipating parents overall, their increase in activities was significant post intervention, which was maintained over time, and their decrease in sedentary hours was also significant from time one to three.

It is useful to surmise that because the parents were involved at some level in changing their own activity behaviours, this involvement influenced the participating children's activity behaviours in some way. The "Type of activities" data gives support that all parents were engaged in about two physical activities each throughout the research period, and overall made efforts to decrease their inactivity behaviours. This supports Brustad (1993, 1996a, 1996b); he found that parents' who were interested in being physically active, influenced their children's interest in physical activities. This notion of parents influencing their children's behaviours due to changing their own is also evident in two other behaviours in the current study. Post hoc results show that, compared to the FWMP parents, the participating MEP parents ate significantly less often in front of the T.V. at time two and three, whilst the nonparticipating MEP parents ate significantly less often at time three. This trend was also evident for the nonparticipating MEP siblings as their results showed a large effect size in the predicted directed. Similarly, the results showed large effect sizes for the frequency with which both participating and nonparticipating MEP and FWMP parents asked for second helpings.

Research has shown that with appropriate training and support for themselves, parents can influence their children's health behaviours (e.g., Braswell, 1991; Collins et al., 2000; Ducharme & Van Houten, 1994; Sanders & Dadds, 1993; Webster-Stratton & Herbert, 1994). With MI, study findings suggest that when individuals' resistance and

ambivalence to change is diminished, health behaviour change is possible (Miller & Rollnick, 1991). Although it was only the participating MEP parents who were coached in the principles and strategies of MI, it is possible that by increasing their own motivation to effect change, the parents felt more confident to influence health behaviour change in their children. The MI strategies of exploring and resolving ambivalence to change may have been more directive in the MEP program, so it may have been expected for the MEP group to show more significant changes than the FWMP group. But, to a great degree, some of the MI strategies are an intuitive process. So, guidance and training in the FWMP program may have influenced such exploration and resolution in the FWMP parents, thus increasing their confidence to support their children in health behaviour change too.

Supportive and involved parents who are confident that they have the skills to influence their children's behaviours, can foster good mental health in themselves and their children (Barlow et al., 2006; Briesmeister & Schaefer, 2007; Treacy et al., 2005). As noted earlier, the participating children's mood results were in the predicted direction post intervention with a large effect size, whilst their global self-worth was significantly increased. Brustad (1993, 1996a, 1996b) found that parents who encouraged physical activities had children who reported greater perceived competence in physical activities. In the current study, large effect sizes for both the physical appearance and athletic competence esteem subscales were observed for the participating children overall. It is interesting to note that the participating MEP and FWMP parents' mood results were also in the predicted direction with a large effect size. Even though their self-esteem results overall significantly decreased from time one to two, their increase in self-

esteem from time two to three was in the predicted direction, again with a large effect size.

In explaining the initial decrease in the participating parents self-esteem, it makes sense from the perspective of the change process. The TTMC model provides a basis for understanding that in an attempt to modify their behaviours, people may spiral from one stage-of-change to another, including relapsing to earlier stages, where they are more likely to experience the greatest ambivalence to change (Prochaska et al., 1992). From the perspective of MI, which can be applied within the framework of the TTMC, with ambivalence comes reduced confidence in one's ability to effect or influence change, which ultimately can affect the self-esteem (Rollnick & Miller, 2002). In the current study, the results show that the participating parents came into the program at a high level of the change process - the maintenance stage for the MEP parents and the action stage for the FWMP parents. This is reflected in their higher reported self-esteem results at baseline as opposed to post intervention.

In participating in a program, the parents in both groups may have felt challenged by supporting change. The MEP parents were introduced to motivational and behavioural change concepts and strategies that they were likely unfamiliar with so were possibly faced with a steep learning curve. Whilst the FWMP group, whose attendance to the educationally based program probably reinforced dietary and activity strategies that they may have heard about before, probably faced supporting change in areas they may have felt challenged by. The greater the perceived hurdle to be jumped, the greater affect this is likely to have on one's confidence and self-esteem. The self-esteem results at this time may not have been significant due to the possibility that the MEP parents were still negotiating the learning curve. Whereas, for the FWMP group,

their significant increase in readiness over time to support their children with choosing healthier food options specifically, suggests that their learning curve may not have been as great. It might be helpful in future studies to assess for this anomaly. That is, to identify whether familiarity with the concepts and strategies of a health behaviour change program influences participant outcomes, such as self-esteem and stages-of-change. The questionnaire would aim to identify what parents already know.

Regarding the nonparticipating siblings, the current study showed few notable health behaviour changes. Golan et al. (1998) promotes creating a family environment that encourages the parents to model helpful health behaviours. In doing so, it is recognised that effecting change across the family members takes time and involvement. So, it is possible that the lack of effects for the nonparticipating siblings in this study is more to do with time, particularly given that the participating parents' attention was directed to the participating child. More studies need to consider how the needs of the whole family can be positively affected by parents' participation in an intervention.

Motivational Interviewing as an Effective Intervention Strategy

From the results discussed here, it is evident few significant changes were found for the MEP group than might have been expected. The findings suggest that the educational program has as much potential to effect change as the experimental program. So, it is possible, that the results of the current study may reflect the fact that most of the children were not at immediate risk of developing a disease or illness. When delivering preventative programs many, if not most, of the participants are unlikely to be at-risk. In this study, the intention was to support families to promote

helpful health behaviours in their children early in life to avoid or delay disease development longer term. This notion suggests that the target group is likely to include those at-risk and non-risk individuals. Wing (2000) advocates the implementation of behaviour-based interventions that target children at risk of disease as well as those not at risk. The "Heart Smart" educational program also targeted both at-risk and non-risk children, and found that the at-risk children demonstrated more health behaviour change than the non-risk children (Johnson & Nicklas, 1995; Johnson, et al., 1991). The children and parents in the current study were predominately non-risk, so based on the outcome of the "Heart Smart" study, it makes sense why the results show few significant behavioural change outcomes.

In addition, it is possible that running MEP as a group program may have compromised the results. As indicated in the thesis introduction, Lundahl et al. (2010) questioned whether there was sufficient data to demonstrate MI's effectiveness in groups, even though other researchers (e.g., Burke et al., 2002; Walters et al., 2002) suggested that it could under certain conditions. Although most of the conditions were taken into account when designing MEP, it is possible that because MEP had a psychoeducational component in its design, this could have reduced its effectiveness. Walters et al. (2002) indicated that a truly group MI program follows the group's concerns, reflecting on the individual and group discrepancies to increase motivation for change. The MEP program was designed as Walters et al. suggested so that parents' ambivalence to support change could be explored. But MEP also trained parents on MI strategies and techniques so they could use MI to address their children's motivational concerns. The inclusion of psychoeducation in an MI group program may affect MI's effectiveness.

In summary, the overall results showed that most effects were demonstrated on both the MEP and FWMP groups. The children's physical activity hours significantly increased and their sedentary hours decreased. Both groups also significantly decreased the frequency with which they ate in front of the T.V. and how often they asked for second helpings. Regarding the dietary outcomes, the children demonstrated a significant decrease in calories and carbohydrates post the interventions, which was maintained at follow-up. In addition, the children's global self worth significantly increased, whilst the FWMP children decreased their disordered eating and felt significantly more satisfied with their bodies over time. For the participating parents, although the MEP group showed a significant decrease in eating whilst watching T.V. compared to the FWMP group, most effects noted were for both groups. The parents showed a significant decrease in nonphysical activities and their readiness to influence change was significantly increased, particularly in their support of choosing healthier food options. Even though the prediction that the MEP children would demonstrate significantly more helpful health behaviour change than the FWMP children was not supported, the qualitative results of the focus group suggest that MEP was helpful in influencing change. These results will be discussed next.

Focus Group Discussion

The Focus Group provided a forum for identifying how effective the MEP intervention actually was for participating parents. It provided qualitative evidence for what health behaviours were important to the parents, how confident they were in supporting behavioural change, and what they achieved in their endeavors to support their children. From the analysis, the two broad themes that emerged were evaluation

of MEP and barriers to supporting change and help-seeking. Each theme constituted core categories and sub-core categories that further extrapolated on the major themes. The following discussion will at times highlight how the qualitative feedback specifically relates back to the material covered in the MEP intervention, thereby giving evidence for MEP's effectiveness.

Theme 1: Evaluation of the MEP Intervention

What was helpful. In evaluating MEP, participants reported what was helpful about the intervention. The parents identified that communication and involving the children in the decision making process was a helpful way of connecting with them to support health behaviour change. Sessions 4 and 5 of MEP particularly dealt with issues around communication and involving the child. In session 4, parents were coached to enhance their children's motivation to change their health behaviours. Topics included learning how to be collaborative, eliciting solutions and reasons for change, and respecting the children's autonomy to choose. Miller and Rollnick (2002) advocate that these 'topics' or ways of interacting represent the spirit of MI, which help people to resolve their ambivalence to change by enhancing their intrinsic motivation. These communication strategies were evident in the feedback provided by some of the parents. For example, one parent who was ambivalent about supporting her daughter to have breakfast, succeeded in resolving her daughter's ambivalence by sharing her own unhelpful breakfast habits. She then collaborated with her daughter to identify reasons why breakfast is important, to brainstorm healthy options, and then respecting her daughter's choices.

Session 5 of MEP dealt with the motivational principles that support change. These principles help to deal with people's emotions and resistance to change. Miller and Rollnick (2002) described them as express empathy, develop discrepancy, roll with resistance, and support self-efficacy. Examples of the use of these principles, in combination with the spirit of MI, are evident in the feedback of several parents. One parent learnt to be less controlling, whilst others listened more to their children. Some parents found that by applying MI and its principles, their children began communicating health denoted dialogue, getting involved in health related activities, or collaborating in health matters.

An interest in Study 1 was to identify if the outcomes of MEP would be generalizable to the nonparticipating family members. The statistical results showed a few changed behaviours as main effects to the nonparticipating parents. Although there were little, if any, statistical effects associated with the nonparticipating siblings, the MEP parents' feedback suggests that health behaviour changes to siblings did occur. Overall, comments supported the idea that MEP was helpful to the parents as agents-of-change to the whole family.

From the qualitative feedback, it became evident that the parents' confidence in supporting health behaviour change increased from pre to post the program. This was evident in parents’ shared experiences and feelingsIn session 2, assessing importance and confidence ratings, field notes showed that most parents had no problems identifying the importance of supporting their children to change specific health behaviours. But, almost unanimously, the parents agreed that they participated because they lacked the confidence to follow through with challenging behavioural change. In undertaking the confidence building strategies (Handout 10 of MEP), many parents

identified what it would take for them to increase their confidence to support change in their children. One parent, who expressed excitement at opening up an honest conversation with her daughter about health behaviour challenges, acknowledged that she had huge confidence issues and found the assessing and enhancing confidence building strategies in Handout 10 very motivating.

The parent as a role model and successful change-agent of health behaviours was certainly evident in the qualitative feedback. Three parents, particularly, identified how they could make a difference to their children by actively demonstrating helpful health behaviours themselves. Parents as major role models in the promotion of health and wellbeing to their children is substantiated by research (e.g., Pender & Stein, 2002; Weiss, 2000). Identifying parents as helpful role-models in supporting children with health behaviour change highlights that they do make a difference as agents-of-change. MEP parents gave examples on how changing their own behaviours and attitudes contributed to constructive health behaviour change to their families. This feedback is also supported by research, which has highlighted that parents as change agents can demonstrate effective health behaviour change in their young children (e.g., Golan et al., 1998, 1999). The statistical results of Study 1, discussed earlier, give further evidence that parents do play a major role in supporting their children to change their health behaviours.

Given that MEP was a motivationally based program, it is pertinent that most of the parents identified motivation as a driving factor for behavioural change. Pransky (2001) reported that understanding what motivates people to change helps to support health behaviour change. A number of MEP parents indicated that understanding what motivates their children, which was covered in session 6, helped them support change.

Parents learnt about what factors enhance children's intrinsic motivation to change and how to help them identify their own reasons for change. This notion of motivation is in keeping with Miller and Rollnick's (2002) view that intrinsically motivated behaviour occurs as a result of autonomously derived, self-determined reasons and desires to change. This is likely to cause longer lasting changes than extrinsically motivated behaviour. In addition, understanding what maintains action towards health behaviour change, can reduce resistance to change (Westberg & Jason, 1996; Woolf et al., 1996). Some MEP parents found that the goal setting activities in session 3 motivated them into action, and helped to maintain their motivation throughout the program. Motivational interviewing strategies help people to deal with resistance to change and to maintain motivation over time (Britt et al., 2003; Miller & Rollnick, 1991).

Feedback from the MEP parents indicated that other group factors contributed to the benefits of MEP. Participation in the group was deemed valuable including providing a basis to feel connected to others who shared their challenge. This feedback supports the notion that interventions, which help parents to encourage and promote helpful health behaviours at home, can impact their family's activity levels and food choices (Pender & Stein, 2002). The statistical results of Study 1 provide evidence for the supportive nature of the group discussions since significant changes to some of the families' activity levels were noted, as were large effect sizes for some of the eating behaviours and patterns.

Other comments reinforced the supportiveness of the facilitator and the generalizability of MEP. From the perspective of MI, its central purpose is to examine and resolve ambivalence about behaviour change (Miller & Rollnick, 1991). So, Miller and Rollnick (1991) argue that it is the therapist who recognises a client's ambivalence

to change, and thus aims to explore and resolve the ambivalence through a supportive, guiding style. The parents' feedback provided evidence that the MEP facilitator's counselling style helped to resolve parents' ambivalence to change. The parents' feedback also gave support that MEP's strategies could be adapted for use with other behavioural challenges in the same way as MI has been used.

What was unhelpful. Regarding MEP's unhelpfulness, the sub-core categories that emerged surrounded what was complicated and how MEP might be improved. Session 6 was highlighted as being somewhat challenging to embrace. The objectives of session 6 were i) to increase parents' understanding of those factors that promote children's intrinsic motivation to change and ii) to practice assessing children's importance and confidence ratings about health behaviour change. The first objective was identified as beneficial - this was discussed earlier. It was the second objective that confused the parents. The intention of objective two was to help parents influence their children's intrinsic motivation to change by supporting them to identify importance and confidence factors. The feedback suggests that the parents understood the concepts but found it challenging applying the rating strategies with their children. As an intervention, MI and its strategies have predominately been used with adults (e.g., Smith et al., 1997; Weinstein et al., 2004; 2006) and adolescents (e.g., Berg-Smith et al., 1999). So, in future studies, it might be helpful to train parents to use a more concrete or visual form of the importance and confidence ratings scale with their children.

Tyler and Homer (2008) did report success using importance and confidence ratings with young children in their family-based study. The ratings helped increase the children's participation in the discussion between them, their parents, and the healthcare facilitator. It is pertinent to note that it was the health facilitator who asked the children

to self-rate, not the parent, and they were asked at the same time as their parents. In so doing, the children may have followed their parents' lead, helping the children to increase their understanding of how to respond to the technique. The feedback from the parents in the current study was not that their children were unresponsive to the use of the self-rating techniques but that they found it challenging to apply.

To my knowledge, MEP is the first program of its kind to be used where parents are initially supported to address their own ambivalence to support their children to change, and then coached to apply MI and its techniques to address their children's ambivalence. It is possible that the healthcare facilitators' expertise in the Tyler and Homer (2008) study is what made the difference in engaging the children in the discussion. If the facilitators had success in applying the strategies with the children but the parents in the current study did not, this suggests a gap in the parents' confidence or a lack of adequate parental training. Both suggestions are likely because application of the MI related strategies and techniques requires practice. An eight week program like MEP may be insufficient time for parents to adequately learn how to use such techniques effectively, thus reducing their confidence. In fact, the qualitative feedback from Study 2 suggests this was the case. It would be helpful in future studies to assess whether additional training would account for this anomaly. For example, not withstanding minor changes, one MEP group would receive session 6 of the current study, whilst another would receive the same session but with additional role play activities. The additional activities would provide parents more practical experience applying the techniques.

Alternatively, it is possible that applicability of MI and its techniques with children, and particularly when delivered by their parents, is restricted to some

strategies. Such as, communication from sessions 4 and 5, goal setting from session 3, and understanding what enhances children's motivation from session 6 (i.e., objective one). This is supported by some researchers. For example, DiGiuseppe et al. (1996) proposed that MI can be used with children to build agreement on the goals and tasks for change. Lask (2003) suggested that communicating and eliciting the advantages of change could be used with children to enhance their motivation. Schmidt (2005) also acknowledged using various communication skills to elicit change, as well as understanding what motivates them to change. Miller and Rollnick (2009) reinforce the idea that MI is not the sum of its techniques, such as the importance and confidence ratings that can be used within MI. The authors stipulate that the spirit of MI requires time to practice and to apply effectively to support health behaviour change. They noted that others' attempts to structuralize the delivery of MI seemingly reduced MI's effect on health behaviour change. From this perspective, it is possible that the parents in this study found objective two of session 6 unhelpful because its delivery of structured rating techniques with children was too prescriptive and counterintuitive to the spirit of MI. The positive comments parents made about improved communication between them and their children provide evidence that the spirit of MI is effective in and of itself. This is supported by Miller and Rollnick (2009) who have indicated that, although the techniques often used in collaboration with MI compliment its complexity as a communication method, they are not always necessary to effect change.

To improve MEP, various suggestions were made by the parents. Most of the suggestions related to making it easier for them to identify which strategies and techniques to use with the children (e.g., a flow chart idea) and having more time to practice and consolidate the strategies (e.g., increase session times). Although these

ideas are legitimate, and should be taken into account if MEP is intended to be used in future studies, the suggestions tap into the parents' barriers to change and help-seeking. This will be covered next.

Theme 2: Barriers to Supporting Change and Help-seeking

Harm to children. The fear of causing harm to their children was a familiar concern amongst the parents. These fears acted as barriers to help-seeking and instigating change. Many parents worried that by directly addressing their children's unhelpful health behaviours, they would influence eating disorders or instill unhelpful eating patterns. Given that the parents' fears are substantiated by research, it is no wonder that some of the parents felt paralyzed in their attempts to support change. Golan et al. (1998) highlighted that using children as agents-of-change, imposing health regimes onto them, and focusing on dieting and weight loss may predispose children to an eating disorder. Other research has shown that concerns about body weight in adolescence (e.g., Pender & Stein, 2002) and young children (Collins, 1991) can affect wellbeing and potentially lead to eating problems. In designing MEP, the potential for these factors to occur were considered in that the parent is the change-agent not the child. The MEP program is not about dieting and weight loss as it is about behavioural change. Furthermore, MI is used as the strategic basis for change, an intervention that aims to maintain self-esteem and respect individual choices by its very nature to explore and resolve ambivalence. In participating in MEP, the parents' fears seemed to have been allayed.

Problem recognition. It became evident during the course of MEP that some parents felt challenged prior to commencing the program about what to specifically

focus on for behavioural change. The feedback from the focus group gave evidence to problem recognition as being a barrier to constructive change. In effect, the parents recognised that their children needed some intervention but they seemed uncertain or unaware what or how to tackle the problem. Some felt so overwhelmed by the challenge that it impeded progress. As noted in the literature review of Study 1, addressing health risk behaviours is a biopsychosocial challenge. This, together with parents feeling bombarded by so much information about health and wellbeing, it is no wonder why they became ambivalent about how to support their children to change. Participating in MEP helped the parents to work through their ambivalence, thereby allowing them to focus and identify the specific barrier or problem that was impeding change.

Treatment adherence. "Time" was identified by the parents as a major barrier to treatment adherence. A lack of time contributed to some parents missing sessions, not completing homework activities, not supporting their children to change, and even sending someone else to participate in the program. From the feedback, it seems that having someone else participate in MEP on your behalf to save time, is not as helpful as actually participating. Even though, in this instance, sending the child's grandmother did influence change indirectly (see P8C) and directly (see P8F, P8H). Missing sessions and not completing the allotted activities probably meant that these parents were unable to consolidate the material from the relevant sessions. The qualitative data from *What was helpful* suggests that these participants did in fact have breakthroughs in supporting their children to change their health behaviours. However, it is possible that a lack of full attention on practicing and applying MEP strategies due to time issues, may have affected obtaining interaction effects from the quantitative data. The time pressures

parents feel was evidenced from the high withdrawal and drop out rates noted in Study 1. Field notes did provide some insight into the reasons for these time barriers, which were summarised earlier and will be addressed further in Study 2. Given parents' time challenges, the usefulness of having a group program that encourages lots of discussion and keeps things practical may help parents consolidate the material learnt.

Social support. Another common theme that came up throughout MEP was the challenges associated with the families' social support network. For example, grandparents who use food as reward and the lack of adequate involvement about health behaviour change from the children's fathers. With all the challenges that parents face, it seems that the social support barrier may be the most important because through the support of others, many barriers can be solved.

Overall. The qualitative feedback from the focus group parents suggests that participating in MEP gave parents insight into addressing their ambivalence to support change. This, in turn, helped them apply some of the MEP strategies and principles to support their children to change their unhelpful health behaviours. Studies show that to prevent disease, parents need to be equipped to promote healthy development in their children (Bergmann et al., 2003; MacFarlane, 2005) and training them is an effective way to influence behavioural change (Briesmeister & Schaefer, 2007). Studies suggest that influencing change in children's behaviours is best achieved in their own environment (Moreland et al., 1982) and in the context of the family (e.g., Haley, 1976; Minuchin, 1974). This way, individual family values and cultural views can be accounted for (Bergmann et al., 2003). The MEP program was designed so that parents are able to influence change at home, according to their family values, and to make a difference to the whole family. The qualitative data helped to extend the meaning of the

statistical results of Study 1 by providing support that the parents who participated were able to contribute positive health behaviour change to their participating children and their families. This finding supports Schwartz et al.'s (2007) study, whose qualitative evaluation of their MI intervention showed that 90% of the parents had been helped with changing some of their family's unhelpful health behaviours.

Recruitment and Retention

Given the few significant results obtained in the current study, it is reasonable to assume that low power was a major problem. To detect a significant result at the level of .05, 62 parents were required in each of the two intervention groups. But, unfortunately, only half this figure responded to the recruitment advertisements, and even less participated. The issue of recruitment and retention was discussed in the methodology section of this thesis. But, briefly, drop out rates prior to an intervention commencing was 46.55%, and 8.62% from MEP after it started. A number of studies have reported high drop out rates. For example, Golan et al. (1998) reported a drop out rate of 3% in the parent only group post commencement, Morrissey-Kane and Prinz's (1999) review of studies showed that 15-35% of parents dropped out before starting an intervention, and Schwartz et al., 2007 reported between 32% to 50% drop out in the parent MI intervention groups compared to 10% in the control group). It is evident that the effects of the current study could have benefited from greater participant numbers. Greater numbers reduce the impact of high drop out rates, thereby providing a good basis for high statistical power.

As previously discussed, one way of increasing potential numbers in studies is to offer incentives and attract research grants or community donations. In the current

study, an incentive in the form of a free raffle was offered when it became evident that recruitment numbers were low. Although field notes suggest that the incentive had the desired effect of increasing inquiries and recruitment numbers, it did not retain those numbers. This outcome supports Ingoldsby's (2010) review of engagement and retention methods. Ingoldsby found that incentives were less effective in engaging and retaining participants than integrated methods that aimed to reduce engagement barriers.

Barriers to Participation and Retention

From an MI perspective, it is possible that motivational issues are relevant in the recruitment of research participants, and particularly, in retaining them. Understanding what motivates people to change their health behaviours, or support others to change, provides insight into addressing resistance and ambivalence barriers to participating in a health behaviour program. It is also possible that from the perspective of the TTMC (Prochaska & Norcross, 2003), the stage-of-change level an individual is in may act as a barrier to program participation, particularly given that this model assesses individuals' motivation to change. The results of Study 1 indicate that the MEP parents were in the maintenance phase of change at baseline, whilst the FWMP parents were in the action stage. The latter then significantly shifted to the maintenance stage by follow-up. In both these phases, people are highly motivated and involved in behavioural change; that is, taking action in one stage and avoiding relapse in another to maintain change. It is reasonable to assume that the parents who inquired but withdrew before commencing a program may have been in the preparation stage, whereby they had good intentions to change and were making plans for action. Or, were in the contemplation stage, where they were thinking about change but not yet committed to taking action. Of course,

those parents who thought about inquiring but did not may have been in precontemplation, with no intention to change their health behaviours any time soon. Future studies may wish to discern parents' readiness or motivation to change by asking the stages-of-change questions during the initial phone inquiry. Doing so can help to identify and guide what support inquiring parents may benefit from most.

During the course of participant recruitment, some inquiring parents communicated barriers that impeded their participation in the current study. The same, or variations of these barriers, were evident among some participating parents. The communicated barriers from both groups contributed to the parents' ambivalence or resistance to support change in their children's health behaviours. Field notes suggest that some of the noted barriers from those parents who withdrew from the study included: Employment or study factors, time restrictions, lack of support from the alternate parent, parental demands, parent illness, believing that the child is responsible for change, lack of confidence in addressing sensitive topics with the child, and fear of causing emotional problems in the child such as body image or eating disorders. Examples of barriers communicated by the participating parents, were similar. The barriers communicated seem to highlight potential impediments in problem recognition, help-seeking, and treatment adherence issues.

In identifying barriers to change, effective MI-based intervention programs can be developed that address the specific ambivalence barriers of parents. In her response to Gance-Cleveland (2005), whose article bestowed the virtues of using MI to facilitate health behaviour change, Waldrop (2006) argued that some families face barriers that impede implementing health goals. She suggests that MI can be used to overcome these barriers first before addressing health behaviour change. Ingoldsby's (2010) review

identified that MI was one of the successful methods used to engage and retain participants in prevention and intervention programs. Study 2 was designed to specifically identify the barriers that impeded parents' participation or adherence in a program. Taking these barriers into account, Study 2 also investigated how parents need to be supported in order to support their children to change their health behaviours.

Overall, the focus group discussion identified that MEP was helpful despite the outcome of the quantitative results. The parents identified that communicating with and involving the children in health behaviour change was helpful. They reported feeling more confident in supporting change in themselves and their children from pre to post MEP, and more intrinsically motivated to implement change. A lack of significant results for the MEP group may be further explained by the limitations evident in Study 1, which are explored next.

Limitations of Study 1 and Suggestions for Future Research

A significant limitation of Study 1 was the small sample size. To improve participant recruitment and participation retention in a future study, several strategies could be implemented. Study 1 targeted health professionals in an attempt to recruit participants. Unfortunately, this mode of recruitment was the least successful in generating leads. A more helpful way to engage health professionals in the recruitment process could be to speak to them personally, invite them to a community based group meeting about the research, or both. Targeting health professionals specifically allows them to gain insight about the aims of the study, meet the researchers, and to clarify their involvement. Also, the researchers can offer them suggestions on how to approach the topic with their patients, and how to market the advertisement material in their

practices to increase patient inquiry. In addition, incentives could be given to health professionals whose patients inquire about the study directly with the researchers, and for those who ultimately complete a program and the relevant measures.

An extension of this incentive goal could include increasing the number of incentives given to parents. That is, in the current study, the only incentive offered to parents was a chance for a draw in a free raffle. Although a number of gifts were donated and parents' chances were increased each time they completed relevant parts of the study, maybe this incentive was insufficient. As already explained, introducing the raffle increased parent inquiries but did not retain the numbers. Offering an actual incentive after parents completed baseline, time two, and time three questionnaire packs, might have increased retention. It would be pertinent to use incentives that are in keeping with the theme of the research, that is, health and wellbeing. For example, family swim passes were donated in the current study. Other examples might include vouchers to sports stores, health food outlets, or family activity parks (e.g., mini golf).

Alternatively, it is possible that the incentives may have been insufficient motivators to engage and retain some of the parents. Ingoldsby's (2010) review identified that incentives were less effective than more integrated methods that aimed to reduce barriers to engagement. Ingoldsby found that the studies that helped families address their concerns and obstacles to treatment participation resulted in greater engagement. Nock & Kazdin (2005) also found that conducting brief discussions with parents to help them problem solve their barriers to intervention participation increased the likelihood of them overcoming impediments to engagement. Identifying potential barriers to engagement before and during an intervention could provide facilitators with an opportunity to help participants overcome the barriers. Nock and Photos (2006)

developed and evaluated a Parent Motivation Inventory (PMI) to assess parents' motivation to participate in an intervention to help support their children's behavioural problems. They found that greater motivation to participate predicted less barriers. The authors argued that the PMI could be used to predict potential barriers to intervention participation so that parents can be assisted to address them.

Another anomaly of Study 1 was the waiting time between initial parent inquiry and program commencement. As previously explained, a limited number of programs were offered during a school term due to insufficient funds to employ and train additional facilitators. Ideally, minimizing the time between obtaining parent consent and program participation is likely to increase retention. This notion is supported by Benway, Hamrin, and McMahon (2003) whose review of studies that investigated the reasons why families miss mental health appointments found that wait time was a significant factor to nonattendance. A problem in the current study was that often parent inquiries were made after a program commenced. This meant that interested parents, who were possibly able to attend at the time of inquiry, may not have been able to participate when a program commenced at the beginning of the next term due to their changed circumstances. An additional limitation was the inability to offer the FWMP program during the day. Although I report in the Method section that the MEP and FWMP groups did not significantly differ for the continuous variables, conducting the interventions at different times may have reduced comparability of the groups. Again, this was due to insufficient funds to attain additional facilitators. More facilitators would also allow for programs to be offered at various times of a school term. This way parents could commence a program shortly after inquiring. In future, attempts could be made to seek donations and grants through community groups or corporate

organizations that may be interested in the aims of the current study. This would allow more day and evening programs to be offered to parents. More programs would allow greater randomization of the participants who, in the current study, were allocated to a program based on their availability to attend. The nonrandom assignment of participants was a limitation of the current study as it compromises the internal and external validity of the study. That is, it reduces generalizability of the results and makes it difficult to discern whether any obtained effects were due to the intervention. Increasing the number of available programs may alleviate this anomaly.

Offering more programs at various starting points during a school term might also alleviate the problem of completing packs during holiday periods. As indicated earlier, completing the questionnaire packs during the school term breaks could have biased some of the Study 1 data, such as the food and activity diaries. In future, varying when programs are offered, might mean that more packs are completed outside of holiday periods. In doing so, this may increase the likelihood that the raw data is more typical for families.

