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Increasing Client Adherence to a Health and Wellness

Lifestyle:

Applications of Exercise Psychology for Professionals

By:

Amber Nicole Walker

**Project submitted in partial fulfillment of the
Requirements for the
Bachelor of Integrated Studies Degree
Health and Wellness Studies**

**Murray State University
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After the end of World War II, America saw a great shift in the nation's economy, in which the nature of work and recreation changed dramatically. Mechanization reduced the demand for heavy labor in factories and on farms and television changed how the average American was spending recreation time. (John F. Kennedy Library and Museum, n.d.) As a result, the average fitness levels of Americans began to rapidly decline. The military noticed that it was becoming more and more difficult to find fit young men to pass the military induction physical (TEDxTalks, 2014). As military officers grumbled about this growing problem, concerns were further raised by an international study that found that, in regards to functional fitness, American children, junior high and high school aged, were much less fit than those other European countries (TEDxTalks, 2014). In fact 56 percent of American children failed the fitness test, while in contrast only eight percent of Europeans failed. (McKinney, 2014). In response, President Eisenhower established the President's Council on Youth Fitness by executive order in 1956. (JFK Library, n.d.)

In the years that have followed, it seems that there hasn't been a great deal of progress in overcoming the issue of lack of fitness in our country. We now see children with coronary blockages and four-year olds with adult onset diabetes (TEDxTalks, 2014). After 60 years of presidential health campaigns, the obesity epidemic is worse than ever, as stated in an article titled as such. (McKinney, 2014). For the first time in two centuries, we have a generation with a shorter predicted lifespan than their parents or grandparents, according to a report by the New England Journal of Medicine (Belluck, 2005).

Sixty percent of American adults are not physically active on a consistent basis and 25 percent are not active at all (Jackson, 2010). Although, physical activity has been called the best medicine in America today, outperforming almost every prescribed medication in the country in

terms of overall impact on health (TEDxTalks, 2014), as a whole, few engage in sufficient exercise.

According to the CDC, physical activity helps in weight control, reduces risk of cardiovascular disease, type 2 diabetes, and metabolic syndrome, and strengthens bones and muscle. It has a profound effect on mental health and mood and will even reduce the risk of some types of cancer, particularly colon and breast cancers. (Centers for Disease Control and Prevention [CDC], 2018) Not only does an active lifestyle have such a significant effect of reducing and preventing many of these types of health related issues, but physical inactivity actually exacerbates and increases them. In addition, findings now indicate that even with regular exercise, the increased hours people now spend sitting may adversely affect the body's metabolism, blood chemistry and overall physical health (Kennedy-Ambruster, n.d.). And yet, according to Ogie Shaw in his 2014 TEDxTalk in Spokane, 40 percent are still "enthusiastically avoiding exercise" and only ten percent are exercising at a level at which they are keeping fit and reaping these benefits.

It stands to reason, then, that people's health and well-being are robustly affected by lifestyle factors which involve behaviors that are potentially controllable by the individual. (Ryan, Patrick, Deci, & Williams, 2008). Additionally, pain weakness and immobility may contribute to the vicious cycle of accelerated decline (Craddock, Pignataro, & Daramola, 2016) In other words, as these ailments set in the individual may be less likely to adopt a physically active lifestyle and a continued lack of physical activity leads to greater health issues, which, in turn, leads to less activity and so on. Past history of sedentary behavior is the strongest predictor of persistent barriers to physical activity. (Craddock et al., 2016)

Human behavior remains the largest source of variance in health-related outcomes (Ryan et al., 2008). However, as many in the health-related fields have observed, it seems to be immensely more difficult to change one's lifestyle than simply making a decision. There are many psychological components, such as the power of habit, that impact an individual's ability to adhere to an exercise. Dishman (1998) reports adherence rates of less than 50 percent for most exercise programs (Jones, Harris, Waller, & Coggins, 2005). A systematic review in the UK indicated program dropout rates as high as 80 percent (Sforzo, Moore, & Scholtz, 2015). Exercise adherence is a recognizable longstanding problem for health-related outcomes (Sforzo et al., 2005).

The two most common reasons for low levels of physical activity are lack of time and lack of motivation (TEDxTalks, 2014). Certainly, these are difficult obstacles to overcome. Others cite lack of energy, lack of enjoyment, and lack of peer support. Some individuals aren't aware of or discount the benefits of exercise (Craddock et al., 2016). Still, others deal with barriers such as injury or inconvenience (Sforzo et al., 2005), not to mention, the fitness industry has often taken a very extreme view on health and fitness, which is unrealistic, at best, for many (TEDxYouth, 2013). However, the first two barriers far exceed the others as reasons for physical inactivity.

If an individual can overcome the mental battle for five years, they will most likely never return to their previous sedentary lifestyle (TEDxTalks, 2014). So how do health and wellness professionals effect real lifestyle change in people? This is where the field of psychology has necessarily joined forces with the field of health and wellness in order to tackle one of the most difficult problems facing our generation today.

Existing theories and research looking at psychological predictors of success have suggested that variables such as self-efficacy, stages of change, and expectations may be particularly important (Jones et al., 2005).

It is worth noting that nutrition also has a significant impact on health and, conversely, the onset of disease. As processed foods become more popular, the impact of these “foods” have been significant. However, for the purposes of this paper, the focus will remain on the physical activity component and the theories pertaining to exercise adherence. Certainly, those who may be interested in the nutritional component will find many of these theories are translatable to effect behavior change in this sphere as well.

As previously mentioned, there are many barriers for individuals regarding the initiation of a new exercise program, including lack of motivation, energy and time. However, once sedentary people have overcome inertia and begin exercising, the next barrier they face is continuing with their exercise program. This is known as exercise adherence. One only has to think about the phenomenon that occurs every January first, when large numbers of people, after having made New Year’s resolutions, flock to the gyms. However, although January and February bring the highest new enrollment rates of the year, this quickly wanes come March. So why is it when people finally start an exercise program, they fail to stick with it?

An important way to begin to answer this question is through the development and study of theoretical models that help us understand the process of exercise adoption and adherence (Weinberg & Gould, 2003). The theories and models that will be discussed here were developed in the field called exercise psychology, as knowledge of the psychology of exercise is paramount in health promotion efforts. Exercise psychology helps professionals to understand the

psychological antecedents of exercise behavior, given the dismal adoption and adherence rates (Lox, Martin Ginis, & Petruzello, 2010).

The field of exercise psychology is primarily concerned with (a) the application of psychological principles to promotion and maintenance of exercise and (b) the psychological and emotional consequences of exercise (Lox et al., 2010). Understanding the psychological and emotional consequences of exercise enables us to reduce acute and chronic negative psychological states and promote acute and chronic positive psychological states (Glanz, Rimer, & Viswanath, 2008)

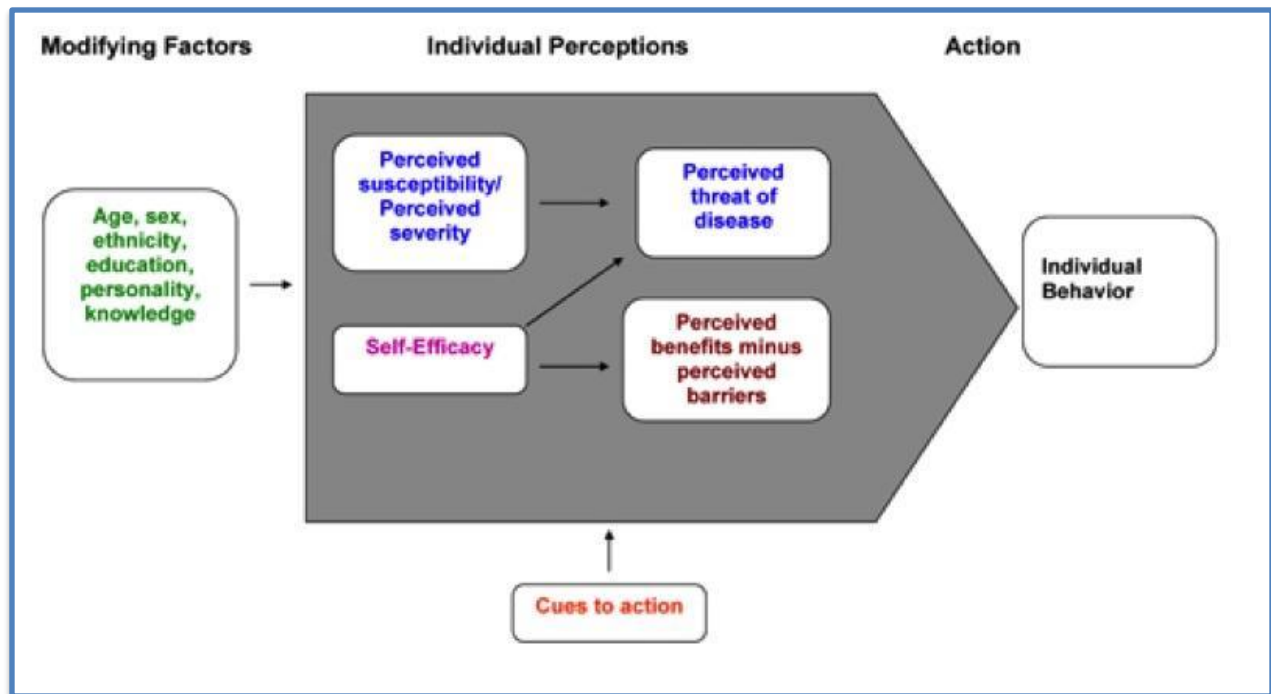
Theoretical models of exercise psychology use constructs such as self-esteem, intentions, self-efficacy, volition, anxiety, and motivation. Understanding these models and constructs help practitioners to understand how to intervene in order to increase adoption and adherence in individuals (Lox et al., 2010)

HEALTH BELIEF MODEL

The Health Belief Model is one of the earliest models for understanding and interpreting preventive health behavior (Craddock et al., 2016). First developed by social psychologists Hochbaum, Rosenstock and Kegels in the 1950's, it is also one of the most enduring models in exercise psychology (Glanz et al., 2008). The Health Belief Model, shown below in Exhibit 1 assumes that when people anticipate or are confronted with negative health outcomes they develop a desire to avoid them or reduce their impact (Berger, Pargman, & Weinberg, 2002). More specifically, it proposes that the likelihood of adopting a behavior depends on the individual's perception of the threat as well as a conviction that the recommended action will reduce the threat (Berger et al., 2002). Thus, the likelihood of an individual to engage in

preventive health behavior depends on their belief that the pros of taking action outweigh the cons (Becker & Maiman, 1975).

Exhibit 1: The Health Belief Model (Glanz et al., 2008)



The Health Belief Model has 5 main concepts that affect an individual's decision to pursue certain health behaviors:

1. Perceived susceptibility. This refers to the individual's opinion about the likelihood of being affected by injury or illness (Glanz et al., 2008). The more imminent the threat, the more likely it is that the individual will participate in preventive or curative health behaviors (Becker & Maiman, 1975)
2. Perceived seriousness. This is the individual's perception about the health threat relative to the potential impact on daily activities, for example, physical, financial and emotional consequences (Berger et al., 2002). Therefore, if the individual views the consequences of the threat as detrimental enough in an area they value, this will have a positive impact on their decision to exercise.

3. Perceived benefits of taking action. If the individual believes that the recommended action will result in the prevention of the perceived consequences, they will be more likely to engage in the behavior (Glanz et al., 2008).
4. Perceived barriers toward action. This pertains to the individual's perception of the difficulty of the prescribed action (Glanz et al., 2008). Therefore, even if the individual believes there is a big enough threat that may impact their daily life and they see the benefits of exercise, if they see it as too difficult, this may deter them from participating.
5. Cues to take action. This is a cue, or prompt, to engage in health-related behavior. Cues to action can be internal, such as pain or symptoms, or external, such as an event or information from an outside source. The intensity of the cue can vary among individuals based on perceived susceptibility, seriousness, benefits, and barriers (Glanz et al., 2008).

Although there has been some success using the Health Behavior Model to predict exercise behavior, overall, the results have been inconsistent, mainly because the model was originally focused on disease rather than exercise (Weinberg & Gould, 2003). However, the concepts of the Health Belief Model are important and foundational to understanding the development of later models.

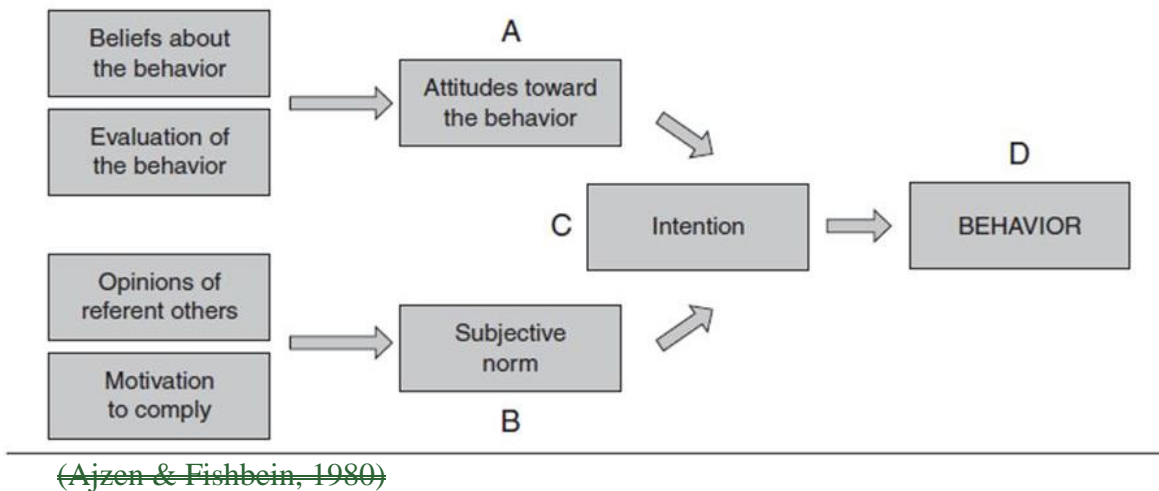
THEORY OF REASONED ACTION

The Theory of Reasoned Action, developed by Martin Fishbein and Icek Ajzen in 1967 (Lox et al., 2010) states that intentions are the predictors of actual behavior (Weinberg & Gould, 2003). Its primary intention is to understand and predict social behavior at the level of individual

decision making (Berger et al., 2002). This intention is determined by two factors: attitude and subjective norms.

