

Self-Determination Theory and Coaching: Toward Long-term Weight Loss in Overweight and
Obese Adults

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ABSTRACT

Obesity and overweightness are common challenges for middle-aged and older adults with 62% of Canadian men and 47% of Canadian women over the age of 45 being either obese (BMI \geq 30) or overweight (25 \leq BMI < 30). Being obese (especially) or overweight is associated with many negative health consequences including increased risks of high blood pressure, sleep apnea, high levels of cholesterol and triglycerides in the blood, as well as insulin resistance and diabetes. Unfortunately, significant weight loss is rarely achieved over the long-term with many adults making several unsuccessful attempts over the course of their lives. The most likely long-term outcome for people who lose weight is to regain all of it within five to six years, with many people gaining it back much sooner. Those who avoid regaining weight do so by controlling their food choices, taking part in physical activity, and/or by being constantly vigilant about their eating and exercise behaviours. This paper will explore the use of self-determination theory and coaching techniques as ways to help obese and overweight individuals to manage their weight and level of physical activity and reduce the risk of relapse.

Introduction

Rates of obesity, defined as having a body mass index (BMI) equal to or greater than 30 kg/m² (WHO, 2014), have been increasing across the globe throughout the late 20th and early 21st centuries (WHO, 2014). Increased rates of obesity have been documented in all developed countries as well as many developing and less-developed countries (WHO, 2014). Between 1980 and 2008, the worldwide rate of obesity doubled to 10 percent; meaning nearly 500 million adults were living with obesity in 2008 (Finucane, 2011). In 2012, one-third of Americans were obese; representing an increase of over 50 percent since 1980 (Flegal, Carroll, Kit, & Ogden, 2012). Canada's overall obesity rate, while lower than that seen in the US, has nonetheless been increasing at a similar pace. According to the Public Health Agency of Canada (2011), between 1979 and 2008 the obesity rate among adult Canadians increased from 14 percent to 25 percent. Similar increases are seen among older adult populations. The obesity rate among older Canadians, between the age of 60 and 74, more than doubled between 1986 and 2009, when it reached a rate of 31.9%. (Fakhouri, Ogden, & Carroll, 2012).

There are many health consequences related to obesity. For instance, obesity causes or further exacerbates high blood pressure, sleep apnea, high levels of cholesterol and triglycerides in the blood, as well as insulin resistance and diabetes (Araghi et al., 2013; Cameron & Zimmet, 2008; Kim & Popkin, 2006). Obesity places increased strain on cardiovascular and skeletomuscular systems resulting in an increased likelihood of developing heart and lung diseases as well as arthritis (Lucke et al., 2007). Obesity can result in significant hip and knee pain that limits mobility in activities of daily life like using stairs, walking, and taking mass transit (Lucke et al., 2007). Obesity is also a contributing factor in the development of several types of cancer including those of the breast, colon, prostate, endometrium, kidney, and

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gallbladder (Popkin, 2007). Increased BMI is positively correlated with increased risk for each of these cancers (Popkin, 2007).

The relationship between obesity and psychological disorders is also well established (Collins, Meng, & Eng, 2016). Obesity results in an increased likelihood of psychological disorders in both women and men regardless of age (Lin et al., 2013). Across numerous studies, obese individuals reported lower quality of life, poorer life satisfaction, and higher incidence of depression (Lin et al., 2013). Mood, anxiety, and various eating disorders such as binge eating and bulimia were among the most common psychological impacts associated with obesity (Collins et al., 2016). In a study by Collins et al. (2016), severely obese (BMI > 40) participants frequently reported high levels of anxiety and symptoms of depression as well as decreased quality of life. The relationship between obesity and psychological disorders is bidirectional. People with psychological disorders may develop obesity and people with obesity often develop psychological disorders (Collins et al., 2016).

As obesity rates have risen, prejudice about and discrimination against obese persons has increased (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008). Indeed, weight-based discrimination or bias has been found to be widespread and largely taken-for-granted (Puhl & Heuer, 2009). Fat individuals are viewed as lacking self-control, lazy, self-indulgent, and less competent than their normal weight peers (Puhl & Heuer, 2009). These biases are pervasive in western societies and lead to abject prejudicial bias against obese individuals in many settings, including medical and commercial situations (Fahs & Swank, 2017). Many research studies have found that medical professionals report working with obese individuals to be less rewarding than working with normal weight patients (Puhl & Heuer, 2009), which itself may lead to reduced levels of care for obese patients (Hebl & Xu, 2001). One study that examined discrimination in

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employment decisions found that participants, who were asked to select the best candidate for a managerial job, expressed more negative prejudicial thoughts about obese people than they did about other highly stigmatized populations like Muslims or members of the LGBTQ+ community (O'Brien, Latner, Ebner, & Hunter, 2013). Among women, only age is a more powerful stigmatizing marker than being perceived as fat (Andreyeva, Brownell, & Puhl, 2008). As a result of this stigma, obese individuals face ongoing discrimination throughout the life course in areas such as education, access to healthcare services, and employment (Puhl & Heuer, 2009). The psychological, physical, and economic consequences of this discrimination and bias are immense and include: increased risk of depression, reduction in self-esteem, increased body image dissatisfaction, development of protective eating behaviours (such as eating alone, eating in secret, and binge eating) decreased use of healthcare services, and lowered employment status (Amy, Aalborg, Lyons, & Keranen, 2006; Friedman et al., 2005; Puhl & Heuer, 2009; Puhl, Moss-Racusin, & Schwartz, 2007).

There is a growing awareness among government officials and healthcare providers that the individual health risks associated with obesity, when taken together, may have very large negative economic impacts on society (Thompson & Wolf, 2001). Being overweight and obese is associated with increased use of healthcare services, decreased economic productivity, and greater reliance on welfare and social payments (Thompson & Wolf, 2001). These economic impacts have driven the development of the popular discourse on obesity at national and international levels (Dobbs & Swinburn, 2015). Over the past 50 years, obesity has emerged as a gravely serious societal issue with obesity now perceived by governments as the single biggest threat to economic well-being and the health of their citizens (Dobbs & Swinburn, 2015). In some developing countries, ending the obesity epidemic is now a more pressing public health

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issue than hunger (Dobbs & Swinburn, 2015). These beliefs and perceptions about the societal risks posed by obesity contribute to the increased stigmatization of obese individuals by government agencies, medical professionals, and employers (Dobbs & Swinburn, 2015).

In response to these trends, innumerable health promotion programs and interventions, aimed at getting overweight and obese people to exercise more and make better food choices, have been developed (Stubbs & Lavin, 2013). Unfortunately, the overall rates of overweight and obesity have tended to either remain the same or to increase (Stubbs & Lavin, 2013). One reason for the lack of success of these programs has to do with attrition. One-quarter to one-half of participants in weight loss programs dropout before achieving significant reductions in their weight (Ekkekakis, Vazou, Bixby, & Georgiadis, 2016). Similarly, many programs are of short duration and, as a result, participants are often not adequately prepared for maintaining new eating and physical activity behaviours after program conclusion (Ekkekakis et al., 2016). Relapse often results due to the lack of preparation for long-term adherence to new behaviours (Ekkekakis et al., 2016). Most people who are successful in reducing their weight gain it all back within five years (Gaesser, 2009). The majority of people gain it back within the first year of program termination and many will regain even more weight than was originally lost (Ekkekakis et al., 2016; Stubbs & Lavin, 2013). Relapse rates after significant weight loss approach those for cigarette smoking or drug abuse – somewhere between 70 to 90 percent (Stubbs & Lavin, 2013).

The negative consequences of relapse extend beyond the regaining of weight. Many overweight and obese adults attempt to lose weight multiple times, with each attempt followed by a subsequent regaining of the weight lost (Ekkekakis et al., 2016). It is in this way that many overweight people progress from being merely overweight to eventually becoming obese (Owen-Smith, Donovan, & Coast, 2014). This cyclical process repeatedly exposes these individuals to

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stigmatization and discrimination as well as increased risk of developing obesity related illnesses and/or disability (Owen-Smith et al., 2014). These experiences can lead to increased social isolation, which further reduces overweight and obese individuals' participation in activities that might help them reach and maintain a more healthy weight (Owen-Smith et al., 2014). Given these risks to obese and overweight individuals, it is imperative that weight loss interventions focus on providing participants with the best chance at success at losing weight as well as avoiding relapse. People should have better prospects as a result of taking part in a weight loss intervention as opposed to suffering the dire consequences described.