Regarding the questionnaire packs, many parents complained that the parent and child packs seemed extensive. Most complaints were that the four-day food and activity diaries were complicated and time consuming. Field notes indicate that these diaries often delayed returning the packs within the nominated time lines. In addition, as already noted, the parents consistently complained that the final page of the demographics questionnaire on the family eating patterns, was confusing. Such extensive questionnaire packs may have been a limitation to participant retention because some parents withdrew due to time restrictions. This limitation may also have reduced the quality and validity of the data received, especially for the diaries. As

discussed in the Results section, some data was difficult to interpret. In future, these diaries and eating patterns page would be eliminated. They would be replaced with something simpler and less time consuming. An example might include editing the activity and eating behaviour sections of the demographics questionnaire by replacing open-ended questions with closed questions, as parents found ticking boxes easy and quick. The editing could replace the food diary with identifying how often certain behaviours (e.g., sweet drinks, snacks, fast foods, fruit, vegetables) were demonstrated during the research period. In addition, it would be helpful to test run the questionnaire packs on a sample of parents to ensure its simplicity and validity. As explained under Measures, time constraints precluded validating this questionnaire.

Other methodological problems may have been parents' lack of adequate training in MEP and using the MEP facilitator to conduct the focus groups and to identify the themes from the participants' transcripts. It was explained earlier that the parents in the current study reported difficulties with applying some of the MI strategies and techniques. It is possible that MEP provided insufficient time for parents to proficiently learn the techniques, thus affecting the results. This anomaly could be accounted for in future studies. Regarding the focus groups, the reasons for using the MEP facilitator were also explained earlier. However, even though an inter-rater was used to double check the themes, it is still possible that the findings may be limited due to an experimenter effect. Familiarity with the facilitator may have biased the focus group participants' feedback because they may have responded in an expected manner. In identifying the themes, the facilitator may have had some preconceived views about what was relevant. In future studies, it might be helpful to account for these biases by

having an independent facilitator to conduct the focus groups and another to identify the themes.

From the results, it seems that children's health behaviour change may rely on parents' support as agents-of-change. This is particularly evident from the quantitative results, which showed that most significant effects were found for both the MEP and FWMP groups. As already discussed, the research supports parents' role as the instigator of change. However, given the limitations of Study 1, it is difficult to categorically conclude whether a difference between the MEP and FWMP groups could have been demonstrated. Identifying the barriers to recruitment, retention, and participation in interventions may help to address this anomaly. Chapter 5 provides some insight into the barriers to health behaviour change and help-seeking.

Chapter 5

Study 2: A Qualitative Study on the Barriers to Health Behaviour Change and Help-seeking

In Study 1, problem recognition, help-seeking, and treatment adherence were identified as potential impediments to parents' motivation to support change. A tendency to avoid help-seeking has been revealed by studies (e.g., Sayal, Taylor, Beecham, & Byrne, 2002). The study findings suggest that to seek help, and then actively participate in treatment, individuals need to at least recognize that a problem exists. In recognizing a problem, there is an acknowledgement that they have undesirable symptoms, and in seeking out help, they recognize that they need intervention to manage or eradicate the symptoms (Cauce, et al., 2002; McMiller, & Weisz, 1996; Vera et al., 1998).

Help-seeking

Barriers to help-seeking and problem recognition. Research of adults diagnosed with an affective disorder suggests that reduced help-seeking behaviour is associated with low problem recognition due to poor knowledge or understanding of mental illness symptomontology (Thompson, Hunt, & Issakidis, 2004; Jorm et al., 2000). Work with mothers and their children suggests similar findings. That is, seeking professional help or treatment adherence were compromised until the mothers recognised that their children's disruptive behaviours (Arcia & Fernandez, 2003), mental health problem (Teagle, 2002), or chronic health condition such as overweight (Dhingra1, Brennan, & Walkley, 2010; Edmunds, 2005), cystic fibrosis, and asthma (Modi & Quittner, 2006) became problematic. An under-use of health services was also

found amongst families of children with general health behaviour problems until the problem was externalized or evident in some way (Pavuluri, Luk, & McGee, 1996; Verhulst & van der Ende, 1997; Zwaanswijk, Verhaak, van der Ende, Bensing, & Verhulst, 2006).

For some individuals change ultimately occurs when health problems arise, when alternate methods cease working, or as a response to a health crisis. This is usually because they can no longer tolerate their uncomfortable circumstances (Barber, 2002; Evans & Delfabbro, 2005; Manthei, 2006; Thompson et al., 2004). For example, factors that predict help-seeking in obese adults include psychological distress, binge eating, higher BMI (Fitzgibbon, Stolley, & Kirschenbaum, 1993), poor quality of life (Fontaine, Bartlett, & Barofsky, 2000), low body image, and knowledge about obesity-related health risks (Annunciato & Lowe, 2007). Parents of children with behavioural disorders only sought help when teachers reported that their children's disruptive behaviours were severe (Woodward, Dowdney, & Taylor, 1997; Zwaanswijk, Verhaak, Bensing, van der Ende, & Verhulst, 2003). Costello, Pescosolido, Angold, and Burns (1998) suggested that parents' help-seeking behaviour for their children's health-related problem is contingent on two elements: Parents' perception that their children have a problem and the degree to which the problem impacts the family. Other studies have also found that parents' tendency to seek help increased when their children's health or behavioural problem impacted the family, such as financially or emotionally (Teagle, 2002; Zwaanswijk et al., 2003). Thus, health behaviour change for some individuals is reactive rather than preventative.

Barriers to help-seeking and treatment adherence. A reactive approach to help-seeking highlights the possibility that problem recognition alone is insufficient to

motivate people to seek assistance. This suggests that other barriers impede help-seeking and treatment adherence. Factors that have predicted poor treatment attendance and adherence in psychotherapy include low socioeconomic status, being female, and social instability (Baekeland & Lundwall, 1975). Amongst overweight adults, barriers to help-seeking have included being male, socioeconomic status, resource and service availability, time to exercise, affordability of healthy food, body image dissatisfaction, and level of interest in seeking external assistance (Kumanyika, 2002). These last two studies highlight gender differences to help-seeking. Studies have shown that women are more inclined to seek help than men (Oliver, Pearson, Coe, & Gunnell, 2005), particularly for health and psychological problems (Addis & Mahalik, 2003; Kessler, Brown, & Broman, 1981; Mansfield, Addis, & Courtenay, 2005). Reluctance to seek help in turn is likely to affect parents' motivation to either support or seek help for their children.

Barriers to seeking help for children. For parents of children with behavioural problems, stressful life events and psychological distress were found to have hampered their efforts to seek assistance to support their children (Verhulst & van der Ende, 1997). Families challenged economically or restricted by cultural values have also been found to under use health services (Cauce et al., 2002; Vera et al., 1998). Other barriers to parental help-seeking or treatment adherence have been found to include program location, transport difficulties, ambivalence from the children (Cote et al., 2004), a lack of social support (Nock & Kazdin, 2005), being a single parent (Kazdin, Holland, & Crowley, 1997), demographic factors such as the child's age and gender, socioeconomic status, parent education, family income, family use of services, parents' own health concerns, and parent-child relationship problems (Cohen & Hesselbart, 1993;

Cunningham & Freiman, 1996; Griffin, Cicchetti, & Leaf, 1993; Zwaanswijk et al., 2003).

Some studies indicate that an impediment to help-seeking is a perception that individuals need to take care of their own problems. Manthei (2006) found that before seeking professional counselling, patients sought to address their problems themselves by reading relevant material, talking to friends or family, through self-reflection, keeping busy, or being in denial. A study that inquired into parents' reluctance to seek help for their children found that parents were more likely to refer a friend's child to professional help but not their own (Raviv, Sharvit, Raviv, & Rosenblat-Stein, 2009). Another study involving mothers and their behaviourally challenged preschool children found that help-seeking was impeded by the mothers' belief that the behaviour would improve by itself and that they, as parents, were responsible for managing the problem (Pavuluri et al., 1996). This notion supports an internal health locus of control, whereby individuals believe that they alone are responsible for health behaviour change (Wallston, Wallston, & DeVellis, 1978). This is in contrast to an external locus of control whereby others, such as health professionals, are assigned the responsibility because parents feel they have little control over changing their children's behaviours (Morrissey-Kane & Prinz, 1999).

Barriers to help-seeking and motivation. Barriers to help-seeking may include ambivalence or motivational factors. For example, being in denial and being unwilling to admit there is a problem is a help-seeking barrier amongst adults with addictive behaviours, such as substance abuse, gambling (Evans & Delfabbro, 2005), and binge eating (Fitzgibbon et al., 1993). This may also be the case for some of the parents who withdrew from participating in Study 1. Studies indicate that health

professionals usually see overweight children when their weight problem becomes chronic. This was verified in a study where parents, who had children with weight problems, admitted that they would only seek professional help if their children's BMI was in the 85th percentile for overweight (Edmunds, 2005). Mothers of preschool children with behavioural difficulties were less likely to seek help and take these behaviours as seriously as the mothers of older children. The assumption these mothers made was that their children's problematic behaviours were typical for this younger age group (Woodward et al., 1997). In a different study, Teagle (2002) found that parents' likelihood to seek help was increased after they recognised their children's mental health condition as severe. In terms of the Transtheoretical Stages of Change Model (TTCM; Prochaska et al., 1992; Prochaska & Norcross, 2003), as discussed in Study 1, it could be argued that people who fail to recognize or admit that they, or their children, have a health problem are in the precontemplation stage-of-change.

Once people recognize that they have a problem (contemplation stage), they then have to overcome an array of potential barriers, such as those discussed above, which can feel overwhelming to change. Regarding encouraging parents to support health behaviour change, Waldrop (2006) argued that some families face barriers that impede implementing health goals and that these barriers need to be addressed before dealing with health behaviour change. Thus, to begin to prepare (preparation stage) and achieve change (action stage), people need to feel they can resolve and overcome these impediments.

From an MI perspective, to resolve ambivalence about behaviour change, people need to work through their cognitive dissonance. This includes identifying what is important about change and increasing their confidence to change (Miller & Rollnick,

2002). In relation to parents' reluctance or resistance to seek help for their children, there are factors that give evidence for compromised importance and confidence levels in health behaviour change. These include a lack of confidence about the cause of a problem and individuals' ability to manage it (Morrissey-Kane & Prinz, 1999). It also includes how important help-seeking is based on the problem's severity and the burden it places on them (Angold et al., 1998). Other factors include a lack of confidence about where to go and what services are available (Costello et al., 1998; Stiffman, Pescosolido & Cabassa, 2004). Also, the importance placed on the value that different resources and services have in helping to resolve the problem (Mitchell & Trickett, 1980; Rogler & Procidano, 1986).

Help-seeking and social support. Encouragement from others has been shown to increase the potential for help seeking. Barber (2002) argued that social reinforcement from significant others, such as friends, partners, and family members, can play a positive role in health behaviour change. Arcia and Fernandez (2003) found that mothers of young children with disruptive behaviours sought help to support their children after teachers highlighted the behavioural problem and requested that parents seek help. Often, such support can also be the first point of contact to help resolve a problem. As indicated earlier, Manthei (2006) found that individuals who recognized they had a problem, sought help from family and friends before seeking professional support. He also found that the converse was true, as some participants found the advice of family and friends as unhelpful or judgmental.

Help-seeking and support from health professionals. Some researchers found that the same was true of seeking professional help. For example, in a study that involved supporting parents to change their own reactions to their children who

displayed antisocial behaviours, Patterson and Forgatch (1985) found that the therapists' behaviours during treatment, influenced parents' compliance. They found that when the therapists taught and confronted the parents, they were more likely to be noncompliant with the treatment than when the therapists supported and facilitated change. Kazdin et al. (1997) also found that the therapist-client relationship influenced intervention participation. Flock and Stange (2004) found that patients recalled health behaviour change advice more readily if the health professional was attentive to the patient and spent more time discussing the topic at hand. In another example, barriers identified to seeking help from general practitioners included a fear of embarrassment, fear of judgement, concerns about the competency of a General Practitioner's (GP) advice, and being disappointed by a GPs' advice (Wrigley, Jackson, Judd, & Komiti, 2005).

Edmunds (2005) found that parents who sought help from health professionals (i.e., GPs and pediatric dieticians) about their children's weight concerns, were left feeling frustrated about the support. The support included advice on healthy eating, increasing activity levels, and the children undertaking some unpleasant medical tests. Those parents who reported positive feedback about the support indicated that their health professionals were interested and empathetic. Even so, these parents reported that dietary restriction support alone was problematic. It seems that none of the parents were offered help with increasing their children's physical activities. The parents also indicated that they would have appreciated ongoing motivational support. In this same study, feedback from the health professionals suggested that they felt incompetent and uncomfortable dealing with childhood obesity. Apparently, they believed that parents are solely responsible for their children's weight status.

Other studies looking at barriers to help-seeking for children with mental health conditions, also found that problem recognition by GPs and pediatricians was a barrier to those children receiving appropriate psychiatric support (Zwaanswijk et al., 2003). In the same study, it was acknowledged that part of the problem was that parents did not raise the concern with the health professional in the first place. In another study by the same authors (Zwaanswijk et al., 2006), the researchers found that the parents who acknowledged their children's problem the most, were more likely to seek professional help. The outcome of these studies highlight the importance of both parents and health professionals working together to support children with health behaviour change.

Study 2 Aims

The research cited in the introduction highlights a number of barriers to health behaviour change. It seems that people are reluctant to seek help until their health problems are severe (e.g., Edmunds, 2005) or become intolerable (e.g., Manthei, 2006). Such a reactionary response to help-seeking indicates that problem recognition alone does not motivate people to get treatment. The research shows that treatment attendance or adherence can be affected by socioeconomic factors, gender, and availability of resources (e.g., Kumanyika, 2002). For families seeking help for their children's problematic health behaviours have also been impeded by parents' own health problems (e.g., Zwaanswijk, et al., 2003), parents' belief that they are responsible for the health behaviour change (e.g., Manthei, 2006), motivational factors, or a lack of professional support (e.g., Edmunds, 2005).

Considering the barriers discussed above, an aim of Study 2 was to explore parents' ambivalence to supporting their children to change their unhelpful health

behaviours by identifying the impediments to problem recognition, help-seeking, and treatment adherence. In addition, it was of interest to determine whether there were any differences between those parents who participated in a program versus those who withdrew. For this second aim, I drew on quantitative analyses from the participant questionnaire packs, as well as the qualitative analyses from the interview transcripts. In identifying and resolving barriers to program participation, resistance to supporting health behaviour change is likely to be reduced. So, a second aim of Study 2 was to investigate how parents need to be supported, what would motivate them to engage in health behaviour interventions, and what strategies they may have used to support their children to change in the past. For the purposes of Study 2, only the experimental MEP parents and those who withdrew from the research were interviewed.

Method

Participants

In total, 18 female parents agreed to participate in the Study 2 telephone interviews. Of the 50 female parents from Study 1 who were contacted about the interviews, 14 had participated in the motivational enhancement program (MEP) and 36 had withdrawn, either prior (31) or after commencing a program (5). Nine of the 14 MEP parents (Intervention group) and 10 of those who withdrew (Withdrawn group) agreed to be interviewed. One of the Withdrawn parents was excluded from the Study 2 analyses as her consent form was never received. No formal data was collated to explain why 32 of the 50 parents chose not to participate. Field notes suggest that some parents did not return messages left, some were unavailable, and others were disinterested.

For the purposes of reporting on the quantitative analyses to compare both groups, the children's data was included. There were 30 participating children in total ranging from 7 years 2 months to 12 years 6 months in age. In the Intervention group there were nine males and six females, and in the Withdrawn group there were 11 males and four females. One Intervention parent completed questionnaires for both her son and daughter, and one Withdrawn parent completed questionnaires for both her sons.

Demographic characteristics are presented in Table 5.1 (Appendix B.1). The table provides information about baseline differences between the Intervention and Withdrawn participating parents and children. A number of variables are provided including mean age, height, weight, BMI, BMI-for-age, language spoken at home, country of birth, education level, and parents' marital status, occupational details, and annual income level. A series of t-tests were conducted to determine the *p*-value for the continuous variables (i.e., age, height, weight, and BMI) to ascertain if a difference existed between the groups. As can be seen from Table 5.1, the analyses showed that the groups did not significantly differ on most of these variables. The only difference was that the Withdrawn parents were significantly younger than the Intervention parents.

Measures

Parent & Child Questionnaire Assessment Packs. Study 2 interview participants were administered the Study 1 parent and child questionnaire assessment packs. The parents' pack consisted of: (1) A family demographics and eating and activity questionnaire; (2) a parent's stage of change questionnaire; (3) the Beck Depression Inventory Shortform; and the (4) Rosenberg Self-esteem Scale. The child's

questionnaire pack consisted of: (1) An instruction sheet for parents on how to complete and administer the child's scales and questionnaires; (2) the Self-perception Profile for Children; (3) the Delighted-Terrible Faces Scale; (4) the Health Self-Determinism Index for Children; (5) the Children's Body Image Scale; (6) and the Eating and Me III Scale.

The eating patterns section of the demographic questionnaire, the four-day nutrition and physical activity diary, and data relating to nonparticipating family members were omitted from the Study 2 analyses. See Study 1 materials section for full details about these forms and scales.

Information sheet and statement of informed consent. The Information Sheet explained the aims of Study 2 and the Statement of Informed Consent informed the parents of their rights as participants (see Appendix B.2). Both forms were variations of the Study 1 versions.

Health behaviour questionnaire. In addition to the questionnaire packs, the participating parents were administered a likert-style structured health behaviour questionnaire (see Appendix B.3). The questionnaire was initially designed by me and then edited after consultation with my supervisor. In designing it, I took into account the barriers to help-seeking, problem recognition, and treatment adherence that were highlighted in Study 1. The purpose of this questionnaire was to identify parents' initial responses about health behaviours so that it could be discussed in the interview.

Interview schedules. Two semi-structured interview schedules were used , one was designed for the Intervention group (see Appendix B.4) and another for the Withdrawn group (Appendix B.5). The questionnaires were designed by me and then edited after consultation with my supervisor. In designing them, I took into account the

barriers to help-seeking, problem recognition, and treatment adherence that were highlighted in Study 1.

Interview equipment. Audio equipment was used to record the outcome of the telephone interviews. For each interview, a tape recorder, a blank tape, and a hand held telephone with a loud speaker facility were used.

Procedure

Ethics approval was sought from La Trobe University Human Ethics Committee to conduct the research. Upon receipt of ethics approval, I contacted those parents who participated in MEP and those who withdrew from Study 1. Phone contact was made using a telephone line provided by La Trobe University. When the parents were contacted, I introduced myself and provided a brief explanation of the purpose and aims of the study. I informed the parents what the study essentially involved. That is, completing parent and child research questionnaires if they had not already done so, what those questionnaires inquired about, and participating in a telephone interview with me. A telephone based interview design was chosen given that time and family constraints were identified as barriers for parents' participation in Study 1. I answered any questions that the parents had about the study. They were also informed that they could withdraw at any time even after signing the consent form.

Parents who agreed to participate in an interview were offered some times and dates. The parent and child questionnaire packs were mailed to those Withdrawn parents who had not yet completed one. It was explained to the parents that the packs would need to be returned prior to the interview.

Telephone interviews. I conducted an inductive qualitative semi-structured interview to gain participating parents' opinions and feedback (Liamputtong & Ezzy, 2005). It is acknowledged that this may limit the validity of the interview results; however, restricted funds precluded employing an independent interviewer. Forty-five minutes to an hour was allocated for each interview. I called parents at the nominated times. They were reminded that the interview would be audio-taped so that the detail and accuracy of the interview could be maintained for later transcription and analysis (Liamputtong & Ezzy, 2005). They were informed that I would ask them a series of questions, mostly open-ended, and that the interview would be conducted in an informal, discursive manner. They were also informed that for some of the questions, I would refer back to the structured health behaviour questionnaire that they had previously completed. Before commencing the interviews, I tested the audiotape by asking each participant a social question (e.g., "what did you do on the weekend?") to ensure that the audiotape was in an appropriate position in relation to the phone. I then rewound the tape to the beginning and commenced recording. Each parent was then asked the Intervention or Withdrawn relevant questions, referring back to the health behaviour questionnaire when relevant. At the end of the interview, I thanked the parents for their participation and ended the interview.

I transcribed all 18 of the Intervention and Withdrawn audiotapes. The transcription included only the participants' responses, almost word for word, including most pauses and 'uhms'. In the transcript, pauses were signified with a series of dots (i.e., ...) and participants were coded as "Parent 10, Parent 22," etc., according to the identification number they were allocated at the time of their initial inquiry about Study 1. During the transcription, any unstated words, unfinished statements, or confusing

sentences were qualified in brackets. For example, "He was slightly heavier and he has never got into the medium [size]." This ensured that the parents' meaning was retained. All statements were clarified according to my understanding of the parents' issues. For ease of transcription, I transcribed the feedback under the relevant questions. My prompts and questions were ignored for the purposes of transcription.

The transcripts were initially analysed using content analysis and then thematic analysis. In examining the interview data, my general theme of interest was exploring barriers to supporting change and help-seeking given its emergence as one of the two major themes in the Study 1 Focus Group analysis. That is, understanding the barriers that impede the parents from supporting their children to change their unhelpful health behaviours. Specific categories of interest that emerged from this general theme were: Barriers that get in the way of parents recognizing whether their children do have a health behaviour problem in the first place, whether they recognize what problem may be getting in the way of supporting change, the barriers that impede parents from seeking help to resolve the identified problem, and barriers related to attending treatment and sticking with it. In this context, treatment is defined as any example of help-seeking, such as professional support, program attendance, or self-directed change (e.g., relevant reading material). Content analysis provides a basis to search for and then code the pre-identified categories in a block of text (Liamputtong & Ezzy, 2005). Thematic analysis, which was discussed in Study 1, was used to classify and code any new categories and themes that emerged from the interview data.

Based on content analysis, the interview transcripts were initially read and categorised in the four areas of interest noted above. That is, recognizing health behaviour problem, recognizing impediments to supporting change, barriers to help

seeking, and impediments to treatment attendance and adherence. The transcripts were then re-read and sub-core categories for each of the four main categories were identified. Then, drawing on thematic analysis, I read the transcripts a third time to identify new emergent themes. The three-step coding procedure that involved open coding, axial coding and selective coding, explained in Study 1, provided the framework from which the final core and sub-core categories were identified (Liamputtong & Ezzy, 2005). During the reading, statements of interest were highlighted and coded accordingly. The transcripts were read a final time to identify any pre-identified categories or new themes that may have been missed.

The same independent inter-rater, who coded the Study 1 focus group transcripts, was provided 25% of the transcripts and a list of the core and sub-core categories associated with the major themes. A discussion took place about the types of statements that might represent the pre-identified themes and categories. The inter-rater then coded the transcripts by highlighting statements in different colors to represent a major theme or category. Together the inter-rater and I checked the transcripts against the original coding to compare for consistency. For each highlighted statement, a 'yes' or 'no' was marked against a theme or category signifying if the inter-rater's coding was consistent or not. Any uncertainties, unhighlighted statements, or discrepancies in coding were clarified and an agreement reached. Most of the original coding was retained except for about 5% of statements, which were also added to other agreed upon categories. Of those statements highlighted, the inter-rater's identification rate of the major themes was 100% consistent. The inter-rater's identification rate of the categories after clarification was about 83% consistent.

Results

Treatment of Quantitative Data

To avoid repetitiveness, the details associated with the quantitative data treatment can be found in the Study 1 results section. For Study 2, a series of independent-samples t-tests were conducted to compare the mean differences between the two groups. As for Study 1, it is acknowledged that conducting multiple t-tests increases the risk of obtaining a Type 1 error, particularly given the low sample size and consequent lack of power.

For those parents who completed data for two of their children, the youngest child's data was removed before running relevant parent quantitative statistics to avoid doubling up on common family factors. Again, as in Study 1, for purposes of observing the differences in the following analyses, .05 was used. Effect sizes (eta squared; η^2) are also reported; they were calculated and interpreted as recommended by Pallant (2005). The mean scores and standard deviations for each of the analyses below were calculated for the Intervention and Withdrawn participating parents and children; see Table 5.2.

Table 5.2

Study 2 Baseline Mean and Standard Deviations of Behavioural and Psychological Data for the Intervention and Withdrawn Groups

	Intervention group		Withdrawn group	
	PC[a] (*n*=15) *M (SD)*	PP (*n*=14) *M (SD)*	PC (*n*=15) *M (SD)*	PP (*n*=14) *M (SD)*
Activity levels hours pw				
Physical	5.62 (2.86)	4.60 (3.29)	6.03 (4.05)	3.81 (2.83)
Nonphysical	22.09 (11.86)	20.51 (17.90)	15.33 (9.97)	14.63 (9.66)
Eating behaviours				
Eating pace[b]	2.20 (0.68)	2.14 (0.67)	2.07 (0.70)	2.07 (0.62)
Second helpings[c]	3.27 (1.33)	3.79 (1.25)	3.27 (1.33)	3.92 (1.49)
Dinner with family[c]	1.20 (0.41)	1.21 (0.43)	1.53 (0.83)	1.50 (0.85)
Delighted-Terrible Faces Mood Scale	1.90 (0.58)		1.80 (0.54)	
Self-perception Profile				
Physical appearance	3.07 (0.84)		2.64 (0.80)	
Global self-worth	3.37 (0.58)		3.37 (0.62)	
Athletic competence	3.28 (0.53)		3.17 (0.68)	
Eating & Me III Scale	28.93 (11.08)		31.13 (11.06)	
Bulimic eating	8.47 (4.22)		7.93 (3.65)	
Body dissatisfaction	13.00 (8.17)		16.47 (8.26)	
Food restriction	7.47 (1.68)		6.73 (1.22)	
Body Image Discrepancy	21.70 (3.79)		23.69 (3.89)	
Health Self-Determination Index	78.87 (15.08)		69.00 (6.22)	
Competency in health	15.67 (6.04)		13.57 (3.81)	
Self-determination health goals	37.60 (9.31)		33.57 (7.32)	
Internal-external cue responsiveness	18.00 (4.94)		14.50 (2.98)	
Health judgement	7.60 (2.50)		7.36 (2.53)	
Stages of Change Total		1.24 (0.44)		1.24 (0.36)
Food		1.36 (0.74)		1.00 (0.00)
Physical		1.21 (0.58)		1.21 (0.43)
Nonphysical		1.14 (0.36)		1.50 (0.85)
Beck Depression Inventory		2.29 (2.05)		4.64 (3.48)
Rosenberg Self-esteem		24.86 (1.17)		25.14 (1.41)

[a]PP = Participating Parents; PC = Participating Children
[b]Pace: 1 = slow, 2 = average, 3 = fast
[c]Frequency: 1 = daily, 2 = most days, 3 = some days, 4 = few days, 5 = rarely

The mean scores in Table 5.2 indicate little variation between the groups generally, except for some of the children's health determination scores, the parents' nonphysical activity scores, the parents' food and nonphysical stages-of-change scores, and the parents' mood. Similar to Study 1, a number of non-significant results were noted. So, the following section will only report the significant results. The non-significant outcomes are reported in Table 5.3 (Appendix B.6).

Participating Children's Eating & Activity Questionnaire (forms part of the Family Demographics and Eating & Activity Questionnaire)

No significant results were noted for a change in activity levels and the various eating behaviours for the participating children.

Participating Children's Psychological Measures

No significant results were noted for the children's mood, self-esteem, disordered eating, or body image discrepancy scores.

The Health Self-Determinism Index for Children. There was a significant difference between the groups for the children's motivation orientation total score $t(27) = 2.27$, $p = .031$, $\eta^2 = .08$, and for their responsiveness to intrinsic vs. extrinsic cues subscale $t(28) = 2.29$, $p = .030$, $\eta^2 = .08$. The direction of the means suggests that the Intervention children were significantly more intrinsically motivated when making general decisions about health matters and specifically more significantly responsive to intrinsic or internal cues to be healthy than the Withdrawn children.

Participating Parents' Eating & Activity Questionnaire (forms part of the Family Demographics and Eating & Activity Questionnaire)

No significant results were noted for a change in activity levels and the various eating behaviours for the participating parents.

Participating Parents Stages-of-Change and Psychological Data

No significant results were noted for a change in the parents' readiness to support change or self-esteem.

The Beck Depression Inventory short form. There was a significant mood difference between the groups, $t(26) = -2.18$, $p = .038$, $\eta^2 = -.09$. The direction of the means suggests that the Withdrawn parents were significantly more depressed than the Intervention parents.

Treatment of Qualitative Interview Data

In exploring the parents' feedback in the interview transcripts, the text pertaining to the categories from the content and thematic analyses were extracted and pasted in a document for ease of reference (these transcriptions are not provided here due to the enormity of the document). Parent quotations are labeled according to their personalized identification number (e.g., P10). Each quote was further labeled with an alphabetic code that distinguishes the relevant category or sub-core category for each of the groups (e.g., Intervention = P10MA; Withdrawn = P10WA).

What follows is a summary of the qualitative analysis results for each of the sub-core categories. The findings of the content analysis will be presented first, which constitutes Themes 1 for both the Intervention and the Withdrawn groups. The findings

that emerged from the thematic analysis will then follow, which constitutes Themes 2, 3, 4, and 5 for Intervention and Themes 2, 4, and 5 for Withdrawn. Theme 3 relates to Intervention only because it pertains to what changed post the program. Given that the results between the groups are similar, the Intervention and Withdrawn feedback will be presented together. For easy reference, Table 5.4 highlights the major themes and associated categories relevant for each group, whilst Table 5.5 (Appendix B.7) summarizes the main similarities and differences between the groups.

Table 5.4

Major Themes, Core Categories and Sub-core Categories from the Study 2 Interviews

Major themes / Core categories / Sub-core categories /	Intervention	Withdrawn
Theme 1: Barriers to supporting change and help-seeking	*	*
Recognizing health behaviour problem	*	*
A. Weight concerns	*	*
B. Unhelpful eating patterns	*	*
C. Unhelpful activity patterns	*	*
D. Genetics	*	*
Recognizing impediments to supporting change	*	*
E. Harm to children	*	*
F. Finances	*	*
G. Time	*	*
H. Effects on other family members	*	*
I. Self-ambivalence/ overwhelmingness	*	*
J. Ambivalence from others	*	*
K. Ambivalence from child	*	*
L. Unhelpful thinking patterns and behaviours	*	*
Barriers to help-seeking	*	*
M. Time	*	*
N. Uncertainty	*	*
O. Denial and fears	*	*
P. Health professionals	*	*
Impediments to treatment attendance and adherence	*	*
Q. Time	*	*
R. Babysitting	*	*
S. Health		*
T. Location		*
U. Child issues		*
V. Theme 2: Motivation to inquire and participate	*	*

Note: The alphabetic code distinguishes the categories and sub-core categories

Table 5.4 (*continued*)

Major themes / Core categories / Sub-core categories /	Intervention	Withdrawn
Theme 3: What changed after MEP	*	
W1. Changed eating behaviours	*	
W2. Changed activity behaviours	*	
W3. Changed thinking patterns and behaviours	*	
W4. Changed husband	*	
Theme 4: Confidence for help-seeking and supporting change	*	*
X. Help-seeking	*	*
Y. Supporting change	*	*
Theme 5: Recommendations to support parents	*	*
Z1. Parent coaching	*	*
Z2. Child coaching	*	*
Z3. Community and Z4. school based	*	*
Z5. Websites and Z6. books	*	*
Z7. Shorter program and Z8. location		*

Note: The alphabetic code distinguishes the categories and sub-core categories

Amongst the similarities between the groups, it is evident from Table 5.4 that a few main factors distinguished those parents who withdrew from an intervention. For example, health (S), location (T), child issues (U), and a need for shorter programs (Z7).

