

**Understanding a Demonstration Effect of 2015 Pan Am Games Track Cycling  
Competitions: Exploring Relationships Between Pre-Event Engagement, Trait Inspiration,  
Positive Affect, and Participation Intention**

by

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### **Author's Declaration**

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners. I understand my thesis may be made electronically available to the public.

## **Abstract**

The demonstration effect occurs when “people are inspired by elite sport, sports people or sport events to actively participate themselves” (Weed et al., 2015, p.197). Theoretical underpinnings of demonstration effects are not well established in the literature (Potwarka, 2015). Thus, the purpose of this thesis was to identify intrapersonal and experiential mechanisms that might help explain demonstration effects. To achieve this purpose, spectators of the 2015 Pan American Games track cycling competitions (n=381) were surveyed. Relationships between pre-event engagement, trait inspiration, positive affect, and intention to participate in track cycling after watching 2015 Pan Am Games track cycling competitions were examined using structural equation modelling (AMOS). Both pre-event engagement and trait inspiration were found to significantly influence both positive affect and participation intention. Positive affect was found to have no significant influence on participation intention, and did not serve as a mediating variable between pre-event engagement and participation intention, or between trait inspiration and participation intention. This thesis reveals that being aware of, interested in, and identifying as a fan of the sport on display is a very important predictor of intention to participate in the sport on display. Furthermore, those who have high trait inspiration are also likely to have positive intentions toward participation in the sport on display. Interestingly, however, a key finding of this thesis is that simply feeling good during the event does not influence spectators’ intentions to participate in the sport on display. Implications for theory and practice, and suggestions for future research are discussed.

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## CHAPTER ONE: INTRODUCTION

Hosting elite international sport events such as the Pan American (Pan Am) Games and Parapan American (Parapan Am) Games can have positive impacts for the communities in which they are held. For example, the International Olympic Committee (IOC) suggests five specific categories of sport event impacts: social, environmental, urban, economic, and sport (International Olympic Committee [IOC], 2013). Social impacts refers to embracing “education, respect for ethical principles, human dignity, mutual understanding, the spirit of friendship solidarity and fair play, while rejecting all forms of racial, religious, political and gender discrimination” (IOC, 2013, p. 24). Furthermore, elite sport events have the potential to change the world’s perception of the host community and showcase the unique culture of the host community (IOC, 2013).

From an environmental perspective, hosting an elite international sport events can lead to positive environmental policy and eco-friendly infrastructure improvements (IOC, 2013). Moreover, hosting sport events can improve the image of the city and improve transportation infrastructure to provide an urban legacy (IOC, 2013). The IOC claims that by making the host city a more attractive place to live and to visit, elite (large scale) sport events can help cities achieve long-term goals to create a higher quality of life for residents and increase the city’s appeal (IOC, 2013).

As the international prestige of the elite international sport event increases, so does the economic impacts (IOC, 2013). Davies (2002) suggests that the economic impacts of mega sport events such as the Olympics have been underestimated. They, in fact, have a larger impact than have traditionally been reported. Gratton, Shibli, and Coleman (2005) and Kim (2013) both have found that the tourism potential and showcase of place that lead to an increase in economic

activity makes it very easy to convince members of the local community of the benefits of hosting the Olympics. Raj et al. (2013) found that the Olympic Games can have a variety of positive economic impacts on a host community which include; inward investment, increased tourism, and advancement of infrastructure. They do however, point out that an increase in employment and consumer spending are present, but just for the duration of the Games (Raj et al., 2013).

Finally, as is most relevant to the present study, the IOC (2013) defined three specific types of sporting legacies which include: sporting venues; boost in sport participation; and increase in the capacity for sport. Sport facility legacies are defined as “permanent venues, built or refurbished for the Games, that can be used extensively for sport once the Games have finished, delivering a lasting sporting legacy” (IOC, 2013, p. 14). Boost in participation refers to “the interest generated by hosting the Olympic Games presents the host city with a unique opportunity to increase the popularity and uptake of sport across the entire host country” (IOC, 2013, p. 18). Increasing the capacity for sport is “boosting interest in sport and engaging schools and local sports clubs, hosting the Games can also help implement new training programmes for coaches, as well as provide better facilities and new equipment, all of which can help nurture the next generation of champions” (IOC, 2013, p. 18).

Increases in sport participation and physical activity are often believed to be key benefits of hosting elite international sport events such as the Olympics or Pan Am/Parapan Am Games for local communities (Boardley, 2013; Funk, Jordan, Ridinger, & Kaplanidou, 2011; Girginov & Hills, 2008; Shipway, 2007; Wicker & Sotiriadou, 2013). One way that elite international sport events can lead to an increase in sport participation is through the demonstration effect. As defined by Weed et al. (2015) the demonstration effect phenomena occurs when “people are

inspired by elite sport, sports people or sport events to actively participate themselves” (p.197). Although viewing sport can motivate individuals to increase their physical activity levels in general (Shipway, 2007), the particular phenomena of the spectator becoming inspired to participate in the *sport on display* is referred to as the demonstration effect (Weed et al., 2015). Demonstration effects can lead to different forms of sport participation, including: increased participation among those who are currently active; inactive individuals beginning participation all together; participation in a new sport by those who are active or inactive; and, those who had a lapse in participation starting to participate again (Weed et al., 2012).

Though quite different, both live (e.g., Funk et al., 2011; Ramchandani & Coleman, 2012) and non-live (e.g., Frick & Wicker, 2016) spectatorship can contribute to the demonstration effect. There are benefits associated with non-live spectatorship such as production value associated with television programming, multitasking opportunities (i.e., child care, cooking, socializing, etc.), and portability (i.e., computer or cellphone) (Rowe, 2014), however, the context of this thesis is live spectatorship. Empirical support for demonstration effects will be explored in the following section.

### **1.1 Demonstration Effects**

As mentioned, the demonstration effect involves the process of spectators of elite sport competitions becoming inspired to participate in sport themselves (Weed et al., 2015). The demonstration effect phenomena has been found to be empirically supported in many contexts (Boardley, 2013; Potwarka, 2015; Potwarka & Leatherdale, 2015; Veal et al., 2012; Weed et al., 2015; Weed et al., 2012). For instance, Boardley (2013) and Potwarka (2015) both found that the Games were able to change the population’s behaviour and intention toward sport participation in a positive direction. With what was coined as the epicenter effect, Potwarka and

Leatherdale (2015) found that in North Shore and Richmond, British Columbia, the number of females participating in winter sports increased significantly after the Vancouver Olympic Games had concluded. This was the only demographic group, however, that demonstrated a significant increase in participation after the Vancouver Games (Potwarka & Leatherdale, 2015). The authors speculate that this isolated increase is due to the high number of medals won by Canadian female athletes at the venues located in Northshore and Richmond (Potwarka & Leatherdale, 2015), thus further supporting the notion of a demonstration effect in relation to elite performances inspiring amateur athletes to participate in sport.

Similarly, in the years following a championship win (i.e., World Cup, European Championship, etc.) for the men's German national football team from 1950 to 2014, amateur participation in football significantly increased in Germany (Frick & Wicker, 2016). Furthermore, when examining all sport clubs in Germany, amateur sport membership increased after national team success, however, junior membership levels experienced a greater increase than senior membership levels (Weimar, Wicker, & Prinz, 2014). Interestingly, the increases in junior membership occurred three years after the national team success, and four years for senior membership (Weimar et al., 2014). Indeed, demonstration effects seem to be present, however, they do not occur immediately. These findings suggest that measureable demonstration effects may not occur until years after the event, and thus, longer-term participation rates should also be considered when evaluating demonstration effects, rather than considering solely the short term change in participation rates.

Similarly, Pappous and Hayday (2015) found that in the non-traditional sports of fencing and judo, there had been an increase in registration in England from when the Olympic Games were awarded to London, to when the study was conducted in 2013. It has been recommended

that efforts to increase physical activity rates in host cities target specific populations, rather than attempt to use similar engagement methods for the entire population (Bullough, 2013; Derom & Lee, 2014). Furthermore, pre-games engagement techniques should be used not only to engage the population with the athletes, but to engage community members in sport as a whole to attempt to increase physical activity at a population level (Misener et al., 2015; Weed et al., 2015). The investment in leveraging a sport participation legacy is not to turn inactive citizens into an elite athlete, but rather to encourage citizens to participate in sport more frequently than they already do; for some individuals that would be to start participating altogether (Funk et al., 2011; Weed et al., 2015).

Indeed, there is strong support for the notion of demonstration effects, however, some scholars have uncovered contradictory evidence that does not support mass sport participation legacies associated with elite international sport events. Veal, Toohey, and Frawley (2012) did not find any change in participation rates among the Australian population after the 2006 Commonwealth Games in Melbourne. Similarly, there was no overall change in registration in sport in Australia after the Sydney 2000 Olympic Games (Frawley et al., 2013; Bauman et al., 2015). Though membership registrations did in fact increase in athletics, fencing, gymnastics, sailing, and tennis, membership rates declined in cycling, softball, swimming, and table tennis (Frawley et al., 2013). Overall, the combined increases and decreases yielded an insignificant change (Frawley et al., 2013). Similarly, Bauman et al. (2015) found that more people started walking for physical activity after the Sydney Games had concluded, however, there was no significant increase in overall time spent participating in physical activity. Furthermore, in Australia, hosting the Sydney Olympics had led to an increase in investment and generation of opportunities for elite sport, leaving the general population with fewer resources for community

sport (Toohey, 2010). An analysis of sport funding after the Sydney Olympics found that recreational sport funding from 2001 to 2005 had in fact decreased, while the funding for elite sport had increased (Toohey, 2010). With this in mind, a subsequent analysis took place in Australia, which found that elite sport was stable, while population level participation had declined, and obesity levels had risen (Toohey, 2010). Similarly, in South Africa, hosting the FIFA World Cup led to wider disparity between elite and grassroots sport (Cornelissen, Bob, & Swart, 2011). Sport for development programs were indeed implemented, however, they did not last after the tournament had ended, allowing the grassroots sport to slip back to neglect (Cornelissen et al., 2011).

Similar findings occurred in response to the Athens, Beijing, Vancouver, and London Olympics (Craig & Bauman, 2014; Darko & Macintosh, 2015; Feng & Hong, 2013; Mahtani et al., 2013). The Athens Games in 2004 initially yielded evidence of a mass sport participation legacy, however, it was not sustained (Pappous, 2011). In the case of the Beijing Olympics, when examining participation rates in Chinese townships before and after the Games took place, Feng and Hong (2013) found no significant changes in participation in sport, as no legacy had been planned for. Similarly, when using pedometers to measure youth's steps per day in Vancouver, Craig and Bauman (2014) found that hosting the 2010 Games had no impact on the amount of steps taken by youth. The authors recommend a larger investment when attempting to leverage the Olympics to increase physical activity in the host nation (Craig & Bauman, 2014).