In this paper I will review the application of a psychological theory of motivation called self-determination theory (SDT) and the use of coaching as part of weight loss and physical activity interventions targeted at obese and overweight individuals. I begin by providing a brief overview of weight loss interventions along with their key design considerations, including the use of coaching and SDT. Next, I will review the literature as it relates to SDT's application in supporting weight loss and increasing levels of physical activity. Following this, I will review the literature concerning the application of various types of coaching in weight loss interventions with a focus on a specific type of coaching called co-active life coaching (CALC). It is my objective to demonstrate that the application of SDT in combination with coaching will offer improved outcomes for obese and overweight individuals in their quest to lose weight and avoid relapse.

I use the terms exercise and physical activity interchangeably in this paper because that is how they are often used in the weight loss and coaching literature reviewed for my paper. As used in the literature reviewed, exercise and physical activity is performed at a moderate level of effort. Common indicators of a moderate level of physical activity include producing sweat and

an inability to carry on a conversation comfortably while performing the activity (Stubbs & Lavin, 2013). The physical activity literature reviewed for this paper consistently uses the term ‘physical activity’ to indicate activities that meet the World Health Organization’s definition of moderate physical activity. The World Health Organization (n.d.) recommends 150 minutes of moderate physical activity per week for all adults to maintain a healthy weight. Types of activities that meet this recommendation include brisk walking, cycling at a speed of about 11 miles per hour, and salsa dancing (World Health Organization, n.d.). In many cases they also use the word ‘exercise’ to mean the same thing.

Motivation, physical activity, and weight loss

Since physical activity and participation in deliberate regular exercise are highly correlated with both improved physical and psychological health, including lowered risk for obesity and overweight, numerous research studies have explored how to encourage and support obese and overweight people to change their eating and physical activity behaviours (Teixeira, Carraça, Markland, Silva, & Ryan, 2012). Generally, these studies have found that people are more successful in making significant changes in eating and physical activity behaviours when they see themselves as in charge of their eating and physical activity decisions and when they have the skills and knowledge needed to change their behaviours (Teixeira et al., 2012). Interventions that provided individuals with the opportunity to express their opinions about different forms of physical activity and food choices were more effective than interventions that prescribed diets and/or exercise regiments without regard for personal preferences (Teixeira et al., 2012). Similarly, interventions that provided education, training, and feedback as new behaviours were adopted were better at increasing levels of physical activity among overweight and obese individuals (Teixeira et al., 2012).

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One consequence of the increasing sedentary nature of modern life is that many adults may not feel competent enough to partake in exercise and other forms of physical activity (Ekkekakis et al., 2016). This is especially true for obese individuals as they may not think they are physically fit enough to exercise or that they have the required skills to do it well (Ekkekakis et al., 2016; Teixeira et al., 2012). This lack of confidence presents a formidable barrier to behavioural change for obese and overweight people. Indeed, the majority of people engaged in weight loss programs are habitually sedentary and unfit / physically incompetent (Ekkekakis et al., 2016; Stubbs & Lavin, 2013). Because of these factors, a significant proportion of overweight and obese individuals may not be motivated to take part in physical activity (Stubbs & Lavin, 2013).

Besides the initial motivation to change behaviours, there are several other factors that make changing eating and physical activity behaviours over the long-term especially difficult for obese and overweight individuals. These include the sheer level of effort needed to lose weight and keep it off and the tendency for the rate of weight loss to slow soon after a period of six months or so (Stubbs & Lavin, 2013). Additionally, the set of strategies and tools that worked initially become less effective as one succeeds in losing weight (Ekkekakis et al., 2016; Stubbs & Lavin, 2013, Teixeira et al., 2012). Without the motivation and the skills required to adapt new behaviours to these physiological challenges, the risk of relapse remains a significant concern (Stubbs & Lavin, 2013).

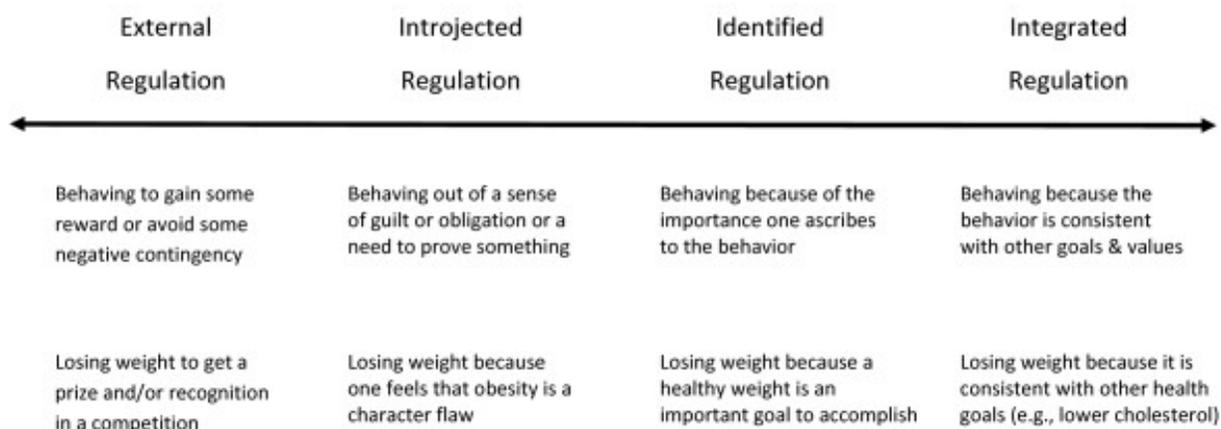
One method of supporting ongoing motivation to continue and adapt newly adopted physical activity and food choice behaviours is to apply self-determination theory (SDT) in the design and delivery of physical activity and weight loss interventions. Many research studies have published findings that support the application of self-determination theory (SDT) in

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interventions aimed at increasing physical activity and supporting weight loss (Deci & Ryan, 2000, 2008; Silva et al., 2010; Wilson, Mack, & Grattan, 2008). SDT maintains that there are two types of motivation – namely, extrinsic and intrinsic (Deci & Ryan, 2000, 2008). Extrinsic motivation refers to performing an activity for reasons related to a desired outcome, reward, or to avoid some negative consequence (Teixeira et al., 2012). For instance, someone may be extrinsically motivated to lose weight because they can purchase smaller sized clothes for an important event, be permitted to get knee replacement surgery, or avoid higher premiums for health insurance. Intrinsic motivation refers to performing an activity because the activity aligns with one's values or provides a sense of satisfaction or enjoyment (Teixeira et al., 2012). An intrinsically motivated person exercises because they value exercise as something worthy of expending time and potentially money to do. The ability to demonstrate competence and mastery of the activity provides them with a sense of accomplishment (Deci & Ryan, 2002, 2008). Intrinsic motivation is also expressed when individuals get a sense of enjoyment and pleasure from taking part in new behaviours (Deci & Ryan, 2002, 2008; Eynon, O'Donnell, & Williams, 2016; Hardcastle & Taylor, 2005).

As shown in the following figure, types of motivation are not as binary as the above discussion suggests. Rather, there is a continuum of motivational types ranging from those that are more extrinsic to those that are less extrinsic – that is – from controlling to increasingly more self-determined motivation types (Deci & Ryan, 2000; Patrick & Williams, 2012; Silva et al., 2010; Wasserkampf & Kleinert, 2015).

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The idea of a continuum stems from a sub theory of SDT called organismic integration theory (OIT) (Deci & Ryan, 2000; Patrick & Williams, 2012; Wasserkampff & Kleinert, 2015). The motivational continuum is made up of several distinct types of extrinsic and intrinsic regulation. For example, external motivation, or more precisely external regulation, represents the most extreme form of extrinsic motivation (Patrick & Williams, 2012). People who are externally motivated take part in activities to gain rewards from others, to avoid negative consequences, or to align with societal norms and expectations (Patrick & Williams, 2012; Silva et al., 2010; Wasserkampff & Kleinert, 2015). An example of external regulation is taking part in a weight loss program because one was instructed to do so by one's doctor. Introjected motivation / regulation refers to behaving out of a feeling of guilt, as a way of seeking praise, or as a way to prove something or to make a point (Patrick & Williams, 2012; Silva et al., 2010; Wasserkampff & Kleinert, 2015). Introjectedly motivated individuals act on a sense of morality or social responsibility. An example would be someone who exercises or diets because they feel they have let their partner down by being overweight or obese. Identified regulation refers to partaking in an activity because one genuinely sees value in the behaviour. In this case, one exercises or manages their diet because they value accomplishing the goals of being more active or weighing

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less (Patrick & Williams, 2012; Silva et al., Wasserkampf & Kleinert, 2015). They see these outcomes as important goals to accomplish. Integrated regulation or motivation refers to doing something because it is consistent with other important goals and values (Patrick & Williams, 2012; Silva et al., 2010; 2012; Wasserkampf & Kleinert, 2015). People demonstrate integrated regulation / motivation when they exercise not only to control their weight but also to support other goals such as reducing their cholesterol levels (Patrick & Williams, 2012). Finally, intrinsic motivation entails partaking in activities because they are enjoyable or pleasurable, genuinely interesting, and/or satisfying (Patrick & Williams, 2012; Silva et al., 2010; Wasserkampf & Kleinert, 2015).