1. **Attitude.** This is the positive or negative view the individual has about performing the behavior (Berger et al., 2002). Two main factors that influence attitude are the individual's belief about the consequences and their evaluation of those consequences (Lox et al., 2010). These individual attitudes are based on positive or negative evaluation of performing the behavior (Weinberg & Gould, 2003).
2. **Subjective Norm.** This refers to the degree of social pressure the individual experiences as a result of their perception of the expectations of significant others and their subsequent motivation to comply (Lox et al., 2010). For example, if the individual is a non-exerciser, but believes that other people important in their life think they should exercise, then they may want to do what others want them to do.

Therefore, the Theory of Reasoned Action maintains, if the individual has a positive attitude and positive subjective norms, it is expected that they will develop an intention to exercise, which will lead to the actual behavior (Weinberg & Gould, 2003). Barring unforeseen events, individuals are expected to behave according to their intentions (Berger et al., 2002). Therefore, interventions for exercise behavior using the Theory of Reasoned Action should include improving one's attitudes toward exercise and by causing external social pressure (Lox et al., 2010). This model maintains that people are usually rational and consider the implications of behaviors before choosing to engage in them (Berger et al., 2002). The Theory of Reasoned Action is illustrated in Exhibit 2 below:

Exhibit 2: The Theory of Reasoned Action (Ajzen & Fishbein, 1980)

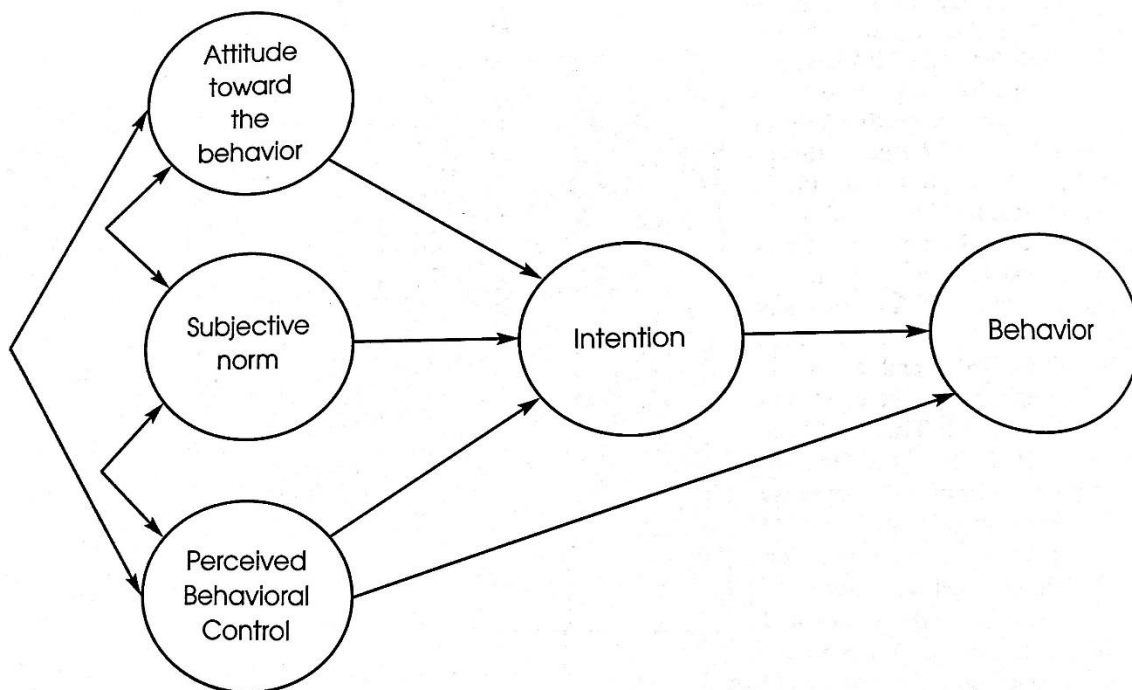
Results show that the Theory of Reasoned Action is helpful in clarifying the decision making process that underlies exercise behavior, but only has modest value in predicting actual exercise behavior (Berger et al., 2002). Unfortunately, the assumed determination of intention, attitudes toward behavior and social norms do not predict behavior with consistency, as it does not take into consideration external variables, past behavior patterns, and exercise habit (Berger et al., 2002). This is especially true for repeatable behaviors or behavior in the indeterminate future (Lox et al., 2010).

THEORY OF PLANNED BEHAVIOR

Because the Theory of Reasoned Action lacks the ability to predict long term behavior, Ajzen extended the theory ten years later. He observed that the Theory of Reasoned Action was particularly valuable when behavior was totally under volitional control (Berger et al., 2002). This new theory, the Theory of Planned Behavior, extends its predecessor by arguing that intentions cannot be the sole predictors of behavior, especially in situations where people might

lack some control over the behavior (Weinberg & Gould, 2003). So, in addition to the constructs previously discussed, the Theory of Planned Behavior adds the construct of perceived behavior control (Lox et al., 2010). This refers to the individual's perceptions of their ability to perform the behavior (Ajzen, 1991) and this control is concerned with the extent to which non-volitional internal factors and external factors interfere with the individual's attempt to perform a behavior (Berger et al., 2002). Therefore, even if the individual has a positive attitude and subjective norm regarding exercise, if they do not believe they have the ability or opportunity to exercise, the intention will most likely be weak (Ajzen, 1991). Most behavior falls on a continuum that extends from total control to complete lack of control (Berger et al., 2002).

Exhibit 3: Theory of Planned Behavior (Berger et al., 2002)



This concept of perceived behavior control is significant because it accounts for barriers such as work, family, time, ability, available resources and so on (Lox et al., 2010).

~~[SEE FIGURE 3.8] Exhibit 4~~

Also, it is important to note that, while subjective norms and attitudes affect intention, perceived behavior control can affect behavior directly (Berger et al., 2002).

The Theory of Planned Behavior has shown to be useful in predicting exercise behavior as seen, for example, in a study by Mummery & Wankel (1999). The study of a group of swimmers found that those who held positive attitudes toward training, believed that significant others wanted them to train hard, and also held positive perceptions about their ability formed stronger intentions and actually had significantly higher adherence to the training program as opposed to counterparts who did not (Weinberg & Gould, 2003).

SOCIAL COGNITIVE THEORY

In 1986, Albert Bandura developed the Social Cognitive Theory, which extends from the Social Learning Theory he developed in the 1960s (LaMorte, 2016). In many texts, the Social Cognitive Theory is discussed under the terminology of its most influential factor as Self-Efficacy Theory. Here, the two will be discussed separately to show the progression of the theory and to give more emphasis to the concept of self-efficacy. However, it is important to note that the later-discussed Self-Efficacy Theory is not necessarily separate from Social Cognitive Theory, but rather an extension of it. Therefore, it is important to note, that the names of these two theories are at times used interchangeably.

While the previously discussed models focused mainly on initiating behavior, they do not consider the maintenance of behavior, which has shown to be, in and of itself, a difficult problem in the health related fields and can be argued to be the true goal in public health (LaMorte, 2016). Furthermore, while many other theories do not specify the underlying mechanisms that mediate

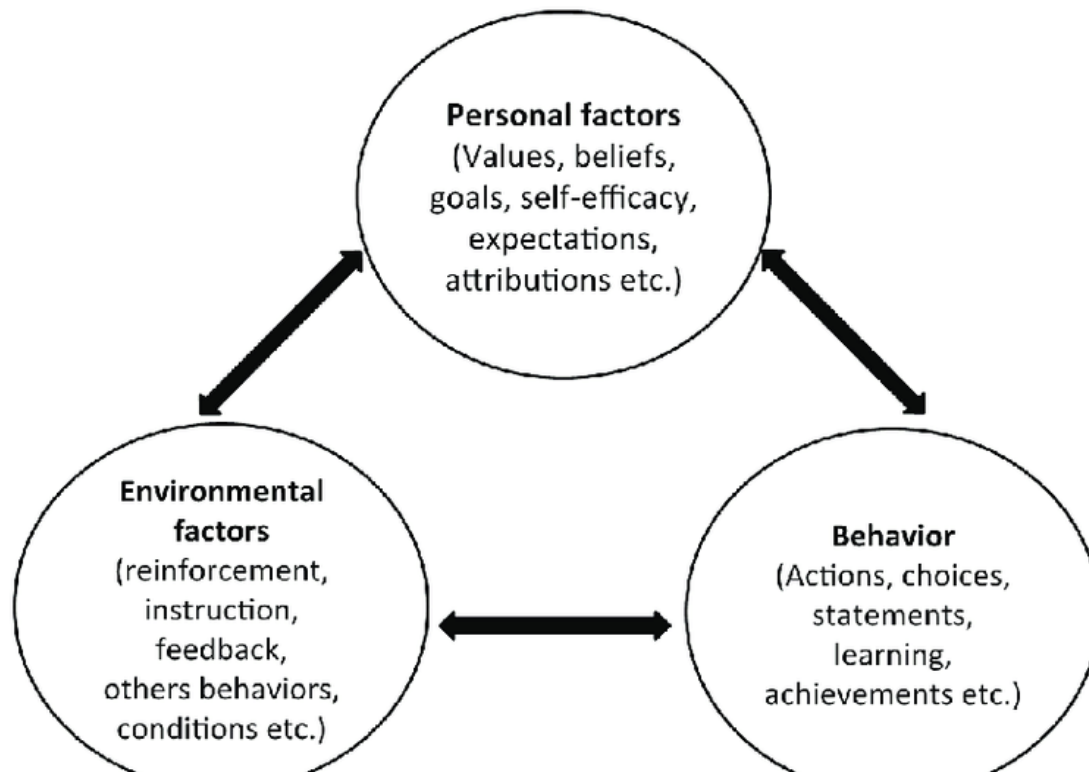
human action and outcomes, Social Cognitive Theory specifies factors by which human action is determined and defines a variety of factors through which the cognitive motivational processes operate to initiate, execute and maintain behavior (Stajkovic & Luthans, 2003). In addition, Social Cognitive Theory specifies optimal ways of translating this knowledge into effective health practices (Bandura, 2004). The goal of the Social Cognitive Theory is to explain how people regulate their behavior through these factors to achieve goal-directed behavior that can be maintained over time (LaMorte, 2016).

Social Cognitive Theory states that behavior is not solely determined by its likely outcome (Craddock et al., 2016). If this were the case, awareness of risks would be sufficient to motivate change (Bandura, 2004). Instead, exercise is influenced by both human cognition (e.g., expectations, intentions, beliefs, and attitudes) and external stimuli (e.g., social pressures and stimuli) (Lox et al., 2010) and that these operate as reciprocally interacting determinants of each other (Weinberg & Gould, 2003). In other words, in Social Cognitive Theory, the “social” part acknowledges that there are environmental or external origins of thought and action, whereas the “cognitive” portion recognizes the influential contribution of cognitive processes (Stajkovic & Luthans, 2003).

This reciprocal determinism is a dynamic interplay between a person (an individual with a set of learned experience), their environment (external social context) and behavior (responses to stimuli to achieve goals) (LaMorte, 2016). These three factors affect and interact with one another and facilitate or hinder change (Craddock et al., 2016). This relationship is embodied in the Triadic Reciprocal Determinism model ([Wood & Bandura, 1989](#)); see Exhibit 4.5 ([Wood & Bandura, 1989](#)). While it may seem that one factor is the majority or lead reason, numerous factors have a causal effect on human behavior (LaMorte, 2016). In addition, participants are

both products and producers of their motivation, respective environments, as well as their behaviors (Stajkovic & Luthans, 2003). While these influencing factors are vary in strength and do not occur concurrently, they each play a role (Pajares, 2002).

Exhibit 54: The Triadic Reciprocal Determinism Model (Pajares, 2002)



In addition to reciprocal determinism, there are several other constructs as part of the Social Cognitive Theory:

1. **Forethought.** In this construct, participants plan their actions, anticipate the consequences, and determine the level of desired performance (Bandura, 2004). Bandura argues that people not only react to their environments, but also self-regulate their behaviors by forethought.

2. **Behavior Capability.** The construct of behavioral capability refers to a person's actual ability to perform a behavior and requires a basis of essential knowledge and skill (17). Education and skill based training are two important interventions to improve behavioral capability in an individual (LaMorte, 2016).
3. **Observational Learning.** This construct asserts that people can witness the behavior of others and reproduce those actions (LaMorte, 2016). These observations also have an effect on the individual's beliefs (Pajares, 2002). Therefore, modeling behavior is important because as individuals see the demonstration of a behavior, their belief that they can also complete the behavior successfully improves.
4. **Reinforcement.** Also called incentive motivation (Pajares, 2002), reinforcement refers to internal and external responses to a person's behavior that affect the likelihood of continuing the behavior (LaMorte, 2016). These can be positive or negative and are sometimes referred to as punishment and reward (Pajares, 2002).
5. **Expectations.** The anticipated consequences of a person's behavior, whether positive or negative have an effect on the likelihood that the individual will perform the behavior or continue to perform the behavior (LaMorte, 2016).
6. **Self-Efficacy.** This is the individual's belief that they can successfully perform a behavior (Weinberg & Gould, 2003) or to execute necessary courses of action to satisfy demands (Berger et al., 2002). Another way to think of self-efficacy is task specific self-esteem. Arguably, the most critical piece in the Social Cognitive Theory is self-efficacy. It has been expanded upon so greatly by Bandura and has been deemed so important to understanding behavior that it is often referred to as Self-Efficacy Theory and will be discussed in this context in the following section.

As can be seen, the conceptual richness of Social Cognitive Theory is a valuable contribution to motivation theory and practice and seems to have considerable implications for improving human performance and motivation (Stajkovic & Luthans, 2003). However, one cannot understand the depth and usefulness of this theory without taking a deeper exploration in to the theory of self-efficacy.

SELF-EFFICACY THEORY

As previously discussed, self-efficacy is a critical construct of Social Cognitive Theory often discussed as its own theory called Self-Efficacy Theory. It is important to note that Self-Efficacy Theory still retains all of the constructs previously discussed in the previous model, but puts the concept of self-efficacy in the forefront as the most determinant factor in the model as it has come to be considered one of the most consistent predictors of exercise behavior (Jones et al., 2005). Self-efficacy, or perceived self-efficacy as it is sometimes called, refers to a person's beliefs about their own capability to accomplish a certain task by their own actions and resources, even in the face of obstacles or barriers (Snieholta, Scholz & Schwarzer, 2005). Self-Efficacy Theory aims to explain how individuals form perceptions about their ability to engage in specific behavior and can be equated with the term perceived capability (Lox et al., 2010). Self-Efficacy Theory hypothesizes that all behavior change is mediated by the common cognitive mechanism termed self-efficacy (Berger et al., 2002). As will be discussed in greater length, self-efficacy has been shown to be a good predictor of behavior and has produced some of the most consistent findings in relationship to exercise behavior.