Interestingly, even with a legacy plan in place, some studies did not find significant evidence to support a mass sport participation legacy in London in response to the 2012 Games (Darko & Macintosh, 2015; Mahtani et al., 2013). Mahtani et al. (2013) found that too much emphasis was placed on targeting youth who were already involved in sport, rather than targeting

specific groups who were not regularly active. Moreover, Darko and Macintosh (2015) found that rather than participating, families would watch the Games together, ultimately decreasing physical activity during the Games.

**1.1.1 Event Leveraging.** Evidence that does not support the demonstration effect may stem from a lack of leveraging (Chalip, 2006; Karadakis & Kaplanidou, 2010; Kellette, Hede, & Chalip, 2008; Tichaawa & Bob, 2015). Many scholars have suggested that elite international sport events can be leveraged to provide the host community with long-term benefits and sustained increases in participation (Bell & Galimore, 2015; Chalip, 2006; Kellette, Hede, & Chalip, 2008). Event leveraging involves using an event to elicit further, indirect benefits outside of the event's primary goal (Chalip, 2006). In the context of mega sport events, "the sport may be the catalyst, vehicle, or rationale for the felt sense of importance, but is neither the object nor the cause. The sporting outcomes may matter to some, but there is a sense that something more important – something that transcends the sport – is going on" (Chalip, 2006, p. 110). For example, the primary goal of hosting the Olympic Games would be to allow the world's top athletes to compete against one another in celebration of sport, whereas the event would then be leveraged to elicit the social, urban, environmental, economic, and sport impacts previously mentioned.

Increased participation that the host community desires can be achieved at a faster rate, or with more ease, when hosting a mega sport event, rather than attempting to achieve such benefits without the leverage of an event. In other words, event leveraging is based on the premise that increased sport/participation rates are more likely to result from the combined impacts of staging the event and implementing sport and physical activity-related interventions in the host community (Mahtani et al., 2013; Weed et al., 2012). For leveraging to be effective, strategies

require extensive planning (Kellette et al., 2008; Potwarka & McCarville, 2010). Furthermore, for any legacy to be successful, a carefully thought-out plan must be developed and monitored from the outset (Agha et al., 2012; Bauman et al., 2015; Chalip, 2006; Karadakis & Kaplanidou, 2010; Kellette, Hede, & Chalip, 2008; Potwarka & McCarville, 2010).

The initial notion of using elite international sport events to leverage community benefit began when Chalip (2006) found that hosting large events bring the host community together through a festival-like atmosphere, thus strengthening social and community networks. The author suggested that with proper planning, these types of events can promote social cohesion to address key social issues. Furthermore, it has been found that host cities that make planned efforts to leverage hosting a mega sport event feel more benefits from hosting when compared to cities that did not make leveraging efforts (Kellette, Hede, & Chalip, 2008). This was the case with the 2006 Commonwealth Games. Papua New Guinea created a strategic plan to create a partnership with the team that it was hosting, which resulted in stronger networks with the visiting team, whereas, Wales made no such efforts, and thus, no benefits were felt from hosting (Kellette et al., 2008). Indeed, leveraging sport events for increased sport participation is often not implemented effectively. Misener et al. (2015) found that little promotion took place to inform event attendees of participation opportunities with a figure skating event. Thus, the event did not lead to an increase in participation (Misener et al., 2015).

Many researchers are calling for event managers and organizations to leverage sport events to increase sport/physical activity participation rates in host communities. However, there are little empirical insights into what makes effective leveraging initiatives. Thus, research is needed to inform the development of leveraging strategies. The current study might inform the development of leveraging initiatives tied to a sport event through identifying levels of pre-event



engagement that are more likely to contribute to high intentions to participate in sport. Event managers, for example, may be able to increase the spectators' pre-event engagement through pre-event communication with ticket-holders. Additionally, event promotion and announcements can be designed to target those with high trait inspiration, by containing highly inspiring messages, and the event atmosphere can be controlled to maximize the positive affect felt by spectators. The constructs of pre-event engagement and personality will be explored in the following sections.

## **1.2 Study Purpose**

Although some studies of mass participation data (e.g., Potwarka & Leatherdale, 2015; Veal et al., 2012; Weed et al., 2015) have provided support for the presence of demonstration effects, very little is known about intrapersonal (i.e., personality, level of pre-event engagement) and experiential factors (i.e., emotional/affective characteristics of the spectator experience) that may contribute to the phenomena. In other words, theoretical underpinnings of demonstration effects are not well established in the literature (Potwarka, 2015). As suggested by Funk et al. (2011), both the individual's experience before and during an event greatly influence their intention to be physically active after the sport event. Thus, the purpose of this thesis is to identify intrapersonal and experiential mechanisms that might help explain demonstration effects. Specifically, relationships between spectators' pre-event engagement (i.e., knowledge of the sport of track cycling; interest in the sport of track cycling; fan identification with the sport of track cycling; and, awareness of opportunities to participate in track cycling after the event has concluded), personality (i.e., trait inspiration), spectator experience (i.e., the extent of positive affect experienced by spectators), and intention to participate in track cycling after watching elite

track cycling performances will be examined. The remainder of this chapter will explore and justify these relationships in more detail.

### **1.3 Theoretical Orientation**

The present study was informed by a stimulus-organism-response (S-O-R) approach (Mehrabian & Russell, 1974). S-O-R is grounded within the notion of interactionism, which is a perspective that takes into account both the individual and the situation when predicting responses to stimuli (Kleiber et al., 2011). Stimulus is the social situation (e.g., watching an elite sport event), organism reflects factors within individual and what they bring with them to the situation (e.g., knowledge/interest in the sport, personality, attitudes, etc.), and response is how the individual responds to the situation, such as an intention to perform a particular behaviour (Kleiber et al., 2011). As S-O-R theory suggests that the individual and the event are equally important to understanding the individual's response (Kleiber et al., 2011), elements of the event experience (stimulus), and what the individual brings to the event (organism) will be investigated to further understand participation intention (response), and thus, the nature of demonstration effects.

The individual's enduring perception, attitudes, and personality are equally as important to understanding a response to a situation as the environmental factors of the situation in question (Kleiber et al., 2011); thus, two different individuals may respond to the same situation quite differently (Kleiber et al., 2011). As the personal meaning ascribed to any given situation determines the impact of an objective situation on an individual (Kleiber et al., 2011), the S-O-R approach will provide a unique theoretical perspective on the investigation of demonstration effects. While still an important aspect to consider, the stimulus had previously been the focal aspect of consideration of many demonstration effect studies (i.e., Frawley et al., 2013; Bauman

et al., 2015; Toohey, 2010; Veal et al., 2012); this thesis will also consider the stimulus, though a particular emphasis will be placed on the organism's role in the elicitation of demonstration effects.

#### **1.4 Study Contributions**

There have been many empirical studies that have yielded strong support for the phenomena of demonstration effects (e.g. Boardley, 2013; Pappous, 2011; Potwarka, 2015; Potwarka & Leatherdale, 2015; Veal et al., 2012; Weed et al., 2015; Weed et al., 2012). Many of the studies that have not found evidence to support the presence of demonstration effects have dealt with events that have not engaged in leveraging efforts (e.g., Bauman et al., 2015; Craig & Bauman, 2014; Darko & Macintosh, 2015; Feng & Hong, 2013; Frawley et al., 2013; Mahtani et al., 2013; Pappous, 2011; Toohey, 2010). Furthermore, as little is known about the nature of demonstration effects, there is little evidence to inform how to properly leverage events to elicit a demonstration effect. This thesis will provide further insights into how elite sport events can be leveraged to support the demonstration effect.

Moreover, many studies that have investigated demonstration effects have placed an emphasis on the role that the stimulus of experiencing the event has on intention or behaviours of participation, while giving little regard to intrapersonal factors of the spectator that influence how the individual responds to such stimuli (e.g., Bauman et al., 2014; Carter & Lorenc, 2015; Darko & Mackintosh, 2015; Derom & Lee, 2014; Hodgetts & Duncan, 2015; Mackintosh et al. 2015; Such, 2016; Weimar et al., 2014; Wicker & Sotiriadou, 2013). This thesis will contribute to the theoretical understanding of demonstration effects by addressing key intrapersonal and experiential (i.e., emotional/affective) factors that may contribute to the formation of a

behavioural intention to change participation after watching an elite international track cycling event.

### 1.5 Hypothesized Model

This thesis will examine relationships between the personality trait of inspiration, pre-event engagement, and positive affect experienced while watching an elite sport competition and spectators' intention to increase their participation in the sport on display (i.e., track cycling). As presented in Figure 1.1, the hypothesised model of this thesis involves five hypotheses, which will each be expanded upon in subsequent sections.

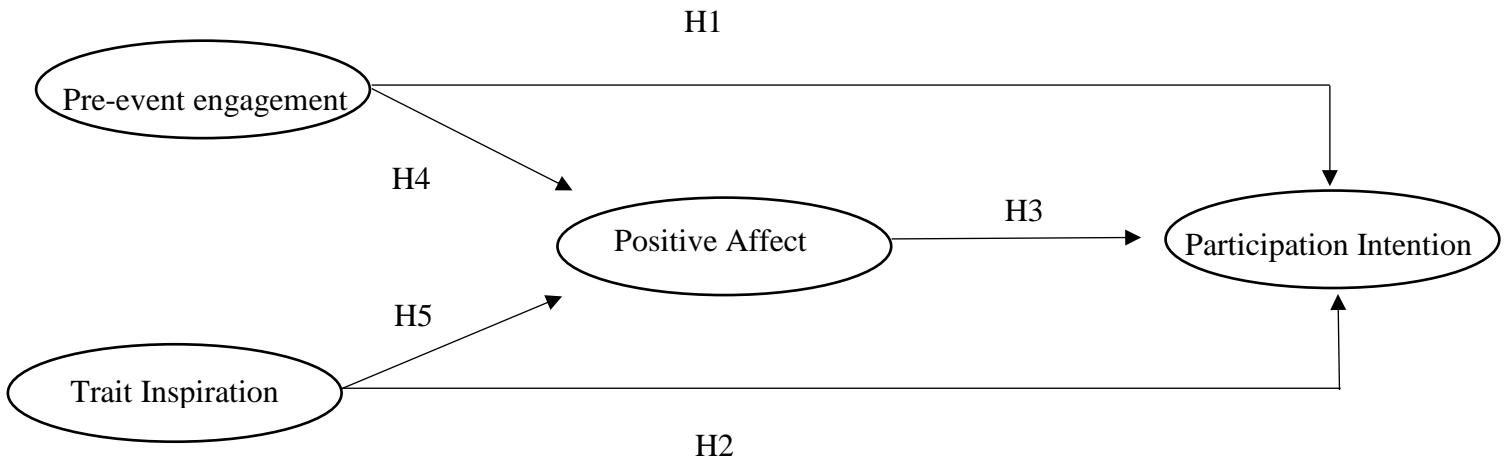


Figure 1.1 Hypothesized Model

Indeed, other factors may contribute to the demonstration effect (i.e., actual or perceived barriers, actual or perceived ability, social experience, medium of consumption, etc.). However, the factors presented in the model above will be the focus of this investigation, as individuals' pre-existing personalities and experiences have seldom been investigated in conjunction with event experience to predict participation outcomes in event literature (Potwarka et al., 2017).