Just as motivation is not simply extrinsic or intrinsic, one's motivation for any particular activity can change over time. The motivational continuum is dynamic and movement from one form of motivation to another results from a process called internalization (Wasserkampf & Kleinert, 2015). Internalization refers to the phenomenon by which one goes from relying on external regulators to participate in an activity to one where participation is increasingly a matter of personal choice or free will (Wasserkampf & Kleinert, 2015). One's motives for doing a particular exercise can reflect several different forms of motivation at the same time (Eynon et al., 2016; Hardcastle & Taylor, 2005; Patrick & Williams, 2012). For example, one can be motivated to exercise because they will get a lower premium on their extended healthcare insurance (external regulation) as well as because they value the outcomes of being in shape and physically fit (identified regulation).

A central idea of SDT is that sustained behavioural regulation and internalization of motivation is fostered when three basic psychological needs are satisfied. These basic needs are autonomy, competence, and relatedness. (Deci & Ryan, 2000, 2008; Patrick & Williams, 2012;

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Silva et al., 2010; Wasserkampff & Kleinert, 2015). Autonomy is demonstrated when one acts and behaves according to their own desires and wishes. Autonomous behaviour is aligned with one's sense of self as well as with one's values. Autonomy is essential for the internalization of behavioural regulation (Koestner & Losier, 2002; Silva et al., 2010). Many research studies have shown that motivations that reflect increasing levels of autonomy, that is, identified, integrated, and intrinsic motivations, lead to sustained behavioural change in weight management and exercise interventions (Silva et al., 2010). For example, ongoing participation in moderate to vigorous physical activity is the strongest predictor of long-term maintenance of one's weight following weight loss (Silva et al., 2010). One is more likely to continue doing activities that one either enjoys (indicating intrinsic motivations), activities that deliver direct outcomes one values like a smaller waist size (indicating identified motivations), or activities that bolster or support other outcomes such as improved social relationships (indicating integrated motivations) (Silva et al., 2010). It is easier to stay excited and interested in new behaviours that support a positive sense of well-being that may arise from doing things that are fun, help improve one's body image, and enhance friendships (Silva et al., 2010).

Competence refers to having a strong belief that one has the necessary skills and resources to achieve their goals. With competence supports, one develops mastery of new skills and interacts with their environment with confidence. Development of competence is supported by receiving instruction on how to perform a new activity, receiving feedback on one's recent performance of new activities, continuing to perform the activity over time, and varying the intensity and duration of one's performance (Deci & Ryan, 2002). For example, long-distance walking can be made more challenging by adding hills or be made more interesting by sometimes walking on a forest trail instead of in one's city neighbourhood. Although primarily

thought of as a psychological theory that focuses on individuals' beliefs and motives, SDT is also concerned about the social settings and contexts in which behavioural change is initiated and sustained, with the social setting having a large impact on the development of competency (Patrick & Williams, 2012). Strong feelings of competence have been correlated with increased levels of internalization, as people are more likely to enjoy and get pleasure from activities they can perform well (Silva et al., 2010).

Relatedness refers to having satisfying and supportive relationships. This can include relationships with family and friends, healthcare providers, and important others (such as coaches, personal trainers, and support networks like Weight Watchers) that one encounters in the pursuit of new goals (Silva et al., 2010). Although important to the overall sustainment of behavioural change, relatedness does not exhibit as strong a connection to the internalization of motives as autonomy or competence (Silva et al., 2010; Teixeira et al., 2012). For example, many people derive enjoyment and pleasure from solitary endeavours like long-distance running, cycling, swimming, etc., where autonomy and competence are critically important, but relatedness seems to be of little or no importance (Silva et al., 2010).

Application of SDT in weight loss and physical activity interventions

Self determination theory has been applied in many different types of health-related behavioural change studies including weight loss and exercise adoption (Teixeira et al., 2012). The emphasis of these interventions is on supporting each of the psychological needs – autonomy, competence, and relatedness – identified in SDT (Teixeira et al., 2012). When each of these needs is supported in the context of physical activity and weight loss interventions, people are less likely to be regulated by external contingencies (Patrick & Williams, 2012; Silva et al., 2010). Rather they are more likely to regulate their physical activity and weight loss behaviours

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based on more intrinsically based motives (Patrick & Williams, 2012) leading to a reduced risk of regaining weight (Ekkekakis et al., 2016).

Autonomy can be supported by ensuring that one's perspectives on new behaviours or activities are explored prior to specific recommendations related to physical activity or weight loss interventions being provided to them. Having one's thoughts taken into account demonstrates that their needs and concerns are central to the decision making process and this can lead to improved accountability for new behaviours (Patrick & Williams, 2012). For example, if a person does not like running, it is important that this is acknowledged and that other options for physical activity are explored. Autonomy can be supported during interventions by providing rationales for all recommendations, especially when the recommendations may not reflect the individual's stated priorities and values, but may warrant their consideration due to other factors they may not have considered up to that point. Engaging the individual in a conversation about these factors may reinforce the belief that they are central to the decision making process (Patrick & Williams, 2012). In this type of interaction it is important to minimize judgemental beliefs and statements related to the individual's choices and to give them time to reflect on how various options might support their values and goals (Patrick & Williams, 2012). Supporting the autonomy of an individual might include exploring how they will deal with the tensions that might arise between their commitment to behavioural change and other commitments they have to family, friends, and work. Acknowledging these other aspects of their lives and giving the individual a chance to express their perspectives on these potential conflicts can strengthen commitment and accountability for the desired behavioural change (Patrick & Williams, 2012).

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The literature also suggests that being optimistic and positive in one's conversations with individuals about their ability to successfully adopt and perform new behaviours will support development of competence (Patrick & Williams, 2012). Competence is further supported by providing feedback in positive ways rather than being judgemental (Patrick & Williams, 2012). For instance, Patrick & Williams (2012) suggest that lapses in behaviour regulation, such as failing to go to the gym or an episode of binge eating, be viewed as temporary setbacks in an ongoing story of success and achievement. Focusing on skill development, problem solving, and contingency planning have been found to bolster competence by preparing the individual to deal effectively with challenges before they are encountered (Patrick & Williams, 2012; Silva et al., 2010). One way to prepare individuals for anticipated challenges in adopting and maintaining new behaviours is a process called Implementation Intentions (Nigg & Durand, 2016). The use of Implementation Intentions involves working with the individual to develop a set of what-if scenarios whereby one decides how they will respond should potentially challenging scenarios occur in the future (Nigg & Durand, 2016; Sheeran, Harris, Vaughan, Oettingen, & Gollwitzer, 2013). In addition to supporting the need for competence, allowing the individual to provide input into the possible responses to each scenario will also support their need for autonomy (Nigg & Durand, 2016). Volition in choosing which activities to pursue and in what manner is also a requirement for the development of competence (Ryan, Patrick, Deci, & Williams, 2009). One scenario in which an individual might benefit from the use of Implementation Intentions is an unexpected conflict in scheduling between work and exercise commitments. For instance, a deadline gets moved up at work, which in turn limits or prevents the individual's ability to go the gym as planned. Using Implementation Intentions, this scenario is explored ahead of time and a suitable response is selected. One possible response to the conflict might be to go to the gym

either later the same evening or first thing the next morning. This type of upfront planning fosters competence and may help individuals avoid lapses in their ongoing success (Nigg & Durand, 2016).

Relatedness support includes ensuring individuals feel comfortable in their interpersonal relationships with intervention personnel and other program participants, if any, with whom they interact (Deci & Ryan, 2002, 2008; Patrick & Williams, 2012). Two examples of providing relatedness support are providing the option for women to use women-only exercise facilities and working with overweight or obese clients in private fitness studios instead of community recreation centres. Consideration of cultural values when developing interventions can also serve to support the need for relatedness (Patrick & Williams, 2012). For instance, consideration of religious beliefs when developing exercise and dietary recommendations is important when working with Muslim men and women. Fasting during Ramadan may place some limitations on how much physical activity can reasonably be accomplished as well as the types of food likely to be consumed (Shepard, 2103).