Self-efficacy is not concerned with an individual's perception of general abilities, rather the extent to which the individual feels they will be successful in performing the desired

behavior with their given abilities and situation. Thus, it can be considered a situation specific form of self-confidence (Lox et al., 2010). Like any psychological construct, self-efficacy must be valid and reliably measured to make a meaningful contribution to motivation theory (Jones et al., 2005). This is most often done in terms of level and strength of confidence (Lox et al., 2010). Magnitude of self-efficacy measures the level of task difficulty that a person believes he or she is capable of executing. Strength indicates whether the belief about magnitude is strong and, therefore, likely to produce coping efforts and perseverance or whether efforts will be weak and easily questioned in the face of difficulty (Jones et al., 2005). Self-efficacy is theorized to have three main influences:

- a. activities that individuals choose to approach
- b. effort expended on such activities
- c. and degree of persistence demonstrated in the face of failure or adverse consequences (Bandura 2004)

SE SCALES-Exhibit 65: An Example of a Self-Efficacy Assessment (Marcus, Selby, Niaura, & Rossi, 1992).

EXERCISE SELF-EFFICACY SCALE

Purpose: This scale is to assess confidence in one's ability to continue exercising in various circumstances.

Directions: Please read the statement below and circle a number (1 to 5) to indicate how confident you are that you could exercise in each of the following situations.

How confident are you that you could exercise in each of the following situations...

	<i>Not at all confident</i>	<i>Slightly confident</i>	<i>Moderately confident</i>	<i>Very confident</i>	<i>Extremely confident</i>
1. When I am tired	1	2	3	4	5
2. When I am in a bad mood	1	2	3	4	5
3. When I feel I don't have time	1	2	3	4	5
4. When I am on vacation	1	2	3	4	5
5. When it is raining or snowing	1	2	3	4	5

Instructions for Scoring: Add all item scores and divide them by 5 to obtain the mean score of each subject. This score will give a general idea of overall self-efficacy for exercise.

Note the circled number for each of the five items to understand the self-efficacy for exercise associated with each of the situations.

~~Self-efficacy is theorized to have three main influences:~~

~~a. activities that individuals choose to approach~~

~~a. effort expended on such activities~~

~~b. a. and degree of persistence demonstrated in the face of failure or adverse consequences (Bandura 2004)~~

According to Bandura, self-efficacy impacts activity choices, efforts of intensity toward a task, and persistence when facing an obstacle (Jackson, 2010). In addition, Self-Efficacy Theory focuses on the role of self-referent thought and provides a common mechanism through which people demonstrate control over their own motivation and behavior (Berger et al., 2002). Self-efficacy has shown to be a good predictor in studies of behavior in a variety of health settings, including smoking cessation, weight management and recovery from heart attack (Weinberg & Gould, 2003).

More recently, Bandura redefined self-efficacy to encompass those beliefs regarding individual capability to produce performance to anticipated outcomes (Berger et al., 2002).

~~Source 1 p55 Expand primary consequences of SE~~

The central role of self-efficacy as an antecedent and consequence of exercise behavior is fairly guaranteed, as documented by ample research on the impact of self-efficacy on behavior, as well as various affective/cognitive and physiological training outcomes (McAuley and Blissmer, 2000). Self-efficacy has a primary consequential effect on behavior, sense of pride and life satisfaction. These three areas, in turn, have a reciprocal effect on self-efficacy (Lox et

al., 2010). In the same way, self-efficacy and exercise have a reciprocal relationship. Although self-efficacy is a determinant of exercise behavior, exercise is also a source of self-efficacy (Jackson, 2010). In fact, exercise has a considerable effect on self-efficacy. In a research study by McAuley, et al (1992), it was shown that exercise acts as a source of information for feelings of self-efficacy, and that these bouts of exercise can be either chronic or acute. For example, in a study by Mihalko and McAuley, 94 middle-aged participants who were previously non-exercisers completed 2 weeks of an aerobic program. In the study, feelings of self-efficacy during graded exercise tests significantly increased from pre- to post-program (Jackson, 2010). Self-efficacy can also be increased within the actual exercise session. Rudolph and Butki found as little as ten minutes of aerobic exercise could increase feelings of self-efficacy (Jackson, 2010). In such bouts of acute exercise, the experience can serve as a mastery experience, thus increasing self-efficacy (Berger et al., 2002). Therefore, to help a hesitant client, having them initiate a simple exercise program is likely to increase confidence, which will lead to increased self-efficacy and more willingness to attempt more challenging exercise later (Jackson, 2010).

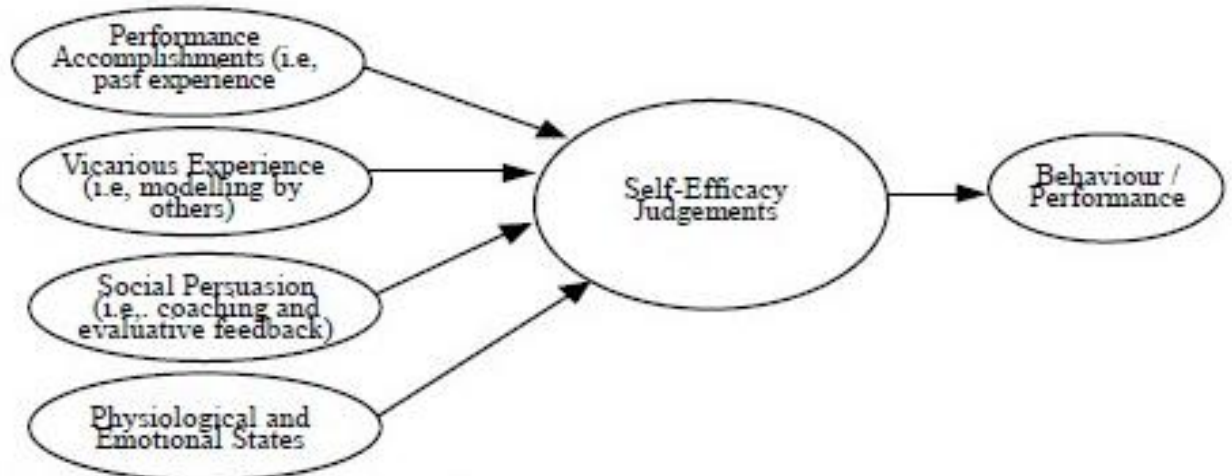
Self-efficacy has been used extensively to predict exercise behavior (Berger et al., 2002). A survey of 2053 randomly sampled adults found that self-efficacy was found to have the strongest correlation to vigorous exercise (Jackson, 2010). In another study from Stanford University Community Health Survey, self-efficacy was significantly related to exercise theories at different stages of the exercise process (Berger et al., 2002). Furthermore, Poag and McAuley found that for any given exercise intensity, people with higher self-efficacy perceived a lower level of exertion (Jackson, 2010). In fact, self-efficacy is the most consistent predictor of changes in exercise behavior over time, despite many variables used to predict exercise changes (Berger et al., 2002). In study by Bock et al. (1997) follow-ups four months after termination of

a six-month exercise program revealed only self-efficacy to be a significant behavior of exercise behavior and adherence (Berger et al., 2002). McAuley et al. (1992) also found that exercise-related self-efficacy plays different roles at different stages of the exercise process and that employing efficacy-based strategies seems to enhance exercise adherence. The Transtheoretical Model and Health Action Process Approach addressed later will discuss these stages in further detail.

Because self-efficacy affects thought patterns that can aid or hinder the individual, it is important to increase self-efficacy within exercise so that the individual will feel they have the ability to be successful in exercise related activities. A variety of widely used psychological techniques are used to aid in the development of high self-efficacy. It is important to develop individual and group strategies aimed at increasing self-efficacy through each of four factors (Jackson, 2010) which serve as the primary sources of self-efficacy. In order of their degree of influence, these four factors are:

1. Past performance accomplishments (also called mastery experiences)
2. Vicarious experience
3. Social persuasion
4. And physiological/affective states (Lox et al., 2010)

† **Exhibit 76: Diagram of the Self-Efficacy Theory** (Lee & Loke Yuen, 2012)



2.

Past Performance Accomplishments

The first of these factors, mastery experiences, is the most powerful source of self-efficacy and it is, therefore, very important to focus on developing these experiences (Jackson, 2010). Past mastery experiences refer to the degree of success or accomplishment perceived by the individual who has previously engaged in similar activities or activities in similar domains (Jones et al., 2005). These accomplishments should be emphasized as they exemplify the idea that “I did it once, I can do it again.” This is a powerful thought process (Jackson, 2010). Past mastery experiences can be increased by using past personal experiences and successes, goal setting strategies, appropriate exercise program design, and exercise logs. Exercise logs can be a very effective record of mastery experiences, providing important evidence of personal accomplishments at times when increasing self-efficacy may be necessary. Using exercise logs in coordination with effective goal setting and program design can further develop mastery experience. With each workout recorded by the individual, sense of accomplishment is further enhanced (Jackson, 2010). From a behavioral perspective, the novice exerciser should be prescribed a simple exercise program that can be successfully completed. Beginning exercisers

may have fragile exercise self-efficacy and the professional should be aware to design programs that build self-efficacy (Weinberg & Gould, 2003).

Goal setting is seen as a very effective method for increasing self-efficacy and motivation and, therefore, adherence. Certainly, a change in any behavior should involve establishing personal goals (Jones et al., 2005). There is overwhelming evidence for the motivational and performance enhancing effect of goal setting (Berger et al., 2002) and should, therefore, be viewed as necessary component of any intervention. There are some key principals to goal setting, which can be remembered by using the acronym SMART: specific, measurable, achievable, realistic, and time-specific. It is important to note, that, although the goals should be achievable and realistic, they should be challenging as well (Weinberg & Gould, 2003).

In addition, the Social Cognitive Theory proposes several processes of goal realization, which are interrelated and each have an effect on motivation and goal attainment. These are: self-observation, self-evaluation, self-reaction, self-reflection, and self-regulation (17). In other word, encouraging clients to set specific behavioral objectives, to monitor and evaluate their progress, and use feedback to reflect on performance will strengthen self-efficacy and motivation and, thus, enhance the likelihood that the individual will continue to adhere to their exercise program (Jones et al., 2005).

Vicarious Experience

Vicarious experiences, on the other hand, involve individuals viewing a performance modeled by another individual. The greater the perceived similarity between the individual and the model, the greater the influence (Lox et al., 2010). In modeling, a trainer could share success stories of people similar to the client who successfully adopted and active lifestyle (Jackson, 2010). It can be noted that the model does not necessarily need to be someone the client knows,

although this may be preferable. More important is the model's similarity to the client (Lox et al., 2010). Other forms of modeling can include watching a video of another similar individual perform the activity, demonstrating the activity to the client or having the client perform the activity in front of a mirror (Jackson, 2010). It has also been demonstrated that avatars, or virtual models can have a successful impact (Lox et al., 2010). In these ways, beginning clients can analyze the habits of successful exercisers to understand how they can become successful as well (Jackson, 2010).

Vicarious experiences can be also be targeted through imagery or visualization (Lox et al., 2010). In this case, the individual is guided to perform the activity in their mind using one or all of their senses (Weinberg & Gould, 2003). Imagery can be used to rehearse a past success or even a desired future success, but is particularly powerful when used to recreate successful past experiences (Jackson, 2010). In this way, mastery experience is combined with vicarious experience, which raises the effectiveness of the intervention. Imagery has proved to be a very useful tool, in that it can be adapted to any perceived barrier that may lower self-efficacy (Jackson, 2010). For this reason, it may be necessary to apply imagery to envision a future outcome. In these cases, the exerciser could be guided to imagine a successful part of an exercise, an effective workout, long term adherence or the outcome of exercise success, such as how they will look or feel when they have reached their goal (Jackson, 2010).

Social Persuasion

The third factor for influencing self-efficacy is verbal persuasion, also referred to as social persuasion. In this intervention strategy, an individual is led through feedback and verbal cues to believe they can be successful (Jackson, 2010). Practitioners should also be aware that nonverbal cues also play a role here. It is important to note that social persuasion is most

effective when the source is a knowledgeable or significant other, such as a spouse, physician, trainer or famous athlete (Lox et al., 2010). An individual can also be taught to use positive self-talk (Jackson, 2010). Professionals should actively look for health-promoting behavior that beginning exercisers are performing and then verbally acknowledge the behavior (Jackson, 2010). Positive affirmations can be a powerful tool, but, as will be discussed in terms of intrinsic and extrinsic motivation, teaching clients to use positive self-talk can be particularly effective. Self-talk has been shown to not only increase self-efficacy, but also to decrease anxiety and increase performance during the completion of an athletic skill (Jackson, 2010). The process of self-talk involves forming the statements individuals make to themselves into positive affirmations (Lox et al., 2010). Teaching clients to use affirmation statements helps them to stay focused on a positive outcome and gives them an independent way in which they can use social persuasion to increase self-efficacy and, therefore success, in their exercise program.

Additionally, the use of behavioral contracts can be used as a tool in this type of intervention (Jackson, 2010). When using contracting as an intervention, the client enters into a behavioral contract with the exercise practitioner. These are written statements that outline a clear-cut plan with specific expectations, establish positive consequences for performing the behavior, and possible negative consequences for not fulfilling the contract behaviors (Lox et al., 2010). It should also describe the target of the behavior, e.g. to lose 15 pounds. The purpose of these contracts is to maintain or enhance individual motivation to continue exercise (Berger et al., 2002). For example, a client may sign a contract that says they will exercise for at least 30 minutes, 4 times per week for 10 weeks. Their reward for achieving this goal could be buying a new outfit and the consequence for not fulfilling the contract could be doing some unpleasant housework. A study by Oldridge and Jones (1983) of patients in a cardiac rehabilitation program,

showed that those who signed an exercise contract had higher attendance of exercise sessions over a six month period than those who refused (Lox et al., 2010). It seems that a written contract first involves the client in the behavior change strategy, which increases commitment and, also, the public commitment aspect of it fosters an increased sense of self-control (Berger et al., 2002).