**1.5.1 Pre-event Engagement (with track cycling).** For the purpose of this thesis, pre-event engagement with track cycling is characterized by: *knowledge* of the sport of track cycling;

*interest* in the sport of track cycling; *fan identification* with the sport of track cycling; and, *awareness* of opportunities to participate in track cycling after the event has concluded.

Consumer engagement increases brand loyalty, and thus purchase behaviour (Esch, Langer, Schmitt, & Geus, 2006; Macdonald & Sharp, 2000; Mittal, Katrichis, & Kumar, 2001).

Similarly, it has been suggested that individuals that are engaged with a sport before attending an elite international sport event may be more likely to participate in that sport after the event has concluded (Carter & Lorenc, 2013; Funk et al., 2011). Furthermore, consistent with the notion that leveraging efforts must be planned (Weed et al., 2015), it has been found that after watching elite sport competitions, pre-event physical activity levels were positively correlated with intention to participate after watching an elite sport performance (Ramchandani & Coleman, 2012). In other words, the more physically active an individual is before watching the elite sport competition, the greater their intention to be physically active after the event (Ramchandani & Coleman, 2012).

The context of the current study is particularly unique for studying demonstration effects. Many of the event spectators would have not had a chance to participate in track cycling, as the velodrome that was built for the event is the only one of its kind in Canada. Although spectators may not have had an opportunity to engage in track cycling as a participant, they may have been engaged as fans. Consistent with the consumer behaviour literature that suggests that the longer a consumer has been engaged with a particular brand, the more likely they are to engage with other products offered by that brand (Mittal, Katrichis, & Kumar, 2001), it can be argued that spectators at the track cycling competition that have been engaged as fans, can also become engaged as participants when the opportunity becomes available. Thus, it is hypothesized that

that (H1) *pre-event engagement with track cycling will be positively associated with intention to participate in track cycling.*

**1.5.2 Trait Inspiration.** As demonstration effects are the phenomena of spectators of elite sport events being “inspired” to increase their physical activity (Weed et al., 2015), the notion of inspiration must be further explored. Although the term inspiration is used to characterize the phenomena, trait inspiration has yet to be measured or conceptualized in relation to demonstration effects.

Inspiration involves *transcendence* (i.e., apart from the individuals typical orientations), *evocation* (i.e., not a conscious decision to be inspired), and *motivation* (i.e., compulsion to take action) (Thrash & Elliot, 2003). Inspiration can be used to describe both a state and a trait (Thrash & Elliot, 2003). State inspiration is a *temporary* feeling that is evoked within an individual momentarily (Thrash & Elliot, 2003), whereas trait inspiration is the extent to which an individual can become inspired based on their *personality* (Thrash & Elliot, 2003). One with high trait inspiration may be inspired to action more easily than one with low trait inspiration (Thrash & Elliot, 2003), or in other words, some people may be more inspirable than others. Those with high trait inspiration have been found to be more action-oriented and more motivated (Thrash & Elliot, 2003). Consistent with the notion of stimulus-organism-response theory, that states that the individual plays a key role in the response to the stimulus (Kleiber et al., 2011), trait inspiration may determine how likely an individual may be to increase their participation in response to viewing an elite sport event (i.e., demonstration effect). Thus, it is hypothesized that (H2) *trait inspiration will be positively associated with intention to participate in track cycling.*

**1.5.3 Positive Affect.** The stimulus (event) itself is also a significant aspect in determining the individual’s response (Kleiber et al., 2011). During the stimulus, or while

experiencing the event, individuals experience affect, or emotional engagement (Watson, Clark, & Tellegen, 1988). Affect can be either positive, or negative. Positive affect is the feeling of being highly engaged and is described with terms such as attentive, excited, and joyful (Watson et al., 1988). Negative affect, on the other hand, involves unpleasant feelings of engagement, and is described using terms such as distressed, upset, and nervous (Watson et al., 1988).

Positive affect has been found to be linked with intense absorption in situations (Frederickson et al., 2001), self-esteem (Mers & Roesch, 2011), and inspiration (Thrash & Elliot). These relationships with positive affect can lead to positive intention to participate in activities (Frederickson et al., 2001). Thus, the stimulus, or event, can elicit positive affect within the individual, leading them to be open to positive intention to increase their physical activity levels.

As pre-event engagement has been found to increase the likelihood of positive intention to participate post-event (Funk et al., 2011), and positive affect can elicit feelings of engagement (Frederickson, 2001), positive affect may mediate the relationship between pre-event engagement and participation intention. Similarly, as trait inspiration has been found to be closely linked with positive affect (Thrash & Elliot, 2003), positive affect may also mediate the relationship between trait inspiration and intention to participate in physical activity. Thus, it is hypothesized that (H3) *PA will be directly positively associated with intention to participate in track cycling*, (H4) *PA will mediate the relationship between pre-event engagement and intention to participate in track cycling*, and, (H5) *PA will mediate the relationship between trait inspiration and intention to participate in track cycling*.

**1.5.4 Participation Intention.** As suggested by Funk et al. (2011) both the pre-event engagement and event experience influence an individual's intention to participate in sport after

the event. The experience at the event can influence the level of psychological commitment of the individual to participate in the particular sport they experienced (Funk et al., 2011).

Interestingly, Potwarka (2015) found that during the Vancouver Olympics in 2010, host residents who had positive attitudes toward the Olympics, also had positive intention to increase their participation levels. Similarly, the Sydney Olympics generated positive intention to participate in physical activity, though when the intentions were not fostered by proper policy, they did not last in the long term (Bauman et al., 2015). Furthermore, a significant amount of spectators at medium-sized elite sport events in England reported feeling inspired by the event to increase their physical activity levels (Ramchandani & Coleman, 2012). Although these findings do not capture actual participation, they provide evidence to support that viewing elite sport performances do indeed inspire spectators to intend to increase their behaviour in physical activity. However, as intentions are predictors of behaviours (Kleiber et al., 2011), measuring intention to participate is the most accurate evaluation that can be obtained without measuring actual participation.

## **1.6 Outline of the Thesis**

The remainder of this thesis will expand on the concepts outlined in the introduction. The literature review will begin by providing an overview of extant theories used to investigate demonstration effects, followed by a justification for the theoretical formwork used in this thesis. An in-depth explanation of the dependent (participation intention), independent (pre-event engagement and trait inspiration), and mediating (affect) variables will then be presented. A methods section will then be presented, where the specific data collection techniques will be outlined, including methodology, sample size, recruitment techniques, data collection tools, and analysis techniques. The findings of the analysis will be presented and expanded upon in relation



to the current literature. Implications of this thesis for practice, theory, and future research will also be presented. This thesis will conclude by addressing the research purpose.

## CHAPTER TWO: LITERATURE REVIEW

This chapter will expand on the concepts outlined in chapter one, and will provide theoretical justifications for the hypothesized model. After reviewing the current theories and models used to investigate demonstration effects, a critique of the current literature will be made, and the hypothesized model of this thesis will be positioned within the demonstration effect body of literature. An exploration of the constructs that make up the hypothesized model will then take place, examining the constructs of pre-event behaviour, trait inspiration, positive affect, and participation intention. This chapter will conclude with a summary of the concepts in relation to the study purpose and a presentation of the model presented in chapter one.

### **2.1 Extant Theories and Models of Demonstration Effects**

Through the various investigations into demonstration effects of elite international sport events, some theories and models have been used or suggested, however, “theoretical underpinnings of demonstration effects are not well established in the literature” (Potwarka 2015). Although these investigations have made meaningful and important contributions to the demonstration effect literature, theoretical gaps still remain. This thesis attempts to address these gaps, which are outlined below.

**2.1.1 The Transtheoretical Model.** Prochaska et al.’s (1992) transtheoretical model (TTM) was offered by Weed et al., (2015) and Boradley (2013) as a means to understand demonstration effects. As presented in figure 2.1, the TTM includes aspects from self-efficacy theory (Bandura, 1977), self-determination theory (2008), and the theory of planned behaviour (Ajzen, 1991).

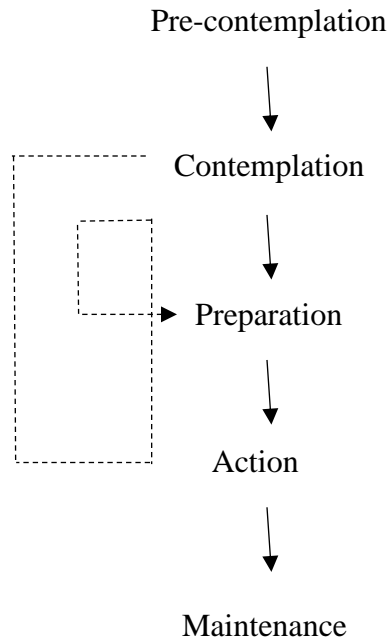


Figure 2.1 The Transtheoretical Model. Adapted from Prochaska, DiClemente & Norcross, 1992

Transtheoretical models “integrate processes and principles” (Prochaska, Redding, & Evers, 2008) of different theories relating to the same phenomena. Prochaska et al.’s (1992) TTM integrates theories relating to behavioural intention (Boardley, 2013). TTM’s core constructs include stages of change, processes of change, decisional balance, and self-efficacy to explain behaviour change (Prochaska et al., 2008). The underlying idea of the TTM is that people pass through a sequence of stages before participating in a particular behaviour. These stages of change include: *precontemplation*, (when no action is intended); *contemplation* (when a behaviour change is intended); *preparation*, (when the intended action is upcoming); *action* (when the intended action takes place); and *maintenance* (when the individual is working toward maintaining action, and preventing slipping back to the precontemplation stage) (Prochaska et al., 2008). Additionally, the construct of decision balance is the individual’s perceived pros and cons for the behaviour change (Prochaska et al., 2008). Finally, the self-efficacy construct is the

individual's perception of their ability to partake in the behaviour change without relapse (Prochaska et al., 2008).