Effectiveness of SDT-based interventions on physical activity and weight loss

Self-determination theory has been used to inform many research studies with aims to positively bring about self-determined behavioural change related to physical activity and / or weight loss (Teixeira et al., 2012). Teixeira et al. (2012) conducted a systemic review of 66 experimental and cross-sectional studies that examined the effectiveness of SDT interventions on exercise and physical activity outcomes. The authors assessed the included studies in groups according to which variables or theoretical constructs were manipulated (experimental) and/or measured (experimental and cross-sectional). The groups were: self-regulation and related

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motivational measures, exercise-related psychological need satisfaction, exercise motives and related measures, perceived need support, and exercise causality orientations. The majority of the studies found there was a correlation between autonomous forms of motivation and sustained exercise behaviour. In their analysis of those studies that reported on participants' motivations, Teixeira et al. (2012) further concluded that while each discreet type of autonomous motivation was positively related to exercise behaviour, no one type was found to be the most effective in all situations. Nevertheless, Teixeira et al. (2012) singled out identified regulation as being the most important contributor to sustained exercise behaviour. As mentioned earlier, identified motivation / regulation exists when the activity is aligned to outcomes a person values.

Surprisingly, intrinsic motivation was not found to have as strong a positive correlation with sustained exercise behaviours as did identified motivation. Teixeira et al. (2012) offered several reasons for why this might be the case. First, they suggested that long-term regular exercise requires a high level of organization and commitment. Time must be allocated on a regular basis and conflicts between priorities must be resolved efficiently. This organizational and planning complexity increases when others are required to take part in the activity - for example, to play a sport like tennis, squash, or basketball. In these cases, conflicts can arise in many different ways, making the conflicts much more difficult to resolve. It seems that regulation stemming from identification with the outcomes of exercise, such as a smaller waist or better management of blood lipids, may be more important than exercising simply for fun or enjoyment. Second, being physically active on a regular basis often requires performing mundane or repetitive activities. For instance, performing Olympic style lifts on a regular basis could be experienced as mundane. Although the exercises are effective in promoting strength, there are only five different lifts that can be performed and they are always done the same way.

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Therefore, identification with the outcome (getting stronger) is more likely to be an important motivator as opposed to doing the exercise for fun and enjoyment. This does not mean that doing Olympic lifts cannot be experienced as fun or enjoyable; however, enjoyment is probably not what keeps one performing them. Lastly, the process of internalization itself may lead to the emergence of identified motivations as one persists in performing exercises or activities that produce outcomes that one learns to value – even in the absence of fun or pleasure (Teixeira et al., 2012).

Teixeira et al. (2012) concluded that it is important for health professionals to learn to recognize and distinguish between the various ways in which autonomous forms of regulation develop in their clients. As someone new to an activity begins to see value in the outcomes stemming from exercise, health practitioners should promote and reinforce the client's perceived value of these outcomes at every opportunity (Teixeira et al., 2012). Teixeira et al. (2012) also found that increased perceived competence was predictive of better adherence and outcomes related to exercise. Some people may start out engaging in exercise because a doctor referred them to a program. Initially, those people might report that they are motivated to participate because they perceive that they will become more attractive if they lose weight. However in the process of participating in physical activity and losing weight, they might come to value other outcomes such as improved confidence and skill in exercising or enjoyment from establishing new friendships with other program participants. These new motivations should be acknowledged and reinforced as a way to deepen their internalization, thus providing the best chance of maintaining long-term adherence (Teixeira et al., 2012).

Teixeira et al. (2015) completed a systematic review of the literature pertaining to the use of self-determination theory in weight loss interventions. The goal of this review was to identify

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mediators and predictors of successful, long-term, behaviour change in obesity interventions. Thirty-five studies were included in this review. Although the authors noted limitations in the diversity of study design and the reliance on self-reported measures of many of the variables of interest, they nonetheless found ample evidence of autonomous motivation, self-regulation skills, and flexible eating restraint to be predictive of longer-term and sustained weight loss. Each of these will be discussed in more detail in this section.

The use of self-regulation skills such as monitoring weight and food choices, goal setting, and overall planning skills were all positively correlated with successful weight loss outcomes, especially in the short-term effectiveness analyses included in the systematic review (Teixeira et al., 2015). Based on this result, Teixeira et al. (2015) suggest that these types of skills may be more important in the early stages of weight loss programs, while other motivational factors like internalization, that operate over longer timeframes and serve to sustain new behaviours, are more important for long-term adherence to behavioural changes. Flexible eating restraint refers to regulating food choices such that no specific foods are forbidden or subjected to overly rigid control. Rather, all food choices are considered according to their direct impact on energy balance (Teixeira et al., 2015). Flexible eating restraint was positively correlated with sustained weight loss and Teixeira et al. (2015) concluded that this eating restraint represents a form of values-based goal pursuit that permits some people to exercise self-determination over their food choices while avoiding weight gain in the long-term.

Long term adherence to new eating and physical activity behaviours is more likely to occur with interventions that support the development of self-regulation skills and more autonomous forms of motivations (Teixeira et al., 2012, 2015). Indeed, there may be a synergistic connection between autonomous motivations and self-regulation. Mata et al. (2011)

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found what they called a spillover effect between self-determined (autonomously motivated) exercise and eating self-regulation. In particular, Mata et al. (2011) found that increased levels of autonomous motivation in exercise pursuits facilitated improvements in eating self-regulation. Subsequent research (Annesi, 2013; Annesi, Johnson, Tennant, Porter, & McEwen, 2016; Annesi & Marenco, 2014) has also found evidence for this spillover effect. Other research (Annesi & Vaughn, 2017) has shown that improved self-regulation of diet is positively associated with increased levels of self-determination in exercise adherence – that is, this behavioural spillover is not unidirectional. Exercise regulation influences food regulation and vice versa.

Although research has not identified the psychological mechanism for the synergistic relationship between self-regulation skills and autonomous motivations, this spillover effect should be considered in the development of weight loss interventions (Annesi et al., 2016; Annesi & Vaughn, 2017). Fleig, Kerschreiter, Schwarzer, Pomp, & Lippke (2014) proposed that this cross-behaviour regulation is made possible because some self-regulatory resources are freed up when a behaviour becomes habitual or automatic. Once a new behaviour becomes a habit, self-regulation of that behaviour becomes highly efficient, thus freeing resources for use in regulating other behaviours. For instance, people who engage in habitual exercise have more resources available to regulate their food choices (Fleig et al., 2014). Fleig et al. (2014) also proposed that cross behaviour synergies result from the effective transfer of cognitive skills or strategies from one context (for example, adherence to exercise commitments) to another (for example, regulation of food choices) This transfer is affected by the application of self-regulatory strategies and tools like planning and goal setting learned in one domain (exercise) to another (eating). This finding provides support for developing interventions related to obese / overweight persons that focus on both physical activity and eating behaviours (Fleig et al.,

2014). Evidence for cross-behaviour regulation between physical activity and eating has been found in several other studies (Annesi, 2013; Annesi et al., 2016; Annesi & Marenco, 2014; Carraça et al., 2013; Fleig et al., 2015). Although each of these studies had limitations related to sampling and/or study duration, they nonetheless were able to show significant support for developing interventions based on both physical activity and eating.

Coaching and health behaviour

Much evidence has been provided in the previous sections of my paper regarding the efficacy of applying the tenets of SDT to foster improvements in weight-control and physical activity behaviours among overweight and obese individuals. As discussed, behaviours related to physical activity and eating regulation are not always independent. Positive change in one of these behaviours has been shown to mediate positive change in the other. Looking at obese and overweight populations, the evidence provided (Annesi, 2013; Annesi et al., 2016; Annesi & Marenco, 2014; Mata et al., 2011) elucidates how behavioural change, driven by self-determined motivations, can lead to improved levels of overall health as well as better maintenance of one's weight.

Access to various social supports during behaviour change has been found to aid long-term adherence to newly adopted health behaviours, including physical activity and weight loss (Verheijden, Bakx, van Weel, Koelen, & van Staveren, 2005). As used in the literature, the term 'social support' spans a wide range of functions and services including support from family and friends, access to a coach, formal instruction, peer-to-peer networking, and support from co-workers and employers (Verheijden et al., 2005). An important distinction is made between structural versus functional support. Structural support is the actual service or function provided within the intervention, such as including spouses or providing a wellness coach in weight loss

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interventions. Functional support refers to how this structural support is perceived by the individual (Verheijden et al., 2005). Depending on the circumstances, structural supports may have negative impacts on behavioural change, if these structural supports are not functionally supportive. For example, involving spouses in weight loss programs may be perceived negatively if one's spouse does not want to lose weight themselves and/or does not support one's own desire to lose weight (Verheijden et al., 2005). Hence, it is important to discuss structural supports with individuals prior to including them in interventions as the supports may or may not have the intended impact on one's behaviours (Verheijden et al., 2005).