Theme 1: Barriers to Supporting Change and Help-seeking

Recognizing health behaviour problem.

Weight concerns. Of the 18 parents interviewed, eight Intervention and all nine Withdrawn parents communicated concerns about their children's weight. Some parents noticed a yo-yo affect and wondered whether this weight concern was part of their

children's normal developmental growth that would right itself over time (P10MA, P22WAi, P59WA), or would worsen depending on their health behaviours (P5MA, P25MA). Other parents expressed a concern that their children's weight was localized (P56WA), had been a problem from an early age (P13MA, P58MA, P37WAi, P40WAi), and were large for their age (P28MA, P62MA, P22WAii, P24WA, P34WAi, P40WAii, P60WAi) or compared to their peers (P21MA, P37WAii, P57WA, P60WAii). One parent identified that her child's weight was affecting his wellbeing (P34WAii).

Unhelpful eating patterns. Eight Intervention and all nine Withdrawn parents recognised that their children's eating patterns contributed to their unhelpful health behaviours. Four Intervention and eight Withdrawn parents reported overeating concerns (P5MBi, P13MBi, P28MBi, P58MBii, P34WBiii, P40WBiii, P59WBi). An Intervention parent noticed the overeating was due to her child going without breakfast (P10MBii), whilst a Withdrawn parent commented that for her child it was due to having minimal breakfast (P34WBi). Another Withdrawn parent felt the overeating was due to the family habits (P57WB), and three others noticed the overeating from an early age (P37WBi, P56WBi, P60WBi). Three Intervention parents wondered whether their children lacked the ability to distinguish when they were full (P5MBii, P13MBii, P28MBii), whilst two Intervention and four Withdrawn parents recognised that their children's eating behaviours were emotionally instigated (P25MBiii, P28MBiii, P37WBiii, P40WBi, P56WBii, P60WBii). Other parents noted that their children ate too fast (P13MBiii, P34WBiv). Five Intervention and eight Withdrawn parents were specifically worried about their children's food choices (P10MBi, P21MB, P25MBi, P30MB, P58MBi, P22WB, P24WB, P34WBii, P37WBii, P40WBii, P56WBiii,

P59WBii, P60WBiii), two of whom noticed that some unhelpful eating took place in front of the T.V. (P25MBii, P37WBiv).

Unhelpful activity patterns. In terms of recognizing unhelpful activity patterns, two Intervention and three Withdrawn parents complained that their children were too sedentary (P13MC, P28MC, P40WCii, P56WCi, P57WC), and others that their children did not exercise enough (P21MC, P22WC, P56WCii, P59WC). Another two Withdrawn parents noticed that their children did not exert themselves when undertaking activities (P24WC, P40WCi). One Intervention parent commented that her son's reluctance to exercise was due to a dislike of sweating, which made it difficult to motivate him to undertake physical activities (P28MC). Whilst a Withdrawn parent lamented that her daughter would only exercise if she was doing it with her (P60WC).

Genetics. Six Intervention and eight Withdrawn parents believed that their children's unhelpful health behaviours were genetic. Several parents felt that their children's overeating (P5MD, P28MD, P59WD) or weight concern was inherited on the mother's side (P21MD, P25MD), the father's side (P22WD, P56WDii), or on both sides (P24WD, P34WD, P37WD, P40WD, P57WD). Two Intervention parents believed that their son's weight concern was due to a slower metabolic rate, also inherited on their side (P10MD, P13MD). Whereas a Withdrawn parent believed that her daughter's weight concern was due to a genetic carbohydrate addiction (P56WDi).

Recognizing impediments to supporting change.

Harm to children. Seven Intervention and all the Withdrawn parents reported feeling concerned that they might cause emotional harm to their children if they discussed health behaviour change. Five Intervention and five Withdrawn parents expressed a fear of damaging their children's self-esteem (P13MEi, P21MEii, P25MEi,

P30MEii, P62MEv, P24WEii, P34WEii, P37WEii, P57WEiv, P59WEii). For some it was a fear of causing body image problems (P13MEii, P21MEi, P30MEi, P58MEi, P62MEi, P22WE, P24WEiii, P56WEi, P57WEii), for two it was a fear of causing their children to "feel" or "be sad" (P28MEi, P62MEii), and for one it was the fear that being overweight meant her daughter would be unsuccessful in life (P37WEiii). Some parents had concerns about causing eating problems or something more "drastic" (P62MEiii) like an eating disorder (P5MEii, P24WEiv, P56WEiii, P57WEiii).

Six Intervention (P13MEiii, P25MEiii, P28MEii, P30MEiii, P58MEii, P62MEvi) and eight Withdrawn (P24WEi, P34WEi, P37WEi, P40WE, P56WEii, P57WEi, P59WEi, P60WE) parents worried that their children being teased about their eating habits or weight would also cause emotional harm. Three Intervention parents acknowledged that before the program they avoided causing harm because one "didn't know how to talk about" her concerns (P62MEiv), another found approaching the topic "sensitive and stressful" (P25MEii), and another did not want to go against "the doctor" advice because she did not "have a solution" (P13MEiv). Similarly, three Withdrawn parents acknowledged that they avoided discussions: One "thought that would make it worse" (P22WE), another thought it was "nasty" (P37WE), and another, who was "not going to give my child any kind of a negative complex" was shocked when her daughter reprimanded her for a lack of support (P56WE). One Intervention parent summed up these general fears, using her own detrimental experience as evidence to avoid addressing health behaviour change (P5MEi).

Finances. One Intervention (P21MF) and three Withdrawn parents stated that finances restricted supporting their children attending additional physical activities.

One due to being a single parent (P40WF), one due to both parents studying (P22WF), and another due to conflicting priorities (P59WF).

Time. Time was a concern for three Intervention and seven Withdrawn parents. Two Intervention parents queried whether they had the time to keep attending the program (P5MG, P25MG). Another Intervention parent raised a number of time impediments; needing more time to shop, cook, take kids to physical activities, take herself to the gym, and to be organized (P21MG). One Withdrawn parent noted that both parents studying was a constraint (P22WG). Leading a busy life was an impediment for a few Withdrawn parents (P24WG, P34WG, P57WG, P60G). For two others, being a single parent was time challenging (P40WG, P56WG).

Effects on other family members. How change would affect the whole family was a concern for three Intervention parents. Two felt that changing the household eating habits (P10MH) or missing out on dessert (P30MH) because of one child was unfair to other family members. Another parent indicated that her other children expressed annoyance that change had occurred (P13MH).

Self-ambivalence/ Overwhelmingness. All nine Intervention and seven Withdrawn parents expressed feelings of ambivalence and being overwhelmed about supporting their children to change their health behaviours. A number of parents felt immobilized: One by her worry that her daughter might not make helpful choices when she was independent (P5MIi) and by her fear of being judged (P5MIii); one by her concern that her son might get aggressive because he was bigger than her (P40WIi); another by a fear that she might repeat her parents' mistakes (P57WIii); one by the constant bargaining and negotiating with her child (P22WI); and a few by their perceived enormity of the challenge to support change (P10MIi, P13MIi, P58MI,

P62MI, P24WIi, P34WIii, P37WIi, P40WIii, P57WIiii). Some parents blamed themselves for not being able to fix their children's health behaviour problems (P10MIii), for being a negative influence (P5MIiii, P13MIii), for being in denial (P58MIii, P40WIiii, P56WIii), for not knowing how much food was a helpful amount to provide (P57WIi), or for lacking the confidence to implement change (P24WIii).

Before participating in Intervention, some parents were ambivalent about how their own health behaviours would influence their children's behaviours (P10MIiii, P21MIi, P58MI, P62MI), how their reaction to stress might impact their children (P25MIi), or that they might have to change their own behaviours to support change (P25MIi, P28MI, P58MIiii). Similarly, some Withdrawn parents were ambivalent about how their children's sedentary behaviours might affect their weight (P34WIi), how increasing their activity levels might benefit (P37WIii), or that even a health conscious household could end up dealing with unhelpful health behaviours (P56WIi). One parent expressed confusion about what was healthy to eat (P21MIii). Dealing with her children's resistance was a dilemma for one parent (P30MI) and feeling lost about what more she could do to support her son to increase his activities was a worry for another (P58MIi).

Ambivalence from others. Seven Intervention and seven Withdrawn parents noted that their efforts to support their children to change was often impeded by the input of others. Parents reported: Feeling judged by friends (P10MJi, P37WJiii) and relatives (P58MJi); sabotaged by the child's father (P10MJiii, P13MJ, P58MJii, P34WJi, P37WJii, P57WJii, P59WJi), friends (P13MJi, P60WJii), crèche staff (P28MJ), relatives (P62MJi, P60WJi), and other children in the family (P10MJii); or unsupported by relatives (P13MJii, P37WJii, P59WJii), friends (P13MJii), their GP

(P13MJii), and the child's father (P13MJiii, P25MJ, P30MJ, P58MJiii, P62MJii, P37WJi, P57WJi, P59WJiv, P60WJiii).

Ambivalence from child. Four Intervention and six Withdrawn parents reported that their efforts to support change were often challenged by the child they wished to support. The familiar message amongst the parents was that the children did not take accountability for themselves. One child needed constant reminding when not to eat (P5MK). Two children seemed unaware of their overweight concerns (P10MK, P24WK). One boy did not make helpful food choices outside of home (P13MK). A young girl did not eat lunch (P30MK). Two boys persistently resisted any suggestions of change (P22WK, P34WK), whilst another resisted selectively (P40WK). One girl only took advice from a third party (P57WK), another was only motivated if her mother engaged in activities with her (P60WK), and another resisted exerting herself (P24WK).

Unhelpful thinking patterns and behaviours. All nine Intervention and eight Withdrawn parents gave examples on how their own unhelpful thinking and behaviour patterns impeded supporting their children. Reported impediments included: Being out of routine (P5MLi), being disorganized (P21MLi, P58MLii), being inflexible (P28MLii), and disguising food (P40WLii). Instilling their own unhelpful eating behaviours was a barrier for others (P5MLii, P10MLiii, P30MLi, P24WLi, P40WL, P56WLi, P57WLi, P60WLii). Parents recognised that using discipline (P22WLii, P34WL, P37WL, P57WLiii, P60WLi) like yelling (P10MLi), force (P21MLiii), or bribery (P22WLi) was unhelpful. Some parents realized that life challenges (P60WLiii), and their own lack of readiness to support change in their child (P13MLi, P25MLiii, P62ML) or themselves (P10MLii, P28MLi, P30MLii, P58MLi, P24WLii, P56WLiii) got in the way. What was unhelpful for other parents was hoping that

someone else would take care of the problem (P13MLii), giving in to children (P21MLii, P28MLiii, P58MLiii), parents' own fears (P25MLi), insecurities (P25MLii, P56WLii, P57WLii), and avoiding health behaviour issues by projecting concerns to other topics (P25MLii).

Barriers to help-seeking.

Time. Time was identified by one Intervention and one Withdrawn parent as a potential barrier to attending MEP (P10MM) or to help-seeking overall (P22WM).

Uncertainty. A number of Intervention and Withdrawn parents reported that uncertainty about what to do (P10MN, P62MN, P34WPi, P40WN, P60WN) and where to go (P13MN, P62MN, P22WNii, P59WN) as barriers to supporting their children to change. Some parents questioned whether the health behaviour concern was problematic enough to seek help (P21MN, P30MN, P62MN). Another thought that relying on her networks was sufficient (P22WNi), whilst others were discouraged by family members (P37WN, P34WNii) or ineffective strategies (P57WN).

Denial and fears. Being in denial about a child's health behaviour concern and or fearing the worst was acknowledged by four Intervention and two Withdrawn parents. One Intervention parent admitted that before the program she was afraid to address her son's weight problem (P13MO), whilst another counteracted her fear by increasing her daughter's activities (P5MO). Another admitted not dealing with her son's problem to avoid conflict (P25MO) and another convinced herself there was no problem (P58MO). One parent avoided her daughter's weight concern by focusing on an alternative health problem (P24WO), and another avoided help-seeking because she felt like a failure (P40WO).

Health professionals. Five Intervention and five Withdrawn parents reported not seeking help because they had previously been put off by a health professional. Intervention parents had been adversely judged by GPs (P5MP, P10MP, P13MP), health care nurses (P10MP), and specialists (P5MP, P13MP). Others were confused by different GPs' conflicting advice (P13MP, P58MP). Some Withdrawn parents were disappointed by the uncommitted or unhelpful advice of GPs (P24WP, P40WP, P59WP), health care nurses (P37WPi, P57WP), dieticians and pediatricians (P28MP, P57WP), or not knowing which health professional to contact.

Impediments to treatment attendance and adherence.

Time. Two parents were studying when they participated in Intervention. This made it difficult for one parent to complete the home activities (P13MQ) and the other to get to the sessions (P30MQ). One Intervention parent felt that participating would have been difficult if she had been working (P28MQ). For the Withdrawn parents, five reported time restrictions as impediments to attending a program. Work and family commitments were the predominant time stealers (P22WQ, P24WQ, P37WQ), as was studying (P56WQ). One parent had difficulty because her time was taken up supporting her daughter with reading recovery (P57WQ).

Babysitting. Baby sitting restrictions nearly stopped one Intervention parent from participating; it sometimes was an impediment to attending (P21MR). For two Withdrawn parents, baby sitting restrictions did stop them from participating (P24WR, P59WR).

Health. One Withdrawn parent was challenged due to her own debilitating health concerns (P40WS).

Location. Location was a concern for five of the Withdrawn parents (P24WT, P34WT, P56WT, P59WT).

Child Issues. One Withdrawn parent withdrew because her son felt insecure about her participation (P34WU) and another because she wanted her resistant daughter to also participate (P60WU).

Theme 2: Motivation to Inquire and Participate

Eight Intervention parents gave feedback about what motivated them to participate. One parent agreed that she was "surrendering" to her fears by coming (P5MVi) and that knowing the researcher helped (P5MVii). Another was motivated by wanting to save her son from being teased (P10MVi). The location (P10MVii, P30MVii), day and time (P58MVii), support from husband (P58MViii), and not involving the child (P62MV) worked for some. Three parents were keen to find answers to cause change (P13MV, P21MV, P30MVi). Three parents felt assured through a conversation with the researcher prior to commencing MEP (P25MV, P58MVi, P62MV). Being in a group was important to another parent (P28MV).

All Withdrawn parents gave feedback about what motivated them to inquire about the research. One parent did not want her son to blame her for his unhelpful behaviours when he was older (P22WV). Another was interested in the research (P24WV). One parent was looking for some ideas (P34WV), and others for reassurance (P37WV, P57WVii). Four parents were worried about their overweight children and wanted some answers (P40WV, P56WV, P57WVi, P59WV). One parent was looking for a program that involved her daughter (P60WV).

Theme 3: What Changed After MEP

All Intervention parents gave feedback about what changed for them after the program. Information regarding what changed was addressed in the Study 1 Focus Group and the results were very similar. So, to avoid repetition, Table 5.6 (Appendix B. 8) provides a summary of the results.

Theme 4: Confidence for Help-seeking and Supporting Change

Help-seeking. Intervention parents' confidence for help-seeking generally increased after their participation in MEP. Two parents felt more empowered to discuss their concerns with their GP (P13MX, P25MX) and two felt encouraged to continue seeking help (P21MX, P28MX). Two parents who, before MEP, sought help through reading health literature, discovered after MEP that alternative forms of help were available (P58MX, P62MX).

In contrast to the Intervention parents, some Withdrawn parents gave examples of support they sought in the past that increased their confidence for help-seeking. Five parents felt supported after seeking help from health professionals such as a health nurse (P37WX), a weight loss program (P59WXi), their GP (P56WX, P59WXii), a pediatrician (P60WXii), a naturopath (P56WX, P60WXiii), and a dietician (P57WX, P60WXi). One parent felt more informed reading health literature (P34WX).

Supporting change. Some Intervention parents provided examples of what strategies helped to increase their confidence to support change. Their feedback was particularly related to their participation in MEP. General comments included: Confronting and addressing her fears and worries (P5MYi); proactively researching health information (P30MYi); feeling connected to others with similar problems

(P5MYii, P10MYii, P25MYi, P30MYii); feeling more in control over the problems (P13MY); and undertaking a structured program as opposed to passive learning (P5MYii, P10MYi, P25MYii, P62MY).

Again, in contrast to the Intervention parents, the Withdrawn parents provided examples of strategies that helped to increase their confidence to support change in the past. These included: Having a husband supporting health behaviour change (P24WY); feeling connected to others with similar problems (P34WYii); leaving health related material for their child to read (P34WYi); monitoring food intake and choices (P37WYi, P57WYii); increasing activity levels (P37WYii, P40WY); decreasing sedentary activities (P57WYiii); collaborating and communicating with their children (P37WYiii, P57WYi); and supporting health behaviour change in the school community (P59WY).

Theme 5: Recommendations to Support Parents

Parent coaching. Both Intervention and Withdrawn parents suggested ideas that might help support them to support their children. The Intervention parents' ideas were reflective of having participated in MEP. For example, one parent suggested creating visual prompts, like fridge magnets, that summarize important MEP strategies (P5MZ1i). Other parents suggested the following: Regular support gatherings such as follow-up refresher programs to review MEP points (P5MZ1ii, P21MZ1i, P58MZ1); ongoing meetings to maintain self-esteem and alleviate the frustrations of supporting change (P10MZ1, P13MZ1); information on nutrition (P21MZ1ii), food choice facts (P28MZ1), and increasing family activity levels (P62MZ1); understanding change better (P25MZ1); and continuing the parent programs (P30MZ1).

The Withdrawn parents' suggestions were similar. Two parents felt they needed coaching on how to change their own behaviours to influence change in their children (P22WZ1, P60WZ1), whereas another identified that her husband (P34WZ1) or ex-husband (P59WZ1ii) needed support on how to influence change. Other parents decided they needed to attend a support program similar to MEP (P24WZ1, P57WZ1ii), or a program that increased their motivation to engage in physical activities (P56WZ1). A parent requested readily available BMI information so she could determine whether her child's weight was a problem (P37WZ1). Others suggested regular supportive gatherings to address health behaviour concerns and frustrations (P40WZ1), and information on nutrition (P59WZ1i) and food choice facts (P57WZ1i).

Child coaching. Two Intervention and five Withdrawn parents wanted their children to attend a program, with or without them, so that the parent was not influencing change alone (P10MZ2, P13MZ2, P24WZ2, P34WZ2, P56WZ2, P57WZ2, P60WZ2). Another parent wanted support to complement the practical health habits she was instilling in her child (P28MZ2).

Community and school based. Both Intervention (P58MZ3, P62MZ3) and Withdrawn parents suggested that their community could be a place of support. Examples included support through a community house (P24WZ3), an ongoing support group (P34WZ3, P59WZ3ii), a helpline (P37WZ3), free government run activity programs (P59WZ3i), and government endorsements on healthy foods (P59WZ3iii). Additional parents suggested that schools were ideal support networks for children and parents (P28MZ4, P58MZ4), for primary and secondary programs (P34W4), and for parent brochures (P37WZ4).

Websites and books. Two Intervention parents indicated that online or regular email follow-ups after MEP would act as prompts to supporting their children (P5MZ5, P58MZ5). Similarly, three Withdrawn parents indicated that a website (P22WZ5), online program (P24WZ5), regular emails, or a T.V. program (P34WZ5) would help to support their children. Another two Intervention and three Withdrawn parents suggested that health behaviour guidance books or newsletters would help (P28MZ6, P58MZ6, P22WZ6, P37WZ6, P59WZ6).

Shorter program and location. Suggestions that might have made a difference to the Withdrawn parents' participation included introducing shorter programs. For example, on weekends, over two to three evenings only, have fewer but longer sessions (P22WZ7, P37WZ7), or sessions that go for less time (P24WZ7). A suitable location was also important for two parents (P22WZ8, P24WZ8).

Discussion

Interestingly, despite the obvious difference between the groups in that one participated in the Study 1 intervention and the other withdrew, the results from the parent interviews was very similar. This finding suggests that it is the minor differences between the groups that may reveal how parents can best be supported to participate in interventions. Determining the differences between the groups and identifying strategies on how best to support parents were two aims of Study 2. The main aim was to explore both Intervention and Withdrawn parents' ambivalence to supporting their children to change their unhelpful health behaviours given that in Study 1 a number of barriers were identified as impediments to supporting change.

In total, five main themes emerged from the analysis of the interview transcripts. Only Theme 3 pertains to the Intervention group because it relates to change post the program. The interviews provided qualitative evidence for impediments to problem recognition, supporting change, help-seeking, and to treatment adherence. For each major theme, core categories and sub-core categories were extrapolated, which are discussed below commencing with Theme 1. This discussion will compare the qualitative feedback between the Intervention and Withdrawn groups for each of the themes and may at times comment on its relevance to Study 1. How the quantitative data informs the qualitative interview transcripts will also be discussed where relevant. This initial discussion of the themes addresses the main aim; that is, parents' barriers to supporting their children to change their health behaviours. The second aim more specifically highlights what the main differences were between the groups. Additional research will be drawn on to explain these findings and suggestions for further research explored. The final discussion addresses the third aim, that is, recommendations on how the parents want to be supported. This will be discussed in Theme 5.

Theme 1: Barriers to Supporting Change and Help-seeking

Recognizing health behaviour problem. In evaluating problem recognition, all the Intervention and Withdrawn parents recognised that their children displayed unhelpful eating and activity behaviours. The main differences from a qualitative perspective were: Twice as many Withdrawn than Intervention children were emotional overeaters, more Withdrawn children made unhelpful food choices, more of them exercised less, and some of them had been over eating from a young age. Studies indicate that recognizing a problem and its undesirable symptoms is an important step in

the help-seeking process (Cauce, et al. 2002.; Edmunds, 2005; McMiller, & Weisz, 1996; Vera et al., 1998). It can be surmised that the parents' action to inquire about the intervention supports the research because their inquiry is a form of help-seeking. It also supports the research that says people, including parents, tend to seek help when a health problem escalates, becomes uncomfortable, or becomes unmanageable (Barber, 2002; Evans & Delfabbro, 2005; Manthei, 2006; Thompson et al., 2004).

All of the parents, except one (i.e., P30M), identified that unhelpful health behaviours contributed to their children's weight concerns. It is evident from the literature (e.g., Dietz, 1998; Scott, 2006) that a number of diseases, including overweight and obesity, have been identified in children due to a change in lifestyle related health behaviours similar to those reported by the parents. Examples noted by research include unhelpful dietary habits (Dhingra, 2007; Havel, 2005; WHO, 2006), eating behaviours, and physical inactivity (e.g., Hardy et al., 2004; Kittleson, 2006; Winkleby et al., 1999; WHO, 2006). Some of the parents from both groups were unclear whether their children specifically met the criteria for being overweight or whether their children's changing body was part of their normal development. This notion supports the literature, which confirms that establishing the BMI in children is more difficult than in adults because of age-related height and weight changes associated with growth (Dietz & Robinson, 1998; Lahti-Koski & Gill, 2004; NHMRC, 2003a).

Nevertheless, the parents expressed a general concern about how their children's weight and unhelpful behaviours might affect their health longer term. The health-related risks associated with overweight and the maintenance of unhelpful health behaviours over time is certainly well documented for the adult population (Bluher et

al., 2004; Freedman, 2004; Gunther, 2004; Saenger, 2004; WHO, 2003; WHO, 2004). Increasingly, this concern is becoming evident in children and adolescents (Copeland et al., 2005; Epstein et al., 1980; Freedman et al., 1999; Hill & Silver, 1995; NHMRC, 2003a; Strauss & Pollack, 2003). Even though all of the parents identified that their children's unhelpful behaviours contributed to the weight problem, most of them felt that genetic factors were at play.

Certainly research supports the notion that overweight and obesity tend to run in families (Krebs & Jacobson, 2003). A number of the parents identified whose side of the family their children's weight problem stemmed from. Evidence that genetics may be a contributor for the children in this study can be discerned from the parents' BMI results. These results suggest that, on average, the BMI for both groups was in the overweight range for adults, that is, 25 to 30 (National Institutes of Health/National Heart, Lung, and Blood Institute, 1998). Although the statistical results between the groups were not significant, comparison of the BMI's between the adults and the children showed a pattern; the Withdrawn parents' mean BMI was higher than the Intervention parents' BMI, as was the Withdrawn children's mean BMI-for-age compared to the Intervention children.

Even though genes were blamed as a potential cause for their children's weight concerns, all of the parents acknowledged that unhelpful health behaviours may also run in families. So, they felt that changing the family's behaviours and supporting their children to change could make a difference. This is supported by the research, which reports that parents play a major role in modeling and promoting helpful health behaviours (Pender & Stein, 2002; Weiss, 2000). In doing so, those helpful behaviours

can be established early in childhood (Nicklas et al., 1992; Singer et al., 1995), thus preventing health problems over the lifespan (Peters, 1988).

To explain the differences in the children's health behaviours the quantitative data was drawn on. As already noted, more Withdrawn parents reported health behaviour problems with their children. Given this, it might be presumed that they would be more motivated to participate in a health behaviour change program. The quantitative data did not reveal much significant change between the groups, which may suggest that the groups in deed were similar or that the sample was too small to identify a statistical difference. However, the results did show a significant difference in the parents' mood. The direction of the means suggests that the Withdrawn parents were more depressed than the Intervention parents. Research has shown that a barrier to help-seeking or treatment adherence is evident in people who have an affective disorder (Thompson et al., 2004; Jorm et al., 2000). Morrissey-Kane and Prinz's (1999) review on the role of parental cognitions and attributions on treatment adherence found that depressed mothers were more likely to drop out of treatment either before or after it commenced.

The research also shows that depression is often associated with chronic conditions such as overweight (Challen, 2007; Woolf, 1996). As noted earlier, the Withdrawn parents' mean BMI was in the overweight range and was higher than the Intervention parents' BMI. More specifically, parents who have their own health concerns to manage (Zwaanswijk et al., 2003), and who are psychologically distressed (Verhulst & van der Ende, 1997), are challenged in their efforts to seek help for their children. The results indicate that the Withdrawn parents were not clinically depressed. However, it is possible that together with other barriers, discussed below, as a group

their mood was sufficiently low to impede their actual participation in a program but not so low that it impeded their engagement in help-seeking behaviours such as inquiry making.

Recognizing impediments to supporting change. An interesting concern evident from the qualitative data was parents' fear of causing emotional harm to their children if they addressed health behaviour change directly. This fear impeded all of the Withdrawn and 78% of the Intervention parents from supporting their children to change. It may explain the significant low mood results obtained for the Withdrawn group. The general consensus was that they did not know how to discuss or approach the issue of health behaviour change.

The parents also worried about the effects of teasing on their children emotionally. Research supports the notion that increasingly children are experiencing low mood (Carpentier et al., 2007), self-esteem problems (Stein & Hedger, 1997), and body image issues (Dunkley et al., 2001). This research legitimizes the parents' concerns. Although the quantitative data does not indicate that any of the children were significantly affected emotionally, the qualitative interviews do suggest that some of the children had mood or esteem concerns. Evidence for such concerns may be discerned from the effect sizes obtained for some of the children's psychological measures. For example, the results of the SPPC showed a moderate effect size indicating that the Withdrawn children's mean physical appearance esteem was lower than the Intervention children's esteem. The E&MIII scale also showed a moderate effect size indicating that the Intervention children restricted their food intake more than the Withdrawn children.

It is also possible that the manner in which parents address health behaviour concerns may impact on their children. The research shows that some parents believe

they should take care of their own problems (Pavuluri et al., 1996; Raviv et al., 2009). In doing so, this might become an impediment to supporting their children to change. On the one hand, parents may be unfamiliar with what health behaviours to target for change, and on the other hand, they may force change. Examples of imposing change on children were given by some parents (discussed further below). This manner of addressing health behaviour change was acknowledged as unhelpful and sometimes emotional for their children. This is supported by Golan et al. (1998), who highlighted that imposing change on children may affect them emotionally.

In addition, the research cited has highlighted that adverse emotional states are often an effect of chronic illness, such as obesity (Goodman & Whitaker, 2002). In turn, a chronic illness may decrease helpful health behaviours (e.g., Anderson & Butcher, 2006; Pine et al., 2001; Strauss, 2000). As noted earlier, the quantitative results show that the Withdrawn children's mean BMI-for-age was higher than the Intervention children's BMI-for-age, suggesting that the Withdrawn children weighed more as a group. It is possible that the Withdrawn children's lower physical appearance esteem may be due to this weight difference. It is also possible that the Withdrawn children's BMI -for-age was higher due to the Intervention group's greater tendency to restrict food intake as reported in the E&MIII scale. This tendency to restrict food may be due to the Intervention children's inclination to be more intrinsically responsive to internal cues of health behaviour change. That is, the HSDI-C scale showed that the Intervention children as a group were significantly more intrinsically motivated in their endeavors to make decisions about health behaviours. In particular, the responsiveness to cue subscale showed that they were significantly more responsive to internal rewards to be healthy.

The notion that the Intervention children were restricting food could be detrimental to their health depending what foods they were restricting; this information was not obtained. This is why this result is deemed an unhelpful health behaviour because being intrinsically motivated to embrace health behaviours does not mean the children were necessarily making healthy choices. Nevertheless, restricting foods could have given the Intervention children a sense of control over their situation, thereby making a more positive difference to their physical appearance esteem compared to the Withdrawn children. Studies of children and adolescents who restricted food intake were found to be preoccupied with a sense of control over their body shape and size (Cook-Cottone, 2010).

In contrast to the parents' fears about not addressing health behaviour concerns, the research cited here reinforces doing the opposite. That is, addressing the concerns can improve emotional states (French et al., 1995; Sahota et al., 2001), thereby increasing the potential for children to engage in health-promoting behaviours (Woolf, 1996). As noted in Study 1, involving the parents-as-agents of change can promote helpful health behaviours and wellbeing in young children (Golan et al., 1998; Pender & Stein, 2002; Weiss, 2000), which can positively influence emotional states (Barlow et al., 2006; Treacy et al., 2005). The impediment of not knowing how to address health behaviour change was raised under the sub-core categories *self ambivalence/ overwhelmingness* and *unhelpful thinking patterns/ behaviours*. Examples of feeling ambivalent and overwhelmed about addressing change were reported by most of the parents (100% Intervention, 78% Withdrawn). Waldrop (2006) highlighted that an impediment to implementing health goals is that families face a myriad of barriers that

need to be resolved before dealing with health behaviour change. This overwhelming challenge to resolve barriers to change could promote procrastination.