Weed et al.'s (2015) systematic review has identified the TTM as one possible theory in predicting participation intention, as it involves stages through which individuals move that can be predicted based on behaviour. Particularly in adults, Weed et al. (2015) suggest that the latter stages of the TTM (i.e., action and maintenance) can help to elicit attitudinal changes toward sport participation, with the initial stages (i.e., pre-contemplation and contemplation) having little influence.

Similarly, Boardley (2013) identified that the ability of the TTM to consider behavioural changes when evaluating demonstration effects had contributed to its utility. Particularly, Boardley (2013) emphasizes the importance of self-efficacy that the TTM considers. Boardley (2013) claims that "increases in self-efficacy may facilitate peoples' transition through the various stages described in the transtheoretical model and therefore towards long-term engagement in physical activity" (p.248).

The TTM has also been a popular model for predicting physical activity in general (i.e., Cardinal & Kosma, 2004; Cardinal, Tuominen, Rintala, 2004; Lutz, Stults-Kolehmainen, Bartholomew, 2010). Cardinal and Kosma (2004), Cardinal et al. (2004), and Lutz et al. (2010) all investigated the physical activity behaviours of college students using the TTM.

Cardinal and Kosma (2004) investigated muscular fitness behaviours, Cardinal et al. (2004) compared exercise behaviours of American and Finnish students, and Lutz et al. (2010) investigated the relationship of stress and anxiety with exercise among female college students.

Cardinal and Kosma (2004) found that the TTM revealed that the processes of change and self-efficacy significantly contributed to the production of the stage of change for muscular

fitness behaviours. Furthermore, as the participants moved through the stages of change, the use of behavioural and cognitive processes of change became more relevant (Cardinal & Kosma, 2004). When investigating the differences between American and Finnish college student's exercise behaviors, the only difference found was in reported self-efficacy, where the American students reported much higher scores (Cardinal et al., 2004). Finally, Lutz (2010) found that female college students who are in the maintenance stage of change, exercised when stressed, with a positive relationship between stress level and exercise duration and intensity. Participants in all other stages of change were less likely to exercise when stressed, with a negative relationship between stress level and exercise duration and intensity (Lutz et al., 2010).

**2.1.2 Theory of Planned Behaviour.** The theory of planned behaviour (TPB) has also been suggested as a pertinent theory to investigate the demonstration effect (Potwarka, 2015). As seen in Figure 2.2, the TPB builds upon the theory of reasoned action, which looks at behavioural intention as a function of one's "attitude toward performing the behaviour and their subjective norms associated with that behaviour" (Ajzen, 1991; Montano & Kasprzyk, 2008, p. 70).

The TPB attempts to predict an individual's intention to behave in a certain way based on their attitudes, subjective norms, and perceived behavioral control (Kleiber et al., 2011). Intention is an important factor to consider within behaviour change, as an ultimate change in behaviour is largely dependent on an initial intention to change behaviour (Ajzen, 1991).

According to the theory, attitudes refer to how the individual feels about the behaviour; subjective norms refer to how the individual thinks that important other feel about the behaviour; and perceived behavioral control refers to the extent to which the individual feels that they can perform the behaviour (Ajzen, 1991).

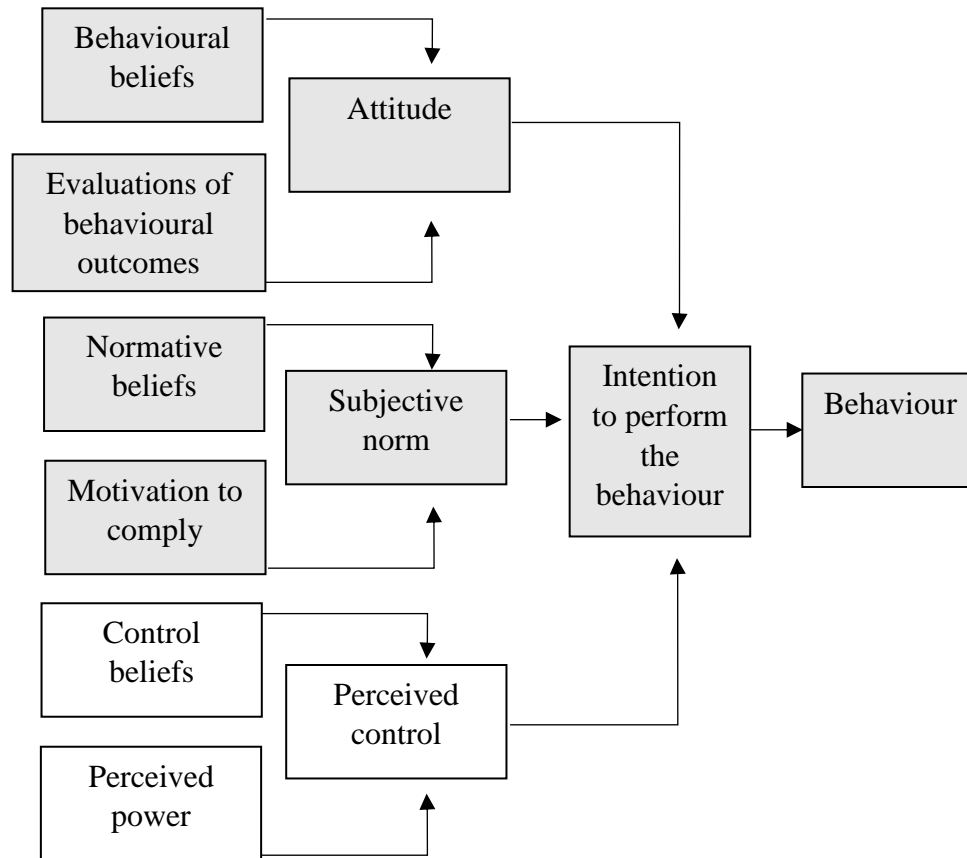


Figure 2.2 Theory of Planned Behaviour. Adapted from Montano & Kasprzyk, 2008, p. 70.

Shaded areas show the Theory of Reasoned Action; entire figure shows the Theory of Planned Behaviour .

More specifically, the attitude construct is comprised of two main aspects that include: the experiential attitude and the behaviour belief, which are the overall affective attitude toward the behaviour, and the positive or negative feelings associated with the behaviour; and, the instrumental attitude or how the individual perceives the consequences of partaking in the behaviour (Ajzen & Fishbein, 1977). The perceived norms include subjective and descriptive norms (Montano & Kasprzyk, 2008). Subjective norms are the individual’s perception of how the people around them will perceive the behaviour, while descriptive norms are the perception of the individual of the extent to which others partake in the behavior (Montano & Kasprzyk,

2008). Finally, personal agency includes perceived behavioural control and self-efficacy. Perceived behavioural control is the perception of the facilitation or constraint of each condition associated with the behaviour, and the extent to which each condition will make the behavior difficult or easy (Montano & Kasprzyk, 2008). Self-efficacy, similarly to the construct included in TTM, is the perception of the ability to perform the behaviour (Montano & Kasprzyk, 2008).

In other words, the TPB considers how the individual feels about the behaviour, how the individual perceives the behaviour, and the individual's perceived control over their behavior (Kleiber et al., 2011; Montano & Kasprzyk, 2008). Fundamentally, the framework provided by TPB identifies the behavioural, normative, and control factors that influence behaviour, and thus exposes areas where interventions can be used to alter attitudes, subjective norms, and perceived control to change behavioural intention (Montano & Kasprzyk, 2008).

TPB has been used to predict general physical activity behaviours (i.e. Blanchard et al., 2007; Christiana, Davis, Wilson, Mcarty, & Green, 2014; Mummery, Spence, Hudec; 2000). Mummery et al. (2000) and Christiana et al. (2014) used the TPB to predict physical activity behaviour among youth. Mummery et al. (2000) found that Canadian youth who reported positive attitudes, subjective norms, and perceived control also had positive intention to participate in physical activity. Similarly, Christiana et al. (2014) found a positive relationship between motivation to participate in non-competitive outdoor physical activity and subjective norms, perceptions of control, and intention among youth from a rural county.

Blanchard et al. (2007) and Potwarka (2015) both employed TPB when investigating behavioural intention among post-secondary students. Potwarka found that the Olympic Games in Vancouver had a positive influence on intention to participate in physical activity in students in both British Columbia and Ontario. Particularly, the TPB constructs of attitude toward the

behavior, past behavior, and descriptive norms had strong influences on the behaviour intentions of the students (Potwarka, 2015). Blanchard et al. (2007) found that though TPB predicted a large difference between participation in physical activity intention of white students and black students, there was in fact only a small difference in actual behaviour.

**2.1.3 Critique of extant theories and models of demonstration effects.** Indeed, the TTM and the TPB can be useful when investigating demonstration effects, however, both theories also have two major limitations: they do not consider the individual's intrapersonal characteristics that exist before being exposed to the event core constructs; and, they do not consider the individual's emotions during the event (Gucciardi & Jackson 2015; Mohiyeddini, Pauli, & Bauer, 2004; Potwarka et al., 2017). Intrapersonal characteristics such as personality traits and affect may improve researchers' ability to predict intention and behaviour (Kleiber, et al., 2011). Moreover, emotions have been found to drive individual's behaviours (Myers, 2004; Zeelenberg et al., 2008). Models using the TPB and TTM to explain demonstration effects have neglected these intrapersonal constructs, which may prove to be significant theoretical gaps for understanding the phenomena of demonstration effects.

The Stimulus-Organism-Response (S-O-R) theory, on the other hand, also considers the behavioural intention of the individual, but unlike the TPB and TTM, the behavioural outcomes can be explained through a function of the individual's intrapersonal characteristics and experiences at the event, rather than a purely post-event explanation.