In this section, I will describe the use of coaching as a structural support for overweight and obese individuals as they work to adopt and sustain new eating and physical activity behaviours. Where appropriate, I will also provide evidence as to how SDT informs the practice of coaching as it pertains to weight loss and physical activity. The term coaching is used in the literature to refer to many different practices and its definition is domain specific (Stelter, 2015). For my purposes, I will use Wolever et al.'s (2013) definition for coaching in health and wellness domains which says coaching is "a client-centered approach wherein clients at least partially determine their goals, use self-discovery or active learning processes together with content education to work toward their goals, and self-monitor behaviours to increase accountability, all within the context of an interpersonal relationship with a coach" (p. 52). Coaching, then, is a client-centered process in which the goals and preferences of the client serve as the starting point for enacting behavioural change. Additionally, the client is seen as an active participant in the coaching process. The client seeks out information and guidance from their coach, monitors and reflects on their own performance, and engages with their coach to maintain progress towards their goals (Stelter, 2015). The coach provides the client with a consistent framework in which to

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explore options to close resource gaps, refine goals, and to learn to be accountable for their performance (Stelter, 2015). According to Wolever et al, (2013), the perceived support and encouragement the client receives from the coach is fundamental to the success of coaching interventions. In this way, coaching most often serves as both a structural and a functional support within interventions (Stelter, 2015; Verheijden et al., 2005).

Different forms of coaching have been investigated as ways to support improvement in health-related behaviours, particularly in relation to physical activity and weight loss (Ammentorp et al., 2013). The use of different types of coaching to support positive changes in behaviours related to diabetes, depression, physical activity, weight loss, and other diseases continues to be a growing area of research (Newnham-Kanas, Gorczyński, Morrow, & Irwin, 2009). The ability of coaching interventions to promote motivational shifts as well as to lower barriers to behavioural change are seen as key factors in their success. Coaching interventions often promote a shift in behavioural regulation from extrinsic to more autonomous and intrinsic motivations (Rutten et al., 2014). Intrinsically motivated individuals have a better chance of maintaining new behaviours related to eating and physical activity than those who are extrinsically motivated (Rutten et al., 2014; Teixeira et al., 2012; Teixeira et al., 2015). Coaching interventions have been found to promote motivational shifts in physical activity behaviours more effectively than in weight loss behaviours (Rutten et al., 2014). Working with a coach helps individuals lower the barriers associated with sustaining significant behavioural change related to eating and physical activity (Venditti et al., 2014). Examples include decreasing the impact of social cues on unhealthy eating, better adherence to new behaviours during holidays and vacation, improved self-monitoring, and better management of self-defeating thoughts or moods (Venditti et al., 2014).

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Even though coaching has been shown to be efficacious in health behaviour change, there is a high degree of variability in coaching methods represented in the health lifestyle coaching literature. This makes it difficult to determine how coaching can be used in health behaviour interventions in a consistent and reliable manner (Oslen & Nesbitt, 2010; Wolever et al., 2013). Elements of coaching interventions commonly lacking specificity in the literature include the duration, frequency, and length of coaching sessions; method of delivery; the professional field and training of staff members; and the conceptual design of the programs (Oslen & Nesbitt, 2010; Wolever et al., 2013). The educational background and training of the coaches in weight loss and physical activity studies varies to a large degree (Ammentorp et al., 2013; Oslen & Nesbitt, 2010; Wolever et al., 2013). In some research projects coaches are healthcare professionals such as nurses, nutritionists, and psychologists; while in other studies coaches are classified as wellness, exercise, or lifestyle coaches who may be personal physical trainers or professionally trained coaches outside the realm of the medical profession (Wolever et al., 2013). Training received by the coaches is another confounding variable. Less than one-quarter of the studies included in a systematic review of coaching interventions included specific information of the training provided to coaches as part of the intervention (Wolever et al., 2013). Where it was provided, training content provided to coaches most often addressed health behaviour models such as SDT, social cognitive theory, and the theory of planned behaviour; interpersonal communication skills to develop rapport, express empathy, and provide emotional support; as well as coaching communication skills related to asking powerful questions, providing feedback, and negotiations (Wolever et al., 2013).

Regardless of the training or educational background of the coach, ongoing access to the same coach has been shown to be an important factor in successful coaching interventions (Oslen

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& Nesbitt, 2010; Wolever et al., 2013). More than 75 percent of the studies Wolever et al. (2013) included in their systematic review of health and wellness coaching provided consistent access to the same coach for the duration of the study, which facilitated the development of a deeper relationship between the coach and the research participants and fostered greater accountability on the part of the participants (Wolever et al., 2013). Accountability is a critical component of successful behavioural change as it makes self-reflection on progress and monitoring of goal attainment possible (Liddy, Johnston, Irving, Nash, & Ward, 2015; Wolever et al., 2013). In contrast, only eight percent of the included coaching studies provided just one encounter between the coach and participants (Wolever et al., 2013) calling the classification of these studies as ‘coaching’ interventions into question.

The practice of coaching in health behaviour interventions is informed by a diverse set of knowledge domains including cognitive and behavioural psychology, positive psychology, and social science (Ammentorp et al., 2013). Using cognitive psychology, coaches work with clients to recognize the role and power of their thoughts with regards to their behaviours (Jordan & Livingstone, 2013). In working with a coach, clients discover how their eating and physical activity behaviours are influenced by their emotions or thoughts about food and physical activity. Their thoughts about these activities may be biased or distorted to fit their own experiences rather than being based on a broader generally accepted reality. Working with a coach can help clients become aware of these biases. In this way, clients may consider and potentially accept alternative perspectives about new behaviours and activities (Jordan & Livingstone, 2013). Applying elements of positive psychology, a coach works from a viewpoint that clients have a desire to lead meaningful and fulfilling lives as well as access to a variety of strengths and resources they can use and build upon as they adopt new or change existing behaviours (Jordan

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& Livingstone, 2013). In this way, clients are allowed to select goals that are important to them and then work with the coach to achieve these goals by leveraging existing strengths and resources as well as developing new skills and accessing other resources as needed (Jordan & Livingstone, 2013). Using ideas from social science, a coach understands that one's behaviours and ability to reach weight and physical activity goals are influenced by the social settings and lived experiences (Smith et al., 2013). Knowing this, coaches seek to understand the social parameters of their clients' lives. For instance, the types of exercise facilities available to the client, the nature of their employment, and their family status are just a few examples of the types of things a coach needs to understand when working with a client. Once these parameters are known, the coach is in a much better position to help the client establish meaningful and realistic goals and begin the process of achieving them (Smith et al., 2013).

The practice of health and wellness coaching shares many characteristics with psychotherapy. Coaching and psychotherapy each seek to move the client through behavioural change processes with the client's improved health and wellbeing being the ultimate goal (Jordan & Livingstone, 2013; Parsons, 2013). Even so, coaching and psychotherapy differ in several important ways. Whereas psychotherapy is a well-established discipline that is regulated in a uniform manner with stringent education and licensing requirements, coaching still lacks nationally recognized education standards and training requirements (Jordan & Livingstone, 2013). Nursing and allied healthcare professional associations have promulgated some education and training requirements for their members who act as coaches as part of their jobs, but such guidelines are still lacking in most health and wellness coaching roles (Jordan & Livingstone, 2013). The International Consortium for Health and Wellness Coaches (ICHWC) was formed in 2009 with the objective to define the coaching profession, set educational standards, and

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influence practice guidelines (ICHWC, 2017). In 2016, the ICHWC entered into a partnership with the National Board of Medical Examiners to develop a minimum standard and measure of foundational competencies required to attain board certification in health and wellness coaching (ICHWC, 2017). Key coaching concepts addressed by this standard include the responsibilities of both participants in the client/coach relationship, the importance of establishing trust and rapport, and the need for active listening and being fully present during coaching sessions (Health & Wellness, 2017). The standard also speaks to the elements of professional conduct for coaches as well as the ethical and legal considerations of coaching activities (ICHWC, 2017). The first cohort of Health and Wellness Coaches who successfully demonstrated mastery of this standard were awarded certification by the ICHWC in September of 2017 (ICHWC, 2017).