Physiological / Affective States Additionally, the use of behavioral contracts can be used as a tool in this type of intervention (Jackson, 2010). [more on behavioral contracts] SOURCE 2 p-209

The last factor that Bandura proposed has to do with physiological and affective states. This intervention focuses on how one's interpretation of their physiological state can affect whether an exercise experience becomes empowering or disempowering (Jones et al., 2005). Physiological states experienced during exercise can include rapid heart rate, sweating, pain, or fatigue. Regarding these experiences, the affective state can either be interpreted as positive or negative and this interpretation will have a correlating effect on self-efficacy (Lox et al., 2010). For this reason, it is important to educate clients about what is going on inside their bodies and what physiological sensations to expect during exercise. Understanding what to expect during exercise can help them attenuate any anxiety they may feel about the exercise session (Jackson, 2010). Therefore, when the individual understands that feelings of muscular fatigue, for example, or of reaching and maintaining an elevated heart rate are normal and positive parts of exercise, they will be much more likely to cope effectively. Additionally, if a client indicates a particularly high level of anxiety, other techniques can be used as interventions in this domain, such as relaxation techniques, deep breathing, positive self-talk and imagery (Lox et al., 2010).

In addition, what people focus their attention on while exercising can have a marked impact on how they perceive the exercise session. Association involves focus on internal feedback, such as heart rate or breathing, whereas dissociation happens when the individual focuses on the external environment (e.g. focusing on the scenery or listening to music). Dissociation typically acts as a distraction and can be a useful tool for taking the mind off pain or fatigue that may be experienced when engaging in vigorous physical activity. Research has also shown that those who dissociate tend to have higher attendance rates. However, when the exercise program is adequately matched with the ~~clients~~client's physical abilities, association can prove to be a useful technique in achieving flow states. Achieving flow state by focusing on the positive aspects of the experience can increase intrinsic motivation, which has been shown to improve adherence (Berger et al., 2002).

If an individual has positive feelings in each of the four factors, benefits will be additive and self-efficacy will tend to be higher (Jackson, 2010). Conversely, negative feelings in any factor will decrease self-efficacy. Therefore, it is important for the professional to address each of these, regardless of how high their individual impact may be deemed. It should also be pointed out that Self-Efficacy Theory is predictive only when a particular behavior is challenging or novel. The effectiveness of these interventions are greatly reduced when the behavior is learned or habitual, or as the behavior moves across the spectrum from adoption to adherence (Lox et al., 2010). Therefore, in order to maintain the effectiveness of these interventions, the professional may increase the intensity and/or complexity of the program once self-efficacy has been raised (Jackson, 2010).

In all interventions with intention to increase self-efficacy, it is critical to understand that self-efficacy is specific to individual tasks and situations rather than general overall feelings of

self-confidence (Jackson, 2010). Furthermore, the transferability from one domain to another depends on how similar the two domains are (Weinberg & Gould, 2003). Therefore, the more specific a practitioner can apply these theories the more effective they may be. For this reason, self-efficacy has become more specifically defined in certain domains, such as coping self-efficacy, maintenance self-efficacy and so on.

Self-efficacy, later redefined as perceived self-efficacy, does not always constitute exactly the same construct. As described earlier, self-efficacy is proposed to be task specific and its meaning depends on the particular situation of individuals who may be more or less advanced in the change process. Therefore, more specific definitions have been deemed helpful in when talking about the construct. There is also some rationale for the distinction between several phase-specific self-efficacy beliefs because during the course of health behavior change, different tasks have to be mastered and different self-efficacy beliefs are required to master these tasks successfully (Ochsner, Scholz, & Hornung, 2013).

. For example, a person might be confident in his or her capability to be physically active in general (i.e., high action self-efficacy), but might not be very confident to resume physical activity after a setback (i.e., low recovery self-efficacy).

SELF DETERMINATION THEORY

Just as Bandura proposed the construct of self-efficacy as the most influential determinant of behavior, another theory, developed by researchers Edward L. Deci and Richard M. Ryan in 1985, focuses on motivation. This theory, called Self-Determination Theory, is concerned with human motivation, personality, and optimal functioning. Rather than just the amount of motivation, self-determination theory focuses on different types of motivation (Nhu,

2017). Like Self-Efficacy Theory, it was designed for achievement and the academic domain, but has since been applied to the domain of exercise and physical activity (Lox et al., 2010).

Self-Determination Theory maintains the assumption that individuals possess three primary psychological needs:

1. The need for self-determination, or autonomy. This need is concerned with the urge to be causal agents and to act in harmony with our integrated self (Lox et al., 2010). Deci and Ryan stated that to be autonomous does not mean to be independent. It means having a sense of free will when doing something or acting out of one's own interests and values (Nhu, 2017).
2. The need to demonstrate competence. The need for competence means the desire and ability to control and master the environment and outcome (Lox et al., 2010). Individuals want to know how things will turn out and what the results are of our actions (Nhu, 2017). In order to provide a sense of competence, professionals should teach about consequences and allow for the perception of choice (TEDxTalks, 2013).
3. The need for relatedness and social interaction. This deals with the desire to “interact with, be connected to, and experience caring for other people”. Our actions and daily activities involve other people and through this, we seek the feeling of belongingness (TEDxTalks, 2013). Developing a sense of relatedness is important to internalization. An individual is more likely to adopt values and behaviors promoted by those with whom they feel connected and whom they trust (Ryan et al., 2008).

The Self-Determination Theory hypothesizes that individuals will seek challenges that satisfy one or more of these needs (Lox et al., 2010). By maximizing the individual's experience of autonomy, competence and relatedness in health domains, adherence to health related behavior is

more likely to be internalized and behavior will be better maintained (Ryan et al., 2008).

Developing a sense of autonomy and competence are critical to the process of internalization and integration through which the individual comes to self-regulate and sustain behavior conducive to well-being (Ryan et al., 2008).

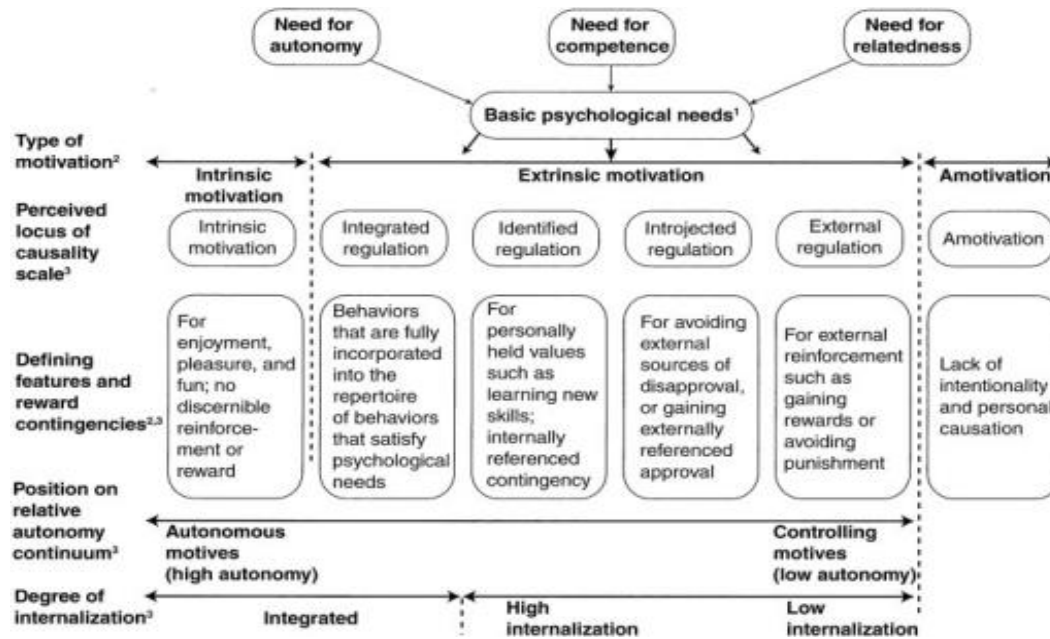
Whereas many ~~historical and contemporary~~ theories ~~of motivation~~ have treated motivation primarily as a unitary concept, focusing on the overall amount of motivation that people have for particular behaviors or activities, SDT differentiates among types of motivation. The idea is that the type or quality of a person's motivation is more important than the total amount of motivation for predicting many important outcomes. Indeed, an abundance of research has now confirmed the soundness of this theory (Deci and Ryan 2008)

There are three main types of motivation that drive achievement behaviors. On opposite ends of the spectrum are intrinsic motivation and amotivation. Intrinsic motivation refers to the mentality of engaging in a behavior for reasons of inherent pleasure, satisfaction, or personal challenge (Berger et al., 2002) rather than for the potential secondary gains that may arise from doing what they love (Nhu, 2017). Because intrinsic motivation is the most self-determined type of motivation on the continuum, those individuals who possess intrinsic motivation are the most likely to engage in and adhere to behaviors which they are intrinsically motivated to perform. Additionally, they are more likely to perform behaviors when they are intrinsically motivated than any other motivation type. Realistically speaking, for most embarking on a new health or exercise program, most health-related behaviors are not intrinsically enjoyable activities. Therefore, these individuals must come to value the behavior and personally endorse their importance (Ryan et al., 2008).

Amotivation, on the other hand, refers to a total lack of intention and motivation. Between these two, fall the four main types of extrinsic motivation (Berger et al., 2002). Extrinsic motivation is defined by Deci & Ryan (1985) as a construct concerning an activity is done in order to attain some separable outcome. The contrast between intrinsic and extrinsic motivation is the difference in motive behind an individual's involvement in an activity. While the former is a performance for the joy of engaging, the latter is an action for a different and separate result (Nhu, 2017). Studies have shown that an intrinsic goals rather than extrinsic goals tend to be more successful. One such study showed that participants with the intrinsic goal of health, rather than an extrinsic goal of attractiveness, resulted in greater initial weight loss and better maintenance over a two year period (Ryan et al., 2008). Furthermore, a focus on extrinsic goals has been associated with more risky health behaviors (Ryan et al., 2008), such as certain fad diets, weight loss supplements, and steroid use.

Intrinsic motivation and two types of extrinsic motivation, integrated regulation and identified regulation, (in which the individual identifies with an activity's value and, ideally, into their sense of self) are categorized as autonomous motivation (Lox et al., 2010). When people are autonomously motivated, they gain self-support and self-advocacy through their own actions (Nhu, 2017). Contrastly, controlled motivation consists of two other types of extrinsic motivation, external regulation and introjected regulation (Lox et al., 2010). When people are controlled, they experience pressure to think, feel, or behave in particular ways. Both autonomous and controlled motivation energize and direct behavior, and stand in contrast to amotivation (Deci & Ryan 2008). Table 2 reflects describes the continuum relationship of these types of motivation.

Exhibit 87: Diagram of self-determination theory, including motives for behavior
(Sanli, Patterson, Bray, & Lee, 2013)



In regards to the four main types of extrinsic motivation, the first and most self-determined form is called integrated regulation. This type of motivation describes the process of engaging in a behavior to confirm one's sense of self (Nhu, 2017). With this type of motivation, a person not only values a behavior, but has also aligned it with other central values and lifestyle patterns. A professional can facilitate integration by supporting clients as they explore resistances and barriers to change and by helping them identify congruent pathways to health (Ryan et al., 2008)

Moving along the spectrum, identified regulation concerns behavior that is motivated by achieving personal goals. Although it is initiated autonomously, identified regulation is guided by an external outcome (Lox et al., 2010). Identification is facilitated when practitioners provide relevant information and meaningful rationales for change and do not apply external controls and pressures that detract from a sense of agency or choice (Ryan et al., 2008).

The third type of extrinsic motivation is introjected regulation, in which the regulation of action has been partially internalized and is energized by factors such as an approval motive, avoidance of shame, contingent self-esteem, and ego-involvements (Deci & Ryan 2008). Finally at the lower end of the continuum is external regulation, in which one's behavior is a function of external contingencies of reward or punishment (Deci & Ryan 2008).

Because autonomy is proposed as a basic need for self-determination, it is important that people feel that they have choice in their behaviors. Therefore, implementing pleasant consequences are more favorable than negative ones because with the latter, the individual will feel controlled. This is the difference between producing success seekers rather than failure avoiders (TEDxTalks, 2013). When people are controlled, they experience pressure to think, feel, or behave in particular ways. Both autonomous and controlled motivation energize and direct behavior, and they stand in contrast to amotivation (Deci & Ryan 2008). As self-determination increases along the continuum, the motivation types increase in autonomy and are associated with more positive outcomes (Lox et al., 2010). Unfortunately, many people engage in behavior changes only because of controlled motivation, which is largely unrelated to long-term adherence (Ryan et al., 2008).

Levels of Motivation

Within each of these motivation types there exists three different levels from general to specific in nature. The most general form of motivation, global motivation, pertains to the individual's personality trait of motivation normally experienced across most behavioral domains. Contextual motivation refers to a person's motivation in a certain domain, such as athletic, academic or occupational. Most specifically, situation motivation refers to the degree of motivation pertaining to a specific activity (Lox et al., 2010). For example, an individual may be

highly motivated to engage in exercise today, but not tomorrow; or an individual may be contextually motivated toward physical activity, but may not be situationally motivated to lift weights.

Self Determination Theory suggests that we ~~attend more carefully~~ pay more careful attention to individual experience and motivation. For individuals to maintain behavior over time, requires that the individual internalize values and skills for change and develop more intrinsic forms of motivation (Deci & Ryan 2008). Although there are many approaches to initiating change, from external pressure and control to the positive use of incentives or rewards, the factors essential to maintenance are often missing (Ryan et al., 2008). Therefore, it is imperative for the practitioner to make use of techniques that focus on more self-determined forms of motivation.

Internalization requires that a person experience the confidence and competence to change. This competence is made easier by allowing the individual a sense of autonomy (Deci & Ryan 2008) and a sense of empowerment (TEDxTalks, 2013). According to Scott Geller in his TEDxTalk at Virginia Tech in 2013, there are three questions that reveal if an individual feels empowered:

1. “Does the individual believe they can?” This is essentially self-efficacy. In other words, does the individual feel they have the time, knowledge and training necessary to attain their goals?
2. “Will it work?” This question deals with outcome expectancies and the belief that the behavior will lead to the desired outcome.
3. “Is it worth it?” This question is related to decisional balance and the belief that the consequences are worth the behavior.

If the answer is yes to all three of these questions, a person will feel competent about participating in a worthwhile behavior and will be more likely to be self-motivated (TEDxTalks, 2013).

Once people are voluntarily engaged and have a high degree of willingness to act, they are most apt to overcome obstacles to maintain the behavior (Ryan et al., 2008). This is one major aspect where Self-Efficacy Theory and Self-Determination Theory stand in contrast to one another as Self-Determination Theory predicts that competence alone is not sufficient to ensure adherence; it must be accompanied by autonomy (Ryan et al., 2008).

Certainly, understanding the types of motivation that individuals may experience and achieve their basic needs is a useful foundation for developing physical activity interventions. Grasping the concepts of various motivational profiles can be extremely useful for professionals when attempting to modify their clients' exercise behaviors (Lox et al., 2010).