## **2.2 Stimulus-Organism-Response Theory**

Stimulus-Organism-Response Theory suggests that an individual's response to a situation is ultimately a function of the individual's intrapersonal dispositions (i.e., emotions, personality) and the characteristics of the situation (Mehrabian & Russell, 1974). In other words, the



stimulus, or experience of the event, and the organism, or what the individual brings with them to the event (e.g., personality), both influence the response, or the intention to participate (Kleiber et al., 2011). Both the individual and the event must be considered together, as the individual cannot be separated from their environment (Lewin, 1935). In order to understand how a demonstration effect occurs, both the individual's experience at the event, and the individual's pre-existing personality and experience must be considered when investigating intention to participate. What the individual brings to the event greatly influences how they perceive the event, and thus how they react to the event (Kleiber et al., 2011), therefore, the individual's role in the demonstration effect warrants investigation.

Through the use of an S-O-R approach, the mechanisms that underpin the demonstration effect phenomena will be investigated to better understand the demonstration effect processes. Indeed, critiques of processes are important to identifying areas for improvement, however, the processes of demonstration effects must first be fully understood before improvements can be made. For example, Hughes (2013), Pappous and Hayday (2015), and Dermon and Lee (2012) all look at the demonstration effect phenomena through a critical lens, however, without fully understating the demonstration effect process, their critiques may overlook key determinants of behavioural change based on elite sport spectatorship, such as personality and emotion.

As noted previously, the constructs included in the hypothesized model include: pre-event engagement, trait inspiration, affect, and participation intention. The development of the hypothesized model was informed by the S-O-R theory, with an emphases on the role that the organism (i.e., pre-event engagement, trait inspiration, positive affect) plays in the stimulus-organism-response relationship. As seen in figure 2.3, the event acts as the stimulus; pre-event

engagement, trait inspiration, and affect act as the organism; and the participation intention acts as the response. The nature of each construct will be explored further.

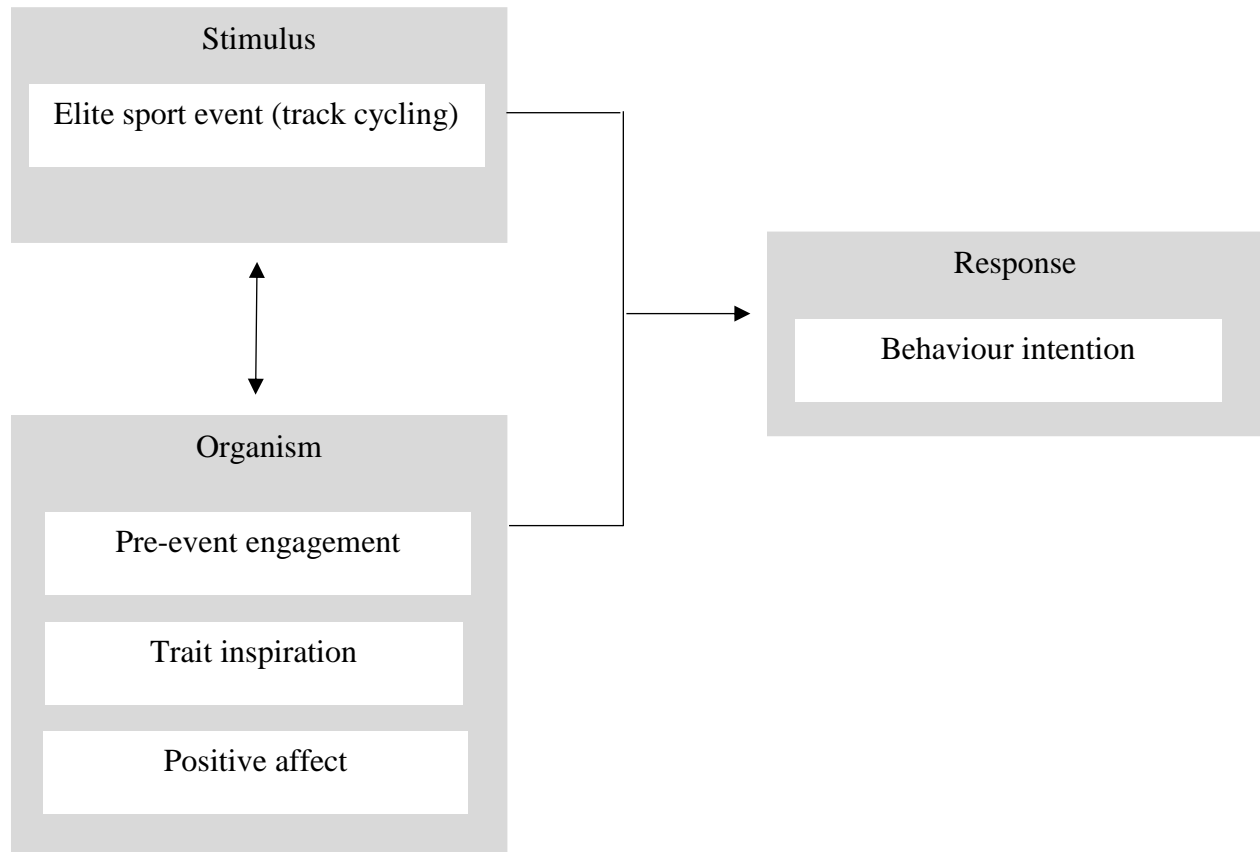


Figure 2.3 Hypothesized Constructs based on Stimulus-Organism-Response Theory

### 2.3 Hypothesized Constructs

The following section will review literature related to each construct and relationship proposed in Figure 1.1, and presented in Figure 2.9

**2.3.1 Consumer behaviour and awareness.** It has been suggested that engagement with an elite sport event prior to attendance is a crucial aspect in eliciting post-event participation intention (Funk et al., 2011; Weed et al., 2015). Funk et al. (2011) found that event attendees' intentions to participate post-event are influenced by their participation levels before the event.

This is consistent with the findings of Weed et al. (2015) and Carter and Lorenc (2013) that suggest that simply viewing the elite international sport event will only entice those who were already active to become more active, while leaving the inactive's participation levels largely unchanged. These findings are consistent with the consumer behaviour literature that largely states that brand awareness and consumer engagement influence purchase behaviour (i.e., Esch, Langer, Schmitt, & Geus, 2006; Macdonald & Sharp, 2000). In the case of demonstration effects, brand awareness can translate to the attendee's awareness of the sport, consumer engagement can translate to engagement with the event, and purchase behaviour can translate to intention to participate.

It has been found that many new consumers base their purchase decisions on the brand that they are aware of over brands that they are not aware of (Macdonald & Sharp, 2000). These findings were supported when Esch et al. (2006), who found that knowledge of a brand, including brand awareness and brand image, directly influence consumers' current purchasing behaviour. Furthermore, consumer engagement, or the cultivation of a relationship between the consumer and a particular brand, has also been identified as an influencer of purchase behaviour (Bowden, 2009). In fact, in the case of credit card product purchases, it was found that the longer a consumer has been engaged with a credit card company, the more likely they are to purchase new products and services when compared with customers that had been engaged with the company for a shorter amount of time (Mittal, Katrichis, & Kumar, 2001), similar to Funk et al.'s (2011) findings, that suggest that the longer the pre-event engagement has been taking place, the stronger the intention to participate for that individual. The consumer behaviour literature provides support for the notion that pre-event engagement plays a role in post-event participation intention.

**2.3.1.1 Pre-event Engagement.** It has been suggested that for the elicitation of a demonstration effect, pre-event engagement must take place (Funk et al., 2011; Weed et al., 2015). Funk et al. (2011) and Ramchandani and Coleman (2012) conceptualize pre-event engagement as the number of events previously attended and self-reported physical activity levels, whereas Weed et al. (2015) conceptualize pre-event engagement as engaging with leverage efforts before the event takes place. Furthermore, it has been suggested that demonstration effects do not occur naturally—for a demonstration effect to occur, the event must be used as leverage to encourage an increase in sport participation (Weed et al., 2015).

Interestingly, Funk et al. (2011) found that those who had higher levels of engagement with the sport/activity (i.e., prior number of running events attended) in running before a running event also had stronger commitment levels to running after the event. This notion is supported by the findings of Ramchandani and Coleman (2012), when they found that physical activity levels among spectators before watching live-elite sport competitions were positively correlated with intention to participate after the event. Furthermore, Funk et al. (2011) found that the participants in a running event who were relatively inactive before the event, but were at least somewhat engaged with the event before the event took place, demonstrated positive attitudes toward continued participation.

Non-participation based pre-event engagement has also been found to have a positive effect on post-event participation. For instance, when the Commonwealth Games were held in Melbourne, Australia, the local residents' attitudes toward the Games were more positive than non-locals' attitudes, and their participation levels had increased (Wicker & Sotiriadou, 2013). The positive attitudes were speculated to be because of the higher level of involvement with the Games before, during, and after, the event, and higher exposure to pre-event marketing (Wicker

& Sotiriadou, 2013). Furthermore, after hosting the Australian Surf Life Saving Championships, a significant increase in participation in the sport occurred, with a possible explanation being the promotional efforts for a related initiative, the Year of the Lifesaver, which had taken place during two-years leading up to the championship competition (Hodgetts & Duncan, 2015).

Thus, consistent with the notion that the longer a consumer has been engaged with a product, the more likely they are to remain engaged with that product and to further engage with other products under the same brand (Mittal, Katrichis, & Kumar, 2001), Funk et al. (2011) suggests that the pre-event engagement is an important aspect to post-event participation intention. Thus, as seen in figure 2.4, it is hypothesized that (H1) *pre-event engagement with track cycling will be positively associated with intention to participate in track cycling*. This thesis considers the pre-event engagement constructs of: knowledge of the sport of track cycling; interest in the sport of track cycling; fan identification with the sport of track cycling; and, awareness of opportunities to participate in track cycling after the event concluded. The context of this thesis is particularly unique, as the opportunity to participate in track cycling in Canada had not been recently available until the velodrome had been created specifically for the event under investigation.