Psychotherapists and coaches each leverage findings from a wide range of theoretical frameworks and conceptual models including SDT, social cognitive theory, adult learning theory, and motivational interviewing (Jordan & Livingstone, 2013). The context and the degree of application of these frameworks and models in working with their clients is a major area of difference between coaching and psychotherapy (Jordan & Livingstone, 2013; Parsons, 2013). Coaches work with clients to guide them in a self-directed process of reaching client-specified goals. Coaches use psychological tools and techniques to help their clients to maintain forward momentum, but generally the client is accountable for progress because they are seen as fully capable of acting in their own best interest (Jordan & Livingstone, 2013). Although a psychotherapist may at times use these frameworks and models in a similar manner to a coach, they also develop prescriptive treatment plans and they actively intervene in the change process (Jordan & Livingstone, 2013).

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The main role of a coach is to assist the client in making behavioural changes that the client holds as important (Jordan & Livingstone, 2103). In their systematic review of the various coaching methods used in health behaviour change interventions, Wolever et al. (2013) determined that successful coaching interventions share several common elements. Successful interventions are client centered, allow clients to select their own goals, rely on active learning and self-discovery as ways to drive progress towards goals, and a strong interpersonal relationship between client and coach (Wolever et al., 2013). Additionally, effective coaching interventions for weight loss and physical activity focus on helping clients develop stronger goal setting, problem solving and self-monitoring skills (Venditti et al., 2016; Wolever et al., 2013).

Co-active life coaching

One method of coaching that provides the essential elements identified by Wolever et al. (2013) is Co-Active Life Coaching (CALC). This style of coaching has evolved over the past 20 years and its use in health and wellness domains is growing (Liu, Irwin, & Morrow, 2015; Mantler, Irwin, & Morrow, 2010; Newnham-Kanas et al., 2009; Pearson, 2011). Coaches may pursue certification in the use of CALC from the Coaches Training Institute, which is the private organization that developed and sustains CALC. The Co-Active Life Coach certification is recognized by the International Coaching Federation (ICF) and permits practitioners to pursue more advanced certification from the ICF (Why CTI?, 2017). The newly established health and wellness coaching certification program from the National Board of Examiners includes elements of CALC as part of their curriculum (Health & Wellness, 2017). Since it has a defined method of delivery, using CALC in health behaviour interventions avoids some of the criticisms of coaching research lacking operational specificity (Liu et al., 2015).

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CALC calls for a collaborative partnership between the coach and client that aims to meet the client's needs and to also establish a flexible ongoing dialogue between coach and client (Kimsey-House, Kimsey-House, Sandahl, & Whitworth, 2010; Pearson, 2011). Within this relationship, the coach helps the client explore options for achieving goals that reflect the client's values and priorities (Pearson, 2011). The coach and client then decide on the actions needed for these goals to be achieved and begin the process of monitoring progress (Pearson, 2011). This is a gradual process that requires ongoing discussion and reflection on the part of the client and the coach so they can successfully navigate unexpected events and obstacles along the way (Pearson, 2011).

Although co-active coaching's tenets were not explicitly discussed in terms of their theoretical underpinnings when they were first published, subsequent analysis and research has been conducted to identify links between CALC and well-established behavioural theories (Liu et al., 2015). Specific theoretical behavioural constructs that are leveraged within the practice of CALC include self-efficacy (competence), acknowledgement, goal setting, values, and empowerment (autonomy) (Liu et al., 2015). Empowerment of the client and development of autonomous motivations figure prominently in CALC interventions, as both are central tenets of the CALC method (Liu et al., 2015). Working in a co-active coaching arrangement appears to be autonomy supportive by its very design (Pearson, 2011). Autonomy supportive environments mediate a corresponding internalization of behavioural regulation, which is a hallmark of long-term behavioural change (Markland & Tobin, 2010; Rutten et al., 2014; Silva et al., 2010; Silva et al., 2011; Teixeira et al., 2015). This suggests that CALC may be an appropriate intervention for behavioural change in general and for exercise and weight loss in particular, as success in changing these behaviours requires ongoing, long-term commitment (Newnham-Kanas, Irwin &

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Morrow, 2008; 2011; Newnham-Kanas, Irwin, Morrow & Battram, 2011; Pearson, Irwin, Morrow & Hall; 2012).

The ability of CALC to support clients to succeed in making significant health behaviour changes in their lives may be seen from a brief examination of the concepts and techniques central to practicing this method of coaching. The practice of CALC is built on what Kimsey-House et al. (2010) call the Four Cornerstones. The first cornerstone is the belief that “people are naturally creative, resourceful, and whole” (Kimsey-House et al., 2010, p. 3). Kimsey-House et al. (2010) are very clear that clients in co-active coaching interventions are not viewed as unwell or lacking in ability to act in their own best interests. This cornerstone is congruent with the grounding of SDT on the assumption that everyone has “natural, innate, and constructive tendencies to develop an ever more elaborate sense of self” (Deci & Ryan, 2002, p. 5). All individuals are presumed to have causal agency and the ability to learn and grow if given the chance and access to the required resources (Deci & Ryan, 2002). The second cornerstone is an acknowledgement that the coaching relationship does not exist to only solve a specific problem in isolation from everything else going on in a client’s life. The problem or challenge, such as obesity and the desire to be more active, is intertwined with the client’s entire life circumstances (Kimsey-House et al., 2010). The third cornerstone entails staying attuned to what is happening and what is being said during the coaching session (Kimsey-House et al., 2010). New information is always being revealed as the coaching relationship matures. The coach needs to be able to engage the client in a discussion about whether and how new information impacts prior decisions and goals for which the client will be held accountable (Kimsey-House et al., 2010). These conversations serve to promote movement along the motivational continuum and to support the client’s psychological needs for autonomy, competence, and relatedness (Pearson,

2011). The fourth and last cornerstone entails working towards transformation in every coaching session or conversation with the client (Kimsey-House et al., 2010). In the beginning, the client most likely will be focused on a very specific goal, for instance, losing a particular amount of weight. During the process, the client may realize that they have developed new skills and ways of thinking that might be helpful with other goals. The spillover effect between physical activity behaviours and better regulation of food choices (Mata et al., 2011) is a good example of this concept.

The application of CALC in obesity interventions has been shown to be effective at bringing about desired changes in eating behaviours and levels of physical activity. Newnham-Kanas et al. (2008) found a significant reduction in waist circumference at the end of their 12-week CALC-based obesity intervention. Participants also reported feeling more optimistic about their ability to make healthier food choices as well as experiencing greater self-acceptance (Newnham-Kanas et al., 2008). Newnham-Kanas et al. (2011) reported similar results from their 6-month CALC obesity intervention with obese adult women. While each of these studies reported statistically significant impacts on eating related behaviours during the course of the study, neither of the studies extended beyond six months, making assessment of sustained impact of CALC over the longer term impossible (Liu et al., 2015). Therefore, it is not known whether these types of interventions will lead to a reduced rate of relapse among participants. Even so, it does seem plausible that by using SDT in combination with CALC, the risk of relapse can be reduced by helping clients find activities that produce outcomes they personally value and identifying foods they enjoy eating that will not undermine their weight loss progress (Rutten et al., 2014). CALC seems well positioned to aid in this regard, but research into its long-term use is needed.

Conclusion

In this paper, I have reviewed the use of SDT, on its own and in combination with coaching, as a way to assist obese and overweight people in their adoption of new behaviours related to eating and physical activity. SDT-based interventions seek to promote the internalization of motivations related to new behaviours by providing supports for participants' psychological needs for autonomy, competence, and relatedness. Internalization signifies that an individual has developed an innate attachment to the outcomes, or the performance, of a newly adopted behaviour. Interventions that considered individual preferences and life circumstances in the design of the intervention produced superior results, most likely as a result of supporting the psychological need for autonomy in adopting new behaviours. Internalized motives may lower the risk of relapse by improving long-term adherence to the new behaviour.

While this paper explored how to best support overweight and obese people in the development and application of new psychological skills, it must be acknowledged that successful behavioural change will also require access to adequate socioeconomic resources as well. Examples of socioeconomic supports include availability of free time in which to exercise, access to suitable safe spaces for exercise and physical activity, and availability of affordable healthy foods. It is the combination of psychological skills along with the socioeconomic means that will provide the greatest chance for overweight and obese individuals to achieve long-term success.