Avoidance in addressing health behaviour change due to feeling overwhelmed was also noted as a barrier to seeking professional help (Wrigley et al., 2005). Also, all the parents from both groups identified unhelpful thinking patterns and behaviours in themselves that got in the way of supporting change. The examples give evidence that the parents felt challenged and that their own emotional status was compromised by their perceived inability to action constructive health behaviour change in their children. This is particularly evidenced by the parents' self-blaming comments, acknowledgments that they were not role modeling helpful behaviours, and were using unhelpful forms of discipline. This feedback suggests that parents' lack of confidence in exercising behaviour change can lead to self-esteem and mood problems in themselves. It can also encourage reactive forms of support to treat signs of ill health (Costello et al., 1998), which increases children's potential to develop health problems later in life. Conversely, coaching parents to intervene in their children's unhelpful patterns of behaviour can increase their confidence to influence change (Briesmeister & Schaefer, 2007); thereby, positively influencing parents' self-esteem and mood (Barlow et al., 2006; Treacy et al., 2005). This influence was particularly evident from the Focus Group results in Study 1.

The interview transcripts reveal that even when parents wanted to implement change, their efforts to support their children were often impeded by the ambivalence expressed by others. Equal numbers of parents from both groups reported feeling judged, sabotaged, and unsupported by various people in their network. A lack of social support as a barrier to helping children change undesirable behaviours was also

identified by Nock and Kazdin (2005). Husbands' or ex-husband's names were raised often by both groups, as were the names of relatives and friends. A reluctance from men to support health related problems is supported by studies (Addis & Mahalik, 2003; Kessler et al., 1981; Mansfield et al., 2005), as is the unhelpful or judgmental behaviours of family and friends (Manthei, 2006). Research emphasizes that providing parents with social support in a secure and accepting environment, allows them to shape the health outcomes that are relevant to their family values and culture. Thereby, assisting them to deal with the stresses associated with health behaviour change (Weiss, 1989; Weiss & Halpern, 1988). In a similar vain as being impeded by the ambivalence of others, parents reported that their efforts to support change were often challenged by the child they wished to support. The familiar message amongst the parents was that the children did not take accountability for their own health behaviours. This notion is supported by Cote et al. (2004) who found that parents' nonattendance or withdrawal from a pediatric obesity program was influenced by their children's ambivalence to the program. Such frustration from the parents acknowledges their sense of helplessness to implement change when significant people in their network, including their children, challenge their efforts.

Other factors that impeded parents efforts to support change included finance, time, and effects on other family members. This data gives evidence to research, which has highlighted socioeconomic status as a barrier to help-seeking (Kumanyika, 2002; Cohen & Hesselbart, 1993; Cunningham & Freiman, 1996; Griffin et al., 1993; Zwaanswijk et al., 2003) and treatment adherence (Baekeland & Lundwall, 1975). It has also been found to be a health risk to children (Hardy et al., 2004; Kittleson, 2006; Winkleby et al., 1999; WHO, 2006), particularly if financial constraints affect families'

affordability of nutritional foods and extracurricular activities. Some Intervention parents were concerned about how health behaviour change may affect other family members who did not have problems. This concern is supported by research, which indicates that the impact on family is often a variable that may instigate or impede supporting health behaviour change (Costello et al., 1998; Teagle, 2002; Zwaanswijk et al., 2003).

Another risk factor identified by research as potentially affecting ill health is the family eating habits (Hardy et al., 2004; Kittleson, 2006; Winkleby et al., 1999; WHO, 2006). Pransky (2001) argues that families impact positive perceptions of health by promoting helpful health behaviours and providing children with the tools they need to contribute to resilient health later in life. The parents who were worried about how changing the family habits might affect the other family members, seem to be blind sided to the idea that positive change builds positive perceptions of health for the whole family. It might be helpful in future intervention programs to promote the benefits of health behaviour change across the family rather than being focused on individual change. This would mean asking parents to identify health change goals that influence everyone in the family, in addition to targeting the health behaviours of a problem child.

Barriers to help-seeking. Parents from both groups reported various barriers that stopped them from seeking help. Having the time was one factor and being in denial another. These two factors, as impediments to help-seeking, is supported by research (Kumanyika, 2002; Manthei, 2006). However, these factors were not as predominate a barrier as were feeling uncertain about what to do, where to go, and being put off by health professionals. Research has highlighted that confidence about where to seek help, what services are available (Costesllo et al., 1998; Stiffman et al.,

2004), and discerning how important various services are to resolving a health problem (Mitchell & Trickett, 1980; Rogler & Procidano, 1986) are barriers to help-seeking. In terms of feeling supported by health professionals, as noted earlier, parents' social support network can make a difference to shaping the health outcomes of families (Weiss, 1989; Weiss & Halpern, 1988). Families' support network is presumed to include health professionals, and in particular GPs, dieticians, and pediatricians, given that often they are used as a source of information for health concerns. Disappointment, disengagement from intervention participation, or noncompliance with the advice of health professionals is supported by research (e.g., Kazdin et al., 1997; Patterson & Forgatch, 1985; Wrigley et al., 2005). In his study, Edmunds (2005) found that parents were frustrated with the support they received from health professionals on changing their obese children's health behaviours. The study also highlighted that many health professionals had negative attitudes about dealing with childhood obesity. Encouragement from significant others has been shown to increase help-seeking and health behaviour change (Barber, 2002; Manthei, 2006) so more research is needed to identify how health professionals can positively influence parents to seek help.

Impediments to program attendance and adherence. Factors that impeded parents' attendance or adherence to a program were not surprising given the barriers already discussed. Available time, babysitting restrictions, adverse health, and program location; all factors that need to be taken into account when designing interventions. Cote et al. (2004) also identified these factors as impediments to intervention attendance and adherence. These concerns were particularly predominate for the Withdrawn group, thereby providing supporting evidence for their nonattendance. Family restrictions that impacted intervention adherence resonated from both groups, even though the

Intervention parents managed to attend. Many of the complaints were that they, as mothers, were left with the responsibility for supporting change, and for having to work around the family challenges. Research does support the notion that more women seek help (Oliver et al., 2005), and particularly for physical and mental health concerns (Addis & Mahalik, 2003; Kessler et al., 1981; Mansfield et al., 2005). Study 1 also supported this notion because all inquiries, bar one, were from females, as were all the participants.

It was not the scope of this study to inquire about the roles of men and women in the context of the family structure. However, the research also suggests that even though the traditional gender roles have changed over the past century (Hoffman, 2000; Parke, 2002), women are still more likely than men to undertake more of the family responsibilities and household tasks (Halpern & Tan, 2009; Shollen, Bland, Finstad, & Taylor, 2009). This suggests that the family-work life balance may be more challenged for mothers than for fathers; the qualitative data gave evidence to this. If mothers do feel challenged, then adding another task, such as participating in a health program, may feel effortful. In any event, mothers may feel challenged in their effort to attend programs. But, given that Study 1 and 2 results show that all participants were females, it seems they are still more motivated than men to inquire about health programs.

Theme 2: Motivation to Inquire and Participate

Parents' motivation to inquire about the program, and ultimately participate for the Intervention parents, varied a little. For the most part, all of the parents inquired due to concerns about their children's health behaviours. Variations in their comments that decided whether the parents participated or not may have related to how important it

was to attend and how confident they felt that they could. Pransky (2001) argues that to change behaviour, people need to change their internal perception about health, and a part of this internal perception is understanding what motivates people to change. Miller and Rollnick (2002) suggest that understanding what motivates people requires resolving their ambivalence to change by understanding their perceptions of how important change is and how confident they are to change.

Although the parents interviewed in this study were not asked to rate how important or confident they felt about attending a program, such ratings could be discerned from their comments. For example, the Intervention parent whose fears impeded her ability to seek help in the past, acknowledged a high level of importance about overcoming her fears. Also, knowing the researcher increased her confidence that she could address the fears. Three other Intervention parents, unknown to the researcher, also acknowledged an increase in their confidence to attend after having discussed their concerns with the facilitator (i.e., the researcher). Research has shown that the behaviours of health professionals impact treatment adherence and attendance (Patterson & Forgatch, 1985; Wrigley et al., 2005) and people's motivation to change their behaviours (Rollnick & Miller, 1995). These parents' comments from Study 2 gave evidence that helping people to resolve their ambivalence can influence change; in this instance, from participating versus not participating in a program.

Research has shown that the degree of importance people place on seeking help is based on the severity of the problem and its perceived burden (Angold et al., 1998). In terms of confidence, there is a higher likelihood that individuals will seek help if they feel assured that an intervention is available, that they can attend it (Costesllo et al., 1998; Stiffman et al., 2004), and there is the support to do so (Barber, 2002). Examples

of high confidence levels to attend a program can be discerned from those parents who found the location, day and time, support from their husband, and the child's exclusion agreeable.

It would be helpful in future studies to measure parents' importance and confidence ratings at the time of their inquiry. This would help to identify how influential certain factors are in help-seeking and, particularly, intervention participation. For example, variations of the questions in Handouts 8 and 9 from the MEP manual could be used to determine what motivational factors parents need to overcome. Identifying potential barriers to program participation, such as those in Study 2, could guide facilitators on how to support parents to increase their readiness to support change in their children.

Theme 3: What has Changed After MEP

Feedback about the benefits of the MEP program and how it assisted parents to support their children was discussed in Study 1. So, to avoid repetition, it will not be addressed here.

Theme 4: Confidence for Help-seeking and Supporting Change

On the whole, Intervention parents' confidence to seek help after the program increased. In addition, their confidence to support change was evident from their interview comments. This supports the research, which suggests that effective parent interventions should aim to increase parents' confidence and sense of competence that they can shape their children's unhelpful behaviours (Briesmeister & Schaefer, 2007). An interesting observation noted from the feedback is that, compared to the Intervention

parents, a number of Withdrawn parents had already sought help from health professionals and had found it effective. The difference between the groups seems to be in the quality of their responses with regards to how confident they were in supporting change.

It seems evident from the Withdrawn parents' examples that they had been proactive in an attempt to support their children. However, the Withdrawn parents' feedback suggests that there were gaps in their confidence to support change and that they might have benefited from attending a program (see Theme 5 below). The Intervention parents also expressed a lack of confidence in supporting change prior to the program, and requested ongoing support after it (again, see Theme 5). But, the main difference between the groups seems to be that, in participating, the Intervention parents gained skills that they could confidently apply in their efforts to support change (Study 1 Focus Group and Theme 3 results reinforces this).

Main Differences Between the Groups

An aim of Study 2 was to discern any specific differences between the Intervention and Withdrawn groups. In doing so, a goal was to identify whether those parents who withdrew had different needs that required attention in the first instance. The main similarities and differences that were drawn from the interview transcripts were discussed above and, as previously indicated, summarised in Table 5.4.

From Table 5.4 it is evident that amongst the similarities between the groups, a few main factors distinguish those parents who withdrew compared to those who participated. For example, the BMI, mood, and physical esteem differences; the differences in children's unhelpful health behaviours; financial, time, location, and

social support impediments; and the reduced motivation to participate given these barriers. In addition, more Withdrawn parents reported a need for reassurance during their initial inquiries and a need for their children to be more proactive in embracing health behaviour change. The reasons for these needs was not explored and could be explained by various suggestions. For example, the Withdrawn parents' lack of parenting skills or wanting to give their children more autonomy than the Intervention parents. As noted earlier, these needs could also suggest a sense of helplessness in the Withdrawn parents. Combined with the aforementioned barriers, this helplessness is likely to be reinforced. A review of studies by Morrissey-Kane and Prinz (1999) highlighted that parents' cognitions and attributions about their children's behaviour change influenced whether or not parents participated in interventions. They argued that pessimistic attributions could lead to feelings of hopelessness and helplessness.

Studies in the area of helplessness suggest that failed efforts to change a situation, may lead to learning that one has little control over his or her outcomes. Learned helplessness as a theory was developed by Seligman and colleagues (1975; Abramson, Seligman, & Tessdale, 1978). The theory posits that lacking a sense of control over a situation, decreases the likelihood that individuals will change their behaviours (Seligman, 1975). Such learned helplessness may lead to motivational problems whereby individuals who have been unable to effect behavioural change might give up. They give up because they believe that their efforts will yield little difference, even if strategies or interventions are available to support change (Seligman, 1975; Stipek, 1988). This notion of helplessness is evidenced in the current study. The results showed that the Withdrawn parents were motivated enough to inquire about the intervention because changing their children's health behaviours was very important.

However, their comments suggest that their motivation to support change was affected by their reduced confidence.

The Withdrawn parents' reported barriers to participating (see examples in Table 5.4, Theme 2) and to supporting change (see examples Theme 4) give evidence to the possibility that many of them withdrew due to feeling helpless. That is, reduced confidence to participate due to logistical factors, such as time or location, can increase individuals' sense of helplessness if the dilemma they face is important enough to change. Similarly, reduced confidence that individuals can support change, particularly if they had already sought help with little effect, could leave them feeling helpless that any intervention could cause change. In addition, believing that one has little control over outcomes increases the possibility of low self-esteem and depression. This in turn increases the likelihood of unhelpful health behaviour patterns (Flynn, 1996; Seligman, 1975; Sweeney, Anderson, Bailey, 1986). Again, all these notions seem to be supported in the current study.

Theme 5: Recommendations to Support Parents

The parents made a number of suggestions that might help support them to participate in health programs and to support their children with health behaviour change. The familiar theme for the Intervention parents was a need for follow-up and intermittent ongoing support after the intervention to refresh their learning. This need is supported by research, which suggests that recall of health behaviour change advice is increased through reinforcement and clarity (Flock & Stange, 2004). In future studies, parents may benefit from participating in follow-up sessions to reinforce learnt strategies. The Intervention parents' follow-up suggestions included recall sessions, a

helpline, mail or web based reminder notices, and telephone calls. Studies that have employed telephone-based MI to reinforce intervention strategies found it effective (e.g., Berg-Smith et al., 1999; Emmons et al., 2001; Weinstein et al., 2004; 2006). Other studies found that more reminder calls led to greater behaviour change (Resnicow et al., 2001; 2005).

The "Heart Smart" study employed a variety of effective follow-up strategies to reinforce health behaviour change in their participants over five years. Their strategies included regular group sessions initially, followed by telephone contact, then via mail. Their goal was to encourage intrinsic behaviour change to reinforce maintenance. Thus, for behaviour change effects to be sustained longer term, parents might benefit from regular 10 to 15 minute follow-up MI based personalized phone calls after an intervention. For example, two fortnightly calls initially, then once monthly for three months, scaling down to another three calls every second month. Thereafter, a final call could be made at the one year mark post intervention. In the meantime, the parents could have access to written or online material developed for this purpose. This material could also include access to educational information because some Intervention parents requested it. The aim of the calls and material would be to cue and reinforce change, solve problems by identifying MI relevant strategies, and to promote maintenance of changed behaviours. Using MI (Ingoldsby, 2010) or motivational enhancement (Nock & Kazdin, 2005) based methods to engage participants is supported by previous research.

For the Withdrawn parents, the theme was that they recognised a need for coaching and training. This is ironic given that they all withdrew from a program they in fact identified as a need. They also acknowledged that they felt ill equipped to

manage the challenges of supporting health behaviour change. These comments give evidence to studies reviewed in Study 1, which indicate that parents are not automatically equipped to promote health behaviour change in their children (Bergmann et al., 2003; MacFarlane, 2005). The Intervention parents' feedback about the benefits of participating in the program gives evidence to research, which suggests that training parents to influence behaviour change in their children can be effective (Briesmeister & Schaefer, 2007).

A common theme that emerged from both groups is the desire for the children to take more accountability for changing their own behaviours. This was particularly evident amongst the Withdrawn group, where five of the nine parents compared to two Intervention parents, highlighted this need. This need suggests a sense of helplessness. It is possible that more parents in the Withdrawn group made this request because they had not completed a program and, therefore, felt less equipped than the Intervention group. This notion can be discerned from Theme 4 on parents' confidence about supporting change. For example, half the Intervention parents acknowledged that attending a program was more helpful in supporting change than passively learning about how or what to change through self-directed learning methods like reading. More Intervention than Withdrawn parents also acknowledged that being with like minded people helped make a difference.

In addition, the Intervention parents acknowledged that they felt more equipped after the program given that they learnt some structured strategies. Although, as noted earlier, some Withdrawn parents identified ways that they supported their children, their reported need to participate in an intervention suggests that they questioned whether what they were doing was sufficient or helpful. This questioning is also evidenced by

Withdrawn parents' comments under Theme 2, whereby some of them indicated that their inquiries were motivated by a need for reassurance. This need, again, reinforces Withdrawn parents' sense of helplessness. Studies show that parents play a major role in influencing helpful health behaviours in their children (Pender & Stein, 2002; Weiss, 2000; Yarcheski et al., 1997). So, for children to take more responsibility for their health behaviours, it seems that parents need to play a proactive role to encourage such responsibility.

As discussed in Study 1, the focus of targeting the parents was to promote preventive intervention strategies. This was based on research, which suggests that establishing helpful health behaviours early in life can make a positive difference to the quality of life over the lifespan (Pender & Stein, 2002). It can also help to prevent disease before any signs appear (Bergmann et al., 2003; MacFarlane, 2005). From this perspective, parents' participation in health related interventions that encourage health behaviour change in their children, can potentially increase their children's ability and motivation to take more accountability as they grow older.

Future Research

Given the above findings, and in addition to the suggestions already made to be considered in future research, it would be interesting to assess parents' sense of helplessness in health behaviour change. Assessing helplessness may help to identify whether this is a significant factor that impacts parents' active participation in interventions and in supporting their children to change. In doing so, support for parents can be specifically targeted to increasing their sense of control over health behaviour change. Supporting parents to reduce their helplessness may also include

treating any affective overlays before commencing an intervention, such as depression, which was evident in the current study. The confidence enhancing strategies associated with MI, are helpful to explore individuals' ambivalence to behaviour change. However, these methods do not treat confidence problems such as depression, low self-esteem, or learned helplessness (Miller & Rollnick, 2002). In identifying parents with learned helplessness, other treatment approaches can be introduced to increase their confidence that participating in health behaviour interventions can make a difference to their situation.

Limitations of Study 2

A limitation of the current study was likely the use of a structured and semi-structured interview technique. The intention of designing a structured health behaviour questionnaire was to identify parents' barriers to help-seeking, problem recognition, and treatment adherence, and then refer back to some of these responses to help guide the interview. The benefit of using a structured questionnaire as a preliminary to the interview was to direct the questioning to these pre-identified themes, given they emerged as barriers in Study 1. The use of a semi-structured interview schedule was, again, to direct the questioning to these topics of interest and to leave the questioning somewhat open to identify any new themes that may impact withdrawal or participation in an intervention. As useful as these questionnaires were in addressing the study aims, their effectiveness in identifying varying themes between the groups may have been limited by their structured format. That is, the reason why the qualitative responses of Study 2 were so similar between the groups, was possibly because the interview discussion was too controlled by me. It would be interesting to identify whether the

themes might have been more varied between the Withdrawn and Intervention parents if a fully unstructured methodology was used.

Other methodological problems may have been the selection process for the interviews and an experimenter effect. In selecting the participants, the Intervention parents and those who withdrew, either prior to or after commencing an intervention, were asked to partake in the interviews. The process after this was self-selection for both groups given that only those parents who agreed to participate were interviewed. A disadvantage is that self-selection reduced the sample size, thereby affecting power and generalisability of the results. The advantages of this form of selection is that those parents who agreed, were likely to be motivated to complete the interview. However, the parent sample might be biased as it was not randomly selected, which means that the results may not represent the views of the general population. To account for this selection bias, it might be helpful for future studies to include a random sample, whereby a more general, less structured interview schedule is used to ascertain parents' responses to participation in health behaviour interventions. It might also be useful in future to include the FWMP control group, which had a higher retention rate compared to the MEP group.

In terms of the experimenter effect, this might have occurred because all of the participants, especially the Intervention group, were familiar with me. As the interviewer, the researcher, and MEP facilitator, I already had an established connection with the participants. So, familiarity and the my personal qualities may have biased the interviews in that the participants responded in an expected manner. It might be helpful in future studies to account for this bias by having an independent individual conduct the interviews.

Chapter 6

Conclusion

The original aim of this thesis was to ascertain whether a behavioural MEP intervention was more effective than an educational FWMP program in supporting parents to support their children to change unhelpful health behaviours. Motivational interviewing was used as the basis for MEP because it has been demonstrated to effectively address individuals' resistance to change and to maintain changed behaviours over time. It has also been used to effect children's health indirectly through its use with their parents. A focus group was conducted to ascertain the utility of MEP given it has not been used before. Both interventions were matched to ensure consistency in delivery, number of sessions, and facilitator contact. Importantly, both programs targeted the parent as the sole agent-of-change.

In contrast to what was expected, the Study 1 findings showed that most of the intervention effects were demonstrated on the children overall. It was suggested that the parent, independent of the intervention, was the factor that influenced the children's health behaviour change. If this is indeed the case, then it is possible that what makes the difference to children's health behaviours is how parents are supported to effect change. Both the MEP and FWMP programs were designed to support parents, both took into account that parents were the instigators of change for their families, and both provided the opportunity for the facilitators to engage with the parents. This last point is important because it was highlighted in Study 1 that a possible anomaly of previous studies was facilitator contact bias.

The qualitative feedback from Study 2 indicates that parents in both groups who had previously sought professional help, were often left feeling unsupported. In doing

so, this is likely to have reinforced a sense of helplessness in seeking help, particularly for those parents who withdrew. As already noted in Study 2, health professionals' own concerns about dealing with health behaviour change in young children are reportedly due to feeling incompetent or uncomfortable (e.g., Edmunds, 2005). It is possible that the health professionals that parents rely on for help, also experience a sense of helplessness in supporting parents to support their children. From an MI perspective, the rapport established between the client and the therapist is critical for health behaviour change. Thus, building positive relationships between parents and health professionals is likely to effect change due to the "support" factor.

The feedback from Study 2 resonates quite strongly that support from significant others is important for parents. Many complaints were made about a lack of support from the children's fathers, close family members, and well meaning friends. It may be impractical for studies to identify how everyone in parents' network can support them. Research could investigate how health professionals who are likely to have contact with families, such as GPs, pediatricians, and dieticians, can best support parents. For example, training health professionals on the spirit and principles of MI so that in their interactions, parents feel heard and understood, they resolve their ambivalence, and identify solutions to support their children. This might include suggesting some practical tools for change or directing parents to other sources of support. In studies where parents felt supported, the health professionals demonstrated empathy (Edmunds, 2005) or were provided with MI training (e.g., Schwartz et al., 2007). Even so, in both these studies the parents reported gaps in their efforts to practically effect health behaviour change in their children due to insufficient or inadequate advice. Some parents in the Study 1 focus group also identified information gaps in MEP.

Thus, in designing interventions to encourage parents to support their children with health behaviour change, a combination of both emotional and practical support may be effective. An example might be to combine the MEP and FWMP interventions so that its strength is based on the intervention's behavioural, motivational, and educational components. In addition, thought needs to be given to designing it so that the barriers to treatment adherence and recommendations reported in Study 2 are taken into account. For example, it would include: Facilitator contact, both by telephone and face to face; group training with an option to join the group remotely via teleconference or visual display; on-line based modules that complement the intervention sessions for those parents who are unable to participate live (e.g., Norman et al., 2007); and involvement from other family members to reinforce potential for change. Ideally, parents would have an opportunity to revisit on-line modules to consolidate learnt material (e.g., Normal et al.), rejoin a future intervention for ongoing support, or consult a help-line (e.g., Butler, Danby, Emmison, & Thorpe, 2009) to overcome challenges with supporting health behaviour change.

Such an intervention, that could offer parents various modes of support, would require a large investment of funds. Financial support could be raised through awareness and grants. In addition, Governments and industry could be targeted for support. Their support would encapsulate a broader input. That is, Governments need to continue influencing health behaviour change at the policy level, whilst industry needs to promote and offer healthier food options and affordable physical activities. This way parents' sense of helplessness to support change in their children would be diminished.

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Appendix A.1

Table 4.2

Study 1 Baseline Demographic Differences Between the Participating and Nonparticipating Family Members

Demographics	MEP PP[a] (*n*=13) %	FWMP PP (*n*=7) %	*p**	MEP NPP[a] (*n*=13) %	FWMP NPP (*n*=7) %	*p*	MEP PC[a] (*n*=14) %	FWMP PC (*n*=7) %	*p*	MEP NPC[a] (*n*=12) %	FWMP NPC (*n*=7) %	*p*
M age-yrs/mths	42.5	41.5	.62	44.5	45.7	.56	9.3	10.3	.10	8.8	11.9	.19
Sex (female)	100.0	100.0					35.7	57.1		58.3	0.0	
Sex (male)				100.0	100.0		64.3	42.9		41.7	100.0	
M height (m)	1.6	1.6	.20	1.7	1.8	.70	1.4	1.5	.30	1.4	1.5	.30
No response										25.0		
M weight (kg)	73.1	79.2	.47	85.4	83.7	.81	21.7	20.9	.67	17.6	19.1	.37
No response										25.0	14.3	
M BMI[b] (kg/m)	27.8	29.4	.48	28.0	26.8	.53	21.7	20.9	.67	17.6	19.1	.37
M BMIz							1.4	.9	.29			
No response										25.0	14.3	
Organizer of PC food												
PP	84.6	42.9										
PP & NPP	15.4	57.1										
Organizer of PC exercise												
PP	23.1	42.9										
PP & NPP	69.2	51.1										
Nil parent	7.7											
Language												
English	100.0	100.0		100.0	100.0		100.0	100.0		100.0	100.0	
Country of birth												
Australia	76.7	71.4		69.2	42.9		92.9	85.7		00 .0	71.4	
New Zealand	14.3			14.3			14.3			14.3		
England	7.7	14.3		15.4	28.6					14.3		
Scotland				7.7								
Germany	7.7			7.7			7.7					
Italy	7.7											
Zimbabwe				14.3								

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Sibling Children
[b]BMI-for-age was calculated for the children
*p < .05

Table 4.2 (*continued*)

Demographics	MEP PP[a] (*n*=13) %	FWMP PP (*n*=7) %	*p*	MEP NPP[a] (*n*=13) %	FWMP NPP (*n*=7) %	*p*	MEP PC[a] (*n*=14) %	FWMP PC (*n*=7) %	*p*	MEP NPC[a] (*n*=12) %	FWMP NPC (*n*=7) %	*p*
Marital status												
Married	92.3	100		92.3	100							
Defacto	7.7			7.7								
Education level												
Preschool										16.7		
Prep										16.7		
Year 1							7.1			8.3		
Year 2							14.3			8.3		
Year 3							7.1	14.3		14.3		
Year 4							50.0			25.0		
Year 5							7.1	28.6				
Year 6							14.3	57.1		8.3	14.3	
Secondary	7.7	28.6		7.7	14.3					8.3	42.9	
TAFE/Dip	38.5	42.9		30.8	42.9							
Undergraduate	23.1	14.3		30.8	28.6					8.3		
Postgraduate	30.8	14.3		30.8	14.3							
Child resides												
Both parents							100.0	71.4				
Shared care							28.6					
No. of siblings												
0							14.3					
1							57.1	71.4				
2							21.4	28.6				
3							14.3					
>4							7.1					
Place in family												
1st							71.4	28.6				
2nd							21.4	57.1				
3rd							14.3					
4th												
5th							7.1					

Table 4.2 (*continued*)

Demographics	MEP PP[a] (*n*=13) %	FWMP PP (*n*=7) %	*p*	MEP NPP[a] (*n*=13) %	FWMP NPP (*n*=7) %	*p*	MEP PC[a] (*n*=14) %	FWMP PC (*n*=7) %	*p*	MEP NPC[a] (*n*=12) %	FWMP NPC (*n*=7) %	*p*
Occupation												
Admin	30.8	71.4		15.4								
Home duties	15.4											
Medical	7.7	14.3		7.7								
Professional	46.2			46.2	85.7							
Student	14.3											
Trade				30.8								
No response				14.3								
Occupation status												
Fulltime	30.8	28.6		100.0	85.7							
Part-time	69.2	71.4		14.3								
Occupation paid hours												
Nil	23.1 (home duties)											
< 20 hrs	7.7											
20 - 30 hrs	61.6	42.9										
> 30 hrs	7.7	28.6		76.9	57.1							
No response	28.6			23.1	42.9							
Annual income level												
Under $15000	38.5	14.3										
$15,001-$40,000	30.8	57.1		28.6								
$40,001-$80,000	23.1	28.6		69.2	57.1							
Over $80,001				23.1	14.3							
No response	7.7			7.7								

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children

Appendix A.2

Study 1 Letter to Parents About Questionnaire Assessment Pack

Date

Dear …….

Thank you for your inquiry about the "Weight management strategies for children" study conducted at La Trobe University. Please find enclosed the Questionnaire Assessment Pack as discussed recently with Marie Anderson. In addition to an Information Sheet and an Informed Consent Form, the Pack includes a Section labelled "***Parent Pack"*** for you as a parent to complete, and a Section labelled "***Child Pack***", which you are asked to complete with your child.

When administering your child's questionnaires, you may wish to inform your child that you are assisting researchers from La Trobe University to find out about children's ideas about health behaviours.

Please complete all questionnaires as indicated and return in the envelope provided by ……. Read all instructions carefully, particularly before administering to your child. If you have any questions, please do not hesitate to contact me directly on 0411 319 990 to discuss this further. Note that some pages are double sided, so when finished, please check again that all sections have been completed.

Thank you again for your inquiry. Feel free to also contact my supervisors Dr Lynette Evans on 9479 1674, email l.evans@latrobe.edu.au, or Prof Susan Paxton on 9479 1736, email s.paxton@latrobe.edu.au.

Yours sincerely

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Appendix A.3

Study 1 Information Sheet

INFORMATION SHEET

Project Title: Weight Management Strategies for Children:
The role of Parent-facilitated Motivational Interviewing

Researchers

Marie Anderson, Psychologist, Doctor of Health Psychology student in the School of Psychological Science, La Trobe University
Supervised by:
Dr Lynette Evans, Senior Lecturer, School of Psychological Science, La Trobe University
Prof. Susan Paxton, Professor, School of Psychological Science, La Trobe University

Project Aims

The general aim of this project is to investigate the effectiveness of a motivational enhancement program on children's health behaviours, self-esteem, mood, and body image through the participation of their parents in the program.