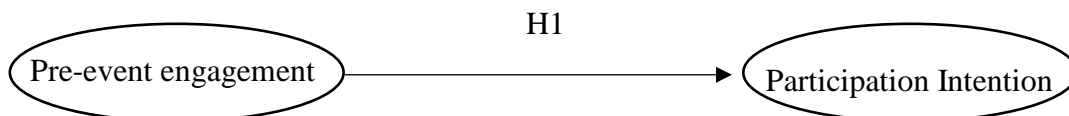


Figure 2.4 Hypothesis 1

**2.3.2 Inspiration.** A demonstration effect occurs when an individual becomes inspired by an elite athletic performance to become more physically active themselves (Weed et al., 2015) Thus, inspiration as a psychological construct seems to warrant further investigation in relation

to the nature of the demonstration effect (Potwarka et al., 2017). Inspiration is evoked within an individual, transcending typical human agency that influences one's behaviour (Thrash & Elliot, 2003). Inspiration is evoked by a trigger, or stimulus object, that motivates an individual to a target (Thrash & Elliot, 2003). Thrash and Elliot (2003) suggest that the concept of inspiration is a tripartite, and includes three core characteristics. First, inspiration involves transcendence, meaning that the individual experiences feelings that the trigger is more important than the individual's typical orientations (Thrash & Elliot, 2004). For example, in the context of track cycling, if an individual's typical orientation toward track cycling is apathetic, feelings of inspiration from watching athletes perform may lead the individual to perceive track cycling as worthy sporting pursuit. The second characteristic is evocation, or the feeling that the individual did not make a conscious decision to be inspired (Thrash & Elliot, 2004). For instance, the individual who is experiencing track cycling would have not consciously thought to become interested in the sport, rather they would simply become interested. Finally, motivation occurs when the individual wants to take action toward the target (Thrash & Elliot, 2004). An individual who is inspired by the sport of track cycling would feel compelled to become more involved with the sport and participate.

The original conceptualization of inspiration suggested a supernatural origin (Thrash & Elliot, 2003). While the concept of inspiration is now much more complex, early theorists suggested that individuals were inspired by divine beings to deliver truths (Thrash & Elliot, 2003). A more scientific theorization of inspiration was later suggested, that thought of inspiration as a psychological concept (Thrash & Elliot, 2003). The religious or divine explanations were replaced with the feeling of illumination (Thrash & Elliot, 2003). Another explanation that emerged was the concept of creative inspiration, or the ability to keep one's

mind open to suggestion, and thus be more likely have novel ideas, or creativity (Thrash & Elliot, 2003).

Most recently, the external environment has been used to explain the concept of inspiration (Thrash & Elliot 2003). The individual is inspired by a trigger that is part of the external environment, such as role models or events (Thrash & Elliot, 2003). Indeed, the external environment can facilitate a temporary state of inspiration, however, inspiration has also been identified as a personality trait (Allport & Odbert, 1936). The extent to which an individual becomes inspired is also contingent upon their trait inspiration (Thrash & Elliot, 2003). In other words, how frequently people experience inspiration in their daily life impact how motivated they are to perform particular behaviours.

**2.3.2.1 Personality.** Personality is the enduring patterns of behaviour across multiple situations (Hogan, 1987), and is what motivates an individuals' behaviour (Abramson, 1980). These enduring behaviours are also known as internal processes that make behaviour consistent (Kleiber et al., 2011). Personality is a combination of internal processes and individual differences (Kleiber et al., 2011). The individual differences aspect refers to the extent to which people act similarly or differently from one another (Kleiber et al., 2011).

Each individual has a composition of high or low tendencies toward different aspects of personality (Kleiber et al., 2011). These consistent personality tendencies are also known as personality traits, and account for an individual's predictable behaviours across various scenarios (Abramson, 1980; Kleiber et al., 2011). The notion of constant personality traits began when Allport believed that it was the individual's personality that guides behaviour, and wanted to create a theory that would be able to accurately describe individuals (Abramson, 1980).

Personality traits vary across individuals, and include the “emotional, motivational, cognitive, and behavioural tendencies” (Kleiber et al., 2011, p. 186). Traits explain why individuals behave in particular ways, as they are a set of dispositions that influence how an individual interprets situations, and thus, how they react to various stimuli (Kleiber, et al., 2011).

There have been many efforts made to accurately describe individual’s personalities. For example, in the beginning stages of personality trait theory development, Eysenck (1990) proposed that personalities could be measured through two-dimensions: a continuum of introversion and extraversion; and, a continuum of stable and unstable. (Myers, 2004). As personality is an individual’s unique combination of traits (Abramson, 1980), Allport expanded Eysenck’s model to include a total of five dimensions of personality traits, which are now known as the “Big Five” personality traits (Myers, 2004). Although there are many more personality traits, the “Big Five” were chosen as they were found to be the most revealing of overall personality, and were terms that were fairly consistent world-wide (Myers, 2004).

The “Big Five” trait dimensions include: emotional stability, measured along a continuum of calm, secure, and self-satisfied versus the opposite end of anxious, insecure, and self-pitying; extraversion, measured as extraverted and sociable versus introverted and reserved; openness, which describes an individual’s preference for variety versus routine; agreeableness, or the extent to which individuals are trusting or helpful, versus suspicious or uncooperative; and, conscientiousness, which describes an individual who is disciplined and organized versus disorganized and careless (McCrae & Costa, 1986). Although people do not act with perfectly predictable behaviour, personality traits, especially the “Big Five”, help to make actions more predictable across time and situations (Myers, 2004).



In the context of sport behaviour, the big five personality factors have been found to help predict risky sport behaviour (i.e., Merritt & Tharp, 2013; Tok, 2011). Merritt and Tharp (2013) found that high neuroticism and low conscientiousness contribute to risk-taking behaviour. Similarly, Tok (2011) found that low levels of conscientiousness were associated with tendencies to participate in risk-taking behaviour, however, low levels of neuroticism were associated with risk behaviour. Furthermore, it was also found that high levels of extraversion were associated with risk behaviour in sport (Tok, 2011).

**2.3.2.2 Trait Inspiration.** Thrash and Elliot (2003) suggested that inspiration can be conceptualized and measured as both a state of being and a personality trait. Trait inspiration relates to how frequently and deeply people experience inspiration in their daily life. Trait inspiration is thought to be associated with an individual's motivation to take action. Thrash and Elliot, for example, found that trait inspiration was positively correlated with task-focused measures of motivation such as intrinsic motivation, openness to experience, and extraversion. In other words, those with a high trait inspiration are more likely to be motivated to action than those with scoring low on trait inspiration. When applied to the investigation of trait inspiration among post-secondary students, it was found that those with high trait inspiration were more likely to be pursuing more than one major than those who did not score high on trait inspiration (Thrash & Elliot, 2003). As those with high trait inspiration were more engaged with their environment and more apt to action oriented motivation, these findings support Thrash and Elliot's (2003) initial notion of trait inspiration. Furthermore, those who scored low on trait inspiration were more likely to be undecided with regard to their major than those scoring higher on trait inspiration (Thrash & Elliot, 2003).

The notion of the relationship between action-orientation and trait inspiration was further supported when Milyavskaya, Ianakieva, Foxen-Craft, Colantuoni, and Koestner (2012) found that those with higher trait inspiration had better progress with goal achievement than those with low trait inspiration. Furthermore, when investigating the ways in which leaders inspire people to action, Searle and Hanrahan (2010) found that the high energy and motivation to action felt by the people that leaders inspired led them to a tangible action outcome. Indeed, consistent with Stimulus-Organism-Response theory, the organism, especially the individual's personality, plays a significant role in the overall response (Kleiber et al., 2011).

Just as Funk et al. (2011) have suggested that engagement must take place before, during, and after an event for participation intention to occur, it has also been found that if one wishes to inspire others, and translate the inspired motivation into inspired action, a relationship must be cultivated before the moment of inspiration, and engagement after the moment of inspiration (Searle & Hanrahan, 2010). This is further supported by the findings of Ramchandani and Coleman (2012), when it was found that spectators of one-off sport events who had already been participating in physical activity reported significantly higher inspiration effects from the event than those who had not been previously active. Indeed, the relationship between the stimulus and the organism is very important to the response.

The experiences of athletes who have been inspired by sport reported that their source of inspiration included: their own success, and potential for greater success; and the performances of role models that perform at a higher level (Figgins, Smith, Sellars, Greenlees, & Knight, 2016). The finding of inspiration by role models further supports the key role of elite athlete's inspirational abilities in the demonstration effect. Furthermore, a study of spectators attending selected one-off sport events in England found that 67.6 percent of respondents felt inspired to

increase their physical activity (i.e., the sport on display and/or physical activity in general) after attending the event (Ramchandani & Coleman, 2012). Interestingly, of these responses, those who attended an event (triathlon) that included both elite and mass participation, reported feeling significantly more inspired to increase their participation than those who attend elite-only competitions (i.e., hockey and rugby) (Ramchandani & Coleman, 2012).

Consistent with Thrash and Elliot's (2003) findings that individuals with high trait inspiration are more easily inspired to take action than those with low trait inspiration, Stimulus-Organism-Response theory suggests that what individuals bring with them to an event greatly influences their response (Kleiber et al., 2011). Recently, Potwarka et al. (2017) found a positive relationship between reported feelings of state inspiration while watching an elite sport performance and intention to try the sport of track cycling. Thus, as seen in figure 2.5, it is hypothesized that (H2) *trait inspiration will be positively associated with intention to participate in track cycling.*

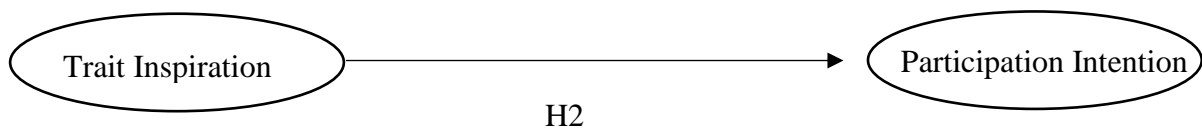


Figure 2.5 Hypothesis 2

**2.3.3 Emotional Experiences.** An individual's general feelings are referred to as affect, which gives rise to emotional responses (Bagozzi, Gopinath, & Nyer, 1999). Affect describes generally positive or negative feelings that occur in response to a situation, and can be long-lasting (Frederickson, 2001). Emotions, however, are specific reactions to stimuli and are more momentary responses that occur much more quickly than affective responses (Frederickson, 2001). Emotions arise within an individual in response to a meaningful experience, rather than

trivial experiences, however, what constitutes as meaningful is unique to each individual (Frederickson, 2001). Furthermore, one cannot choose what emotions to feel, when to feel them, and to what extent; individuals are constantly regulating emotions, whether they realize it or not (Frederickson, 2001; Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008).

Behaviour and decisions are greatly influenced by emotions (Myers, 2004; Zeelenberg et al., 2008). Indeed very important decisions often require much thought before action is taken, however, typical behaviours and decisions are often guided by momentary emotional reactions (Zeelenberg et al., 2008). Thus, these affective experiences during an event can guide a spectator's attitudes, behaviours, and interests toward participation.