CONTINUUM VERSUS STAGES OF CHANGE MODELS

To this point, the theoretical models discussed are all considered to be continuum models. These continuum models use an approach that identifies variables that influence action and combines them into a prediction. They also tend to focus on a given moment in time (Weinberg & Gould, 2003). The application of continuum theories results in ordering subjects along a conceptual continuum of action likelihood. This 'continuum' is achieved by administering measurements of the constituent variables of the theory and computing the results in the manner prescribed by the theory (Morrison, 2001). These models theorize that individuals with higher scores on the proposed measurements are more likely to participate in the behavior than those who are further down on the conceptual scale. Continuum theories differ importantly from stage

theories inasmuch as they imply that changes in the variable will result in changes in action likelihood, regardless of a person's initial position on continuum. Therefore, continuum theories assume that interventions designed to increase scores on their constituent variables should result in improvements in the target behavior for any person the intervention was offered to, regardless of the severity of their initial problem behaviors.

Stage theories, on the other hand, presuppose stage specific barriers to change and that, therefore, treatment should be optimally matched with stages (Weinstein et.al., 1998). These models offer methods of looking at the change in attitudes, behaviors, and intentions that an individual cycles through as part of making the decision to change behavior and subsequently taking action (Babeu, Kricos, & Lesner, 2004). The hypothesis of this model is that a person's decision to adopt a new health-related behavior often entails a non-linear process of transient states (Weinstein et.al., 1998). Though these models differ in what stages they include and in the way they number and name the stages (National Institutes of Health [NIH], n.d.), they recognize that different people are in different stages of readiness for change and that, by identifying a person's position in the change process, a professional can more appropriately match the intervention to the individual's stage of readiness for change (Australia, Department of Health, 2004). It is important not to assume that people are ready for or want to make an immediate or permanent behavior change (National Institutes of Health [NIH], n.d.). The attraction of stage-based models lies in their ability to explain why interventions aimed at large groups or the general public, such as mass media or community interventions, are rarely universally effective. Stage-based models propose that 'tailored' interventions, which take into account the current stage an individual has reached in the change process, will be more effective than 'one size fits

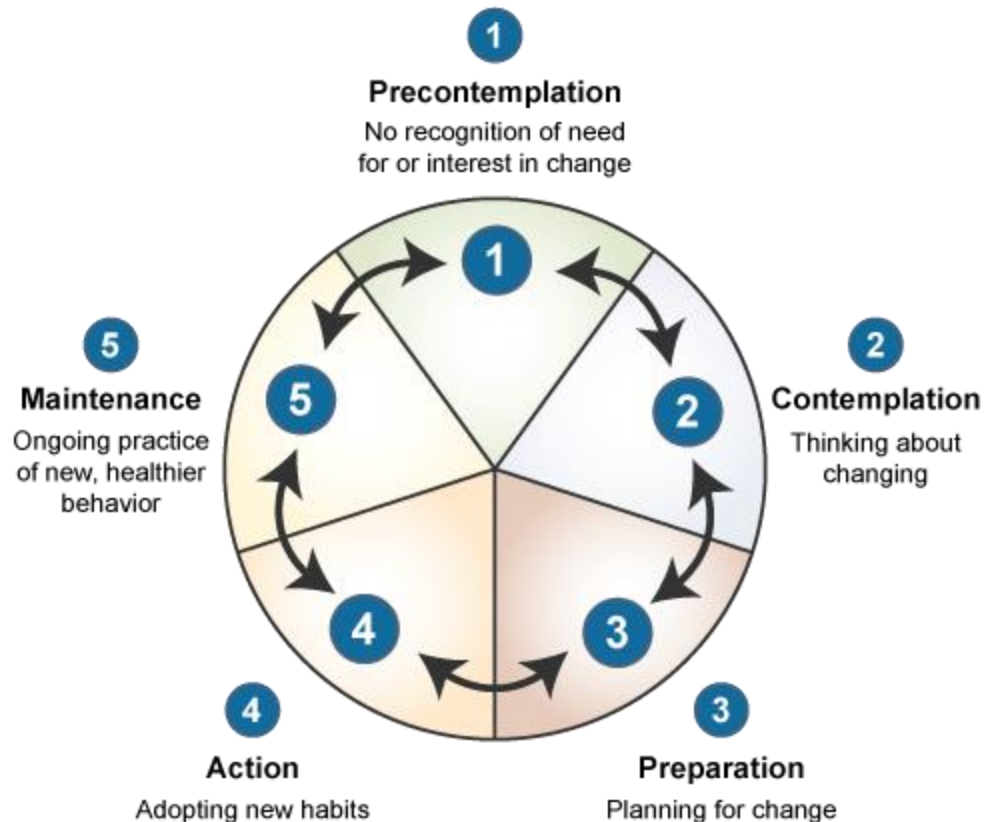
all' interventions (Riemsma et al., 2002). There are two leading models in the exercise domain that will be focused on: the Transtheoretical Model and the Health Action Process Approach.

TRANSTHEORETICAL MODEL

As previously stated, the continuum models are extremely useful in understanding behavior, but they tend to focus on a given moment in time. The Transtheoretical Model, constructed by James Prochaska, Carlo Di Clemente and John Norcross beginning in 1977, is based on analysis and use of different theories, hence the name "transtheoretical" (Weinberg & Gould, 2003). It was developed at the University of Rhode Island Cancer Prevention Research Center after years of studying and observing how people quit smoking. It has since proven to be useful in the exercise domain (Lox et al., 2010). The Transtheoretical Model argues that individuals progress through a series of stages of change and that movement through these stages is considered cyclical rather than linear because many do not succeed in establishing and maintaining lifestyle change. Specifically, clients may progress or regress through the stages in varying ways (Berger et al., 2002). Additionally, behavior change is not a quick model; rather behavior change is a gradual process through a series of stages (Lox et al., 2010). This model argues that different interventions and information need to be tailored to match the particular stage that the individual is in at the time of the intervention (Weinberg & Gould, 2003).

There are five distinct stages in the Transtheoretical Model, shown in Exhibit 8 below. These stages involve distinct time frames and specific characteristics of the individual in the particular stage. An important argument for the Transtheoretical Model is that there are specialized interventions to be prescribed to the individual based on their current stage.

Exhibit 98: The Transtheoretical Model/Stages of Change (Prochaska & DiClemente, 1982)



~~There are five distinct stages in the Transtheoretical Model. These stages involve distinct time frames and specific characteristics of the individual in the particular stage. An important argument for the Transtheoretical Model is that there are specialized interventions to be prescribed to the individual based on their current stage.~~

Precontemplation Stage

In this stage, the individual has no intention to change behavior in the foreseen future—sometimes specified as the next six months (Berger et al., 2002). There are a variety of hypothesized reasons that an individual may be in the precontemplation stage. They may be uninformed or under-informed about the consequences of their physical inactivity or health-related choices (Weinberg & Gould, 2003). Or they may have tried a number of times to change

and have, thus, become demoralized about their ability to change. Another possibility could be that social pressures to change have caused them to become defensive (Lox et al., 2010). Still another explanation might be that they simply dislike the exercise experience (Weinberg & Gould, 2003).

Precontemplators are typically classified as resistant or unmotivated to change (Berger et al., 2002). Therefore, this is a very stable stage because, without intervention, individuals will stay in this stage for a very long time (Lox et al., 2010). Many programs are not designed for or do not meet the needs of these specific individuals (Berger et al., 2002). For individuals in the precontemplation stage, appropriate interventions involve informing the client on the benefits of exercise, providing factual information, or consultations (Lox et al., 2010). As mentioned, individuals in this stage can be defensive and resistant to change, therefore, the professional should refrain from judgement on the client's current lifestyle, or trying to convince them to change. Simply providing information in order for the client to draw their own conclusions is what is necessary at this stage.

Contemplation Stage

Individuals in the contemplation stage seriously intend to or are contemplating exercise within the next six months (Weinberg & Gould, 2003). These individuals are more aware of the pros and acutely aware of the cons of behavior change (Berger et al., 2002). These individuals know that exercise is good, but are not ready to make any changes to their lifestyle (Lox et al., 2010). Despite their intentions, individuals in this stage typically remain there for about two years, according to research (Weinberg & Gould, 2003). For contemplators, the balance between pros and cons can produce strong ambivalence, keeping individuals stuck in this stage for a long period of time. This is sometimes called chronic contemplation or behavior procrastination

(Berger et al., 2002). The way in which people perceive the pros and cons of behavior change is called decisional balance (Lox et al., 2010). In one study, researchers found that the cons usually outweigh the pros in the precontemplation and contemplation stages. It is when a crossover of the balance occurs that individuals enter the preparation stage and as the pros begin to outweigh the cons movement into the action and maintenance stages occurs (Weinberg & Gould, 2003). Therefore, it is important for professionals to help their clients realize all of the benefits of exercise and lifestyle change. A professional may also help the client audit their feelings about their current identity and/or activity level (Lox et al., 2010).

Preparation Stage

In this stage, a person usually intends to take action in the near future, usually in the next month (Berger et al., 2002). People in this stage may be exercising some, however, not regularly and the activity is not regular enough to produce any major benefits (Weinberg & Gould, 2003). These people have usually taken some action, such as joining a gym, visiting their doctor, or perhaps buying equipment. They also usually have some sort of plan of action (Berger et al., 2002). The preparation stage is a very unstable stage, as individuals are more likely than precontemplators or contemplators to progress or regress (Berger et al., 2002). Effective interventions at this stage could involve encouraging the client to get organized and plan for an active lifestyle, such as investigating the cost to join a gym or how to work exercise into a busy schedule (Lox et al., 2010). Other strategies would include providing clients with the tools and information necessary to change, which can decrease doubts about their ability to change (Lox et al., 2010).

Action Stage

Individuals in the action stage have made overt modifications to their lifestyle within the past six months and are now exercising regularly (Berger et al., 2002). This stage tends to be the least stable stage, as the risk of relapse is high. It also tends to be the busiest stage, as the most processes of change are in use (Weinberg & Gould, 2003). In this stage, the action is observable, which is often seen as equivalent to behavior change, although this is not necessarily true (Berger et al., 2002). Considering that the individual in this stage is already involved in some physical activity, these clients most need information in order to prevent backsliding. Providing clients with tips on overcoming barriers that prevent relapse and teaching strategies to maintain motivation, such as goal-setting will increase the likelihood of adherence (Lox et al., 2010).

Maintenance Stage

Six months after the criterion for action has been reached until old behaviors have been considered terminated is considered the maintenance stage (Berger et al., 2002). Once an individual has stayed in this stage and “won the mental battle” for 5 years (TEDxTalks, 2014), they are very likely to maintain regular exercise throughout their lifetime, excepting time-outs for injury or other health-related reasons (Weinberg & Gould, 2003). In the maintenance phase, relapse prevention becomes of highest importance, as there are less change processes employed than in the action stage (Berger et al., 2002). One study showed that individuals who had major life events that occurred during maintenance exercised significantly less than those who did not experience these major life events. Therefore, being prepared for “high-risk” situations that can lead to relapse is imperative (Weinberg & Gould, 2003). However, only 15 percent of individuals relapse all the way back to the precontemplation stage (Berger et al., 2002).

Strategies to help clients prevent backsliding include planning ahead and identifying situations

that may cause a client to lapse, such as vacation, boredom or a busy schedule are effective interventions to ensure adherence at this stage (Lox et al., 2010).

Termination Stage

While this stage is not formally included in the model, it is sometimes added when discussing stages of change to describe the stage where individuals have no temptation to engage in old behavior and have 100 percent self-efficacy in their new lifestyle (Berger et al., 2002).

In a large work site project conducted by Marcus, et. al. (1992) promoting health behaviors, participants were categorized into the different stages of change. The distribution percentages were as follows: 24 percent in the precontemplation stage, 33 percent in the contemplation stage, 10 percent in preparation, 11 percent in the action stage, and 22 percent in maintenance. This distribution pattern approximately matches the patterns found in other behaviors, such as smoking cessation, as well (Weinberg & Gould, 2003). Therefore, action-oriented programs will not match the vast majority of the population (Berger et al., 2002). In some studies researchers have found that when there is a mismatch between the stage of change and the intervention strategy, attrition is high (Weinberg & Gould, 2003). Therefore, specific intervention strategies are necessary to improve adherence rates. For example, one cannot treat people in the precontemplation stage as if they are ready for action intervention and expect them to advance (Berger et al., 2002). Movement through the stages of change, particularly the earlier stages involves changing how people think about exercise, changing how people think about themselves and changing aspects of the environment that influence exercise behavior (Lox et al., 2010).

The dynamic nature of the model is its strength because exercise researchers have recommended dynamic models that focus on both adopting and maintaining behaviors (Berger et

al., 2002). A strong indication that people are moving through the stages are shifts in decisional balance, an increase in self-efficacy to overcome temptations, and a higher likelihood of using processes of change (Lox et al., 2010).

Processes of Change

In addition to the stages of change, which characterize when people change, the Transtheoretical Model includes constructs for behavior change processes that occur and describe how people change (Weinberg & Gould, 2003). These processes of change can be either covert or overt activities that people use to modify experiences and environments in order to subsequently modify behavior (Berger et al., 2002). These processes are divided into two categories: cognitive (sometimes also called experiential) and behavioral. Cognitive/experiential processes are used more during the early stages and behavioral processes are more effective as the individual progresses into the later stages (Lox et al., 2010). These processes are described in Exhibit ~~910~~ below:

Exhibit ~~910~~: Definitions of interventions associated with each of the processes of change in the Transtheoretical Model (Lox et al., 2010)

	Processes	Description
Experiential processes	Consciousness raising	Finding and learning new facts, ideas, and tips that support the recommended behaviour change
	Dramatic relief	Experiencing the negative emotions (fear, anxiety, worry) that go along with particular behavioural risks
	Self-reevaluation	Realising that the behaviour change is an important part of one's identity as a person
	Environmental reevaluation	Realising the negative impact of the problem behaviour or the positive impact of the recommended behaviour on one's proximal social and/or physical environment
	Self-liberation	Making a firm commitment to change
Behavioural processes	Helping relationships	Seeking and using social support for the recommended behaviour change
	Counter conditioning	Substitution of recommended alternative behaviours and cognitions for the problem behaviour
	Reinforcement management	Increasing the rewards for the positive behaviour change and decreasing the rewards of the problem behaviour
	Stimulus control	Removing reminders or cues to engage in the problem behaviour and adding cues or reminders to engage in the recommended behaviour
	Social liberation	Realising that the social norms are changing in the direction of supporting the health behaviour change

—Cognitive/Experiential processes are directed toward increasing people's awareness and changing their thoughts and feelings about themselves and exercise behavior. This type of **self reevaluation** self-reevaluation involves carefully considering how they feel about themselves and if that is an identity they want to maintain (Lox et al., 2010). These types of processes include:

1. Consciousness raising. This process increases one's awareness and memory of the benefits of behavior change (Lox et al., 2010). This could be educating a client on the benefits of exercising
2. Dramatic relief. This is either positive or negative emotional arousal about the health behavior (LaMorte, 2016). Teaching clients to be more aware of their emotions regarding exercise and new behaviors can be an effective way to increase adherence.