Participation Study 1

Participating parents will be allocated to one of two 8 session-intervention programs run weekly (each session taking approximately 90 minutes), both designed to address childhood weight problems. One program involves parent education and the other includes a motivational enhancement focus. Parents will be requested to complete a series of questionnaires at four time points: Before starting an intervention program, after completing a program, and 6 and 12 months later. Each questionnaire pack will take approximately 40-60 minutes to complete. These packs include questions on family demographics, including height and weight; the family's eating and activity patterns; and information about mood, self-esteem, and body image. It also includes the completion of a food and activity diary for the child over four days (2 weekdays and a 2 day weekend). By completing the questionnaires at each time point you will help us to track the changes that you and your family experience over time, thus providing valuable information about the effects of specific programs in the prevention of obesity in young children.

Participation in Focus Group

On completion of the program, participating parents will be invited to attend an additional session to provide feedback about their experiences in the programs with the aim of identifying recommendations for future improvement. This focus group methodology will take 90 mins in total and be audio-taped for ease of collating participants' responses.

Confidentiality

All information provided will be kept confidential as identifying information will only be on the coded consent forms, and questionnaires will only be identified by the participant code. Consent forms will be filed separately from the coded questionnaires in Dr Evan's University office. Although the overall results of this study may be reported in a thesis, presented at conferences, and published in scientific journals, you will not be identified in any way. You are free to withdraw from the study at any time. If you would like a summary of the final results of this study, you may inform us of this at any time.

Appendix A.4

Study 1 Statement of Informed Consent

Weight Management Strategies for Children:
The Role of Parent-facilitated Motivational Interviewing
(Informed Consent - Participating **Parent's** Copy)

Consent
Should you choose to participate in this study, please sign and return the researcher's copy of the Informed Consent and the attached questionnaires in the provided pre-paid envelope.

If you have any questions about this research project or if you are distressed following completion of the questionnaires, please contact Dr Lynette Evans on (03) 9479 1674, email: l.evans@latrobe.edu.au or Dr Susan Paxton on (03) 9479 1736, email: s.paxton@latrobe.edu.au. If you have any concerns, queries, or complaints that the researcher has not been able to answer to your satisfaction, you may contact the Ethics Liaison Officer, Faculty Human Ethics Committee, La Trobe University, Victoria, 3086, (03) 9479 1443, email: humanethics@latrobe.edu.au.

I……..…… consent to taking part in the study described in the information sheet, which involves completing questionnaires relating to myself, my family, and my participating child(ren), at four time points (before starting the program, after the program, and 6 and 12 months later). I understand my rights as a participant in this research. The objectives and procedures of the study have been explained and I understand them. I have been advised that the results of the research may be published but that my personal details will remain confidential. I voluntarily consent to participate and I have discussed this project with my child(ren), as outlined in the "Child's Questionnaires: Instructions to the Participating Parent " sheet, and the child(ren) has agreed to participate. I therefore give consent for my child(ren) to participate, and I understand that I may withdraw my or my child(ren)'s participation from the study at any time.

Participating Parent Name…… Signature…… Date……

Name of Participating Child(ren): …….....

Researcher…….……. Signature…… Date……

I understand that should I remain in the study, after the intervention program I may be invited to participate in a focus group to share my experiences in the program. I voluntarily consent to participate in this focus group should I be invited, and I understand that I may withdraw my participation from the focus group at any time.

Participating Parent Name…… Signature…… Date……

Researcher…….……. Signature…… Date……

THANK YOU for your time and your willingness to participate in this study.

PLEASE KEEP THIS PAGE AND THE INFORMATION SHEET

ID No:……

Weight Management Strategies for Children:
The Role of Parent-facilitated Motivational Interviewing

(Statement of Informed Consent - **Researcher's** Copy)

I……..…… consent to taking part in the study described in the information sheet, which involves completing questionnaires relating to myself, my family, and my participating child(ren), at four time points (before starting the program, after the program, and 6 and 12 months later). I understand my rights as a participant in this research. The objectives and procedures of the study have been explained and I understand them. I have been advised that the results of the research may be published but that my personal details will remain confidential. I voluntarily consent to participate and I have discussed this project with my child(ren), as outlined in the "Child's Questionnaires: Instructions to the Participating Parent " sheet, and the child(ren) has agreed to participate. I therefore give consent for my child(ren) to participate, and I understand that I may withdraw my or my child(ren)'s participation from the study at any time.

Participating Parent Name…… Signature…… Date……

Name of Participating Child(ren): …….....

Researcher…….……. Signature…… Date……

I understand that should I remain in the study, after the intervention program I may be invited to participate in a focus group to share my experiences in the program. I voluntarily consent to participate in this focus group should I be invited and I understand that I may withdraw my participation from the focus group at any time.

Participating Parent Name…… Signature…… Date……

Researcher…….……. Signature…… Date……

THANK YOU for your time and your willingness to participate in this study.

PLEASE RETURN THIS PAGE ALONG WITH THE
COMPLETED QUESTIONNAIRES IN THE ENVELOPE PROVIDED

Appendix A.5

Study 1 Family Demographics and Eating & Activity Questionnaire

ID No: ____

FAMILY DEMOGRAPHICS AND

EATING & ACTIVITY QUESTIONNAIRE

Weight Management Strategies for Children Study

The following questions ask about you and your family. Please answer every question. Note that there are no right or wrong answers, just provide the answer that relates specifically to you or your family members.

All responses are strictly confidential.

NOTE Definitions:

- Participating Parent is the parent who will be attending the 8 week training program.
- Participating Child is the child whose participating parent has consented to support them to change his/ her current health behaviours. This child will not be participating in the training program directly.
- Nonparticipating Parent/ Children are other family members whose demographic information will be sought via the participating parent for the purpose of identifying family dynamics but they will not directly participate in the training program.
- Parent refers to legal guardian of participating child.

Collecting weights and heights from family members:

- To ensure that no family member feels singled out, it is suggested that weights and heights of all family members be collected as a family activity if possible. Explain to the children that you are assisting researchers from La Trobe University to find out how different families weights and heights change over time, and in particular, how children grow.

Today's date: ……/……/……

NOTE definitions of terms on page 1.

1. **Demographic details of both parents and participating child. If you have more than one child participating, please request a separate questionnaire for the additional child.**

   Please answer the following questions in relation to both the **PARTICIPATING** and the **NONPARTICIPATING** parent. For the **PARTICIPATING** child, only answer those questions that are relevant.

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
Your relationship to the participating child:			
Are you the primary organiser of household food? Circle one.	Yes No Both	Yes No Both	
Are you the primary organiser of child's physical activities?	Yes No Both	Yes No Both	
Date of birth			
Gender: Please circle.	Male Female	Male Female	Male Female
Country of birth			
Current height: State if centimetres or inches	…….. cm Or …….. inch	…….. cm Or …….. inch	…….. cm Or …….. inch
Current weight: State if kilograms or pounds	…….. Kg Or …….. Pd	…….. Kg Or …….. Pd	…….. Kg Or …….. Pd
Main language spoken at home			
Suburb of residence			
Post Code			
Marital status: Tick one.	( ) Married ( ) Single ( ) De facto ( ) Separated ( ) Divorced	( ) Married ( ) Single ( ) De facto ( ) Separated ( ) Divorced	N/A

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
Occupation: State title. Full time or part time: Tick one. Approx. hours of work per week:	…… …… ( ) Full time ( ) Part time/ Casual Hours……..……	…….. …….. ( ) Full time ( ) Part time/ Casual Hours……..……	N/A
Highest education level completed: Tick one.	( ) Secondary school (level? ……) ( ) TAFE / Diploma ( ) Undergraduate degree ( ) Postgraduate ( ) Other: …….. ……... ….....…….....	( ) Secondary school (level? ……) ( ) TAFE / Diploma ( ) Undergraduate degree ( ) Postgraduate ( ) Other: …….. ……... …….....	Year level = ____
Please indicate your approximate income: Tick one.	( ) Under $15,000 ( ) $15,001 – $40,000 ( ) 40,001 – $80,000 ( ) Over $80,001	( ) Under $15,000 ( ) $15,001 – $40,000 ( ) 40,001 – $80,000 ( ) Over $80,001	N/A
How many brothers and/or sisters does the child have? Circle one.	N/A	N/A	1 2 3 4 or more
Child's place in family: Circle one.	N/A	N/A	1st 2nd 3rd 4th or more
Who does the child live with? Tick one.	N/A	N/A	( ) Both parents ( ) Mother only ( ) Father only ( ) Shared care ( ) Relatives ( ) Guardian ( ) Other: …… ……..

2. **The following questions relate to exercise behaviours of the PARTICIPATING parent, the NONPARTICIPATING parent, and the PARTICIPATING child.**

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
Have the parents and or child engaged in any form of exercise over the last two (2) weeks: Circle one.	Yes No	Yes No	Yes No
If you circled yes, please describe exercise type (you may tick more than one).	( ) Football. ( ) Martial Arts ( ) Cricket ( ) Walk (e.g., to school, the dog) ( ) Power walk ( ) Gymnastics ( ) Gym Circuit ( ) School sports ( ) Swimming ( ) Dancing ( ) Basketball ( ) Netball ( ) Bike riding ( ) Tennis ( ) Aerobics ( ) Yoga ( ) Others: ………… ………………………	( ) Football. ( ) Martial Arts ( ) Cricket ( ) Walk (e.g., to school, the dog) ( ) Power walk ( ) Gymnastics ( ) Gym Circuit ( ) School sports ( ) Swimming ( ) Dancing ( ) Basketball ( ) Netball ( ) Bike riding ( ) Tennis ( ) Aerobics ( ) Yoga ( ) Others: ………… ………………………	( ) Football. ( ) Martial Arts ( ) Cricket ( ) Walk (e.g., to school, the dog) ( ) Power walk ( ) Gymnastics ( ) Gym Circuit ( ) School sports ( ) Swimming ( ) Dancing ( ) Basketball ( ) Netball ( ) Bike riding ( ) Tennis ( ) Aerobics ( ) Yoga ( ) Others: ………… ………………………
Estimate the <u>average</u> total weekly exercise duration in minutes for all activities undertaken in the last two (2) weeks.	………… Average total mins per week for last two (2) weeks	………… Average total mins per week for last two (2) weeks	………… Average total mins per week for last two (2) weeks
Tick if this is typical or not for most weeks over the last six (6) months.	( ) Typical ( ) Typically less ( ) Typically more	( ) Typical ( ) Typically less ( ) Typically more	( ) Typical ( ) Typically less ( ) Typically more
If not typical, estimate what is generally typical per week.	………… Average total mins per week for last six (6) months	………… Average total mins per week for last six (6) months	………… Average total mins per week for last six (6) months
Please circle to indicate when exercise activities were undertaken.	Weekdays / nights Weekends Both	Weekdays / nights Weekends Both	Weekdays / nights Weekends Both

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
If parents or child do NOT exercise, please select from the following (you may tick more than one option).	**I do not exercise because:** ( ) I am too tired. ( ) I do not have enough time. ( ) I do not like to exercise. ( ) I am unsure of what exercise to do. ( ) My parents did not encourage physical activities. ( ) Other (please specify)……..	**I do not exercise because:** ( ) I am too tired. ( ) I do not have enough time. ( ) I do not like to exercise. ( ) I am unsure of what exercise to do. ( ) My parents did not encourage physical activities. ( ) Other (please specify)……..	**Child does not exercise because:** ( ) Child is too tired. ( ) Parent(s) do not have enough time to take child. ( ) Child does not like to exercise. ( ) Child is unsure of what exercise to do. ( ) Parent(s) is unsure of what exercise to suggest. ( ) Other: ……

3. **The following questions relate to the nonphysical leisure behaviours of PARTICIPATING parent, the NONPARTICIPATING parent, and the PARTICIPATING child.**

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
Have the parents and or child engaged in any nonphysical activities over the last two (2) weeks? Circle one.	Yes No	Yes No	Yes No
If you circled yes, please describe type of activity (you may tick more than one).	( ) Computer ( ) Video games ( ) T.V. ( ) Internet ( ) Playstation ( ) Gameboy ( ) Board game ( ) Homework ( ) Read leisure ( ) Cinema ( ) Others: …….	( ) Computer ( ) Video games ( ) T.V. ( ) Internet ( ) Playstation ( ) Gameboy ( ) Board game ( ) Homework ( ) Read leisure ( ) Cinema ( ) Others: …….	( ) Computer ( ) Video games ( ) T.V. ( ) Internet ( ) Playstation ( ) Gameboy ( ) Board game ( ) Homework ( ) Read leisure ( ) Cinema ( ) Others: ……
Estimate the total <u>average</u> weekly duration in minutes for all nonphysical activities undertaken in the last two (2) weeks. Tick if this is typical or not for most weeks over the last six (6) months. If not typical, estimate what is generally typical per week.	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more …… Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more …… Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more …… Average total mins per week for last six (6) months

	Participating Parent	**Nonparticipating Parent**	**Participating Child**
Please circle to indicate when nonphysical activities were undertaken:	Weekdays / nights Weekends Both	Weekdays / nights Weekends Both	Weekdays / nights Weekends Both

4. **The following question relates to the eating behaviours of the PARTICIPATING and the NONPARTICIPATING family members as a whole.**

For the past seven (7) days, please indicate the number of family members who have eaten home prepared, takeaway/ bought, or missed meals by placing the number in the parenthesis provided.

	Mon	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Sun**
Breakfast	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Morning Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Lunch	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Afternoon Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Dinner	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Evening Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed

5. **The following relates to the eating behaviours of the *participating* Child only.** On **most days**, over the last seven (7) days, please indicate whether the child has eaten home prepared, takeaway/ bought, or missed meals by placing a tick in the parenthesis provided. Pick the item that best describes the child's eating behaviours most of the time.

	Mon	**Tues**	**Wed**	**Thurs**	**Fri**	**Sat**	**Sun**
Breakfast	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Morning Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Lunch	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Afternoon Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Dinner	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed
Evening Snacks	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed	( ) Home prepared ( ) Take away/bought ( )Missed

6. **Demographics of NONPARTICIPATING children in the family. If there are more than four other children, please include information on a separate sheet.**

	Child 1	**Child 2**	**Child 3**	**Child 4**
Date of birth				
Country of birth				
Gender: Please circle.	Male/Female	Male/Female	Male/Female	Male/Female
Current height: State if cm or inches	……. cm Or ……. inch	……. cm Or ……. inch	……. cm Or ……. inch	……. cm Or ……. inch
Current weight: State if kg or pounds	……. Kg Or ……. Pd	……. Kg Or ……. Pd	……. Kg Or ……. Pd	……. Kg Or ……. Pd

	Child 1	**Child 2**	**Child 3**	**Child 4**
Main language spoken at home				
Suburb of residence				
Post Code				
Place in family. Circle one.	1st 2nd 3rd 4th+	1st 2nd 3rd 4th+	1st 2nd 3rd 4th+	1st 2nd 3rd 4th+
Who child lives with?				
Year level at School	Year ………	Year ………	Year ………	Year ………

7. The following questions relate to the PARTICIPATING and NON-PARTICIPATING parents and children.

	Partg Parent	**Non-Partg Parent**	**Partg Child**	**Child 1**	**Child 2**	**Child 3**	**Child 4**
Compared to other adults and children, circle which eating pace describes each family member most of the time?	Slow Average Fast	Slow Average Fast	Slow Average Fast	Slow Average Fast	Slow Average Fast	Slow Average Fast	Slow Average Fast
Over the last two (2) weeks, how often have parents and children generally asked for second helpings of food after meals or snacks? Tick one.	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely
Over the last two (2) weeks, how often have parents and children eaten dinner with the family on most days? Tick one.	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely	( ) Daily ( ) Most days ( ) Some days ( ) Few days ( ) Rarely

7. The following relates to **how often** the **PARTICIPATING** and **NON-PARTICIPATING** family members generally displayed the stated eating patterns over the last two (2) weeks: **0 = Rarely, 1 = Few days, 2 = Some days, 3 = Most days, or 4 = Daily**. Circle one number for each of the eating patterns.

	Partg Parent	**Non-Partg Parent**	**Partg Child**	**Child 1**	**Child 2**	**Child 3**	**Child 4**
1. Standing up	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
2. Out of pot/ bowl	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
3. Watching T.V.	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
4. In the bedroom	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
5. When reading	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
6. Playing nonphysical activities	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
7. When angry/ upset	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
8. When happy /excited	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
9. When is bored	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
10. When is ready to go somewhere	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
11. When is offered food	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
12. In the car	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
13. When friends are over	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
14. At a friend's house	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
15.Unsupervised by parents	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
16. In parents presence	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
17. In the garden/ outside	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
18. After exercise	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
19. Doing homework	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
20. When is not hungry	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4
21. Other: ……	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4

8. The following questions relate to exercise behaviours of the NONPARTICIPATING children.

	Child 1	**Child 2**	**Child 3**	**Child 4**
Have any of the children engaged in any form of exercise over the last 2 weeks?	Yes No	Yes No	Yes No	Yes No
Estimate the average total weekly exercise in minutes for all activities undertaken in the last 2 weeks. Tick if this is typical or not for most weeks over the last six (6) months. If not typical, estimate what is generally typical per week.	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more ……Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more ……Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typicall more ……Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more ……Average total mins per week for last six (6) months
Please circle to indicate when exercise activities were undertaken:	Weekday/nights Weekends Both	Weekday/nights Weekends Both	Weekday/nights Weekends Both	Weekday/nights Weekends Both

9. The following questions relate to the nonphysical individual leisure behaviours of the NONPARTICIPATING children.

	Child 1	**Child 2**	**Child 3**	**Child 4**
Have any of the children engaged in any form of nonphysical activities over the 2 weeks?	Yes No	Yes No	Yes No	Yes No
Estimate the total average weekly duration in minutes for all nonphysical activities undertaken in the last 2 weeks? Tick if this is typical or not for most weeks over the last 6 months. If not typical, estimate what is generally typical per week.	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typicall more ……Av total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more ……Av total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typicall more ……Average total mins per week for last six (6) months	……Average total mins per week for last two (2) weeks. ( ) Typical ( ) Typically less ( ) Typically more ……Av total mins per week for last six (6) months

Appendix A.6

Study 1 Parents' Stages of Change Questionnaire

Stages of Change Questionnaire
Parent's Instructions

Please use the following definitions when answering the questions below:

Health behaviours - The term *health behaviours* in the context of this questionnaire relates to nutritional intake (food eaten), physical activity (exercise undertaken), or nonphysical activities (sedentary).

Nutritional intake - Refers to regular ingestion of healthier food and drink options that are low in fat, salt, and sugar, and high in fibre.

Physical activity - Refers to regular exercise such as walking (e.g., the dog, to school), planned physical activities (e.g., football, swimming, tai quando), school sports (football, soccer, netball, tennis), chores (e.g., helping in the garden or home), physical leisure activities (e.g., bike riding, trampoline, playground).

Nonphysical activities - Refers to regular sedentary leisure activities such as playing computer games, watching TV, internet use, hand held games (e.g., play station, gameboy), board games, homework, going to the movies.

1. When answering the following questions, please circle the number 1, 2, 3, 4, OR 5 that is most true for you.

Have you been supporting your child to choose healthier food options according to the above definitions?

Yes, I have been supporting my child to choose healthier food options for MORE than 6 months.
Yes, I have been supporting my child to choose healthier food options for LESS than 6 months.
No, but I intend to support my child to choose healthier food options in the next 30 days.
No, but I intend to support my child to choose healthier food options in the next 6 months.
No, and I do NOT intend to support my child to choose healthier food options in the next 6 months.

2. When answering the following questions, please circle the number 1, 2, 3, 4, OR 5 that is most true for you.

Have you been supporting your child to increase his or her physical activity level according to the above definitions?

Yes, I have been supporting my child to increase his or her physical activity level for MORE than 6 months.
Yes, I have been supporting my child to increase his or her physical activity level for LESS than 6 months.
No, but I intend to support my child to increase his or her physical activity level in the next 30 days.
No, but I intend to support my child to increase his or her physical activity level in the next 6 months.
No, and I do NOT intend to support my child to increase his or her physical activity level in the next 6 months.

3. When answering the following questions, please circle the number 1, 2, 3, 4, OR 5 that is most true for you.

Have you been supporting your child to reduce his or her time spent in nonphysical activities according to the above definitions?

Yes, I have been supporting my child to reduce his or her time spent in nonphysical activities for MORE than 6 months.
Yes, I have been supporting my child to reduce his or her time spent in nonphysical activities for LESS than 6 months.
No, but I intend to support my child to reduce his or her time spent in nonphysical activities in the next 30 days.
No, but I intend to support my child to reduce his or her time spent in nonphysical activities in the next 6 months.
No, and I do NOT intend to support my child to reduce his or her time spent in nonphysical activities in the next 6 months.

Appendix A.7

Study 1 Parent Instructions to Administer Child's Questionnaires

Child's Questionnaires
Instructions to the Participating Parent

Prior to administering the child questionnaires, explain to your child that you are assisting researchers from La Trobe University to find out about children's ideas about health behaviours. When administering the child questionnaires, please allow your child to choose the answers without prompting from anyone. Ideally, administer the questionnaires in private, away from other family members. It is suggested that you review the instructions for each questionnaire before actually administering them. Also, to ensure your child's energy levels and concentration are maintained, it may be best to administer the questionnaires intermitted over a whole day or over two days. If you have any questions, do not hesitate to contact the researcher.

"What I Am Like" - Instructions to the Participating Child

When administering the "What I Am Like" questionnaire, follow these instructions to help you through it.

Inform your child that you will be asking him/ her some fun sentences and then you will ask him/ her to choose a sentence that suits him/ her best.

Explain that this is not a test and that there are no right or wrong answers.

Explain that all kids are different, so different kids will choose different sentences.

Inform your child that you will start with a practice sentence so s/he gets the gist of what to do.

Explain that the practice sentence talks about two kinds of kids and that you want to know which kids are most like him/ her.

Read out Sample (a) at the top of the form. For example:

Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.

Ask your child to choose whether s/he is more like the kids who "would rather play outdoors" or the kids who "would rather watch T.V.". Do not mark anything yet.

Then ask your child whether his/ her chosen answer is REALLY TRUE for him/ her or SORT OF TRUE.

When your child chooses, mark one of the boxes with a cross or tick.

Explain that you will now ask similar sentences and that each time, you will ask your child to choose the kids that are most like him/ her.

Continue with the next sentences until you have finished.

When finished, please thank your child for being part of our research.

"How Do You Feel Right Now" Questionnaire

When administering this questionnaire, read out the top section that explains: "I would like to know how you have been feeling about a number of things". Then read out the questions from 1 to 7, and ask him/ her to circle the face that best shows how s/he feels.

Health Questions

The administration of this questionnaire is similar to the "What I Am Like" questionnaire.

Inform your child that you will be asking him/ her some more fun sentences and then you will ask him/ her to choose a sentence that suits him/ her best.
Explain that this is not a test and that there are no right or wrong answers.
Explain that all kids are different, so different kids will choose different sentences.
Inform your child that you will start with a practice sentence so s/he gets the gist of what to do.
Explain that the practice sentence talks about two kinds of kids and that you want to know which kids are most like him/ her.
Read out Sample (b) at the top of the form since Sample (a) will be familiar to your child from the "What I am Like" questionnaire above.
Ask your child to choose whether s/he is more like the kids who "like hamburgers better than hot dogs" or like the kids who "like hot dogs better than hamburgers". Do not mark anything yet.
Then ask your child whether his/ her chosen answer is REALLY TRUE for him/ her or SORT OF TRUE.
When your child chooses, mark one of the boxes with a cross or tick.
Explain that you will now ask similar sentences and that each time, you will ask your child to choose the kids that are most like him/ her.
Continue with the next sentences until you have finished.
When finished, please thank your child for being part of our research

Children's Body Image Scale

This scale is simple to administer. Inform your child that you are going to show him/ her some pictures of a girl's or boy's body (you will have the scale that corresponds with your child's gender) and you want him/ her to point to the picture that s/he thinks best describes how his/ her body looks. Show your child the pictures and after a minute or two ask him/ her to point to whichever picture s/he thinks best describes how his/ her body looks. Circle the picture your child chooses.

Eating and Me Scale III

To administer this questionnaire, explain to your child again that there are no right or wrong answers and that the researchers are interested in knowing what s/he thinks or does. Read out the example sentence to your child and then ask him/ her to consider which of the six options apply to him/ her. When your child has answered, circle the related number. Continue with the remaining sentences.

Appendix A.8
Study 1 Food and Activity Diary of Children's Health Behaviours

Food Intake Record of Participating Child

Please complete the food intake sheet attached during **4 days (2 weekdays and 2 weekends)** when you are with your child most of the time. Please indicate ***location*** the food/ drink is consumed, e.g., school, mum's or dad's (if lives with both indicate *home*), grandparents', cinema, restaurant, park, etc. Where possible, also indicate any ***activities*** child was undertaking, e.g., watching TV, playing board or computer games, gameboy, etc.
Record all the food and drinks your child consumes during a 24 hour period for each day and please ***estimate quantities*** (use as a guide, ½ cup signifies a medium serve; and a glass of drink signifies approx. 250 ml.). Below are examples of foods typically consumed throughout a day.

Breakfast (eg., dad's; watching TV)
- 1 small bowl cornflakes with milk
- 1 large bowl coco pops with milk
- 1 small tub yoghurt
- 2 slices fruit bread with butter and jam
- 1 glass orange juice
- 1 medium bowl muesli

Snack (school)
- 1 small bag popcorn
- 1 chocolate bar
- 2 muesli bars
- 2 glasses water

Lunch (school)
- 1 apple
- 1 sandwich with butter, salad, tuna
- 1 sandwich with cheese
- 1 small bag chips
- 1 small bottle coke
- 1 roll with tomato and ham
- 1 large sausage roll
- 1 small tuna salad
- 1 small apple juice
- 1 glass water

Snack (grandparent's; board games)
- 1 sandwich with chocolate spread
- 1 large mixed fruit platter
- Cheese dip with carrot, celery, savory biscuits
- 4 sweet biscuits
- 1 cream bun
- 1 glass water
- 1 large blackcurrent juice

Dinner (mum's)
- Medium plate mashed potatoes, peas, BBQ sausage
- Small plate broccoli, fried chicken drumstick
- 1 McDonalds hamburger, large fries, milk shake
- Battered fish and chips
- 1 large slice apple pie with ice-cream
- 1 glass lemonade
- 3 small chops, roast potatoes, pumpkin, carrots
- 1 glass water

Snack (mum's; computer games)
- 1 icy pole
- 1 glass chocolate milk with 2 sweet biscuits
- 1 small slice banana bread

Please note: The above are examples only. Your child may consume other foods not on this list.

Food & Activity	**Day 1, Date:……..…….**	**Day 2, Date:……**	**Day 3, Date:……..……**	**Day 4, Date:……**
Breakfast State activities	Location:…….	Location:…….	Location:…….	Location:…….
Snacks (between breakfast & lunch) State activities	Location:…….	Location:…….	Location:…….	Location:…….
Lunch State activities	Location:…….	Location:…….	Location:…….	Location:…….
Snacks (between lunch & dinner) State activities	Location:…….	Location:…….	Location:…….	Location:…….
Dinner State activities	Location:…….	Location:…….	Location:…….	Location:…….
Snacks (between dinner & bedtime State activities	Location:…….	Location:…….	Location:…….	Location:…….

Physical and Nonphysical Activity Record of Participating Child

Please complete the physical and nonphysical activity sheet attached for **4 days (2 weekdays and 2 weekends)** when you are with your child most of the time. Please indicate ***location*** the activity was undertaken, e.g., school, mum's or dad's (if lives with both indicate *home*), grandparent's, park, gym.
Record all the activities your child undertakes during a 24 hour period, the location of the activity, and for how long. Below are examples of some typical activities, locations, and duration times that children might undertake.

Physical Activity	**Location**	**Duration in minutes**
Walked the dog	Around the block	20
Football	Park	90
Playground	Park	30
Tai quando	Club	60
Cricket	Club	120
Basketball	Friend's	30
Netball	School	60
Tennis	Club	45
Trampoline	Dad's	15
Swimming	Club	30
Chores	Mum's	20
Skipping	Home	15
Sports	School	60
Running	Park	30
Bike riding	Friend's	60
Nonphysical Activity		
Computer games	Dad's	45
TV	Mum's	180
Internet	Grandparent's	30
Playstation	Home	60
Gameboy	Friend's	45
Board game	Friend's	120
Homework	Home	60
Fishing	Dad's	120
Movies	Theatre	150

Physical Activity	**Day 1, Date:……..…….**	**Day 2, Date:……**	**Day 3, Date:……..……**	**Day 4, Date:……**
Activity: Location: Duration:				
Activity: Location: Duration:				
Activity: Location: Duration:				
Activity: Location: Duration:				
Nonphysical Activity				
Activity: Location: Duration:				
Activity: Location: Duration:				
Activity: Location: Duration:				
Activity: Location: Duration:				

Appendix A.9

Study 1 Summary of the Motivational Enhancement Program (MEP)

The MEP facilitator was the researcher. Appropriate training in the spirit and techniques of motivational interviewing (MI) was provided by a Senior Psychology Lecturer at La Trobe University who lectured on and conducted professional programs in motivational interviewing. The MEP facilitator attended lectures, workshops, and observed the delivery of MI and its techniques, all conducted by the same Senior Lecturer. The Senior Lecturer observed the initial Group 1 sessions to ensure the facilitator's efficiency. In addition, the MEP facilitator contributed to the writing and delivery of an MI workshop on 'Dealing with Resistance to Facilitate Change in Substance Use: A Guide to Motivational Interviewing to Psychologists' as part of her doctoral assessment.

The primary purpose of MEP was to explore and resolve participating parents' ambivalence about supporting their participating children to change their unhelpful health behaviours. In supporting the parents to address their own ambivalence, they were thus coached to use MI and its strategies to influence change in their children. This essentially involved goal setting, problem-solving, and addressing behaviour change strategies in an empathic, helpful, non-judgmental style. To encourage change-talk, the facilitator asked a variety of open-ended questions to provide the parents with opportunities to explore their concerns, ambivalence, reasons for adherence, and ideas for change. When appropriate, the facilitator offered personal feedback, information, advice, optimism, affirmation, and confidence in the parents' ability to make and sustain change (Miller & Rollnick, 2002). A standard protocol encompassing the entire MEP intervention was developed using a number of resources (e.g., Miller & Rollnick, 2002; Rollnick et al., 2002). See the CD that accompanies this thesis for the MEP Treatment Manual.