**2.3.3.1 Affect.** Affect refers to one's emotional engagement, and can be described as positive or negative (Watson, Clark, & Tellegen, 1988). Affect is a term used to describe an experience broadly as good or bad (Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008). More specifically, positive affect (PA) "reflects the extent to which a person feels enthusiastic, active, and alert" (Watson et al., 1988, p. 871), which involves the emotional states of attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong and active (Watson et al., 1988). Whereas, negative affect (NA) reflects "distress and unpleasurable engagement" (Watson et al., 1988, p.871), which involves the emotional states of distressed, upset; hostile, irritable; scared, afraid; ashamed, guilty; and nervous, jittery (Watson et al., 1988). The way in which an individual appraises a situation, or interprets the situation, influences their emotional response (Watson & Spence, 2007).

According to cognitive appraisal theory, the specific ways that individuals interpret the situation that they are experiencing leads to their unique emotional response, and thus, their overall behavioural response to the situation (Watson & Spence, 2007). An individual's emotions

serve as mediating factors between the stimulus and response behaviour (Watson & Spence, 2007). In other words, according to cognitive appraisal theory, individuals' behavioural responses to similar stimuli differ based on how the individuals' emotional responses to the stimulus characteristic differ (Watson & Spence, 2007). Thus, although there may be many individuals experiencing the same event, each individual will interpret the event characteristics differently, leading to different emotional responses, and different behavioral responses.

Although PA and NA may sound like they are negatively correlated, or at opposite ends of a spectrum, they are in fact two distinct concepts, or are not on a spectrum at all (Kuesten, Chopra, Bi, & Meiselman, 2014; Watson et al., 1988). PA is measured in terms of high or low PA, and NA is measured separately in terms of high or low NA. Positive affect has been found to be linked positively with total self-esteem and performance (Merz & Roesch, 2011). In other words, those who experience PA tended to also have high levels of self-esteem and a positive perception of their performance. Furthermore, PA has been linked with engagement, and thus, may dispose individuals toward partaking in activities (Frederickson, 2001). These findings can be applied to the demonstration effect. For instance, spectators that experience high levels of positive affect may serve to increase perceived confidence to try a new sport, and increase their levels of participation. Thus, as seen in figure 2.6, it is hypothesized that (H3) *PA will be directly positively associated with intention to participate in track cycling.*

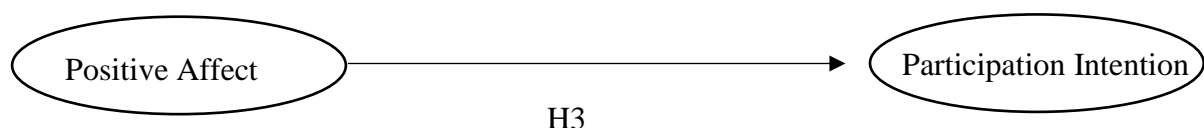


Figure 2.6 Hypothesis 3

Interestingly, inspiration, a key aspect of the demonstration effect, has been found to be positively linked with PA, and is unrelated to NA (Thrash & Elliot, 2003). Furthermore, the data set to be used only measured three of the ten NA items, to be discussed in the methods section, and thus, only PA will be included in this thesis, as positive intention to participate are the focus of this investigation, leaving the negative intention for participation out of scope, and therefore, the investigation into NA also out of scope.

**2.3.3.2 Mediation.** Positive affect may also mediate the relationship between pre-event engagement and participation intention, and between trait inspiration and participation intention. Mediation attempts to establish a causal link between the independent and dependant variables (Hayes, 2012). For example, as discussed more in-depth below, for positive participation intention to occur, those with high pre-event engagement must also experience positive affect at the event.

Interestingly, the mediation process can be complete or partial. Complete mediation is when the mediating variable explains the entire relationship between the independent and dependent variables, while partial mediation is when the mediating variable explains only some of the relationship between the independent and dependent variables (Baron & Kenny, 1986). As it is suspected that there are many factors that contribute to the demonstration effect, affect is suspected to be a partial mediator within the hypotheses of this thesis. In other words, it is expected that pre-event engagement and trait inspiration will influence participation intention both directly and indirectly through positive affect.

**2.3.3.3 Pre-event Engagement and Positive Affect.** Pre-event engagement includes factors such as knowledge of the sport of track cycling, interest in the sport of track cycling, fan identification with the sport of track cycling, and awareness of opportunities to participate in

track cycling after the event has concluded. Pre-event engagement has been argued to be a necessary aspect to eliciting a demonstration effect (i.e., Carter & Lorenc, 2013; Funk et al., 2011; Weed et al., 2015). PA has been found to be associated with self-esteem and positive perception of performances. Moreover, Frederickson (2001) has identified a strong link between experiencing PA engagement and participation. Thus, as Funk et al. (2011) have suggested, both pre-event engagement and engagement during the event are necessary for post-event participation, pre-event engagement may lead spectators to be more positively engaged while watching the competition. Positive engagement may lead to positive affect, and thus, as seen in figure 2.7, it is hypothesized that (H4) *PA will mediate the relationship between pre-event engagement and intention to participate in track cycling.*

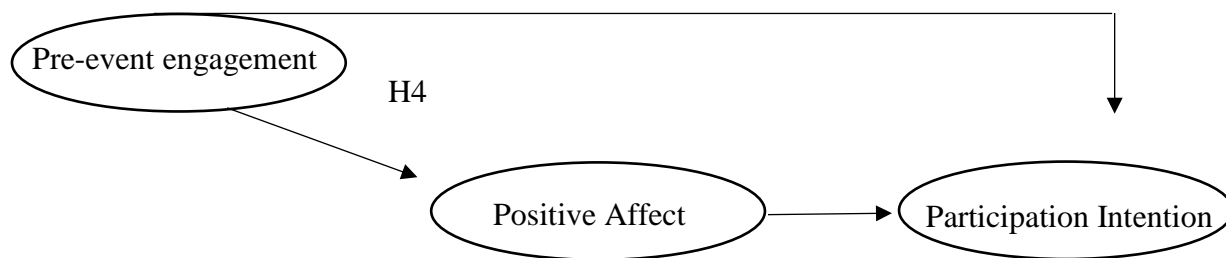


Figure 2.7 Hypothesis 4

**2.3.3.4 Positive Affect and Trait Inspiration.** Similar to PA, trait inspiration has also been found to be linked to self-esteem (Thrash & Elliot, 2003). Furthermore, trait inspiration is associated with perceived competence and optimism (Thrash & Elliot, 2003). Trait inspiration has also been associated with positive affect, or positive emotional experiences (Thrash & Elliot, 2003). Figgins et al. (2016) found that along with high levels of motivation, affect, goal progress, and energy, athletes who reported feeling inspired also reported feeling very connected to, and identified with, their team. Indeed, PA and trait inspiration are related. In fact, PA was the

strongest correlate of trait inspiration in Thrash and Elliot's (2003) seminal work exploring the construct, meaning that those with high trait inspiration are likely to be highly engaged with their surroundings. High engagement with surroundings while experience the event may lead to positive affective experiences. Thus, as PA and trait inspiration have been found to be closely linked (Thrash & Elliot, 2003), it is hypothesized that (H5) *PA will mediate the relationship between trait inspiration and intention to participate in track cycling* (Figure 2.8).

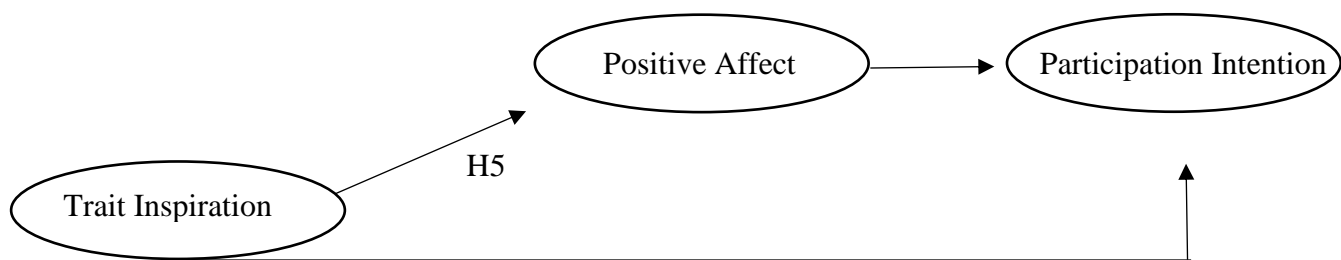


Figure 2.8 Hypothesis 5

**2.3.4 Participation Intention.** There have been many empirical studies that have yielded strong support for the phenomena of the demonstration effect (e.g., Boardley, 2013; Pappous, 2011; Potwarka, 2015; Potwarka & Leatherdale, 2015; Veal et al., 2012; Weed et al., 2015; Weed et al., 2012). Investigations of demonstration effects to date have been primarily focused on the event's role in the demonstration effect, while largely neglecting the role that the individual spectator brings to the process of eliciting an intention to increase participation in sport. For example, the population-level investigations previously discussed (i.e. Craig & Bauman, 2014; Darko & Macintosh, 2015; Feng & Hong, 2013; Mahtani et al., 2013), and investigations into the environmental factors that contribute to participation (i.e. Bullough, 2013; Derom & Lee, 2014; Frick & Wicker, 2016; Weimar, Wicker, Prinz, 2014) gave little regard to individual characteristics of the spectator such as personality and emotions.



As suggested by Funk et al. (2011) both the pre-event engagement and event experience influence an individual's intention to participate in sport after the event. The experience at the event can influence the level of psychological commitment of the individual to participate in the particular sport they experienced (Funk et al., 2011). Interestingly, Potwarka (2015) found that during the Vancouver Olympics in 2010, host residents who had positive attitudes toward the Olympics, also had positive intention to increase their participation levels. Similarly, the Sydney Olympics generated positive intention to participate in physical activity, though when the intentions were not fostered by proper policy, they did not last in the long term (Bauman et al., 2015). Furthermore, a significant amount of spectators at medium-sized elite sport events in England reported feeling inspired by the event to increase their physical activity levels (Ramchandani & Coleman, 2012). Although these findings did not capture actual participation, they provide evidence to support that viewing elite sport performances do indeed inspire spectators to intend to increase their behaviour in physical activity. Moreover, these positive attitudes toward physical activity can predict actual behaviour (Kleiber et al. 2011), and can be leveraged to translate into actual participation (Funk et al., 2011). Furthermore, as trait inspiration is a key variable included in this thesis, and those with high trait inspiration are more likely to turn motivation into action (Thrash & Elliot, 2003), the participation intention of the individuals under investigation may be even stronger predictors of actual participation.