3. Environmental reevaluation. This is understanding how their unhealthy behaviors may affect others (LaMorte, 2016). For example, a parent may realize they are setting a poor example for their children.
 4. ~~Self-reevaluation. This occurs when the individual does a self-reappraisal in order to realize that the healthy behavior is part of who they want to be (LaMorte, 2016).~~
 4.
 5. Social liberation. A very helpful process for moving through the stages of change, social liberation involves strategies to strengthen a person's commitment toward exercise by finding ways in which society shows it is supportive of the healthy behavior (Lox et al., 2010).
-

Behavioral processes consist of behaviors that a person undertakes in order to change aspects of the environment that affect exercise participation (Lox et al., 2010). The processes included in this category are:

1. Counterconditioning. Counterconditioning involves substituting healthy behaviors and/or thoughts for unhealthy ones (LaMorte, 2016). An individual may take a walk after dinner instead of immediately sitting down in front of the television.
2. Helping relationships. Clients should find supportive relationships that encourage the desired change and behavior (La Morte, 2016).
3. Reinforcement management. This is the process in which individuals develop strategies for rewarding or reinforcing oneself when goals are achieved.

4.—Self-liberation. This is a commitment to change behavior based on the belief that the achievement of the healthy behavior is possible (Lox et al., 2010).

4.

5. Stimulus control. This involves placing cues in the environment that will remind people to be more physically active and removing cues that tempt them toward bad habits (LaMorte, 2016). This can involve purging the house of junk food and moving exercise equipment to a more prominent location.

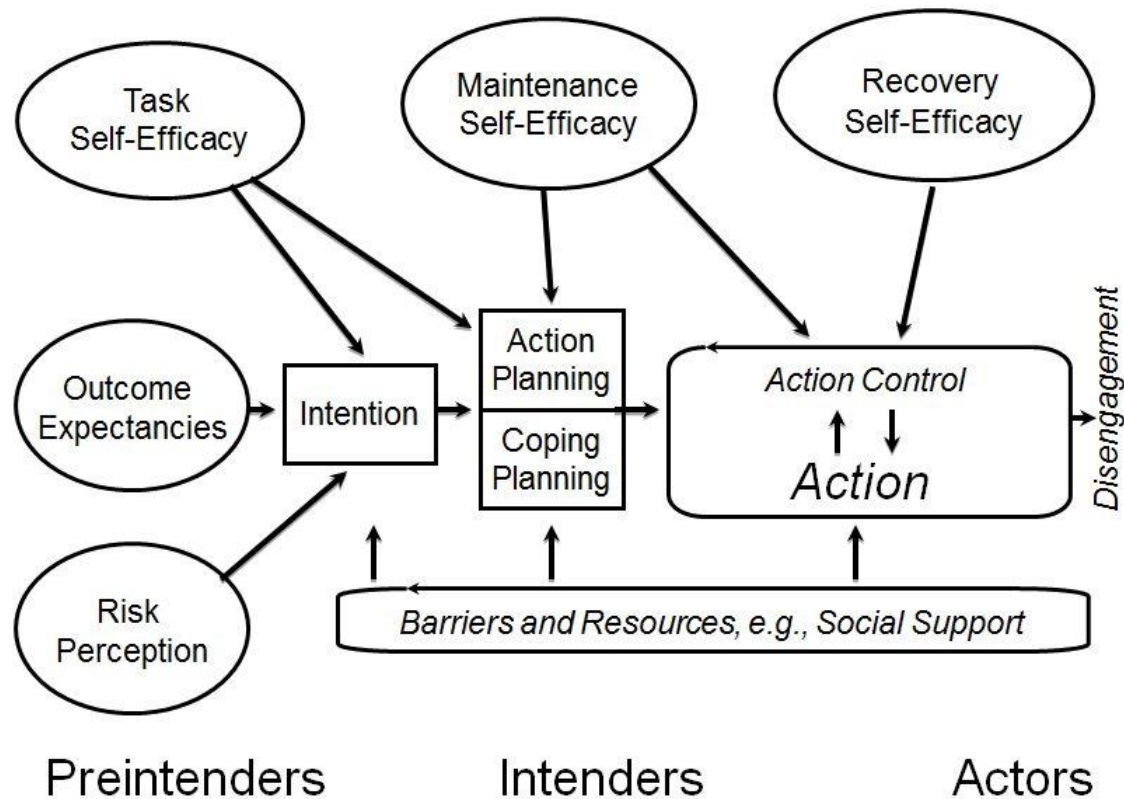
There is mixed evidence on the Transtheoretical Model's ability to predict exercise stage transition. Although the model does a reasonable job predicting if people will progress, regress, or show no movement, it has shown some difficulty in explaining which stage an individual will move into over a period of time and when they will reach a certain stage. Therefore, the model is more effective at predicting direction than what stage and when. However, the Transtheoretical Model still provides a useful framework for helping people adopt a more active lifestyle as it recognizes that a one-size-fits-all approach is not effective when it comes to exercise interventions (Lox et al., 2010). Furthermore, Albert Bandura and others have criticized the theory as having imposed arbitrary time frames on the stages and that getting people to progress from one stage to the next takes more than the passage of time. Another problem presents itself in that most people do not exhibit stable progress through the stages. Many skip stages or regress in ways that the model cannot predict. Therefore, some researchers have proposed subgroups within the stages as a possible way to better predict stage progression (Moore & Highstein, 2004). All things considered, the Transtheoretical Model is based on 30 years of research in measuring behavior change for a wide variety of health behaviors and it does

provide a practical blueprint for effecting self-change in health behaviors (Moore & Highstein, 2004).

HEALTH ACTION PROCESS APPROACH

Another stage model that is helpful to understand in the health-promotion domain is the Health Action Process Approach (HAPA). Developed by Ralf Schwarzer in 1992, HAPA provides a theoretical framework to study motivational and volitional processes in health behavior change (Snieholta et al., 2005). The model suggests that the adoption, initiation, and maintenance of health behaviors are a process that consists of at least a motivation phase and a volition phase. The latter might be further subdivided into a planning phase, action phase, and maintenance phase (Schwarzer, 2009). It also includes the idea that perceived self-efficacy plays an important role at all stages, as well as other cognitions, such as intention, risk perception, and outcome expectancies (Chiu, Lynch, Chan, & Rose, 2012).

Exhibit 110: The Health Action Process Approach Model (Schwarzer, 2009)



Motivational Phase

Before people change their habits, they develop a behavioral intention. In HAPA, this occurs in the motivational phase. This motivational process begins with risk awareness, which can lead to deliberations about health behavior change (Snieholta et al., 2005). Risk perceptions serve predominantly to set the stage for a contemplation process early in the motivation phase but do not extend beyond (Schwarzer, 2009). Risk perception has two aspects: perceived severity of a health condition and personal vulnerability towards it. The first refers to the amount of harm that might occur, and the second pertains to the subjective probability that one could fall victim to that condition (Snieholta et al., 2005).

Self-efficacy and outcome expectancies are seen as the major predictors of intentions (Chiu et al., 2012). Outcome expectancies are the beliefs that an individual holds about the

positive and negative consequences of altering their behavior. This is similar to decisional balance in that when the positives (or pros) outweigh the negatives (cons) it will result in an increased intention toward behavior change (Snieholta et al., 2005). Most previous models treat these two as being unrelated predictors. However, outcome expectancies can be seen as precursors of self-efficacy because people usually make assumptions about the possible consequences of behaviors before inquiring whether they can really take the action themselves (Aliabad et al., 2014). It follows that if one does not believe in one's capability to perform a desired action, one will fail to adopt, initiate and maintain it. Thus perceived self-efficacy is an important factor in forming an intention to change (Snieholta et al., 2005). Outcome expectancies are chiefly important in the motivation phase, but they lose their predictive power after a personal decision has been made (Schwarzer, 2009).

The magnitude of direct influence of perceived self-efficacy and outcome expectancies ~~are is sometimes seen as~~ most often situationally specific. If self-efficacy is ~~specified seen~~ as a mediator between outcome expectancies and intention, the direct influence of outcome expectancy on intention may decrease. However, research on this issue ~~are is~~ inconsistent, making both cognitions primary candidates for motivating change. In situations where individuals have no experience with the behavior they are contemplating, it is assumed that outcome expectancies may have a stronger direct influence than self-efficacy. Only after a sufficient level of experience is attained, does self-efficacy become more influential in forming an intention (Schwarzer, ~~2009~~2009).

It should be noted that, regarding risk awareness, fear appeals are of limited value and it is not productive to attempt to scare an individual or client into behavior change. Rather, ~~in~~ persuasive communications, the message should be framed in a way that allows individuals to

~~draw on their~~use coping resources and skills to control or mediate health threats. However, a minimum level of threat or concern must exist before people start contemplating the benefits of possible actions and ~~ruminate~~consider their competence to actually perform them. (Chiu, 2012).

In establishing the direct effect these factors have on producing an intention, it is assumed that self-efficacy and outcome expectancies dominate, whereas risk perceptions may not contribute any additional direct influence. As indirect factors, however, risk perception may be of significance as the particular context and one's personal experience play a role and may change the weight of its influence (Schwarzer, 2009).

Volitional Phase

Once a behavior intention is formed the motivational phase is complete and the individual enters the volitional phase. However, intentions do not always translate into action. Intentions are more likely to be translated into behaviors when people anticipate detailed plans, imagine success scenarios, and develop preparatory strategies of tackling a challenging task (Schwarzer, 2009). The volitional process can be subdivided into sequences such as planning, initiation, maintenance, and relapse management. The adoption and maintenance of the health behaviors is not achieved through an act of will, but involves the development of self-regulatory skills and strategies. This involves methods to influence motivation and behaviors such as the setting of attainable goals, creating incentives, using coping strategies, monitoring progress, and enlisting social support (Snieholta et al., 2005). There are three main constructs used in the volitional phase to increase the likelihood of health behavior change: action planning, coping planning and action control.

During action planning, individuals develop a mental representation of a future situation and a behavioral action that should be effective for achieving the goal. Gollwitzer (1999) calls

such precise action planning implementation intentions. Implementation intentions help promote goal attainment by helping people to initiate behavior change (Snieholta et al., 2005).

Action plans and coping plans are based on possibilities of anticipated situations. An action plan should be specific and include situational cues and sufficient detail to qualify as a plan, and should be more than merely a behavioral intention (Chiu, 2012). An example would be, "I plan to walk with my partner for an hour after dinner through the park," rather than "I intend to go for a walk a couple times a week." The time of week and day and the presence of the partner constitute the cues that are supposed to trigger the action. This type of action planning has shown to be a powerful predictor of health behavior in many domains (Snieholta et al., 2005). These post-decisional, pre-actional cognitions are necessary because the person might otherwise act impulsively (Aliabad, 2014). In addition, self-efficacy plays a significant role at this stage; therefore, action planning is important in effectively establishing plans which match the individual's perceived self-efficacy (Schwarzer, ~~2009~~2009).

However, uncertainty exists even with such action planning, as unfavorable conditions for performing the behavior may develop, such as inclement weather, an unexpected visit from a friend, or a change of the partner's schedule. Maintenance self-efficacy is important here (Snieholta et al., 2005). Action control and coping planning serve to mediate these situations, by using self-regulatory techniques and advanced planning for unfavorable scenarios.

Coping planning is thought to be a more effective self-regulatory strategy than action planning alone. It is important to note that coping plans are made in advance. After people form an action plan, they imagine possible obstacles and generate coping strategies (Schwarzer, 2009). After one's first-choice plan becomes unrealistic due to anticipated obstacles or better options to attain one's goal, coping plans created in advance could be initiated. These plans function as an

alternative to the initial action plan in terms of the target behavior, the time, the social situation, and other circumstances (Aliabad, 2014). In some studies, evidence shows that there are unconscious effects of planning based on automaticity. In these cases, behavior can be elicited by situational cues, without active self-regulation (Snieholta et al., 2005).

Performing an intended health behavior is an action, just as is refraining from a risk behavior. The suppression of health-detrimental actions requires effort and persistence as well, and therefore is also guided by a volitional process that includes action plans and action control (Schwarzer, ~~2009~~2009). Action control includes efforts undertaken in order to alter one's behavior, known as self-regulation. There are three self-regulatory processes that make up action control: self-monitoring, awareness of standards, and effort. Action control can be seen as the most proximal volitional predictor of behavior. Coping and maintenance self-efficacy promotes these processes, as a self-efficacious person will set clear goals, monitor themselves with optimism and put forth effort toward goal attainment (Snieholta et al., 2005).

Action planning and coping planning are alterable variables. They can be easily communicated to individuals with self-regulatory deficits which is the reason why they have been frequently applied in interventions to change health behaviors (Schwarzer, ~~2009~~2009). In a study by Sniehotta, et. al. (2004) of 437 in-patients with coronary heart disease, results showed that intention was a significant predictor of action planning, while action planning predicted exercise. Therefore, the effect of intention on exercise was fully mediated by action planning. The present research indicates that emphasis a need for alternative strategies to intention based approaches, such as making people aware of their coping resources, or self-regulatory capabilities. Interventions within this model should focus on improving action planning activity, heightening self-efficacy and fostering action control skills (Snieholta et al., 2005).