As described in the literature, the cost of coaching interventions is a likely barrier to the broad use of coaching among the general population. As the risk of weight relapse extends for a long period of time (up to five years), the cost of working with a coach over this long a time period is likely to be very high. Without substantial funding from provincial or national health agencies, coaching for weight loss will likely be limited to those individuals with the means to

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pay their own way. With the development of new wellness coaching standards by the ICF and ICHWC, it is vitally important that these groups advocate for and promote the use of more affordable and scalable coaching methods. For instance, the use of social media and internet based technologies in the delivery of coaching may help lower the cost and allow coaches to work beyond their local geography. As important as it is to offer assistance to those seeking long-term weight loss, and as effective as coaching has been shown to be in this regard, it is clear that more action needs to be taken to prevent obesity from occurring in the first place. As currently practiced, coaching will not have a noticeable impact on the overall rate of obesity across the population, but it might help some individuals succeed where most fail.

REFERENCES

- Ammentorp, J., Uhrenfeldt, L., Angel, F., Ehrensward, M., Carlsen, E. B., & Kofoed, P. E. (2013). Can life coaching improve health outcomes? – A systematic review of intervention studies. *BMC Health Services Research, 13*(1), 428-439.
- Amy, N. K., Aalborg, A., Lyons, P., & Keranen, L. (2006). Barriers to routine gynecological cancer screening for White and African-American obese women. *International Journal of Obesity, 30*(1), 147-155.
- Andreyeva, T., Brownell, K. D., & Puhl, R. M. (2008). Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *International Journal of Obesity, 32*(6), 992-1000.
- Annesi, J. (2013). Effects of treatment differences on psychosocial predictors of exercise and improved eating in obese, middle-age adults. *Journal of Physical Activity and Health, 10*(7), 1024-1031.
- Annesi, J. J., Johnson, P. H., Tennant, G. A., Porter, K. J., & McEwen, K. L. (2016). Weight loss and the prevention of weight regain: Evaluation of a treatment model of exercise self-regulation generalizing to controlled eating. *The Permanente Journal, 20*(3), 4-18.
- Annesi, J. J., & Marenco, N. (2014). Temporal aspects of psychosocial predictors of increased fruit and vegetable intake in adults with severe obesity: Mediation by physical activity. *Journal of Community Health, 39*(3), 454-463.
- Annesi, J. J., & Vaughn, L. L. (2017). Directionality in the relationship of self-regulation, self-efficacy, and mood changes in facilitating improved physical activity and nutrition behaviors: Extending behavioral theory to improve weight loss treatment effects. *Journal of Nutrition Education and Behavior, 49*(6), 505-512.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Araghi, M. H., Jagielski, A., Neira, I., Brown, A., Higgs, S., Thomas, G. N., & Taheri, S. (2013). The complex associations among sleep quality, anxiety-depression, and quality of life in patients with extreme obesity. *Sleep, 36*(12), 1859-1865.
- Cameron, A. J., & Zimmet, P. Z. (2008). Expanding evidence for the multiple dangers of epidemic abdominal obesity. *Circulation, 117*(13), 1624-1626.
- Carraça, E. V., Silva, M. N., Coutinho, S. R., Vieira, P. N., Minderico, C. S., Sardinha, L. B., & Teixeira, P. J. (2013). The association between physical activity and eating self-regulation in overweight and obese women. *Obesity Facts, 6*(6), 493-506.
- Collins, J., Meng, C., & Eng, A. (2016). Psychological impact of severe obesity. *Current Obesity Reports, 5*(4), 435-440.
- Deci, E. L., & Ryan, R. M. (2000). The " what" and " why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268.
- Deci, E. L., & Ryan, R., M. (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester.
- Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology, 49*(3), 182-185.
- Dobbs, R., & Swinburn, B. (2015, April 2). The global obesity threat. Retrieved March 09, 2016, from <http://www.mckinsey.com/mgi/overview/in-the-news/the-global-obesity-threat>
- Ekkekakis, P., Vazou, S., Bixby, W. R., & Georgiadis, E. (2016). The mysterious case of the public health guideline that is (almost) entirely ignored: Call for a research agenda on the causes of the extreme avoidance of physical activity in obesity. *Obesity Reviews, 17*(4), 313-329.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Eynon, M. J., O'Donnell, C., & Williams, L. (2016). Gaining qualitative insight into the subjective experiences of adherers to an exercise referral scheme: A thematic analysis. *Journal of Health Psychology*, <http://journals.sagepub.com/doi/full/10.1177/1359105316656233>.
- Fahs, B., & Swank, E. (2017). Exploring stigma of "extreme" weight gain: The terror of fat possible selves in women's responses to hypothetically gaining one hundred pounds. *Women's Studies International Forum*, *61*, 1
- Fakhouri T., Ogden C., & Carroll M. (2012). Prevalence of obesity among older adults in the United States, 2007–2010. *National Center for Health Statistics Data Brief*, 106.
- Finucane, M. M., Stevens, G. A., Cowan, M. J., Danaei, G., Lin, J. K., Paciorek, C. J., ... & Farzadfar, F. (2011). National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9· 1 million participants. *The Lancet*, *377*(9765), 557-567.
- Flegal, K. M., Carroll, M. D., Kit, B. K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *JAMA*, *307*(5), 491-497.
- Fleig, L., Kerschreiter, R., Schwarzer, R., Pomp, S., & Lippke, S. (2014). 'Sticking to a healthy diet is easier for me when I exercise regularly': Cognitive transfer between physical exercise and healthy nutrition. *Psychology & Health*, *29*(12), 1361-1372.
- Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight stigmatization and ideological beliefs: relation to psychological functioning in obese adults. *Obesity*, *13*(5), 907-916.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Gaesser, G. (2009). Is “Permanent Weight Loss” an oxymoron? The statistics on weight loss and the National Weight Control Registry. In: E. Rothblum, & S. Soloway (eds). *The Fat Studies Reader*. New York: New York University Press.
- Hardcastle, S., & Taylor, A. H. (2005). Finding an exercise identity in an older body: “It’s redefining yourself and working out who you are”. *Psychology of Sport and Exercise*, 6(2), 173-188.
- Hebl, M. R., & Xu, J. (2001). Weighing the care: physicians' reactions to the size of a patient. *International Journal of Obesity & Related Metabolic Disorders*, 25(8).
- Health & Wellness Coach Certifying Examination. (2017). Retrieved October 27, 2017, from http://www.nbme.org/pdf/hwc/HWCCE_content_outline.pdf
- ICHWC. (n.d.). Retrieved October 21, 2017, from <http://ichwc.org/>
- Jordan, M., & Livingstone, J. B. (2013). Coaching vs psychotherapy in health and wellness: Overlap, dissimilarities, and the potential for collaboration. *Global Advances in Health and Medicine*, 2(4), 20-27.
- Kim, S., & Popkin, B. M. (2005). Commentary: Understanding the epidemiology of overweight and obesity--a real global public health concern. *International Journal of Epidemiology*, 35(1), 60-67.
- Kimsey-House, H., Kimsey-House, K., Sandahl, P., & Whitworth, L. (2010). *Co-active coaching: Changing business, transforming lives*. Hachette UK.
- Koestner, R., & Losier, G. F. (2002). Distinguishing three ways of being highly motivated: A closer look at introjection, identification, and intrinsic motivation. In E. Deci & R. Ryan (Eds.), *Handbook of self-determination research, Vols. 101-121*, Rochester, NY; University of Rochester Press.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Latner, J., O'Brien, K., Durso, L., Brinkman, L., & Macdonald, T. (2008). Weighing obesity stigma: The relative strength of different forms of bias. *International Journal of Obesity*, 32(7), 1145-1152.
- Liddy, C., Johnston, S., Irving, H., Nash, K., & Ward, N. (2015). Improving awareness, accountability, and access through health coaching. *Canadian Family Physician*, 61(3), e158-e164.
- Lin, H. Y., Huang, C. K., Tai, C. M., Lin, H. Y., Kao, Y. H., Tsai, C. C., ... & Yen, Y. C. (2013). Psychiatric disorders of patients seeking obesity treatment. *BMC Psychiatry*, 13(1), 1.
- Liu, R. H., Irwin, J. D., & Morrow, D. (2015). Health behaviour outcomes of co-Active coaching interventions: A scoping review. *International Journal of Evidence Based Coaching and Mentoring*, 13(1), 15-42.
- Lucke, J., Waters, B., Hockey, R., Spallek, M., Gibson, R., Byles, J., & Dobson, A. (2007). Trends in women's risk factors and chronic conditions: Findings from the Australian Longitudinal Study on Women's Health. *Women's Health*, 3(4), 423-432.
- Mantler, T., Irwin, J. D., & Morrow, D. (2010). Assessing motivational interviewing through co-active life coaching tools as a smoking cessation intervention: A demonstration study. *International Journal of Evidence Based Coaching & Mentoring*, 8(2), 131-142.
- Markland, D., & Tobin, V. J. (2010). Need support and behavioural regulations for exercise among exercise referral scheme clients: The mediating role of psychological need satisfaction. *Psychology of Sport and Exercise*, 11(2), 91-99.
- Mata, J., Silva, M. N., Vieira, P. N., Carraça, E. V., Andrade, A. M., Coutinho, S. R., ... & Teixeira, P. J. (2011). Motivational "spill-over" during weight control: Increased self-