The following outlines the essence of how the MEP program was facilitated. The MEP parents participated in eight, 90, interactive group-based sessions. The first two sessions formed phase one, which involved gathering information to resolve ambivalence and increase motivation for change. The aim of the first MEP session was to establish rapport, discuss the goals of the program, and to explore the participating parents' reasons and concerns about supporting health behaviour change in their children. This initial session also involved defining motivation, identifying ambivalence as an impediment to change, and addressing factors that influence overweight given that overweight was used as the template to address health behaviour change. At the end of each session, parents were encouraged to undertake home activities to reinforce what was covered. The home activities allocated for session one were for parents to record their children's typical health behaviours and note whether they were helpful or unhelpful to the maintenance of good health, to record how parents felt about their children's health behaviours, to identify any ambivalence, and to record the challenges associated with changing parents' own unhelpful behaviours as a springboard to supporting their children.

At the beginning of each new session, the home activities set in the preceding session were discussed. In session two, the challenges in changing parents' own

unhelpful behaviours were explored. This included identifying what changes the parents felt they needed to make as a preliminary to supporting their children to change their health behaviours. The discussion built on session one's discussion on the factors that affect motivation by exploring *importance* and *confidence* factors. That is, how important it was for parents to support their children to change specific unhelpful health behaviours, and how confident they felt that they could be supportive. Miller and Rollnick (2002) suggest that *importance-confidence* questions are presented to clients on a scale of 0 (not at all important/ not at all confident) to 10 (extremely important/ extremely confident). In doing so, the reasons for the nominated score and what it would take to increase this score are explored. For example, if parents indicated that their ability to support their children to reduce television watching scored a *confidence* rating of five out of ten, their reasons for nominating this score were initially discussed. Then what they needed to increase this rating were explored. These additional reasons, along with practicing and applying *importance* and *confidence* strategies (see Handouts for Session 2) during their home activities, provided a basis for parents to increase their intrinsic motivation to support their children to change their health behaviours.

The ensuing six sessions formed phase two of the MEP intervention, which involved strengthening parents' commitment to support their children to change their health behaviours. This included continuing to address participating parents' ambivalence to change, addressing discrepancies between their desired goals versus current status, and enhancing importance and confidence ratings. In session three, parents were encouraged to identify health goals for change and to write a change plan for action. The goals set by parents may have directly supported their children to change a specific health behaviour, for example, increase a child's physical activity level by helping the child choose a sport. Or the goal may have indirectly supported their children by changing one of their own health behaviours, for example, allocate the time to go for a walk with the child. In session four, gaps in parents' skills or knowledge were identified as possible barriers to supporting change, and target goals were consolidated and refined. In addition, the spirit of MI - collaboration, evocation, and autonomy - were introduced to reinforce that the manner in which parents interact with their children influences children's health behaviour change. Following on from this, session five introduced the four MI principles that support change, that is, express empathy, develop discrepancy, rolling with resistance, and supporting self-efficacy. The aim of understanding and applying these principles was to help parents deal with their children's emotions and resistance to change.

In session six, the parents were supported in how to engage, goal set, problem-solve, and address their participating children's ambivalence to change by enhancing their intrinsic motivation. To this end, the concepts that promote children's intrinsic motivation to change their behaviours were discussed, that is, competence, curiosity, social relatedness, and independence. Stipek (1988) argues that to enhance or evoke intrinsic motivation in children, adults can appeal to children's innate human need to develop a sense of competence, to promote their curiosity and interest in an activity, to support them to engage in socially oriented activities, and to encourage them to identify independently derived goals. Session six also encouraged parents to practice assessing children's importance and confidence ratings as a way of enhancing children's motivation to change. Session seven explored the concepts of lapsing or relapsing, and

helped parents identify emotions and negative thoughts that may potentially initiate lapses or relapses to supporting their children to change. Simple strategies to cope with lapses or relapses were discussed such as managing stress through relaxation and distraction techniques. Finally, session eight summarised the main points of the MEP intervention, clarified any misunderstandings, distinguished parents' successes during the program, and identified potential future challenges. After this final session, parents were invited to stay to participate in the Focus Group (discussed further below).

Qualitative MEP Focus Group

Upon completion of MEP, those participating parents who consented to taking part in the audio taped focus group remained after the final session. Parents who chose not to participate were thanked and excused from staying. Before commencing the focus group a short 15 minute break was provided to the parents. The focus groups were facilitated by the researcher. Ninety minutes was allocated for each focus group (e.g., as per Granito, 2001; McCash, 2005). The facilitator opened the focus groups with a brief introduction and description of the purpose. The facilitator then posed open-ended questions to the group, as opposed to a more structured interview, to diminish shaping of responses (Patton, 1990). A protocol of discussion questions was developed that aimed to identify the following issues of interest from the focus group participants: i) The challenges the parents faced, ii) their perceived value of the program, iii) what they found most supportive, iv) whether they felt the program was flexible to account for individual family differences or whether they found it restrictive, v) how they found the use of the principles in enhancing their children's intrinsic motivation vi) what they felt the strengths and weakness of the intervention were, and vii) suggestions for improvement. See Handout 30 and 32 for a list of the questions developed for the focus group. The questions were available as a guide for the researcher to help direct the discussion to ensure that the issues of interest were considered. Because of the discursive nature of the focus group, not all the questions were posed at every group, particularly if the researcher felt that the parents' responses covered the areas of interest.

The facilitator monitored the dynamics of the group to ensure that the discussion was not dominated by only a few parent participants. Parents were encouraged to note down queries, comments, and questions during the discussion to ensure their feedback was not forgotten to be addressed in the focus group.

A Summary of the Topics Covered in MEP

Session 1: Rapport building & information gathering.

The objectives of this session included:

Familiarize parents through a "get to know each other" activity.

Address housekeeping and group rules.

An outline of the aims and goals of the program.

Discuss the factors that influence overweight.

Group activity: Parents explore their reasons for participating in the program, identify their children's current health behaviours, and discuss their concerns.

Discuss the challenges of supporting children to change their health behaviours.

Define motivation, ambivalence, and stages of change.
Identify ambivalence as an impediment to change.
Homework activities: Record children's typical health behaviours, record parents' behaviours, and record the challenges associated with changing parents' behaviours.

Session 2: Assess & Enhance Importance & Confidence to Support Change
The objectives of this session include:
Identify what behavioural changes parents may need to make as a preliminary to supporting their children to change their health behaviours.
Discuss that behavioural change is influenced by the importance placed on changing behaviours and how confident people feel about making changes.
Activity: Assess parents' importance and confidence ratings related to supporting their children to change specific health behaviours.
Introduce motivational strategies that aim to enhance parents' importance and confidence ratings to support behavioural change in their children.
Homework activities: Practice the motivational strategies.

Session 3: Identify Behaviour Change Goals & Establish an Action Plan
The objectives of this session include:
Activity: Identify specific desirable health goals that support behavioural change.
Evaluate goals and priorities for action.
Write a change plan to strengthen parents' commitment for change.
Homework activities: Review goal identification exercise, consolidate, and choose a specific health goal to implement.

Session 4: Skill Building & Enhancing Children's Motivation to Change
The objectives of this session include:
Identify gaps in parents' skills or knowledge and address.
Discuss motivational principles that support behavioural change, i.e., collaboration, eliciting solutions from children rather than imposing them, and respecting children's autonomy to choose amongst options.
Role play: Support behavioural change by applying motivational principles.
Homework activities: Implement a specific health goal and practice the motivational principles that support change in children's unhelpful health behaviours.

Session 5: Motivational Principles that Support Behavioural Change
The objectives of this session include:
How to deal with children's emotions, i.e., learning how to express empathy, helping children to identify discrepancies between what is important to them vs. current behaviours, becoming aware how parents' behaviours can influence their children to resist behavioural change, and how to support self-efficacy.
Role play: Practice strategies to deal with children's emotions to enhance their intrinsic motivation to change their behaviours.
Homework activities: Implement a specific health goal and practice strategies learnt to deal with children's emotions.

Session 6: Eliciting Intrinsic Motivation From Children

The objectives of this session include:

Discuss the concepts that promote children's intrinsic motivation to change their behaviours. That is, achieving competence in a task, inspiring change through curiosity, supporting them to engage in socially oriented activities, and promote independence by encouraging responsibility and choice.

Activity: Practice assessing children's importance and confidence ratings and practice the motivational strategies that aim to enhance children's motivation to support behavioural change.

Homework activities: Implement a specific health goal and practice assessing children's importance and confidence in relation to changing a specific behaviour. Practice applying the motivational strategies that enhance behavioural change.

Session 7: Relapse Prevention

The objectives of this session include:

Parents to identify situations, emotions, or thoughts that "trigger" lapses to supporting their children to change their behaviours.

Parents to identify ways to avoid, alter, or eliminate triggers.

Practice relaxation techniques to counter stresses.

Discuss the importance of rewarding positive behaviour and identify examples.

Homework activities: Implement a specific health goal and practice motivational strategies that support change. Parents to identify triggers to supporting change, identify ways to alter triggers, and practice relaxation techniques.

Session 8: Review and Program Termination

The objectives of this session include:

Summaries the main points and skills learnt from the previous sessions.

Clarify misunderstandings of the techniques presented in the past sessions.

Distinguish parents' successes in supporting their children to change their unhelpful health behaviours.

Encourage parents to continue using the techniques learnt.

Discuss the challenges parents may face in future and explore how to apply the learnt techniques to address these challenges and the unexpected.

Reinforce that relapse to pre-program behaviours can be part of change, and that it is a cue to review techniques learnt.

Close session.

Appendix A.10

Study 1 Summary of the Family Weight Management Program (FWMP)

The facilitator of FWMP was a secondary school teacher trained in dietetics who volunteered her time for the project. The volunteer had been teaching nutrition and home economics to senior students at a private high school and had completed her dietetics degree at La Trobe University several years earlier. The primary purpose of the educationally-focused FWMP program was to address families' lifestyle factors such as food and activity habits. The aim was to educate the participating parents on what constitutes healthy nutritional foods (as per NHMRC, 2003b) and on the benefits of increasing physical activities and decreasing sedentary behaviours (as per NHMRC, 2003a). The program included some exercises and tasks about healthy eating and physical activities but did not address motivational issues to encourage behaviour change. Essentially, the parents were supported in educating their participating children on the benefits of healthy eating and increasing their physical activities but not how to enhance their intrinsic motivation. Like the MEP program, homework activities were a feature of the FWMP program to help parents consolidate learnt material. The FWMP home activities raised parents' awareness about their families' unhelpful eating and activity habits, and encouraged change through education of helpful habits.

The FWMP program was developed by The Children's Hospital at Westmead, New South Wales (2002). The researcher identified the program after having a discussion with a family based dietician, who had been using the program for several years to educate parents who had overweight concerns of their young children. The researcher contacted the Department of Nutrition and Dietetics at Westmead Hospital to order the program. The training manual was made available to the researcher for a standard fee.

A Summary of Topics Covered in Each Session

Session 1: Introduction

The objectives of this session include:
Familiarize parents through a "get to know each other" activity.
Address housekeeping and group rules.
What parents' goals are in attending the program.
An outline of the expectations of the program.
Factors that influence overweight and obesity.
Define overweight, obesity, BMI.
Introduce growth charts.
Discuss the advantages and disadvantages of children being overweight or obese.
Myths about dieting and how to avoid the "dieting cycle".
Homework activities: Observe participating child's food and eating patterns.

Session 2: Healthy Eating

The objectives of this session include:
Discuss factors that contribute to excess weight gain.
Introduce the food pyramid.

Discuss what a healthy diet is for children.
Discuss sources of fat, carbohydrates, and proteins in foods.
Choosing low fat foods.
Group activity regarding healthy eating.
Homework activities: List what is in the fridge.

Session 3: Parenting and Limit Setting
The objectives of this session include:
Discuss what the term "parenting" means.
Understand how various forms of discipline affect the establishment of healthy habits.
Address strategies to manage difficult child behaviours.
Understand children's developmental stages and capabilities at different ages
Establishing standards for healthy food habits
Group activities on managing children's eating behaviours.
Homework activities: Record parent behaviours in response to participating children's eating behaviours.

Session 4: Sharing Family Food Tasks
The objectives of this session include:
Discuss families' eating habits, e.g., second helpings, serving sizes, eating styles.
Role plays on addressing food habit problems.
Address solutions for common family problems associated with food habits.
Help children accept new foods.
Understand the role of the parent vs. the child's role in food planning.
Homework activities: Identify what family habits are unhelpful to the maintenance of good health and ideas how to engage the participating child to change.

Session 5: Becoming More Active
The objectives of this session include:
Discuss current family activity levels.
Discuss the importance of physical activity.
Differentiate between physical and sedentary activities.
Discuss structured vs. unstructured physical activities.
Dealing with barriers to undertaking physical activities.
Increasing families' opportunities to engage in activities.
Homework activities: Brainstorm ideas for increasing child's activity levels.

Session 6: Overeating Versus Hunger
The objectives of this session include:
What is hunger and overeating.
Group activity - identifying hunger and overeating.
Behaviours associated with overeating.
Strategies to overcome hunger and overeating.
Discuss portion sizes for children's various age groups.
Homework activities: Identify hunger and overeating behaviour in the child.

Session 7: Family Food Habits
The objectives of this session include:
Describe family food habits.
Discuss how family members influence food habits on each other.
Discuss the similarities and differences between group member's food habits.
Explore helpful eating habits.
Preparing children for habit change.
Homework activities: Parents choose a habit to change in themselves and observe how this influences their children.

Session 8: Meal Planning for Busy Families
The objectives of this session include:
Discuss changes implemented since commencing program.
Understand energy content of high fat and high sugar foods.
Healthier ways to eat out.
Reducing fat content in recipes.
Identifying quick, easy, and healthy meals.
Group activity: Plan a healthy menu for various social occasions given what learnt.
Close session.

Appendix A.11

Study 1 School Permission Letter to Advertise Research Program

Date

RE: Research Study at La Trobe University
Weight Management Strategies for Children:
The role of Parent-facilitated Motivational Interviewing

To the Principal,

I am a postgraduate student, undertaking a Doctorate of Health Psychology at La Trobe University. I write to request your approval to publish the attached advertisement in the school's parent newsletter. The advertisement invites parents to participate in a study that will be conducted on the Bundoora Campus of La Trobe University.

As you may be aware, obesity is on the increase. We hope that my study will provide insight into weight management strategies for children. The literature suggests that parents are a major influence in supporting children to change their health behaviours, and therefore the study aims to recruit parents into a motivational enhancement program. By advertising through the school's newsletter, I hope to give interested parents an opportunity to contribute to this valuable research.

In December 2005, I contacted the Department of Education and Training (DE&T), Research and Development Branch. Ms Chris Warne confirmed that DE&T ethics clearance is unnecessary as the research "will not take place in schools and does not involve direct contact with students or teachers". She informed me that the Principal's permission to advertise the research would suffice.

Should you wish to discuss this further, please contact me by leaving a message on my mobile, 0411 319 990, or through my email address at La Trobe University m2anderson@students.latrobe.edu.au. Feel free to also contact my supervisors Dr Lynette Evans on 9479 1674, email l.evans@latrobe.edu.au, or Prof Susan Paxton on 9479 1736, email s.paxton@latrobe.edu.au.

Yours faithfully,

MARIE ANDERSON
Psychologist
Lecturer
Doctorate of Health Psychology Student
School of Psychological Science
La Trobe University
BUNDOORA VIC 3083

Dr LYNETTE EVANS
Psychologist/ Senior

Prof SUSAN PAXTON
Psychologist/Professor

Appendix A.12

Study 1 Advertisement Placed in Schools' Parent Newsletter

FREE Program for Parents

Weight management strategies for children

Parents who are concerned about over-weight issues with their children, aged between 8 to 12 years, are requested to contact Marie Anderson, who is a Health Psychology Doctorate research student at La Trobe University.

The study aims to examine the effectiveness of a motivational enhancement program for parents to support weight reduction strategies in their children.

Parents will be requested to attend eight 90 min training sessions, and complete a series of questionnaires before starting a program, after completing a program, and 6 and 12 months later. The questionnaires will assess the child's eating and activity patterns, mood, self-esteem, and body image. The child will not be directly involved in a program, and all information will remain strictly confidential. Please email Marie to receive more details on m2anderson@students.latrobe.edu.au, or leave a message on her mobile number 0411 319 990.

Appendix A.13

Study 1 Letter Informing Health Professionals About Program

Date

RE: Research Study at La Trobe University
Weight Management Strategies for Children:
The role of Parent-facilitated Motivational Interviewing

Dear Health Professional

I am a postgraduate student, undertaking a Doctorate of Health Psychology at La Trobe University. I write to draw your attention to my "Weight management strategies for children" study with the hope that you might have client parents who are interested in participating. A copy of an advertisement summarizing the study is attached. The advertisement invites parents to participate in a study that will be conducted on the Bundoora Campus of La Trobe University.

As you may be aware, obesity is on the increase. We hope that my study will provide insight into weight management strategies for children. The literature suggests that parents are a major influence in supporting children to change their health behaviours, and therefore the study aims to recruit parents into a motivational enhancement program. By informing you about the study, I hope to give interested parents an opportunity to contribute to this valuable research.

Should you wish to discuss this further, please contact me by leaving a message on my mobile, 0411 319 990, or through my email address at La Trobe University m2anderson@students.latrobe.edu.au. Feel free to also contact my supervisors Dr Lynette Evans on 9479 1674, email l.evans@latrobe.edu.au, or Prof Susan Paxton on 9479 1736, email s.paxton@latrobe.edu.au.

Yours faithfully,

MARIE ANDERSON
Psychologist
Lecturer
Doctorate of Health Psychology Student
School of Psychological Science
La Trobe University
BUNDOORA VIC 3083

Dr LYNETTE EVANS
Psychologist/ Senior

Prof SUSAN PAXTON
Psychologist/Professor

Appendix A.14

Table 4.4

Study 1 Non Significant Results

Measure / Behaviour	Main effect	Interaction effect
PC[a] Eating & Activity Questionnaire		
Eating behaviours		
Eating pace[b]	$F(1.22, 23.2) = .131$, p*=.771, $\eta p^2 = .007$	$F(1.22, 23.2) = .830$, $p = .395$, $\eta p^2 = .042$
Dinner with family	$F(2, 38) = .667$, $p = .519$, $\eta p^2 = .034$	$F(2, 38) = 1.56$, $p = .224$, $\eta p^2 = .076$
Breakfasts had[c]	$F(2, 38) = 1.06$, $p = .358$, $\eta p^2 = .053$	$F(2, 38) = 1.06$, $p = .358$, $\eta p^2 = .053$
Breakfasts missed[c]	$F(2, 38) = 1.06$, $p = .358$, $\eta p^2 = .053$	$F(2, 38) = 1.06$, $p = .358$, $\eta p^2 = .053$
Main meals home prepared[bc]	$F(1.34, 25.4) = .822$, $p = .406$, $\eta p^2 = .041$	$F(1.34, 25.4) = .441$, $p = .569$, $\eta p^2 = .023$
Main meals takeaway[c]	$F(2, 38) = .232$, $p = .794$, $\eta p^2 = .012$	$F(2, 38) = 1.49$, $p = .239$ $\eta p^2 = .073$
Main meals missed[bc]	$F(1.03, 19.6) = 1.09$, $p = .311$, $\eta p^2 = .054$	$F(1.03, 19.6) = 1.09$, $p = .311$, $\eta p^2 = .054$
Eating patterns		
When angry[b]	$F(1.32, 38) = 1.06$, $p = .335$, $\eta p^2 = .053$	$F(1.32, 38) = 1.06$, $p = .335$, $\eta p^2 = .053$
When bored	$F(2, 38) = 1.54$, $p = .227$, $\eta p^2 = .075$	$F(2, 38) = .481$, $p = .622$, $\eta p^2 = .025$
When not hungry[b]	$F(1.48, 38) = .267$, $p = .700$, $\eta p^2 = .014$	$F(1.48, 38) = 1.63$, $p = .217$, $\eta p^2 = .079$
PC Food Diary		
Nutritional values over four-days		
Fat	$F(2, 30) = 3.09$, $p = .060$, $\eta p^2 = .171$	$F(2, 30) = .141$, $p = .869$, $\eta p^2 = .009$
Fibre	$F(2, 30) = .868$, $p = .430$, $\eta p^2 = .055$	$F(2, 30) = .198$, $p = .822$, $\eta p^2 = .013$
Salt	$F(2, 30) = .379$, $p = .687$, $\eta p^2 = .025$	$F(2, 30) = .799$, $p = .459$, $\eta p^2 = .051$

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
[c]In last 7 days.
*p = < .05

Table 4.4 (*continued*)

Measure / Behaviours	Main effect	Interaction effect
Activity calories burnt over four-days		
Physical activities	$F(2, 32) = .876$, $p^* = .426$, $\eta p^2 = .052$	$F(2, 32) = .275$, $p = .761$, $\eta p^2 = .017$
Nonphysical activities	$F(2, 32) = 3.00$, $p = .064$, $\eta p^2 = .158$	$F(2, 32) = .274$, $p = .762$, $\eta p^2 = .017$
PC[a] Psychological Measures		
Delighted-Terrible Faces Scale	$F(2, 38) = 2.07$, $p = .14$, $\eta p^2 = .098$	$F(2, 38) = 1.05$, $p = .359$, $\eta p^2 = .052$
Self-Perception Profile for Children		
Physical appearance	$F(2, 38) = 2.60$, $p = .087$, $\eta p^2 = .120$	$F(2, 38) = .365$, $p = .696$, $\eta p^2 = .019$
Athletic competence	$F(2, 38) = 2.76$, $p = .076$, $\eta p^2 = .127$	$F(2, 38) = 3.31$, $p = .05$, $\eta p^2 = .148$
Eating and Me III Scale		
Bulimic eating	$F(2, 38) = 2.47$, $p = .098$, $\eta p^2 = .115$	$F(2, 38) = 1.46$, $p = .245$, $\eta p^2 = .071$
Children's Body Image Scale discrepancy with BMI scores	$F(2, 36) = .270$, $p = .765$, $\eta p^2 = .015$	$F(2, 36) = .076$, $p = .927$, $\eta p^2 = .004$
Health Self-Determinism Index Intrinsic-extrinsic orientation	$F(2, 38) = 2.92$, $p = .066$, $\eta p^2 = .133$	$F(2, 38) = 1.05$, $p = .359$, $\eta p^2 = .052$
Competency in health matters	$F(2, 38) = .844$, $p = .438$, $\eta p^2 = .043$	$F(2, 38) = .156$, $p = .856$, $\eta p^2 = .008$
Self-determination health goals	$F(2, 38) = .826$, $p = .445$, $\eta p^2 = .042$	$F(2, 38) = .583$, $p = .563$, $\eta p^2 = .030$
Health judgement	$F(2, 38) = 1.87$, $p = .168$, $\eta p^2 = .090$	$F(2, 38) = .448$, $p = .642$, $\eta p^2 = .023$

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*$p = < .05$

Table 4.4 (*continued*)

Measure / Behaviours	Main effect	Interaction effect
Family Members' Eating & Activity Questionnaire		
Activity data		
PP physical activity[b]	$F(1.35, 24.2) = 2.66$, $p^* = .107$, $\eta p^2 = .129$	$F(1.35, 24.2) = .814$, $p = .410$, $\eta p^2 = .043$
NPC physical activity	$F(2, 30) = .233$, $p = .794$, $\eta p^2 = .015$	$F(2, 30) = .796$, $p = .460$, $\eta p^2 = .050$
Eating behaviours		
PP eating pace[b]	$F(1.30, 23.3) = .263$, $p = .674$, $\eta p^2 = .014$	$F(1.30, 23.3) = .639$, $p = .471$, $\eta p^2 = .034$
PP second helpings	$F(2, 36) = 2.73$, $p = .079$, $\eta p^2 = .131$	$F(2, 36) = 1.56$, $p = .223$, $\eta p^2 = .080$.
PP dinner with the family	$F(2, 36) = 1.22$, $p = .307$, $\eta p^2 = .064$	$F(2, 36) = 1.59$, $p = .217$, $\eta p^2 = .081$
NPP eating pace	$F(2, 36) = .092$, $p = .912$, $\eta p^2 = .005$	$F(2, 36) = 1.26$, $p = .296$, $\eta p^2 = .065$
NPP second helpings[b]	$F(1.47, 26.4) = 1.93$, $p = .173$, $\eta p^2 = .097$	$F(1.47, 26.43) = 1.12$, $p = .325$, $\eta p^2 = .058$
NPP dinner with the family	$F(2, 36) = 1.88$, $p = .168$, $\eta p^2 = .094$	$F(2, 36) = .368$, $p = .695$, $\eta p^2 = .020$
NPC eating pace	$F(2, 30) = 1.12$, $p = .339$, $\eta p^2 = .070$	$F(2, 30) = 1.12$, $p = .339$, $\eta p^2 = .070$
NPC second helpings	$F(2, 30) = .055$, $p = .946$, $\eta p^2 = .004$	$F(2, 30) = 1.977$, $p = .156$, $\eta p^2 = .116$
NPC dinner with the family	$F(2, 30) = .419$, $p = .661$, $\eta p^2 = .027$	$F(2, 30) = 1.25$, $p = .302$, $\eta p^2 = .077$
Eating patterns		
PP when angry/ upset	$F(2, 36) = 1.06$, $p = .357$, $\eta p^2 = .056$	$F(2, 36) = 2.36$, $p = .109$, $\eta p^2 = .116$
PP when bored	$F(2, 36) = 2.01$, $p = .149$ $\eta p^2 = .100$	$F(2, 36) = 1.38$, $p = .265$, $\eta p^2 = .071$
PP when not hungry	$F(2, 36) = .815$, $p = .451$ $\eta p^2 = .043$	$F(2, 36) = .815$, $p = .451$, $\eta p^2 = .043$

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*$p = < .05$

Table 4.4 (*continued*)

Measure / Behaviours	Main effect	Interaction effect
NPP when angry/upset	$F(2, 36) = .706$, $p^* = .501$, $\eta p^2 = .038$	$F(2, 36) = 1.72$, $p = .194$, $\eta p^2 = .087$
NPP when bored[b]	$F(2, 36) = 1.48$, $p = .241$, $\eta p^2 = .076$	$F(2, 36) = .608$, $p = .550$, $\eta p^2 = .033$
NPP when not hungry	$F(2, 36) = 1.17$, $p = .321$ $\eta p^2 = .061$	$F(2,36) = .239$, $p = .789$, $\eta p^2 = .013$
NPC when watched T.V.	$F(2, 34) = .315$, $p = .732$, $\eta p^2 = .018$	$F(2, 34) = 2.71$, $p = .081$, $\eta p^2 = .137$
NPC when angry/upset	$F(2, 34) = 1.94$, $p = .159$, $\eta p^2 = .103$	$F(2, 34) = 1.12$, $p = .338$, $\eta p^2 = .062$
NPC when bored	$F(2, 34) = .116$, $p = .891$, $\eta p^2 = .007$	$F(2, 34) = .545$, $p = .585$, $\eta p^2 = .031$
NPC when not hungry	$F(2, 34) = 1.48$, $p = .241$, $\eta p^2 = .080$	$F(2, 34) = .363$, $p = .698$, $\eta p^2 = .021$
PP stages-of-change & psychological data		
Stages-of-change		
Supporting increasing physical activities[b]	$F(1.49, 36) = 3.36$, $p = .062$, $\eta p^2 = .157$	$F(1.49, 36) = 1.62$, $p = .219$, $\eta p^2 = .082$
Supporting decreasing nonphysical activities	$F(2, 36) = 1.42$, $p = .255$, $\eta p^2 = .073$	$F(2, 36) = 1.28$, $p = .291$, $\eta p^2 = .066$
The Beck Depression Inventory Short-form	$F(2, 36) = 2.06$, $p = .143$, $\eta p^2 = .102$	$F(2, 36) = .608$, $p = .550$, $\eta p^2 = .033$

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*$p = < .05$

Appendix A.15

Table 4.5

Study 1 Type of Activities That the MEP and FWMP Participating Children and Parents Undertook at Time 1, 2, and 3

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Participating Children						
When physical activities undertaken						
Weekday/nights	1 (7.1)		1(14.3)	1(14.3)	1(14.3)	
Weekends						
Both	14 (100)	13(92.9)	14(100)	6(85.7)	6(85.7)	6(85.7)
Physical activity types						
Football/ Soccer	7	7	7	1	1	0
Martial Arts	2	2	3	0	0	0
Cricket	1	3	1	0	0	2
Walk	9	9	13	2	4	6
Power walk	0	0	0	0	0	0
Gymnastics	1	1	1	1	1	1
School sports	7	9	7	4	5	4
Swimming	7	8	7	4	0	3
Dancing	1	1	3	1	1	2
Basketball	4	3	5	0	1	2
Netball	1	1	0	1	1	1
Bike riding	13	5	6	3	1	2
Tennis	0	1	2	0	0	0
Aerobics	0	0	0	0	0	1
Yoga	0	0	0	0	0	0
Other: Playground	1	1	0	0	2	0
Golf	1	1	0	0	0	0
Little athletics	1	0	2	0	0	0
Totem tennis	1	0	0	0	0	0
Trampoline	1	2	2	0	0	0
Acrobatics	0	0	0	1	1	0

Note. At each time period, most participating children and parents undertook more than one activity.

Table 4.5 (*continued*)

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Other continued						
Calisthenics	0	0	0	1	1	1
Badminton	0	0	0	1	1	1
Jogging	0	1	0	0	0	0
Skateboarding	0	1	1	0	0	1
Pilates	0	0	0	0	1	0
Squash	0	0	1	0	0	0
Scooter	0	0	1	0	0	0
Wii sports	0	0	1	0	0	0
Billiards	0	0	1	0	0	0
Softball	0	0	0	0	0	1
Skating	0	0	0	0	0	1
Baseball	1	0	0	0	0	0
Nil	1	0	0	0	0	0
When nonphysical activities undertaken						
Weekday/nights						
Weekends						
Both	14 (100)	14 (100)	14(100)	7 (100)	7 (100)	7 (100)
Nonphysical activity types						
Computer	11	11	11	5	4	6
Video games	3	4	6	3	2	1
T.V.	14	14	14	7	7	7
Internet	8	8	11	3	4	3
Playstation	6	7	6	4	2	2
Gameboy	3	4	5	1	2	1
Board game	7	3	7	1	1	
Homework	13	13	14	6	6	5
Read leisure	12	12	13	5	5	4
Cinema/ movies	3	4	5	3	2	1

Note. At each time period, most participating children and parents undertook more than one activity.