RELAPSE PREVENTION

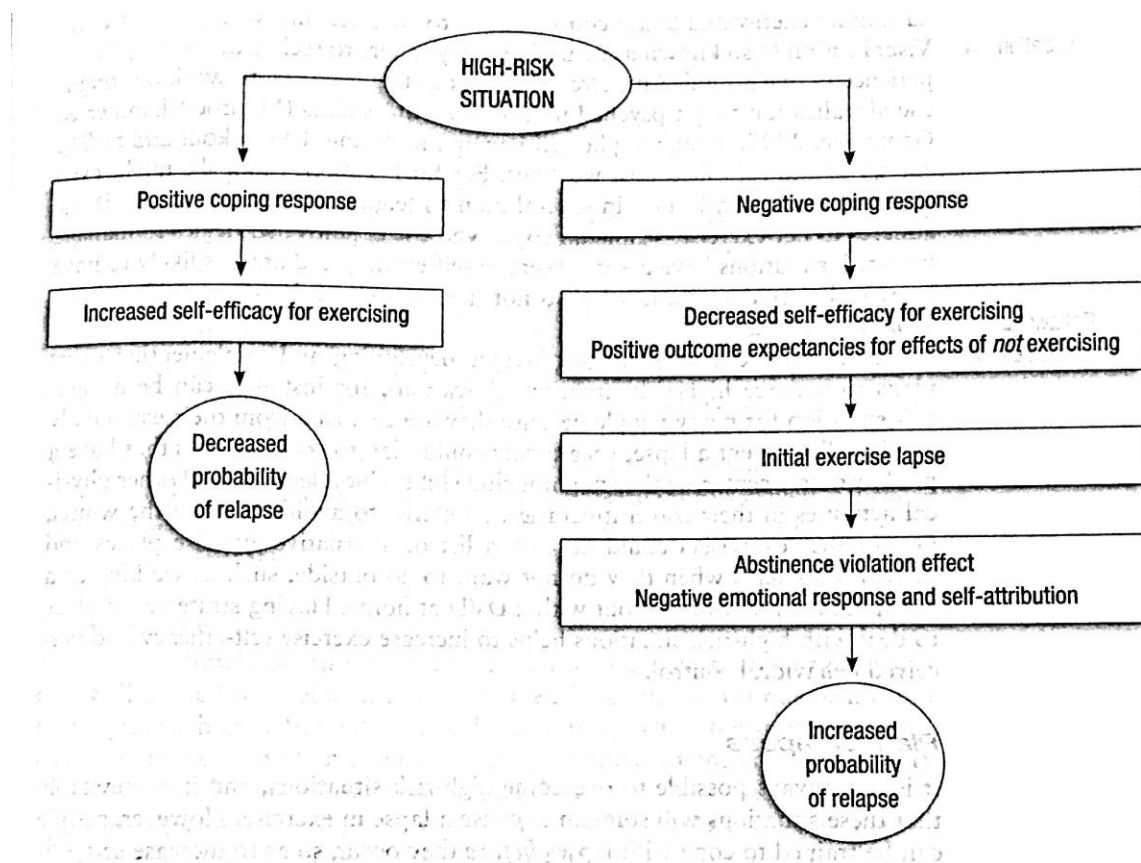
A great deal of theory thus far has dealt with initiation and maintenance of exercise behaviors. However, another problem plagues the ability of individuals to adhere to a lifestyle change. That problem is the issue of relapse prevention. Relapse refers to a breakdown or failure in a person's attempt to maintain change in any set of behaviors generally marked as no exercise for three or more months (Parks & Marlatt, 2000). Lapses or "drop out" in exercise routines are quite common and are considered to be more the rule than the exception, reaching as high as 50% in certain populations (Amati et al., 2007). Sallis et al. suggested that a large proportion of the population may have previously initiated exercise but subsequently relapsed at some later time. In this study of patterns of lifetime history of relapse from exercise, 20% of regular exercisers experienced a previous relapse three or more times and 20% reported one to two relapses (Weinberg & Gould, 2003).

Temporary lapses are almost inevitable; however, the concern is when the lapse causes the individual to return to their previous sedentary lifestyle. The most common reason given for relapse is injury, followed by work demands, lack of interest, lack of time, family demands, boredom with an exercise program, the end of the sports season, bad weather, and stress (Lox et al., 2010). Certainly, there are many obstacles that can inhibit adherence to an exercise program. Although it has been touched on in some theories, particularly when discussing coping planning, coping self-efficacy and self-regulatory skills, it bears further examination in more detail.

The Relapse Prevention Model proposed by Marlatt and Gordon, initially developed for the treatment of alcoholism, suggests that both immediate determinants (e.g., high-risk situations, coping skills, outcome expectancies, and the abstinence violation effect) and covert antecedents (e.g., lifestyle and environmental factors) can contribute to relapse (Larrimer & Palmer 1999).

As demonstrated in the Exhibit 121, which outlines the Relapse Prevention Model, relapses occur as a result of a negative coping response to “high-risk” situations (Lox et al., 2010) Coping behavior plays an important role in understanding the relationship between exposure to challenging situations and outcome (i.e., slip, lapse, or relapse). Coping “refers to what an individual does or thinks in a relapse crisis situation so as to handle the risk and is conceptualized as a mediator between the stress of the high-risk situation and relapse” (Amati et al., 2007).

Exhibit 121: Relapse prevention model in the exercise domain (Lox et al., 2010)



According to the Relapse Prevention Model, it is the person’s coping response that will determine whether a lapse and subsequent relapse will occur when encountering a high-risk

situation (Lox et al., 2010). Coping efforts are predominantly linked to a desired goal (e.g., attending a planned exercise session) and may be cognitive, behavioral, or a combination thereof (Amati et al., 2007). As shown in the model, an inadequate range of adaptive coping responses results in decreased self-efficacy. The self-efficacy construct is a particularly important aspect to the relapse phenomenon, especially when combined with a positive outcome expectancy, for example, having more time to relax by skipping an exercise session (Amati et al., 2007). In the event that this initial lapse leads the individual to perceive a loss of situational control and lose hope in future behavior change, thus believing that the entire program should be abandoned, this is known as the abstinence violation effect. The abstinence violation effect results in a negative emotional response (e.g., guilt, shame, and self-attribution for the perceived failure) (Berger et al., 2002). The Abstinence Violation Effect is considered to be a particularly powerful determinant of the course of a possible lapse or relapse (Amati et al., 2007). Therefore, it is the model's contention that exposure to specific high-risk situations per se does not precipitate relapse. Rather, it is the manner in which individuals cope with the situations that impacts outcome (Amati et al., 2007).

On the other hand, when individuals demonstrated a positive coping response, the result is increased self-efficacy and a decreased probability of relapse. It is, therefore, imperative that client's be taught positive coping skills in order to ensure long-term adherence (Lox et al., 2010). Dishman and Buckworth (1997) note that the events that lead to relapse may have a limited impact if they are anticipated and planned for. It is important to teach clients to recognize obstacles and barriers temporary impediments and to develop self-regulatory skills for preventing lapses (Berger et al., 2002). An exercise slip may be viewed as an isolated incident. In this instance, the lapse and how it is perceived may be regarded as a gateway to more

prolonged periods during which time persons do not engage in planned exercise (Amati et al., 2007).

There are many cognitive and behavioral strategies that may be employed in order to mediate the risk of relapse. Specific interventions include identifying specific high-risk situations for each client and increasing the client's skills for coping with those situations, increasing the client's self-efficacy, educating clients on the effects of exercise, teaching them how to manage lapses, and restructuring their perceptions of the relapse process (Larrimer & Palmer 1999).

A 2001 Study by Perri et al., which compared different relapse prevention strategies, found that the techniques for preventing relapse in the exercise domain were most effective when given as in a therapy-based setting. This was significantly more effective than didactic presentations and learning modules. Therefore, relapse prevention may have a greater impact when applied as an individualized therapy based on an assessment of specific problem circumstances, the client's level of skill, and the likelihood that the client will apply the skill in the problem situation (Perri et al. 2001). Accordingly, this type of intervention strategy will be most examined here.

Treatment approaches begin with an assessment of the environmental and emotional characteristics of situations that are potentially associated with relapse (i.e., high-risk situations). As shown in the [model diagram](#), a central concept of the model ~~postulates~~ proposes that high-risk situations frequently serve as the immediate precipitators of a lapse. According to the model, a person who has initiated a behavior change, such as an exercise program, should begin experiencing increased self-efficacy or mastery over their behavior, which should grow as they continue to maintain the change. Certain situations or events, however, can pose a threat to the

person's sense of control and, consequently, ~~precipitate~~ precedes a relapse crisis (Larrimer & Palmer 1999). Several types of situations can play a significant role in relapse, for example:

1. Negative emotional states, such as anger, anxiety, depression, frustration, and boredom, which are also referred to as intrapersonal high-risk situations (Stetson et al., 2005)-. For example, a person may worry about having enough time to complete a project if they spend time exercising, they may feel that they are too tired, or they may feel bored with their exercise routine.
2. Social pressure, including both direct verbal or nonverbal persuasion and indirect pressure. This may involve family or job demands or friends gathering for dinner during a time when the individual has planned to exercise (Larrimer & Palmer 1999).
3. Environmental factors. Bad weather is the most commonly cited obstacle to adherence (Stetson et al., 2005)-).

To anticipate and plan accordingly for high-risk situations, the person ~~first~~ must first identify ~~the~~ situations in which ~~he or she~~ they may experience difficulty coping. These situations can be identified using a variety of assessment strategies. For example, the ~~therapist~~ professional can interview the client about past lapses or relapse episodes in order to identify situations in which the client has or might have difficulty coping (Larrimer & Palmer 1999). Furthermore, clients who have not yet initiated an exercise program can be encouraged to self-monitor their behavior. They can, -for example, ~~by~~ maintaining an ongoing record of the situations, thoughts and emotions that may tempt them to skip an exercise session or ~~might~~ prevent them from working out. Such a record allows clients to become more aware of the immediate precipitants of

a lapse. Even ~~in~~with clients who have already begun a program of physical activity, self-monitoring can still be used to assess situations in which these obstacles are more prevalent.

Although the relapse prevention model considers the high-risk situation the immediate relapse trigger, it is actually the person's response to the situation that determines whether he or she will experience a lapse. Because a person's coping behavior is a particularly critical determinant of the likely outcome, the ability to ~~execute~~use effective coping strategies can greatly reduce the likelihood of relapse (Lox et al., 2010). Moreover, people who have coped successfully with high-risk situations ~~are assumed to~~should experience a heightened sense of self-efficacy, particularly coping self-efficacy. Conversely, people with low self-efficacy perceive themselves as lacking the motivation or ability to resist high-risk situations (Larrimer & Palmer 1999).

Once an assessment has been made of the client's emotional and environmental high-risk situations, the next step is building effective coping strategies specific to those situations can begin. The goal of the specific intervention strategies is to teach clients to anticipate the possibility of relapse and to recognize and cope with these high-risk situations. These strategies should also focus on enhancing the client's awareness of cognitive, emotional, and behavioral reactions in order to prevent a lapse from escalating into a relapse (Stetson et al., 2005)~~).~~.

Cognitive coping strategies involve using non-observable thought processes, such as self-talk, visualization and cognitive restructuring, to overcome disruptive thoughts or feelings (Lox et al., 2010). An example of self-talk, as applied here, could be when an exerciser who is worried about time to complete a project tells themselves that there is "No need to panic. A quick run will give me more energy and better concentration." In an instance where a client is lacking energy to work out, they might use visualization to get ~~psyched up~~excited and energized for the

exercise sessions (Lox et al., 2010). In addition, the previously discussed techniques for enhancing self-efficacy can be very effective in mitigating high-risk situations. These cognitive restructuring devices are designed to provide clients with ways to reframe the habit change process as learning experience, and teach that -with-errors and setbacks are expected as mastery develops (National Institutes of Health [NIH], n.d.).

Behavioral coping strategies can also be developed and implemented to produce overt plans to manage high-risk situations. For example, an individual concerned about a lapse during vacation can stay in a hotel with a pool or fitness center or a client who primarily exercises outside can make back-up plans for days when there is inclement weather (Lox et al., 2010). Other strategies may involve prompts and behavioral contracting. Prompts are cues that initiate behavior. Just as the smell of food can be a cue to eat, one can incorporate cues to prompt exercise behavior, such as laying out exercise clothes the night before or placing exercise equipment in visible locations. Likewise, social support and a routine exercise time and place can provide powerful prompts (Weinberg & Gould, 2003).

As mentioned, the abstinence violation effect is an incredibly powerful emotional response to a lapse and has a strong influence on the individual's likelihood of relapse. Therefore, it is important to minimize this, by teaching clients strategies to cope with the despair, guilt or shame they may experience when they violate their intention to exercise (Larrimer & Palmer 1999). For example, professionals may help them with cognitive restructuring by teaching them that such a scenario is not a catastrophe, but rather an inevitable part of the process that can be an experience to be learned from and handled more effectively in the future. Similarly, "All-or-nothing" thinkers may be encouraged to set flexible exercise goals (Lox et al.,

2010). According to a meta-analytic review by Dishman and Buckworth (1996), behavioral interventions were shown to be nearly five times more effective than other interventions.

Other interventions to reduce the risk of relapse could involve social interventions. These could include establishing exercise groups or buddy systems or teaching clients to ask for support.

There are many processes of change and strategies that can be employed to increase adherence and reduce the risk of relapse. For the most part, existing literature focuses on processes through the lens of increasing adherence. It is important, however, to take a look how relapse occurs and how to employ strategies to decrease the risk of relapse in order to increase adherence.

~~However, as processes of change are discussed in more detail, it is important to keep in mind that these processes are effective across several areas of the exercise domain.~~

APPLICATIONS OF ~~THEORY~~ EXERCISE PSYCHOLOGY FOR HELPING CLIENTS:

A CASE STUDY

The purpose of this paper has been to explore theories in exercise ~~science~~ psychology and provide an understanding of how these theories help explain and predict exercise behavior for the purpose of helping professionals increase client success in adhering to a health and wellness lifestyle. Therefore from a practical point of view, it should be deemed helpful to take a look at an example of how these theories might help predict the exercise adherence of a client and, furthermore, increase their likelihood of adherence. It should be understood ~~by~~ at this point that each theory has its own specific variables ~~which that~~ are deemed within the theory to have the

most predictive power. ~~and that u~~Using processes to manipulate these variables can, therefore, have an impact on the ~~clients~~client's adherence.

This case study will focus on using the theories discussed to help the practitioner make more informed decisions about promoting exercise behavior.

Melanie is a young mother, who has not exercised since having her oldest child 7 years ago. She is already becoming overweight and her doctor has advised her that she should start an exercise program, as her blood pressure and cholesterol are now becoming a bit high. She says that since getting married and becoming a mother of two children (ages seven and four) she just can't seem to find the time to exercise, but she used to really love running and playing tennis. Based on the reasons to exercise and the determinants of exercise adherence, how can the probability be increased that Melanie will start and adhere to an exercise program?