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- determination and exercise intrinsic motivation predict eating self-regulation. *Sport, Exercise, and Performance Psychology*, 1(S), 49-59.
- Health & Wellness Coach Certifying Examination. (2017). Retrieved October 27, 2017, from http://www.nbme.org/pdf/hwc/HWCCE_content_outline.pdf
- Newnham-Kanas, C., Gorczynski, P., Morrow, D., & Irwin, J. D. (2009). Annotated bibliography of life coaching and health research. *International Journal of Evidence Based Coaching and Mentoring*, 7(1), 39-103.
- Newnham-Kanas, C., Irwin, J. D., & Morrow, D. (2008). Co-active life coaching as a treatment for adults with obesity. *International Journal of Evidence Based Coaching & Mentoring*, 6(2), 1-12.
- Newnham-Kanas, C., Irwin, J. D., Morrow, D., & Battram, D. (2011). The quantitative assessment of motivational interviewing using co-active life coaching skills as an intervention for adults struggling with obesity. *International Coaching Psychology Review*, 6(2), 211-228.
- Nigg, C. R., & Durand, Z. (2016). The theoretical basis for engagement in physical activity among older adults. *Annual Review of Gerontology and Geriatrics*, 36(1), 251-271.
- O'Brien, K. S., Latner, J. D., Ebner, D., & Hunter, J. A. (2012). Obesity discrimination: The role of physical appearance, personal ideology, and anti-fat prejudice. *International Journal of Obesity*, 37(3), 455-460.
- Olsen, J. M., & Nesbitt, B. J. (2010). Health coaching to improve healthy lifestyle behaviors: An integrative review. *American Journal of Health Promotion*, 25(1), e1-e12.
- Owen-Smith, A., Donovan, J., & Coast, J. (2014). "Vicious Circles" The Development of Morbid Obesity. *Qualitative Health Research*, 24(9), 1212-1220.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Parsons, A. A. Developing principles for therapeutic coaching: A UK perspective. *Philosophy of Coaching: An International Journal*, 1(1), 80-98.
- Patrick, H., & Williams, G. C. (2012). Self-determination theory: Its application to health behavior and complementarity with motivational interviewing. *International Journal of Behavioral Nutrition and Physical Activity*, 9(1), 18-30.
- Pearson, E. S. (2011). The 'how-to' of health behaviour change brought to life: A theoretical analysis of the Co-Active coaching model and its underpinnings in self-determination theory. *Coaching: An International Journal of Theory, Research and Practice*, 4(2), 89-103.
- Pearson, E. S., Irwin, J. D., Morrow, D., & Hall, C. R. (2012). The CHANGE Program: Comparing an interactive versus prescriptive obesity intervention on university students' self-esteem and quality of life. *Applied Psychology: Health and Well-Being*, 4(3), 369-389.
- Popkin, B. M. (2007). Understanding global nutrition dynamics as a step towards controlling cancer incidence. *Nature Reviews Cancer*, 7(1), 61-67.
- Public Health Agency of Canada. (2011). Obesity in Canada. <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/oic-oac/index-eng.php>
- Puhl, R. M., Moss-Racusin, C. A., & Schwartz, M. B. (2007). Internalization of weight bias: implications for binge eating and emotional well-being. *Obesity*, 15(1), 19-23.
- Puhl, R., & Heuer, C. (2009). The stigma of obesity: A review and update. *Obesity*, 17(5), 941-964.
- Rutten, G. M., Meis, J. J., Hendriks, M. R., Hamers, F. J., Veenhof, C., & Kremers, S. P. (2014). The contribution of lifestyle coaching of overweight patients in primary care to more

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- autonomous motivation for physical activity and healthy dietary behaviour: Results of a longitudinal study. *International Journal of Behavioral Nutrition and Physical Activity*, *11*(1), 86-97.
- Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2009). Facilitating health behaviour change and its maintenance: Interventions based on self-determination theory. *European Health Psychologist*, *10*(1), 2-5.
- Sheeran, P., Harris, P., Vaughan, J., Oettingen, G., & Gollwitzer, P. M. (2013). Gone exercising: Mental contrasting promotes physical activity among overweight, middle-aged, low-SES fishermen. *Health Psychology*, *32*(7), 802-809.
- Shepherd, R. J. (2013). Ramadan and sport: Minimizing effects upon the observant athlete. *Sports Medicine*, *43*(12), 1217-1241.
- Silva, M. N., Markland, D., Carraça, E. V., Vieira, P. N., Coutinho, S. R., Minderico, C. S., ... & Teixeira, P. J. (2011). Exercise autonomous motivation predicts 3-yr weight loss in women. *Medicine & Science in Sports & Exercise*, *43*(4), 728-737.
- Silva, M. N., Markland, D., Vieira, P. N., Coutinho, S. R., Carraça, E. V., Palmeira, A. L., ... & Teixeira, P. J. (2010). Helping overweight women become more active: Need support and motivational regulations for different forms of physical activity. *Psychology of Sport and Exercise*, *11*(6), 591-601.
- Smith, L. L., Lake, N. H., Simmons, L. A., Perlman, A., Wroth, S., & Wolever, R. Q. (2013). Integrative health coach training: A model for shifting the paradigm toward patient-centricity and meeting new national prevention goals. *Global Advances in Health and Medicine*, *2*(3), 66-74.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

- Stelter, R. (2015). "I tried so many diets, now I want to do it differently" - A single case study on coaching for weight loss. *International Journal of Qualitative Studies on Health and Well-being*, 10(1), 269-275.
- Stubbs, R. J., & Lavin, J. H. (2013). The challenges of implementing behaviour changes that lead to sustained weight management. *Nutrition Bulletin*, 38(1), 5-22.
- Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 9(1), 78-108.
- Teixeira, P. J., Carraça, E. V., Marques, M. M., Rutter, H., Oppert, J. M., De Bourdeaudhuij, I., ... & Brug, J. (2015). Successful behavior change in obesity interventions in adults: A systematic review of self-regulation mediators. *BMC Medicine*, 13(1), 84-99.
- Thompson, D., & Wolf, A. M. (2001). The medical-care cost burden of obesity. *Obesity Reviews*, 2(3), 189-197.
- Venditti, E. M., Wylie-Rosett, J., Delahanty, L. M., Mele, L., Hoskin, M. A., & Edelstein, S. L. (2014). Short and long-term lifestyle coaching approaches used to address diverse participant barriers to weight loss and physical activity adherence. *International Journal of Behavioral Nutrition and Physical Activity*, 11(1), 16-28.
- Verheijden, M. W., Bakx, J. C., van Weel, C., Koelen, M. A., & van Staveren, W. A. (2005). Role of social support in lifestyle-focused weight management interventions. *European Journal of Clinical Nutrition*, 59, S179-S186
- Wasserkampf, A., & Kleinert, J. (2016). Organismic integration as a dynamic process: A systematic review of empirical studies on change in behavioral regulations in exercise in adults. *International Review of Sport and Exercise Psychology*, 9(1), 65-95.

SELF-DETERMINATION THEORY AND COACHING IN WEIGHT LOSS

Why CTI?. (2017). Retrieved October 27, 2017, from <http://www.coactive.com/why-cti/accreditations-affiliations>

Wilson, P. M., Mack, D. E., & Grattan, K. P. (2008). Understanding motivation for exercise: A self-determination theory perspective. *Canadian Psychology, 49*(3), 250-256.

Wolever, R. Q., Simmons, L. A., Sforzo, G. A., Dill, D., Kaye, M., Bechard, E. M., ... & Yang, N. (2013). A systematic review of the literature on health and wellness coaching: defining a key behavioral intervention in healthcare. *Global Advances in Health and Medicine, 2*(4), 38-57.

World Health Organization. (n.d.). Retrieved October 27, 2017, from <http://www.who.int/dietphysicalactivity/pa/en/>

World Health Organization. (2014). Obesity and overweight. 2013. <http://www.who.int/mediacentre/factsheets/fs311/en/>