Table 4.5 (*continued*)

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Other: Painting/ crafts/drawing	2	0	0	1	1	0
Singing	1	0	0	0	0	0
Instrument	1	0	0	0	0	0
Playing cards	0	1	0	0	0	0
Listening to music/ ipod	0	0	1	0	0	0
Participating parents						
When physical activities undertaken						
Weekday/nights	2(15.4)	3(23.1)	2(15.4)	1(14.3)	2(28.6)	
Weekends			1 (7.7)		1(14.3)	
Both	10(76.9)	10(76.9)	10(76.9)	5(71.4)	5(71.4)	5(71.4)
N/A	1 (7.7)	1(14.3)				1(blank)
Physical activity types						
Football/ Soccer	0	0	1	0	0	0
Martial Arts	0	0	0	0	0	0
Cricket	0	0	0	0	0	0
Walk	12	10	12	4	5	5
Power walk	3	2	1	1	1	2
Gymnastics	0	0	0	1	1	0
School sports	0	0	0	0	0	0
Swimming	1	3	2	1	0	0
Dancing	1	1	0	0	0	0
Basketball	0	0	0	0	1	0
Netball	0	0	0	0	0	0
Bike riding	1	2	2	2	2	1
Tennis	1	1	1	0	0	0
Aerobics	1		2	0	0	0
Yoga	2	4	4	0	1	1

Note. At each time period, most participating children and parents undertook more than one activity.

Table 4.5 (*continued*)

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Other: Treadmill	1	0	0	0	0	0
Gym circuit	3	3	4	1	3	1
Pilates	0	0	0	1	1	
Volleyball	0	0	0	1	1	1
Abdominal workout	0	0	0	1	0	0
Boxing	0	1	0	0	0	0
Meditation	0	0	1	0	0	0
Billiards	0	0	1	0	0	0
Gardening	0	0	1	0	0	1
Housework	0	0	0	0	0	1
Nil	1	0	0	1	0	1
When nonphysical activities undertaken						
Weekday/nights						
Weekends						
Both	13 (100)	13 (100)	13(100)	7 (100)	7(100)	7(100)
Nonphysical activity types						
Computer	9	10	12	5	4	4
Video games	0	0	0	0	0	0
T.V.	12	12	13	5	6	6
Internet/ email	9	10	13	5	6	6
Playstation	0	0	0	1	0	0
Gameboy	0	0	0	0	0	0
Board game	4	2	3	3	1	1
Homework	4	4	3	1	2	
Read leisure	10	11	11	6	7	5
Cinema/ DVD	5	2	3		3	0
Other: Writing scapbooking	2	0	2	1	1	1
Playing cards	0	1	0	0	0	0
Knitting/ crafts	0	1	1	0	0	0

Table 4.5 (*continued*)

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Nonparticipating parents						
When physical activities undertaken						
Weekday/nights	1 (7.7)	1 (7.7)	1 (7.7)	6(85.7)	1(14.3)	
Weekends	1 (7.7)	2(15.4)	3(23.1)		1(14.3)	2(28.6)
Both	7(53.8)	10(76.9)	9(69.2)		4(71.4)	4(71.4)
N/A	4(30.8)			1(14.3)	1(blank)	1(blank)
Physical activity types						
Football/ Soccer	1	0	3	3	2	1
Martial Arts	0	0	0	0	0	0
Cricket	0	2	0	0	0	1
Walk	7	6	8	5	4	5
Power walk	0	2	2	1	1	2
Gymnastics	0	0	0	0	0	0
School sports	0	0	0	0	0	0
Swimming	0	0	1	2	0	0
Dancing	0	0	0	0	0	0
Basketball	0	0	0	0	0	0
Netball	0	0	0	0	0	0
Bike riding	4	5	4	3	1	3
Tennis	0	0	0	1	0	1
Aerobics	0	0	0	0	0	0
Yoga	0	0	0	0	1	1
Other: Golf	1	0	0	0	0	0
Jogging	2	1	1	0	1	0
Weights	1	1	1	0	0	0
Gardening	3	2	1	0	0	0
Gym circuit	1	2	3	1	1	0
Boot camp	1	1	1	0	0	0
Volleyball	0	0	0	1	1	0

Table 4.5 (*continued*)

	MEP group			FWMP group		
Family members & activity types	Baseline T1	Post int. T2 *n* (%)	Six month T3	Baseline T1	Post int. T2 *n* (%)	Six month T3
Other continued						
Back exercises	0	0	0	1	0	0
Darts	0	1	0	0	0	0
Physical job	0	1	1	0	0	0
Billiards	0	0	1	0	0	0
Motor bike	0	0	1	0	0	0
Badminton	0	0	0	0	0	1
Nil	4	0	0	0	1	1
When nonphysical activities undertaken						
Weekday/nights						
Weekends						
Both	13 (100)	13 (100)	13(100)	7 (100)	7(100)	7(100)
Nonphysical activity types						
Computer	9	9	11	5	4	4
Video games	0	0	0	1	1	2
T.V.	12	13	13	5	6	6
Internet/ email	8	10	10	6	6	6
Playstation	0	0	1	1	0	0
Gameboy	0	0	0	0	0	0
Board game	5	0	3	2	0	0
Homework	0	1	1	2	1	0
Read leisure	10	8	8	4	5	5
Cinema/ DVD	1	3	3	3	1	1
Other: Darts	1	0	0	0	0	0
Listen to music	0	0	0	1	1	0
Playing cards	0	1	0	0	0	0

Note. At each time period, most participating children and parents undertook more than one activity.

Appendix A.16

Table 4.6

Reasons the Participating Children and Parents did not Undertake Physical Activities at Time 1, 2, and 3

Time period / Participants	*n*	MEP group	*n*	FWMP group
Baseline (T1)				
Participating Children	-		-	
Participating Parents	1	I am unsure of what exercise to do	1	I am too tired
Nonparticipating Parents	4	I do not have enough time	1	I am too tired I do not have enough time I do not like exercise My parents did not encourage physical activities
Post intervention (T2)				
Participating Children	-		-	
Participating Parents	-		-	
Nonparticipating Parents	-		1	I am too tired I do not like exercise My parents did not encourage physical activities
Six month (T3)				
Participating Children	-		-	
Participating Parents	-		1	I am too tired Due to injury
Nonparticipating Parents	-		1	I am too tired I do not like exercise My parents did not encourage physical activities Due to injury

Appendix A.17

Table 4.8

The Average Mean Eating Patterns and Behaviours That the MEP and FWMP Family Members Displayed at Time 1, 2, and 3

	MEP group			FWMP group		
Family members & eating habits	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*
Participating Children (MEP *n* = 14 FWMP *n* = 7)						
Eating behaviours						
Eating pace	2.21 (0.70)	2.07 (0.73)	2.00 (0.68)	2.29 (0.95)	2.29 (0.76)	2.43 (0.79)
Second helpings	3.36 (1.34)	3.79 (1.25)	4.29 (1.20)	3.00 (1.53)	3.29 (1.11)	3.71 (1.11)
Dinner with family	1.21 (0.43)	1.07 (0.27)	1.21 (0.43)	1.57 (0.53)	1.57 (0.53)	1.29 (0.49)
Breakfast had in last 7 days	6.29 (1.82)	7.00 (0.00)	7.00 (0.00)	7.00 (0.00)	7.00 (0.00)	7.00 (0.00)
Breakfast missed in last 7 days	0.71 (1.82)	0.00	0.00	0.00	0.00	0.00
Main meals home prepared 7 days	18.79 (2.67)	19.79 (1.37)	19.14 (1.56)	18.86 (1.46)	19.14 (0.90)	19.43 (0.53)
Main meals takeaway in last 7 days	1.29 (0.83)	1.14 (1.35)	1.79 (1.48)	2.14 (1.46)	1.86 (0.90)	1.57 (0.53)
Main meals missed in last 7 days	0.93 (2.20)	0.07 (0.27)	0.07 (0.27)	0.00	0.00	0.00
Eating patterns						
Watching T.V.	2.79 (1.48)	2.50 (1.22)	1.57 (0.65)	3.14 (1.57)	3.43 (1.27)	3.00 (1.73)
When angry/ upset	1.14 (0.36)	1.14 (0.36)	1.14 (0.36)	1.43 (0.79)	1.57 (0.79)	1.86 (1.21)
When is bored	2.29 (1.27)	2.21 (1.19)	1.57 (0.76)	2.57 (1.72)	2.71 (0.95)	2.43 (1.13)
When is not hungry	2.14 (1.23)	2.00 (0.96)	1.36 (0.50)	2.43 (1.51)	2.29 (0.95)	2.71 (1.38)

Table 4.8 (*continued*)

Family members & eating habits	MEP group Baseline T1 *M (SD)*	MEP group Post int. T2 *M (SD)*	MEP group Six month T3 *M (SD)*	FWMP group Baseline T1 *M (SD)*	FWMP group Post int. T2 *M (SD)*	FWMP group Six month T3 *M (SD)*
Participating parents (MEP *n* = 13 FWMP *n* = 7)						
Eating behaviours						
Eating pace	2.08 (0.64)	2.00 (0.58)	2.08 (0.49)	2.57 (0.53)	2.71 (0.49)	2.71 (0.49)
Second helpings	3.92 (1.19)	4.15 (1.14)	4.38 (0.87)	4.00 (1.15)	3.43 (1.27)	4.29 (1.25)
Dinner with family	1.23 (0.44)	1.08 (0.28)	1.23 (0.44)	1.71 (0.76)	1.57 (0.53)	1.29 (0.49)
Eating patterns						
Watching T.V.	2.54 (1.61)	2.00 (1.29)	1.62 (0.65)	2.43 (1.27)	3.29 (1.11)	3.00 (1.73)
When angry/ upset	1.31 (0.63)	1.15 (0.38)	1.15 (0.38)	1.71 (0.95)	2.29 (1.38)	1.86 (1.21)
When is bored	2.08 (0.95)	1.62 (0.96)	1.62 (0.77)	2.71 (1.25)	2.86 (1.07)	2.43 (1.13)
When is not hungry	2.00 (1.08)	1.69 (0.95)	1.38 (0.51)	2.71 (1.38)	3.00 (1.41)	2.71 (1.38)
Nonparticipating parents (MEP *n* = 13 FWMP *n* = 7)						
Eating behaviours						
Eating pace	2.31 (0.48)	2.15 (0.38)	2.23 (0.44)	2.29 (0.49)	2.43 (0.79)	2.43 (0.53)
Second helpings	3.77 (0.93)	4.15 (0.80)	4.15 (1.34)	3.43 (0.79)	3.29 (1.25)	3.86 (1.07)
Dinner with family	1.69 (0.95)	1.46 (0.88)	1.46 (0.66)	1.71 (0.76)	1.57 (0.53)	1.29 (0.49)

Table 4.8 (*continued*)

	MEP group			FWMP group		
Family members & eating habits	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*
Eating patterns						
Watching T.V.	2.46 (1.56)	2.15 (1.28)	1.62 (0.65)	2.43 (1.27)	3.00 (1.41)	3.29 (1.50)
When angry/ upset	1.08 (0.28)	1.00 (0.00)	1.00 (0.00)	1.29 (0.76)	1.29 (0.76)	1.43 (0.79)
When is bored	1.77 (1.01)	1.54 (0.78)	1.62 (0.77)	1.71 (1.50)	1.57 (0.79)	1.29 (0.49)
When is not hungry	1.77 (0.93)	1.62 (0.96)	1.38 (0.65)	1.71 (0.95)	1.71 (0.95)	1.57 (0.79)
Nonparticipating siblings						
Eating behaviours (MEP *n* = 11 FWMP *n* = 6)						
Eating pace	1.82 (0.60)	1.73 (0.47)	1.91 (0.54)	1.83 (0.41)	2.17 (0.75)	2.17 (0.75)
Second helpings	3.82 (1.08)	4.27 (0.79)	4.00 (1.00)	3.67 (1.03)	3.33 (1.37)	3.50 (1.05)
Dinner with family	1.18 (0.40)	1.09 (0.30)	1.18 (0.40)	1.50 (0.55)	1.67 (0.82)	1.33 (0.52)
Eating patterns (MEP *n* = 12 FWMP *n* = 7)						
Watching T.V.	2.83 (1.40)	2.58 (1.24)	1.92 (0.67)	3.14 (1.57)	3.14 (1.86)	3.57 (1.13)
When angry/ upset	1.00 (0.00)	1.08 (0.29)	1.00 (0.00)	1.00 (0.00)	1.29 (0.49)	1.29 (0.76)
When is bored	1.50 (0.67)	1.67 (0.78)	1.75 (0.75)	2.14 (1.57)	1.86 (0.90)	2.00 (1.15)
When is not hungry	1.50 (0.67)	1.67 (0.65)	1.42 (0.67)	1.71 (0.95)	2.29 (1.11)	1.86 (1.21)

Appendix A.18

A Sample of a Participating Child's Condensed Four-day Food Diaries for Time 1, 2, and 3 Converted into Nutritional Values (Excludes Dinners)

Group MEP ID 1.1

Food Diary Time 1

Breakfast

Mon 4 slices toast *318,61,4,3,816 with jam 222,55,0,1,24; 1 glass water 0 - Home chatting = 540,116,4,4,840
Tue 1 med bowl Nutrigrain 120,28,0,2,227 (with 1 milk 146,11,8,0,98), 1 piece toast 80,15,1,1,204 with jam 55,14,0,0,6; 1 glass water 0 - Home chatting = 401,68,9,3,535
Sat 2 whole (English) muffins (4slices) 534,105,4,6,1056 + jam 222,55,0,1,24; 1glass water0- Home chatting=756,160,4,7,1080
Sun 1 medium bowl Nutrigrain 120,28,0,2,227 (with 1 milk 146,11,8,0,98), 1 glass water 0-Home chatting= 266,35,8,2,325 = 1963,379,25,16,2780

Morning Tea

Mon 1 rollup 50,12,1,0,55; 2 tim tams 190,24,10,0,65, 1 pear 96,26,0,5,2 - School = 336,62,11,5,122
Tue ½ cup twisties 156,15,10,0,297; 1 pear 96,26,0,5,2 - School = 252,41,10,5,299
Sat 1 yoghurt 121,9,7,0,92; 2 tim tams 190,24,10,0,65 - Home, after basketball game = 311,33,17,0,157
Sun 1 hot dog 204,0,18,0,620; 1 Gatorade 50,14,0,0,110- After football final = 254,14,18,0,730 = 1153,150,56,10,1308

Lunch

Mon 4 slices 318,61,4,3,816 peanut butter 751,28,64,10,624 & cheese(2) 225,1,19,0,348 - School = 1294,90,87,13,1788
Tue 4 slices 318,61,4,3,816 peanut butter 751,28,64,10,624 & cheese(2) 225,1,19,0,348 -School = 1294,90,87,13,1788
Sat 2 peanut butter 751,28,64,10,624 & cheese(2) 225,1,19,0,348 sandwiches (4slices) 318,61,4,3,816, 1 glass water 0 - Home, chatting = 1294,90,87,13,1788
Sun 3 chicken nuggets 142,8,9,0,276, chips 410,49,22,4,195, lemonade spider 349,63,11,1,95 - Restaurant chatting friends & grandparents = 901,120,42,5,566 = 4783,390,303,44,5930

Afternoon Tea

Mon 6 savoy biscuits(plain) 54,6,0,0,96 with cheese(1) 113,0,9,0,174; 1/4 cup peanuts 165,6,14,2,230; 1 apple 80,21,0,4,2 - Home, watching TV = 412,33,23,6,502
Tue 3 savoy biscuits(plain) 27,3,0,0,48 with cheese(1) 113,0,9,0,174; 1/4 cup peanuts 165,6,14,2,230, 1 apple 80,21,0,4,2 - Home, watching TV = 385,30,23,6,454
Sat 1 pear 96,26,0,5,2; 1/4 cup peanuts 165,6,14,2,230 - Home, watching TV = 261,32,14,7,232
Sun 1 pear 96,26,0,5,2; 2 shortbread biscuits 80,10,4,0,72; 1 rollup 50,12,1,0,55- Home, chatting = 226,48,5,5,125 = 1284,143,65,24,1313

Evening Snack

Mon Nil - Home, playing chess =0
Tue Nil - Home, reading =0
Sat Nil - Home, watching TV =0
Sun Nil - Clubrooms playing football on oval =0 = 0

Food Diary Time 2

Breakfast

Mon 1.5 (English) muffins(3slices) *401,79,3,5,792 with peanut butter 564,21,48,8,468 water 0-Home talk =965,100,51,13,1260
Fri Large bowl Gorilla munch cereal 119,25,2,0,135 (+ 1 milk) 146,11,8,0,98, glass water 0 - Home talking = 265,36,10,0,233
Sat 1.5 (English) muffins(3slices) 401,79,3,5,792 with jam 166,41,0,1,18, water 0 - Home, talking = 567,120,3,6,810
Sun 3 weetbix 201,42,2,6,209 (with 1 milk) 146,11,8,0,98, water 0 - Home talking=347,53,10,6,307= 2144,305,74,25,2610

Morning Tea

Mon 2 lite biscuits(plain) 18,2,0,0,32- School
Fri 2 lite biscuits(plain) 18,2,0,0,32- School
Sat apple(1) 80,21,0,4,2, custard 206,32,6,198 in a bowl - Home, talking 286,53,6,10,200
Sun apple(1) 80,21,0,4,2, grapes 110,29,0,1,3 - Home, talking = 190,50,0,5,5 = 512,107,6,15,269

Lunch

Mon 3 slices 239,46,3,2,612 vegemite 57,4,0,1,1296 sandwiches, small bowl grapes 110,29,0,1,3; 1 roll-up 50,12,1,0,55 - School = 456,91,4,4,1966
Fri 3 slices 239,46,3,2,612 vegemite 57,4,0,1,1296 sandwiches, 2 slices watermelon 46,12,0,1,2; 1 roll-up 50,12,1,0,55 - School = 392,74,4,4,1965
Sat 2 salad rolls 430,48,24,2,580, water 0 - Home, talking = 430,48,24,2,580
Sun 2 salad rolls 430,48,24,2,580, water 0 - Home, talking = 430,48,24,2,580= 1708,261,56,12,50791

Afternoon Tea

Mon Handful of peanuts 165,6,14,2,230, watermelon 46,12,0,1,2 - Home, talking = 211,18,14,3,232
Fri 1 mango 134,35,1,4,4, small plate of chips 137,12,8,0,200, peanuts 165,6,14,2,230 - Home, watching TV & talking = 436,53,23,6,434
Sat Piece of chocolate cake 196,30,8,1,173, strawberries 23,6,0,1,1, water 0 - Friend's house, talking = 219,36,8,2,174
Sun apple(1) 80,21,0,4,2, small pkt chips 137,12,8,0,200 - Home, watching DVD = 217,33,8,4,202 = 887,472,47,15,1042

Evening Snack

Mon Nil - Home =0
Fri Nil - Home =0
Sat Nil - Home =0
Sun Nil - Home =0 = 0

*** Numbers signify the nutritional values of that food in the following order: Calories, Carbohydrates g, Fat g, Fibre g, Sodium mg**

Food Diary Time 3

Breakfast

Mon 3 crumpets *270,60,0,3,840 with peanut butter 564,21,48,8,468, glass water 0 - talking = 834,81,48,11,1308
Fri 2 English muffins(4slices) 534,105,4,6,1056 with peanut butter 751,28,64,10,624, glass of water 0 - Home, talking with family = 1285,133,68,16,1680
Sat 2 English muffins (4slices) 534,105,4,6,1056 with peanut butter 751,28,64,10,624, water 0 - talking 1285,133,68,16,1680
Sun Nutrigrain 120,28,0,2,227 with 1 milk 146,11,8,0,98, glass of water 0 - Home, talking with family = 266,39,8,2,325 =3670,386,192,45,4993

Morning Tea

Mon Small pkt chips 137,12,8,0,200; 1 roll up 50,12,1,0,55; 2 sweet biscuits 106,14,4,0,174- School = 293,38,13,0,425
Fri Small pkt chips 137,12,8,0,200; 2 tim tams 190,24,10,0,65, banana 128,30,0,3,2 - School = 455,66,18,3,267
Sat Mandarin(1) 53,13,0,2,2; 1 roll-up 50,12,1,0,55, glass water 0 - Home, talking = 103,25,1,7,57
Sun Water 0 - Football club, playing football = 0 =851,125,32,10,749

Lunch

Mon 3 slices bread 239,46,3,2,612 with vegemite 57,4,0,1,1296 & cheese(1) 113,0,9,0,174, apple(1) 80,21,0,4,2 - School = 485,488,12,7,2084
Fri 3 slices bread 239,46,3,2,612 with vegemite 57,4,0,1,1296 & cheese(1) 113,0,9,0,174, apple(1) 80,21,0,4,2 - School = 485,488,12,7,2084
Sat 3 slices salad sandwiches(1.5) 323,36,18,2,435 water 0 - Home, after basketball = 323,36,18,2,435
Sun Hot dog(1) 204,0,18,0,620; 3 dim sims 265,30,12,3,1172 - Football club, after football = 469,30,30,3,1792 = 1762,1042,72,19,6395

Afternoon Tea

Mon apple(1) 80,21,0,4,2, muesli bar 176,29,5,2,100, water 0 - Home, before basketball training = 256,50,5,6,102
Fri 1 roll-up 50,12,1,0,55, box popcorn 190,38,2,8,2- Watching sister play basketball = 240,50,3,8,57
Sat Small pkt chips 137,12,8,0,200; 2 tim tams 190,24,10,0,65; 1 bottle Gatorade 50,14,0,0,110 - Home, after basketball = 377,50,18,0,375
Sun Meat pie 474,38,29,2,1260, small pkt potato chips 137,12,8,0,200, water 0 - Watching football = 611,50,37,2,1460 = 1484,200,63,16,1994

Evening Snack

Mon Home banana cake 179,30,5,1,166- Talking to family
Fri Nil - No response =0
Sat Nil - No response =0
Sun Nil - No response =0 = 179,30,5,1,166

Appendix A.19

Glossary Sample of Food & Drink Items with Nutritional Values and Assumptions

Item & nutritional values*	Item & nutritional values*	Assumptions
Bread	**Bakers Delight Bread**	**Bread**
White	1/6 81g Bakers Delight Twist	Unstated or 1 sandwich = 2 slices
4 slices *318,61,4,3,816	231,31,7,2,598	2 sandwiches = 4 slices
3 slices 239,46,3,2,612	http://www.cluboptislim.com.au/foods/food.php?category_id=38965&brand_id=49&food_id=200154&partner=	1 toast = 1 slice
2 slices 159,30,2,1,408	80g Bakers Delight Pullapart cheese & bacon 220,34,5,2,538	2 toasted sandwiches = 4 slices
1.5 pieces 119,23,2,1,306	http://www.cluboptislim.com.au/foods/food.php?category_id=38965&brand_id=49&food_id=73012&partner=	Unstated raisin bread = 1 slice
1 (30g) piece 80,15,1,1,204	**Cereals**	If bread type unstated = white assumed
½ slice 40,8,1,0,102	1 weetbix 67,14,1,2,70	Bakers Delight website
1 roll 45g 119,23,2,1,306	2 weetbix (36g) 134,28,1,4,139	http://www.cluboptislim.com.au/foods/category.php?category_id=50287&brand_id=49
2 rolls 239,46,3,3,2,612	3 weetbix 201,42,2,6,209	**Breakfast Muffins**
1 foccacia 30g 81,15,1,1,175	4 weetbix 268,56,2,8,279	If unstated muffin = breakfast muffin
2 foccacias 162,30,2,2,350	2 high bran weetbix 40g 143,22,2,7,162	Half muffin = 1 slice
1 60g pita bread 165,33,1,1,322	¾ 28g cornflakes 101,24,0,1,202	Unstated or 1 muffin = 2 slices
1 55g Turkish bread 130,0,1,0,0,0	1 cup 12g puffed wheat 44,11,0,1,1	1.5 muffins = 3 slices
1 med 57g croissant 231,26,12,2,424	¾ 33g rice crisps 118,28,0,0,319	2 muffins = 4 slices
57g (2) garlic bread 200,23,10,1,430	1 cup 233g porridge w water 128,22,2,4,105	**Cereals**
3 garlic bread 300,35,25,2,645	1 45g coco bombs 158,31,2,1,145	If weetbix amount unstated = 2
http://caloriecount.about.com/calories-wegmans-garlic-bread-i92633	http://caloriecount.about.com/calories-lowan-cocoa-bombs-i117301	Milk unstated with cereal = 1 cup whole milk assumed
1 slice French toast 126,19,4,1,292	1 30g coco pops 116,85,70,0,0	Cereal = around 30g serving size
1.5 French toast 189,29,6,2,438	http://www.livestrong.com/thedailyplate/nutrition-calories/food/kelloggs/coco-pops/	Unstated cereal = cornflakes
2 slices French toast 252,38,7,1,584	**Beverages**	Rice bubbles = puffed wheat
http://caloriecount.about.com/calories-french-toast-i18268?size=2	1 cup tea w 1 tsp sugar 5,0,0,0,0	**Eggs**
Wholemeal/ multigrain/ hi fibre	1 can 370ml coke 155,40,0,0,15	Unstated prepared eggs = poached
1 slice 36g 89,17,1,1,175	2 cans coke 310,80,0,0,30	Stated egg = 1 hard boiled
2 slices 178,34,2,3,350	3 cans coke 465,120,0,0,45	Stated eggs = 2 hard boiled
2.5 slices 223,43,3,4,438	1 glass 200ml coke 84,22,0,0,8	French toast = with 1 fried egg
3 slices 267,52,4,4,525	1 can 345ml diet coke 4,0,0,0,18	Egg served with bacon = fried
1 roll 45g 114,20,1,4,203	1 glass 200ml 2,0,0,0,10	Bacon & egg = ½ serve
http://www.livestrong.com/thedailyplate/nutrition-calories/food/woolworths/seeded-wholewheat-rolls/	1 24 fl oz Gatorade quencher 50,14,0,0,110	**Eggs**
Rye /black	http://caloriecount.about.com/calories-quaker-oats-gatorade-juice-i51	1 hard boiled (45g) 70,1,5,0,55
2 slices 32g 165,31,2,4,422	1 can 355ml fanta 190,52,0,0,70	1.5 hard boiled 105,2,8,0,83
3 slices 248,47,3,6,633	1 200ml glass fanta 107,29,0,0,39	2 hard boiled 140,2,10,0,110
Sourdough	http://www.livestrong.com/thedailyplate/nutrition-calories/food/fanta/orange-soda/	1 cup scrambled (220g) 367,5,27,0,616
1 slice 87,17,1,1,195	1 can 360ml lemonade 149,39,0,0,15	1 scrambled egg 85,1,6,0,90
2 slices 175,33,2,2,390	1 glass 200ml lemonade 83,22,0,0,8	2 scrambled (96g) 170,1,11,0,180
Raisin	1 lemonade spider 349,63,11,1,95	1 fried (46g) 90,0,7,0,94
1 toasted 24g 71,14,1,1,102	1 can 355ml diet lemonade 0,0,0,0,21	½ fried 45,0,4,0,47
2 toasted 142,27,2,2,204	http://caloriecount.about.com/calories-lemonade-i14293	2 fried 180,0,1,14,0,188
Breakfast Muffins	12oz cola slurpee 177,48,0,0,0	1 poached (50g) 77,1,5,0,62
4 slices 534,105,4,6,1056	http://www.thedailyplate.com/nutrition-calories/food/7-eleven/slurpee-coca-cola-classic-flavored	2 poached (100g) 154,1,10,0,124
3 slices 401,79,3,5,792	Med 580g fruit slushee 310,83,0,1,50	1 raw whole egg (48g) 70,0,5,0,68
2 slices 267,52,2,3,528	http://caloriecount.about.com/calories-sonic-lemon-berry-fresh-fruit-i56885	1 egg white (35g) 17,0,0,0,55
1 slice (57g) 134,36,12,264	1 200ml glass lime cordial 53,8,0,0,0	1 egg omelet (45g) 72,0,5,0,72
2 slices low fat 65g 140,28,1,1,270	http://caloriecount.about.com/calories-op-cordial-i73066	2 egg omelet 144,0,10,0,144
1 slice 63g multigrain 150,26,2,2,80		http://caloriecount.about.com/calories-eggs-ic0104
2 slices multigrain 300,52,4,4,160		**Beverages**
http://caloriecount.about.com/calories-dempsters-grainhouse-multigrain-english-muffins-i85109		Beverages 1 fl oz = 30ml
Crumpets		Food 1oz = 28.35g
1 crumpet 90,20,0,1,280		http://curezone.com/conversions.asp
2 crumpets 180,40,0,2,560		Tea = 1 tsp sugar assumed
3 crumpets 270,60,0,3,840		ml unstated drinks = 1 can
http://caloriecount.about.com/calories-trader-joes-crumpets-i111647		Unstated soft drink = lemonade
		Unstated or 1 glass juice = 200ml orange assumed
		Unstated or 1 glass drink = 200ml
		Small juice = 100ml orange assumed
		Unstated slurpee = cola
		Unstated cordial = lime diluted 200ml

* Numbers signify the nutritional values of that food or drink item in the following order: Calories, Carbohydrates g, Fat g, Fibre g, Sodium mg

Appendix A.20

Table 4.11

The Average Mean Activity Hours That the MEP and FWMP Family Members Undertook per Week at Time 1, 2, and 3

	MEP group			FWMP group		
Family members & activity habits	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*	Baseline T1 *M (SD)*	Post int. T2 *M (SD)*	Six month T3 *M (SD)*
Participating parents (MEP *n* = 13 FWMP *n* = 7)						
Physical activity	4.11 (2.63)	5.31 (2.60)	4.88 (3.19)	3.00 (2.36)	5.40 (3.94)	2.86 (2.98)
Nonphysical activity	19.09 (12.52)	22.36 (11.76)	21.04 (14.40)	18.26 (13.15)	14.18 (8.17)	13.00 (9.76)
Nonparticipating parents (MEP *n* = 13 FWMP *n* = 7)						
Physical activity	2.97 (3.45)	7.13 (4.80)	8.63 (6.77)	4.00 (3.43)	4.81 (4.18)	4.22 (4.28)
Nonphysical activity	24.35 (19.48)	19.93 (13.23)	21.04 (16.01)	30.17 (15.88)	25.66 (12.89)	16.17 (12.89)
Nonparticipating siblings (MEP *n* = 12 FWMP *n* = 7)						
Physical activity	6.85 (3.87)	7.80 (4.31)	12.08 (9.09)	6.03 (3.92)	6.49 (3.36)	6.17 (4.23)
Nonphysical activity	16.24 (6.44)	18.07 (6.40)	15.77 (6.49)	22.26 (14.77)	16.71 (10.39)	14.48 (9.40)