First it is helpful to determine what stage of change that she is in so a program can be devised to match that stage. Because of the advice of her doctor, Melanie is seriously considering beginning an exercise program, but hasn't done anything yet. It can be determined that she is in the Contemplation Stage, or Motivational Phase. The first strategy would be to shift the decisional balance, by helping her weigh the pros and cons of an exercise program and to increase her risk perception. From the Health Belief Model, her likelihood of engaging in preventative health behaviors depends on the person's perception of the severity of the risk and the perceived benefits of taking action. Therefore, it could be helpful to emphasize the benefits of exercise and educate her on the severity of her potential problems. Using anecdotes about others people similar to her, with her health situation may also increase risk perception. Explaining additional benefits of exercise, such as reduction of stress and depression, greater self-esteem, and weight control could further sway the decisional balance. In addition,

reminding Melanie of the fun and enjoyment she experienced when she was more physically active could increase intrinsic motivation. These interventions should encourage self-liberation, thus, Melanie's commitment to change.

Because Melanie perceives lack of time as the greatest barrier to exercise, helping her to see that, in reality, it has been the low priority that she has given exercise that makes it seem as if she has no time for it. Suggesting that she place exercise as one of her top priorities, especially with the risks she is now exposed to, a behavioral intervention would be to exercise at the start of her day and be make it a part of her daily routine. Laying out her workout clothes the night before and exercising first thing each day can provide powerful cues to action that will ensure that exercise does not get shuffled to the bottom of the priority list as the day goes on. By working with Melanie to find solutions to barriers, this will increase her perceived behavioral control, which, as stated in the Theory of Planned Behavior, has a direct influence on behavior.

Based on the research, social support is a predictor of adherence, so it would be useful to suggest to Melanie that she enlist the support of her husband and possibly find a running partner, as this can increase adherence. Another suggestion could be to find an early morning class she could attend. Because Melanie has said that she used to really enjoy tennis as well, encouraging her to find a partner and schedule some tennis sessions would also be a great suggestion. Planning a program that is inherently enjoyable will increase intrinsic motivation. Furthermore, these suggestions should increase self-efficacy, as Melanie already has previous mastery experience in running and tennis: she's done it before and she can do it again. The vicarious experience and social support provided by an exercise class would provide vicarious experience (seeing other women like her complete the workout) and social persuasion. The fact that she has stated that she previously enjoyed these activities also ensures that including these in her

program will provide her with positive physiological and affective states. In this way, positive feelings in all four factors of self-efficacy are achieved, and, therefore, probability of adherence will be higher.

Moreover, this plan of action can provide her with the three basic needs of self-determination: by giving Melanie options, she will have a sense of autonomy and free will in making decisions about her health regimen; she can believe in her competence through previous mastery experience; and enlisting a partner or attending a class will provide a sense of relatedness. It has already been determined that choosing inherently enjoyable activities for Melanie will increase her intrinsic motivation, a powerful determinant of adherence. Further intervention in this domain could involve self-reevaluation to help Melanie determine what she values in life and showing her how her program increase her ability to align with those values, thereby increasing integrated regulation. Finally, working with Melanie on specific, measureable, achievable, realistic goals will increase introjected regulation and further develop mastery experiences.

By this point, Melanie should have moved through the Preparation Stage and be entering, or have entered into, the Action Stage or Volitional Phase. In this stage, relapse prevention is key. Accordingly, helping Melanie to develop a relapse prevention plan is key. Planning contingencies for when inclement weather occurs, at which time and running or tennis are not possible, is crucial. Perhaps running at an indoor track or racquetball at the local gym could be viable backup plans. Other coping skills, such as identifying negative emotions (boredom or frustration) and adjusting her program accordingly, can be especially effective. Additionally, by making sure that she does her workouts early in the day, she can make sure that social pressures do not interfere with her program. Finally, Melanie should understand that temporary lapses are

almost inevitable, and should not be a source of guilt or feelings of failure. Instead, she should realize that a lapse is not a catastrophe if she does not totally abandon her program. Letting her know she can “make-up” an exercise session if she feels it’s necessary can increase perceived behavioral control.

In considering this scenario, many major concepts from the theories discussed have been employed to show how a professional can help a client initiate and maintain and exercise lifestyle. Understanding the explanations each theory proposes helps inform decisions about factors to focus on in helping clients achieve a positive lifestyle change through an exercise program. While, not every component of every theory was included in this scenario, it provides a broad survey of the theories discussed and illustrates how they may be applied to a real life scenario. It should also be noted that not every case will require the same applications. For this is reason, it is necessary to have an understanding of a broad range of concepts that can be applied when situationally necessary. Certainly, there are many obstacles to exercise adherence, most of which originate in the mind. However, although the mind is one of the most powerful forces on earth, there are techniques, principles and applications available to help clients overcome barriers and achieve a healthier lifestyle.

~~Melanie is a young mother, who has not exercised since having her oldest child 7 years ago. She is already becoming overweight and her doctor has advised her that she should start an exercise program, as her blood pressure and cholesterol are becoming a bit high. She says that since getting married and becoming a mother, she just can’t seem to find the time to exercise, but she used to really love running and playing tennis~~

~~GOAL SETTING AND GOAL ATTAINMENT~~

~~In addition, the Social Cognitive Theory is composed of several processes of goal realization, which are interrelated and each have an effect on motivation and goal attainment~~

~~(17). These are:~~

~~1. Self Observation.~~

~~2. Self Evaluation~~

~~3. Self Reaction~~

~~4. Self Reflection~~

~~5. Self Regulation. According to self regulation, people do not behave to suit the preferences or demands or others.~~

~~6. Self Efficacy~~

BIBLIOGRAPHY

- Amati, F., Barthassat, V., Miganne, G., Hausman, I., Monnin, D. G., Costanza, M. C., & Golay, A. (2007). Enhancing regular physical activity and relapse prevention through a 1-day therapeutic patient education workshop: a pilot study. *Patient education and counseling*, *68*(1), 70-78.
- Aliabad, H. O., Vafaenasab, M., Morowatisharifabad, M. A., Afshani, S. A., Firoozabadi, M. G., & Forouzannia, S. K. (2014). Maintenance of physical activity and exercise capacity after rehabilitation in coronary heart disease: A randomized controlled trial. *Global journal of health science*, *6*(6), 198.
- Australia, Department of Health (2004). *The stages-of-change model*. Retrieved from <http://www.health.gov.au/internet/publications/publishing.nsf/Content/drugtreat-pubs-front9-wk-toc~drugtreat-pubs-front9-wk-secb~drugtreat-pubs-front9-wk-secb-3~drugtreat-pubs-front9-wk-secb-3-3>
- Azjen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Babeu, L. A., Kricos, P. B., & Lesner, S. A. (2004). Application of the stages-of-change model in audiology. *J Acad Rehabil Audiol*, *37*, 41-56.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health education & behavior*, *31*(2), 143-164.
- Belluck, P. (2005). Children's Life Expectancy Being Cut Short by Obesity. Retrieved from <https://www.nytimes.com/2005/03/17/health/childrens-life-expectancy-being-cut-short-by-obesity.html>
- Becker, M. H., & Maiman, L. A. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical care*, 10-24.
- Berger, B.G., Pargman, D., Weinberg, R.S. (2002). *Foundations of Exercise Psychology* (3rd ed.). Morgantown, WV: Fitness Information Technology, Inc.
- Centers for Disease Control and Prevention. (2018). Physical Activity and Health. Retrieved from <https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm>
- Chiu, C. Y., Lynch, R. T., Chan, F., & Rose, L. (2012). The health action process approach as a motivational model of dietary self-management for people with multiple sclerosis: A path analysis. *Rehabilitation Counseling Bulletin*, *56*(1), 48-61.
- Craddock, J.C., Pignataro, R.M., & Daramola, C.O. (2016). Athletic Trainers and the National

Health Agenda: Promoting Health Behavior Change. *Clinical Kinesiology (Online Edition)*, 44-52.

Glanz, K., Rimer, B.K., Viswanath, K.V. (2008). *Health Behavior & Health Education: Theory, Research, and Practice*. San Francisco, CA: Jossey-Bass.

Jones, F., Harris, P., Waller, H., & Coggins, A. (2005). Adherence to an exercise prescription scheme: The role of expectations, self-efficacy, stage of change and psychological well-being. *British Journal Of Health Psychology*, 10(3), 359-378.

Jackson, D. (2010). How Personal Trainers Can Use Self-Efficacy Theory to Enhance Exercise Behavior in Beginning Exercisers. *Strength & Conditioning Journal (Lippincott Williams & Wilkins)*, 32(3), 67-71.

John F. Kennedy Presidential Library and Museum (n.d.). The Federal Government Takes on Physical Fitness. (n.d.). Retrieved from <https://www.jfklibrary.org/JFK/JFK-in-History/Physical-Fitness.aspx>

Kennedy-Ambruster, C., Shipley, M.S., Yoke, M.A., & Calvert, H. (n.d.) Personal Training and Fitness Coaching: Do They Really Work? Retrieved from <https://acefitness.org/certifiednewsarticle/2136/personal-training-and-fitness-coaching-do-they>

LaMorte, W.W. (2016). *The Social Cognitive Theory*. Retrieved from Boston University School of Public Health: <http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories5.html>

Larimer, M. E., & Palmer, R. S. (1999). Relapse prevention: An overview of Marlatt's cognitive-behavioral model. *Alcohol research and Health*, 23(2), 151-160.

Lee, R. L. T., & Loke Yuen, A. (2012). A quasi-experimental intervention to improve self-efficacy for eating and exercise weight management: Short-term effects. *Journal of nutritional disorders & therapy*.

Lox, C.L., Martin Ginis, K.A., & Petruzello, S.J. (2010). *The Psychology of Exercise: Integrating Theory and Practice* (3rd ed.). Scottsdale, AZ: Holcomb Hathaway, Publishers, Inc.

Marcus, B. H., Selby, V. C., Niaura, R. S., & Rossi, J. S. (1992). Self-efficacy and the stages of exercise behavior change. *Research quarterly for exercise and sport*, 63(1), 60-66.

McAuley, E., & Blissmer, B. (2000). Self-efficacy determinants and consequences of physical activity. *Exercise and Sport Sciences Reviews*, 28(2), 85-88.

McKinney, K. (2014). 60 years of presidential campaigns, and obesity is worse than ever. Retrieved from <https://www.vox.com/2014/6/23/5828388/60-years-of-presidential-fitness-campaigns-and-obesity-is-worse-than>

- Moore, M., & Highstein, G. (2004). Principles of behavioral psychology in wellness coaching. In *Presented/published by the International Coach Federation's Coaching Research Symposium. Quebec City, Quebec, Canada.*
- Morrison, N. (2001). Stage and continuum theories: The contributions of the self-determination theory, the theory of planned behavior, and the stages of change model to the understanding of. *Psychology (Clinical).*
- National Institutes of Health (n.d.). Stage Model for Behavioral Intervention Development. Retrieved from <https://www.nia.nih.gov/research/dbsr/stage-model-behavioral-intervention-development>.
- Nhu, T. (2017). What is Self-Determination Theory. Retrieved from <https://positivepsychologyprogram.com/self-determination-theory/>
- Ochsner, S., Scholz, U., & Hornung, R. (2013). Testing Phase-Specific Self-Efficacy Beliefs in _____the Context of Dietary Behaviour Change. *Applied Psychology: Health and Well-Being*, _____5(1), 99-117.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of educational research*, 66(4), 543-578.
- Parks, G.A. and Marlatt, G.A. (2000). Relapse Prevention Therapy: A Cognitive-Behavioral Approach. Retrieved from <https://nationalpsychologist.com/2000/09/relapse-prevention-therapy-a-cognitive-behavioral-approach/10491.html>
- Perri, M. G., Nezu, A. M., McKelvey, W. F., Shermer, R. L., Renjilian, D. A., & Viegner, B. J. (2001). Relapse prevention training and problem-solving therapy in the long-term management of obesity. *Journal of consulting and clinical psychology*, 69(4), 722.
- Prochaska, J. O., & DiClemente, C. C. (1982). Transtheoretical therapy: Toward a more _____integrative model of change. *Psychotherapy: theory, research & practice*, 19(3), 276.
- Riemsma, R. P., Pattenden, J., Bridle, C., Sowden, A. J., Mather, L., Watt, I. S., & Walker, A. (2002). *A systematic review of the effectiveness of interventions based on a stages-of-change approach to promote individual behaviour change*. National Coordinating Centre for Health Technology Assessment.
- Ryan, R.M., Patrick, H., Deci, E.L., & Williams, G.C. (2008). Facilitating health behavior _____change and its maintenance: Interventions based on self-determination theory. *European _____Health Psychologist*, 10(1), 2-5.

Sanli, E. A., Patterson, J. T., Bray, S. R., & Lee, T. D. (2013). Understanding self-controlled motor learning protocols through the self-determination theory. *Frontiers in psychology*, 3, 611.

Schwarzer, R. (2009). Modeling health behavior change: The health action process approach (HAPA). Retrieved from http://userpage.fu-berlin.de/gesund/publicat/ehps_cd/health/hapa.htm

Snieholta, F.F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention-behavior gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, 20(2), 143-160.

Sforzo, G. A., Moore, M., & Scholtz, M. (2015). Delivering Change That Lasts: Health and Wellness Coaching Competencies for Exercise Professionals. *ACSM's Health & Fitness Journal*, 19(2), 20-26.

Stajkovic, A. D., & Luthans, F. (2003). Social cognitive theory and self-efficacy: Implications for motivation theory and practice. *Motivation and work behavior*, 126, 140.

Stetson, B. A., Beacham, A. O., Frommelt, S. J., Boutelle, K. N., Cole, J. D., Ziegler, C. H., & Looney, S. W. (2005). Exercise slips in high-risk situations and activity patterns in long-term exercisers: An application of the relapse prevention model. *Annals of Behavioral Medicine*, 30(1), 25-35.

TEDxTalks. (2013, December 5). *The psychology of self-motivation | Scott Geller | TEDxVirginiaTech* [Video File]. Retrieved from <https://youtu.be/7sxpKhIbr0E?list=PLSqmTJ2tDDxU8CffcYJFeo9oQM0HcC8YH>

TEDxTalks. (2014, November 18). *Winning the Mental Battle of Physical Fitness and Obesity | Ogie Shaw/TEDxSpokane* [Video File]. Retrieved from <https://youtu.be/K60xHx836T0?list=PLSqmTJ2tDDxU8CffcYJFeo9oQM0HcC8YH>

TEDxYouth. (2013, January 13) *Health, Fitness and Happiness & rules to give you all 3: Tony Horton at TEDxYouth@SantaMonica* [Video File]. Retrieved from <https://youtu.be/RQupiauyZYE?list=PLSqmTJ2tDDxU8CffcYJFeo9oQM0HcC8YH>

Weinberg, R.S. & Gould, D. (2003). *Foundations of Sport & Exercise Psychology* (3rd ed.). Champaign, IL: Human Kinetics.