Appendix A.21

Table 4.14

Test of Sphericity Data for Behavioural and Psychological Data

Measure / Behaviour	Mauchley's Test of Sphericity *p**
PC[a] (*n* = 21)	
Eating & Activity Questionnaire	
Activity data	
Physical activity hours	0.523
Nonphysical activity hours	0.425
Eating behaviours	
Eating pace	.000*
Asked for second helpings	0.929
Dinner with family	0.211
Eating patterns	
Watching T.V.	0.578
When angry/ upset	.002*
When is bored	0.187
When is not hungry	.019*
Nutritional intake values	
Calories	0.339
Carbohydrates	0.923
Fat	0.081
Fibre	0.165
Salt	0.778
PC[a] Psychological Measures	
Delighted-Terrible Faces Scale	0.928
Self-Perception Profile for Children	
Global self-worth	.025*
Physical appearance	0.279
Athletic competence	0.945
Eating and Me III Scale	
Total scale of disordered eating	0.546

Bulimic eating	0.623
Body dissatisfaction	0.176
Food restriction	0.576
Children's Body Image Scale discrepancy with BMI scores	0.720
Health Self-Determinism Index Intrinsic-extrinsic orientation	
Competency in health matters	0.367
Self-determination health goals	0.788
Health judgement	0.823
Internal-external cue responsiveness	0.282

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*Assumption of sphericity violated if $p = < .05$

Table 4.14 (*continued*)

Measure / Behaviours	Mauchley's Test of Sphericity *p**
PP[a] (*n* = 20)	
Family Members' Eating & Activity Questionnaire	
Activity data	
Physical activity	.004*
Nonphysical activity	0.865
Eating behaviours	
Eating pace	.001*
Second helpings	0.302
Dinner with the family	0.081
Eating patterns	
Watching T.V.	0.954
When angry/ upset	0.759
When is bored	0.447
When is not hungry	0.139
PP[a] stages-of-change & psychological data	
Stages-of-change	0.457
Supporting healthier food options	0.160
Supporting increasing physical activities	.029*
Supporting decreasing nonphysical activities	0.466
Rosenberg Self-esteem Scale	0.537
Beck Depression Inventory shortform	0.139

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*p = < .05

Table 4.14 (*continued*)

Measure / Behaviours	Mauchley's Test of Sphericity *p**
NPP[a] (*n* = 20) Family Members' Eating & Activity Questionnaire	
Activity data	
Physical activity	0.172
Nonphysical activity	0.823
Eating behaviours	
Eating pace	0.068
Second helpings	.022*
Dinner with the family	0.463
Eating patterns	
Watching T.V.	0.568
When angry/ upset	0.086
When is bored	.038*
When is not hungry	0.443
NPC[a] (*n* = 19) Family Members' Eating & Activity Questionnaire	
Activity data	
Physical activity	0.279
Nonphysical activity	0.779
Eating behaviours	
Eating pace	0.757
Second helpings	0.749
Dinner with the family	0.857
Eating patterns	
Watching T.V.	0.790
When angry/ upset	0.682
When is bored	0.212
When is not hungry	0.967

[a]PP = Participating Parents; NPP = Nonparticipating Parents; PC = Participating Children; NPC = Nonparticipating Sibling Children
[b]The assumption of sphericity was violated, therefore the Greenhouse-Geisser adjustment was used.
*p = < .05

Appendix B.1

Table 5.1

Study 2 Baseline Demographic Differences Between the Intervention and Withdrawn Participating Parents and Children

Demographics	Intervention PP[a] (*n*=14) %	Withdrawn PP[a] (*n*=14) %	*p**	Intervention PC[a] (*n*=15) %	Withdrawn PC[a] (*n*=15) %	*p**
M age-yrs/ mths	42.4	38.6	0.03	9.4	9.5	0.78
Sex (female)	100.0	100.0		40.0	26.7	
Sex (male)	0.0	0.0		60.0	73.3	
M height (m)	1.6	1.7	0.19	1.4	1.4	0.83
No response					7.1	
M weight (kg)	73.2	77.5	0.41	44.9	49.1	0.31
No response		14.3				
M BMI[b] (kg/m)	27.7	28.2	0.82	21.7	23.7	0.18
M BMIz				1.6	1.9	0.26
No response		14.3				
Organiser food						
PP	85.7	78.6				
Both parents	14.3	21.4				
Organiser exerc						
PP	28.6	78.6				
Both parents	64.3	21.4				
Language						
English	100.0	92.9		100.0	86.7	
Eng/ Sinhala		7.1			13.3	
Country of birth						
Australia	78.6	85.7		93.3	100.0	
England	7.1	7.1				
Germany	7.1					
Italy	7.1					
Sri Lanka		7.1				
Marital status						
Married	92.9	78.6				
Defacto	7.1	7.1				
Single		4.3				

[a] PP = Participating Parents; PC = Participating Children

[b]BMI-for-age was calculated for the children

*$p < .05$

Table 5.1 (*continued*)

Demographics	Intervention PP[a] (*n*=14) %	Withdrawn PP[a] (*n*=14) %	*p**	Intervention PC[a] (*n*=15) %	Withdrawn PC[a] (*n*=15) %	*p**
Education level Preschool						
Prep						
Year 1				6.7		
Year 2				13.3		
Year 3				6.7	26.7	
Year 4				46.7	40.0	
Year 5				13.3	20.0	
Year 6				13.3	13.3	
Secondary	14.3	14.3				
TAFE/Dip	35.7	64.3				
Undergraduate	21.4	7.1				
Postgraduate	28.6	14.3				
Child resides with Both parents				100.00		
Shared care					86.7	
Mother only					6.7	
No. of siblings 0				13.3	20.0	
1				60.0	53.3	
2				20.0	20.0	
3					6.7	
>4				6.7		
Place in family 1st				66.7	66.7	
2nd				26.7	26.7	
3rd					6.7	
4th						
5th				6.7		
Occupation Admin	28.6	21.4				
Home duties	21.4	21.4				
Medical	14.3	21.4				
Professional	28.6	21.4				
Student	7.1	14.3				

Table 5.1 (*continued*)

Demographics	Intervention PP[a] (*n*=14) %	Withdrawn PP[a] (*n*=14) %	*p**	Intervention PC[a] (*n*=15) %	Withdrawn PC[a] (*n*=15) %	*p**
Occupation status						
Fulltime	28.6	42.9				
Part-time	71.4	50.0				
No response		7.1				
Occupation paid hours						
Nil		7.1 (home duties)				
< 20 hrs	14.3	21.4				
20 - 30 hrs	50.0	21.4				
> 30 hrs	14.3	21.4				
No response	21.4	28.6				
Annual income level						
Under $15000	35.7	42.9				
$15,001-$40,000	35.7	50.0				
$40,001-$80,000	21.4	7.1				
Over $80,001						
No response	7.1					

[a]PP = Participating Parents; PC = Participating Children

Appendix B.2

Study 2 Information Sheet and Consent Form

PARTICIPANT INFORMATION SHEET

Project Title: Weight Management Strategies for Children: The role of Parent-facilitated Motivational Interviewing

Researchers

Marie Anderson, Psychologist, Doctor of Health Psychology student in the School of Psychological Science, La Trobe University. Supervised by:
Dr Lynette Evans, Senior Lecturer, School of Psychological Science, La Trobe University
Prof. Susan Paxton, Professor, School of Psychological Science, La Trobe University

Project Aims

The general aim of this project is to investigate the effectiveness of a motivational enhancement program on children's health behaviours, self-esteem, mood, and body image through the participation of their parents in the program.

Individual Interviews Study 2

Study 1 involved parents' participation in an 8 session intervention program designed to address childhood weight problems. Study 1 also involved parents' participation in a focus group to provide feedback about their experiences in a program. Study 2 involves parents' participation in a one-off individual 30-40 minute, personal or telephone based audio-taped interview to identify factors on how to best support parents to support their children to change their health behaviours. Parents who participated in a motivational enhancement program or were unable to commence or complete a program will be invited to take part in Study 2. Participation also involves completing a series of questionnaires only once. This excludes those parents who have already completed questionnaire packs. Each questionnaire pack will take approximately 40-60 minutes to complete and includes details on family demographics, the family's eating and activity patterns, information about mood, self-esteem, and body image, and a 4 day food/ activity diary for the child.

Confidentiality

All information provided will be kept confidential as identifying information will only be on the coded consent forms, and questionnaires will only be identified by the participant code. Consent forms will be filed separately from the coded questionnaires in Dr Evan's University office. The audio recording of the interview will be transcribed using codes for individuals and then destroyed. Although the overall results of this study may be reported in a thesis, presented at conferences, and published in scientific journals, you will not be identified in any way. You are free to withdraw from the study at any time. If you would like a summary of the final results of this study, you may inform us of this at any time.

Consent

Should you choose to participate in this study, please sign and return the researcher's copy of the Informed Consent. If you have any questions about this research project or

if you are distressed following completion of the interview, please contact Dr Lynette Evans on (03) 9479 1674, email: l.evans@latrobe.edu.au or Dr Susan Paxton on (03) 9479 1736, email: s.paxton@latrobe.edu.au. If you have any concerns, queries, or complaints that the researcher has not been able to answer to your satisfaction, you may contact Faculty Human Ethics Committee, La Trobe University, Kaye Collins, 9479-3698.

INFORMED CONSENT
Weight Management Strategies for Children:
The Role of Parent-facilitated Motivational Interviewing
(Participating **Parent's** Copy)

I……..…… consent to taking part in study 3 as described in the informed consent, which involves participating in an individual, audio-taped, 30-40 min interview to identify factors on how to best support parents to support their children to change their health behaviours. I understand my rights as a participant in this research. The objectives and procedures of the study have been explained and I understand them. I have been advised that the results of the research may be published but that my personal details will remain confidential. I voluntarily consent to participate and I understand that I may withdraw my participation from the study at any time.
Participating Parent Name…… Signature…… Date……

Researcher……. Signature…… Date……

ID No:……

Weight Management Strategies for Children:
The Role of Parent-facilitated Motivational Interviewing
(Statement of Informed Consent - **Researcher's** Copy)

I……..…… consent to taking part in study 3 as described in the informed consent, which involves participating in an individual, audio-taped, 30-40 min interview to identify factors on how to best support parents to support their children to change their health behaviours. I understand my rights as a participant in this research. The objectives and procedures of the study have been explained and I understand them. I have been advised that the results of the research may be published but that my personal details will remain confidential. I voluntarily consent to participate and I understand that I may withdraw my participation from the study at any time.

Participating Parent Name…… Signature…… Date……

Researcher……..… Signature…… Date……

THANK YOU for your time and your willingness to participate in this study.
PLEASE TEAR ALONG THE DOTTED LINE AND RETURN THE BOTTOM SECTION OF THIS PAGE IN THE REPLY-ADDRESSED ENVELOPE

Appendix B.3

Study 2 Health Behaviour Questionnaire

Please circle the number in the column that you think best shows your response to each of the following statements, which relate to the **PARTICIPATING PARENT** or the **PARTICIPATING CHILD**. Note: there are no correct answers. We are only interested in what you do or think.

1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always

1. I am concerned about my child's weight	1	2	3	4	5
2. I think my child is overweight or obese	1	2	3	4	5
3. I am concerned about my child's eating and or activity health behaviours	1	2	3	4	5
4. My child eats more than s/he should	1	2	3	4	5
5. My child eats less than s/he should	1	2	3	4	5
6. My child prefers foods high in salt, fat, sugar, and low in fibre	1	2	3	4	5
7. I think my child eats a balanced diet from the pyramid food group	1	2	3	4	5
8. My child needs support to select healthy food choices	1	2	3	4	5
9. My child is more active than s/he should be	1	2	3	4	5
10. My child is less active than s/he should be	1	2	3	4	5
11. My child prefers nonphysical activities	1	2	3	4	5
12. I think my child's level of physical activity is satisfactory	1	2	3	4	5
13. My child needs support to undertake physical activities	1	2	3	4	5
14. I discuss with my child the importance of healthy eating and exercise	1	2	3	4	5
15. I avoid addressing weight or health behaviour change with my child because:					
I don't want to single him/ her out from other children or siblings	1	2	3	4	5
I'm not sure how to deal with resistance from my child	1	2	3	4	5

I don't think it's fair the other siblings have to change their behaviours 1 2 3 4 5

Other children/ siblings tease my child if discussions or change occurs 1 2 3 4 5

I'm unsure how to discuss healthy behaviour change with my child 1 2 3 4 5

16. I have wondered whether addressing weight or health behaviour change with my child might lead to eating, self-image, or self-esteem problems 1 2 3 4 5
17. Planning healthy meals is a priority in my daily and or weekly schedule 1 2 3 4 5
18. I plan healthy meals most days 1 2 3 4 5
19. I have limited time to plan healthy meals 1 2 3 4 5

    Please explain:…….....

    …….....
20. The child's other parent and I have different views about eating and activity habits/ behaviours and this gets in the way of supporting our child to change 1 2 3 4 5

    Please explain:…….....

    …….....
21. The child's other parent avoids discussing health behaviour change 1 2 3 4 5
22. The child's other parent is supportive about health behaviour change 1 2 3 4 5
23. I am aware how my and the other parent's eating and activity habits/ behaviours influence our child's habits/ health behaviours 1 2 3 4 5
24. If I had to change my eating and activity habits/ behaviours to support my child to change his or her habits/ behaviours:

    I feel confident that I would be able to change 1 2 3 4 5

    I feel it's important for me to change my habits to support my child 1 2 3 4 5

    I feel ready to change my habits to support my child

1 2 3 4 5

25. I think changing my habits wouldn't make a difference to my child's habits

1 2 3 4 5

26. I would attend a program to support my child to change health behaviours

1 2 3 4 5

27. If a program was offered, & taking my circumstances into account, I would attend an eight session program. Sessions run for 90mins each & conducted weekly (day or evening) 1 2 3 4 5

Please explain:…….....

…….....

28. I would encourage the child's other parent to participate in the program:

With me	1	2	3	4	5
Instead of me	1	2	3	4	5
Separate programs	1	2	3	4	5
Prefer not to involve other parent	1	2	3	4	5

Please explain:…….....

…….....

29. I would encourage my child to participate in the program:

With me	1	2	3	4	5
Instead of me	1	2	3	4	5
Separate programs	1	2	3	4	5
Prefer not to involve child	1	2	3	4	5

Please explain:…….....

…….....

Appendix B.4

Interview Schedule for Parents who Participated in an Intervention

Study 2 Questionnaire: Post MEP Participation Feedback Interview

Questions relate to the **PARTICIPATING PARENT** or **CHILD**. Record the answers to the open questions and encourage elaboration of parents' responses, e.g., "You mentioned …. Tell me more about this". Inform parents that there are no correct answers. Note that questions 7, 15, 16, 20, 21, 22, and 23 refer to parents' responses on the Study 2 Health Behaviour Questionnaire, which they completed prior to the interview. Please ensure you have this questionnaire available for the interview.

Date of interview:…….

1. What prompted you to inquire about the parent facilitated weight management program?…….....
.....

2. After your inquiry, was there anything that almost discouraged you or prevented your participation in a program?…….....
…….....

3. What factors supported your participation and attendance in a program?
…….....
.....

For questions 4 and 5, please circle the number in the column that the parent thinks best shows their response according to the scale.

1 = never 2 = rarely 3 = sometimes 4 = often 5 = always

4. Prior to the program you were concerned about your child's weight 1 2 3 4 5
5. Prior to the program you thought your child was overweight or obese 1 2 3 4 5
6. If any, what concerns did you have about your child's weight prior to the program?
.....

7. Please refer to questions 1 and 2 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that you are …… concerned about your child's weight and that …..… you think your child is overweight or obese. If any, what concerns do you now have about your child's weight? …….....
8. Prior to the program what did you think caused your child's weight concerns?

.....

.....

9. Having completed the program, what do you now think caused your child's weight concerns? …….....

.....

10. In the past, what help and from whom, did you seek due to concerns about your child's weight (include program inquiry)? .....

.....

11. In the past, what factors prevented you or made you reluctant to seek help? .....

.....

12. In what way has completing the program changed your views about seeking help about your child's weight concerns? .....

…….....

13. Please refer to questions 3 to 8 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that you are …… concerned about your child's eating and activity health behaviors, that your child …… eats more than s/he should and …..... eats less, …… prefers foods high in salt, fat, sugar, and low in fibre, …….. eats a balanced diet from the pyramid food group, and ……. needs support to select healthy food choices. How have these behaviours changed since commencing the program?

.....

.....

14. Please refer to questions 9 to 13 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that your child is …… more active than s/he should be and …… less active, …… prefers nonphysical activities, you …….. think your child's level of physical activity is satisfactory, and that your child …… needs support to undertake physical activities. How have these behaviours changed since commencing the program? ..

…….....

.....

15. What strategies, prior to and from the program, have worked or been helpful to change your child's health behaviours?

…….....

.....

16. What strategies, prior to and from the program, have not worked or been unhelpful in changing your child's health behaviours?

…….....

.....

17. What do you think might help your child change his/ her health behaviours?

.....

.....

18. Please refer to questions 14 to 16 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that you …… discuss with your child the importance of healthy eating and exercise and that you may avoid addressing weight or health behaviour change with your child for various reasons (remind parent of the reasons stipulated in Q. 15). How have these behaviours changed since commencing the program?

….....

.....

19. Please refer to questions 17 to 19 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that planning healthy meals is ……. a priority in your daily and or weekly schedule, that you …….. plan healthy meals most days, and that you …… have limited time to plan healthy meals. How have these behaviours changed since commencing the program?…….....

.....

20. Please refer to questions 20 to 23 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that the child's other parent and you have different views about eating and activity habits/ behaviours and this …….. gets in the way of supporting your child to change, that the child's other parent …… avoids discussing health behaviour change, that the child's other parent is …… supportive about health behaviour

change, and that you are …… aware how you and the other parent's eating and activity habits/ behaviors influence your child's habits/ health behaviours. How have these behaviours changed since commencing the program?…….

.....

.....

21. Please refer to questions 24 and 25 of the Study 2 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that if you had to change your eating and activity habits/ behaviours to support your child to change his or her behaviours you ……. feel confident that you would be able to change, you …….. feel it's important to change your habits to support your child, you …….. feel ready to change your habits to support your child, and you …….. think changing your habits wouldn't make a difference to your child's habits. How have these behaviours changed since commencing the program?

…….....

.....

22. As a parent, what are your needs in attempting to support your child to change his/ her health behaviours?…….....

.....

23. How have these needs changed since commencing the program?

…….....

.....

24. What type of program would support your needs?

…….....

.....

25. Any final comments?

…….....

Appendix B.5

Interview Schedule for Parents who Withdrew From an Intervention

Study 2 Questionnaire: Program Withdrawal Feedback Interview

Questions relate to the **PARTICIPATING PARENT** or **CHILD**. Record the answers to the open questions and encourage elaboration of parents' responses, e.g., "You mentioned …. Tell me more about this". Inform parents that there are no correct answers. Note that question 4 refers to parents' responses on the Study 2 Health Behaviour Questionnaire, which they completed prior to the interview. Please ensure you have this questionnaire available for the interview.

Date of interview:……

1. What prompted you to inquire about the parent facilitated weight management program?

…….....

.....

2. After your inquiry, what discouraged you or prevented your participation in a program?

…….....

.....

3. What factors would have supported your participation and attendance in a program?

…….....

.....

.....

4. Please refer to questions 1 and 2 of the Study 3 Health Behaviour Questionnaire and summarise the parent's responses. For example, "In summary, you mentioned that you are …… concerned about your child's weight and that …… you think your child is overweight or obese. If any, what concerns do you have about your child's weight? …….....

.....

.....

5. What do you think caused your child's weight concerns?

…….....

6. In the past, what help and from whom, did you seek due to concerns about your child's weight (include program inquiry)? .....

.....

7. In the past, what factors prevented you or made you reluctant to seek help?

.....

.....

8. What strategies have worked or been helpful to change your child's eating and or activity health behaviours?

.....

.....

9. What strategies have not worked or been unhelpful in changing your child's health behaviours?

.....

.....

10. What do you think might help your child change his/ her health behaviours?

.....

.....

.....

11. As a parent, what are your needs in attempting to support your child to change his/ her health behaviours?…….....

.....

.....

12. What type of program would support your needs?

…….....

.....

13. Any final comments?

…….....

…….....

Appendix B.6

Table 5.3

Study 2 Non Significant Results

Measure / Behaviour	t-test score
PC[a] Eating & Activity Questionnaire	
Activity data	
Physical activity hours	$t(27) = -.31$, $p = .757$, $\eta^2 = -.00$
Nonphysical activity hours	$t(28) = 1.69$, $p = .102$, $\eta^2 = .06$
Eating behaviours	
Eating pace	$t(28) = .53$, $p = .601$, $\eta^2 = .02$
Asked for second helpings	$t(28) = .00$, $p = 1.00$, $\eta^2 = 0$
Dinner with family	$t(28) = -1.39$, $p = .176$, $\eta^2 = -.05$
PC[a] Psychological Measures	
Delighted-Terrible Faces Scale	$t(28) = .47$, $p = .643$, $\eta^2 = .02$
Self-Perception Profile for Children	
Global self-worth	$t(27) = -.01$, $p = .992$, $\eta^2 = -.00$
Physical appearance	$t(27) = 1.39$, $p = .176$, $\eta^2 = .05$
Athletic competence	$t(27) = .49$, $p = .626$, $\eta^2 = .02$
Eating and Me III Scale	
Total scale of disordered eating	$t(28) = -.54$, $p = .591$, $\eta^2 = -.02$
Bulimic eating	$t(28) = .37$, $p = .714$, $\eta^2 = .01$
Body dissatisfaction	$t(28) = -1.16$, $p = .258$, $\eta^2 = -.04$
Food restriction	$t(28) = 1.36$, $p = .183$, $\eta^2 = .05$
Children's Body Image Scale discrepancy with BMI scores	$t(27) = -1.39$, $p = .176$, $\eta^2 = -.05$
Health Self-Determinism Index Intrinsic-extrinsic orientation	
Competency in health matters	$t(27) = 1.11$, $p = .278$, $\eta^2 = .04$
Self-determination health goals	$t(27) = 1.29$, $p = .208$, $\eta^2 = .05$
Health judgement	$t(27) = .26$, $p = .797$, $\eta^2 = .01$

[a]PP = Participating Parents; PC = Participating Children
*$p = < .05$

Table 5.3 (*continued*)

Measure / Behaviours	t-test score
PP[a] Family Members' Eating & Activity Questionnaire	
Activity data	
Physical activity	$t(27) = .65$, $p = .523$, $\eta^2 = .03$
Nonphysical activity	$t(27) = 1.08$, $p = .289$, $\eta^2 = .04$
Eating behaviours	
Eating pace	$t(27) = .26$, $p = .770$, $\eta^2 = .01$
Second helpings	$t(27) = -.28$, $p = .786$, $\eta^2 = -.01$
Dinner with the family	$t(27) = -1.12$, $p = .273$, $\eta^2 = -.05$
PP[a] stages-of-change & psychological data	
Stages-of-change	$t(26) = .00$, $p = 1.00$, $\eta^2 = 0$
Supporting healthier food options	$t(26) = 1.79$, $p = .084$, $\eta^2 = .06$
Supporting increasing physical activities	$t(26) = .00$, $p = 1.00$, $\eta^2 = 0$
Supporting decreasing nonphysical activities	$t(26) = -1.44$, $p = .162$, $\eta^2 = -.06$
Rosenberg Self-esteem Scale	$t(26) = -.59$, $p = .564$, $\eta^2 = -.02$

[a]PP = Participating Parents; PC = Participating Children
*$p = < .05$

Appendix B.7

Table 5.5

The Main Similarities and Differences Between the Intervention and Withdrawn Groups

Major Theme / Category / Sub-category	Similarities between the Intervention and Withdrawn groups	Differences between the groups
Theme 1: Barriers to supporting change and help-seeking		
Recognizing health behaviour problem		
Weight concerns	•Almost all parents recognised their children had weight concerns. •Average BMI was in overweight range for both parent groups.	•Withdrawn parents' and children's mean BMIs were higher than the Intervention parents' and children's BMIs respectively.
Unhelpful eating & activity patterns	•All parents recognised that their children displayed unhelpful eating and activity behaviours.	•More Withdrawn parents had children who had been over eating from a young age, who were emotional overeaters, made unhelpful food choices, exercised less, and were large for their age. •One Withdrawn child had major health risks due to being overweight.
Genetics	•Genetics and family behaviours were identified problems for both groups.	
Recognizing impediments to supporting change		
Harm to children	•Most parents expressed fear of causing emotional harm or eating problems to their children.	•A Withdrawn parent withdrew after the first session because her son felt insecure about her participation.
Finances Time Effects on other family members		•Finances and time were barriers for more Withdrawn parents. •Effects on other family members were impediments for more Intervention parents.
Self-ambivalence/ Overwhelming	•Most parents felt ambivalent and overwhelmed about addressing health behaviour change.	•A Withdrawn parent withdrew because she wanted her child to attend without her.
Ambivalence from others	•Parents from both groups felt judged, sabotaged, and unsupported by family and friends.	

Table 5.5 (*continued*)

Major Theme / Category / Sub-category	Similarities between the Intervention and Withdrawn groups	Differences between the groups
Ambivalence from child	•Parents from both groups complained that their children did not take accountability for their own health behaviours.	
Unhelpful thinking patterns and behaviours	•All parents identified unhelpful thinking patterns and behaviours that got in the way of supporting change.	
Statistical differences		•Withdrawn parents were significantly more depressed than Intervention parents. •Withdrawn children's mean physical appearance esteem was lower than Intervention children's esteem. •Intervention children restricted their food intake more than Withdrawn children. •Intervention children were significantly more intrinsically responsive to internal cues of health behaviour change.
Barriers to help-seeking		
Time	•Time to seek help was a barrier to both groups.	
Denial and fears		•Twice as many Intervention parents expressed being in denial about their children's health behaviours.
Uncertainty and health professionals	•Uncertainty about what to do and where to go, and being put off by health professionals, was common to both groups.	
Impediments to program attendance and adherence		
Time and babysitting	•Family restrictions for program attendance or adherence was evident in both groups.	•More Withdrawn parents had time and babysitting restrictions.
Health Location Child issues		•Only Withdrawn parents reported adverse health, location, and child impediments.

Table 5.5 (*continued*)

Major Theme / Category / Sub-category	Similarities between the Intervention and Withdrawn groups	Differences between the groups
Theme 2: Motivation to inquire and participate	•High importance and confidence to inquire was evident from both groups due to concerns about their children's health behaviours.	•Intervention parents' high confidence to attend was evident because the location, day and time worked; support from husbands; and the child's exclusion was agreeable. •Withdrawn parents' inquiries were motivated by a need for reassurance •Withdrawn parents' low confidence to participate included location, health, babysitting, and time restrictions. •Withdrawn parents' low importance to participate was evident from parents' non committed inquiries and those who wished to send the child.
Statistical differences		•Intervention stages-of-change showed greater motivation to decrease children's nonphysical activities. Intervention children's nonphysical activity results showed they undertook more sedentary behaviours than Withdrawn. •Withdrawn stages-of-change showed greater motivation to influence children's healthy food options. Withdrawn children and parents ate less often together compared to Intervention.
Theme 3: What has changed post MEP		
Changed eating and activity behaviours		•All Intervention parents reported changed eating and or activity behaviours in their children.
Changed thinking patterns and behaviours		•All Intervention parents reported changed thinking patterns and behaviours.
Changed husband		•After MEP most Intervention parents reported positive examples of husbands' support.
Theme 4: Confidence for help-seeking and supporting change		

Table 5.5 (*continued*)

Major Theme / Category / Sub-category	Similarities between the Intervention and Withdrawn groups	Differences between the groups
Help-seeking and supporting change	•Most Intervention parents' confidence to seek help and support change increased after MEP. •Most Withdrawn parents demonstrated confidence to seek help and support change in the past.	•Withdrawn parents had been instigating strategies prior to their inquiries but acknowledged gaps in their confidence to support change. •More Withdrawn parents expressed a desire for their children to take accountability for behaviour change.
Theme 5: Recommendations to support parents		
Parent coaching	•Intervention parents expressed a need for follow-up and intermittent ongoing support after MEP. •Withdrawn parents recognised a need for coaching because they felt ill equipped to support change.	•Intervention parents' suggested continuing the group programs, summarizing the MEP strategies, including nutrition information, and family involvement. •Withdrawn parents suggested understanding health behaviour change, involving husband, group programs, BMI and nutrition information, and programs that increase parents' motivation.
Child coaching Community/school Websites & books		•More Withdrawn parents suggested involving the child and running community/school based programs.
Shorter program Location		•Only Withdrawn parents requested shorter programs in suitable locations.

Appendix B.8

Table 5.6

Intervention Parents' Feedback Associated With Theme 3 "What Changed After MEP"

Category	Results
Changed eating behaviours	•After MEP, the Intervention parents identified that their participating children were: • Eating less (P5MW1, P28MW1, P58MW1) • Eating more balanced meals (P10MW1i, P13MW1i, P21MW1i, P25MW1ii, P30MW1i, P58MW1) • Recognizing emotional eating (P5MW2, P25MW1i). •The feedback suggests that all of the Intervention children were more proactive in supporting changed eating behaviours (e.g., P62MW1). •The Intervention parents' cooking, food preparation, and shopping regime had also changed (P5MW3, P10MW2i, P13MW1i, P21MW1ii, P25MW1iii, P30MW1ii).
Changed activity behaviours	•After MEP, the Intervention parents identified that their participating children: • Engaged in activities more proactively (P5MW2, P10MW2, P13MW2, P21MW2, P30MW2) • Exercised more (P10MW2, P13MW2, P21MW2i, P25MW2, P28MW2, P30MW2, P58MW2). •The Intervention parents also increased their own activity levels (P21MW2ii) and supported physical activities more proactively (P25MW2, P58MW2).
Changed thinking patterns and behaviours	•A number of the Intervention parents accepted that supporting change was ongoing and could take time (P5MW3i, P10MW3i, P58MW3i). •Others noted that communication and involving the children helped to support change (P5MW3ii, P13MW3ii, P21MW3ii, P28MW3iii, P30MW3ii, P58MW3iii). •Some parents recognised that: • They are an agent-of-change (P5MW3iii, P10MW3ii, P13MW3i, P21MW3i, P25MW3i, P28MW3ii, P58MW3ii, P62MW3) • Fear or worry no longer impeded them from supporting change (P5MW3iv, P13MW3iii, P21MW3iii, P25MW3ii, P28MW3i, P30MW3i, P58MW3iv).
Changed husband	•The Intervention parents acknowledged that changes from their husbands included: • Greater communication, support, and collaboration (P5MWiv, P10MW4, P13MW4, P21MW4i, P25MW4, P58MW4, P62MW4i) • Changing their own health behaviours (P21MW4ii, P28MW4, P62MW4ii).