## **2.4 Summary**

In sum, the purpose of this thesis is to identify intrapersonal and experiential mechanisms that might help explain demonstration effects. A review of the relevant literature has revealed that new opportunities for sport participation can be generated through hosting elite international sport events, which is a claim often used to justify the investment in such events (IOC, 2012). A

way that these new opportunities can be translated into increased participation is through demonstration effects, or the phenomena of spectators of elite sport performances being inspired to increase their own physical activity (Weed et al., 2015). Although some evidence has not supported the existence of demonstration effects on entire host populations (i.e. Bauman et al., 2015; Pappous, 2011; Toohey, 2010; Veal et al., 2012), demonstration effects on specific populations have been found to occur as a result of hosting elite international sport events (i.e. Boardley, 2013; Frick & Wicker, 2016; Potwarka, 2015; Potwarka & Leatherdale, 2015; Weimar et al. 2014).

Indeed, demonstration effects occur in host cities of elite international sport events, however, the nature of demonstration effects are not well understood, particularly at the level of the individual spectator. As identified by Funk et al. (2011) and supported by Stimulus-Organism-Response theory (Kleiber et al., 2011), both the individual and the environment in conjunction with one another explain the individual's response, or participation intention.

The individual brings with them to the event their previous engagement with the sport, and their own personality and personality traits. Those with more engagement and awareness of an activity may be more likely to continue to engage with the activity (Mittal et al., 2001; Ramchandani & Coleman, 2012). Those with a high trait inspiration may more likely to be inspired by an event than those who score low on the personality trait of inspiration.

The way in which an individual experiences an event may also influence participation intention. As positive affect may be positively associated with engagement and action (Frederickson, 2001) and emotions influence behaviour (Zeelenberg et al., 2008), demonstration effects may also be linked to positive affective experiences while watching sport events. After this review of the literature, the following hypothesis were developed:

H1: *pre-event engagement with track cycling will be positively associated with intention to participate in track cycling.*

H2: *trait inspiration will be positively associated with intention to participate in track cycling.*

H3: *PA will be directly positively associated with intention to participate in track cycling.*

H4: *PA will mediate the relationship between pre-event engagement and intention to participate in track cycling.*

H5: *PA will mediate the relationship between trait inspiration and intention to participate in track cycling.*

These hypotheses are summarized and presented in Figure 2.9.

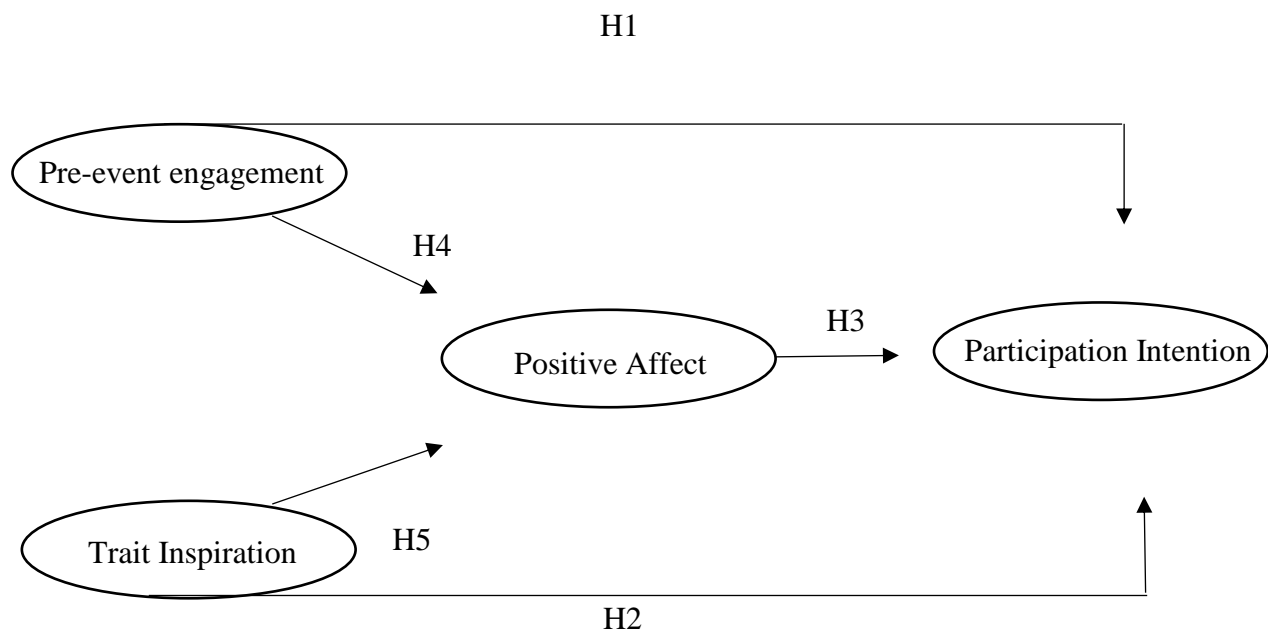


Figure 2.9 Hypothesized Model

## CHAPTER THREE: METHODS

The following chapter will describe the methods employed to test the hypothesized model. A detailed description of the event context and dataset will be provided, including data collection procedures and instruments. The specific questions that were used in the analyses will be outlined, including the wording, measurement, and theoretical background of each question. Finally, methods of analyses and statistical techniques used to test the data will be presented.

### 3.1 Study Context: PanAm Games

In 2015, Toronto, Ontario was host to the Pan Am and Parapan Am Games. In the bid to host this mega-multi-sport event, the Toronto 2015 Organizing Committee (TO2015) outlined a detailed plan for a sport participation legacy that was thought to result from hosting the Games. Through the use of equipment and assets, transfer of knowledge, volunteer recruitment, and the creation of a Legacy Endowment Fund (Toronto 2015, 2009), TO2015 promised to “provide all levels of sport in Canada with resources to increase participation and develop greater numbers of athletes who excel on the international stage” (Toronto 2015, 2009).

TO2015 placed an emphasis on providing a sport legacy as a result of hosting the Pan Am Games in Toronto. Event stakeholders claimed that the Games would provide an increased amount of sport infrastructure through refurbishing existing facilities and building new facilities, which will benefit the population of Ontario (Toronto 2015, 2009). There were four specific facilities included in the proposal that were to be created to help achieve the bid’s goal of increasing the capacity of high performance sport in Canada (Toronto 2015, 2009), including: the Canadian Sport Institute Ontario (CISO), designed to accommodate elite interdisciplinary sport training and sport science as well as provide opportunities for the community to take advantage of the state-of-the-art equipment and participation opportunities (Toronto 2015, 2009);

the PanAmerican Aquatics Centre; two additional 50m pools at each end of the GTA for additional aquatics training, that never came to fruition; and, the creation of the Velodrome, the “only indoor 250m cycling track in Canada and one of only two in North America” (Toronto 2015, 2009). The Velodrome was created in Milton, Ontario and is now open for public use (Mattamy National Cycling Centre, 2017). The Mattamy National Cycling Centre includes: a cycling track, three gymnasium courts, an indoor walking/running track, a fitness centre, bike storage, a café, event space, and meeting rooms (Mattamy National Cycling Centre, 2017).

The Mattamy National Cycling Centre’s primary purpose was for the use of track cycling and track cycling competitions. Track cycling takes place on a track, either indoors or outdoors. Riders race around an inclined track as part of individual and team pursuit events. The track at the Mattamy National Cycling Centre meets the highest standards for cycling tracks, with a length of 250 meters (Mattamy National Cycling Centre, 2017). There are a total of eleven events that take place within the sport of track cycling, including: sprint (1,000 total meters, with only the final 200 meters being timed); Keirin (a motor bike leads the pack of three to seven riders for five and a half laps, then a sprint finish for the final two and a half laps); kilometer (the rider with the fastest time for one kilometre wins); 500 meters (women’s version of the kilometer); individual pursuit (two cyclists start at opposite ends of the track, then pursue each other for the allotted distance); team pursuit (individual pursuit, but with 3-4 riders per team); points race (a sprint occurring every two laps and points awarded to races depending on which place they finish); Madison (over 50 km, teams of two racers take turns being in the race); scratch race (the first past the finish line wins); Olympic sprint (a teammate leads the team for one lap before dropping out); and, Omnium (pentathlon of events) (Cycling Canada, 2017).

### **3.2 Data Collection**

Data were collected as part of a previous larger research project. The purpose of the original research project was to investigate spectator experiences of attendees of the Pan Am Games track cycling competitions, and to leverage the Games to increase participation in track cycling. More specifically, the project aimed to increase the leveraging capacity of the Town of Milton to engage the adult community in track cycling through the distribution of “Try-the-Track” vouchers for sessions scheduled for after the event. Additionally, this project aimed to advance the methodological approaches to studying demonstration effects and elite international sport event leveraging, and contribute to the theoretical understanding of the demonstration effect through gathering data on spectator experience and response to on-site leveraging initiatives. The research project involved the distribution of questionnaires to spectators of the Pan Am track cycling competitions in Milton, Ontario. Questionnaires were designed to evaluate the spectators’ experiences while watching the track cycling competitions during the 2015 Pan Am Games. Questionnaires were administered to spectators after watching one of seven track cycling competitions taking place at the Velodrome.

As there was no on-site parking at any of the competition facilities during the 2015 Pan Am Games, spectators were transported via school bus to and from competition facilities and off-site parking. For the track cycling spectators, parking was available at a recreation centre, approximately a 15 minute drive away from the velodrome. Questionnaires were administered by research assistants on the school bus trip from the Velodrome back to the parking facility. Permission and security clearance were granted to be onsite after all competitions taking place at the Mattamy National Cycling Centre (Milton Velodrome). The research project received ethics

clearance from the University of Waterloo. Information and consent forms can be found in Appendix A.

Research assistants explained the purpose of the study, and asked spectators if they would like to participate. Potential participants were given the incentive of a \$2.00 gift card to an international coffee-based restaurant to participate. Participants were informed that their participation was completely voluntary, their questionnaire would be kept confidential, and they were able to stop at any point. To be eligible to complete the questionnaire, respondents had to have not track cycled before, be at least 16 years of age, and live within 60 miles of the facility (to be consistent with the Milton National Cycling Centre's catchment area for their post-event marketing plan). One participant per household was eligible to fill out the survey.

The last page of the survey was an optional section where participants could provide their information for a follow-up survey. Research assistants informed the participants that if they filled out the last page, they would receive an additional gift. If the participant agreed to a follow-up survey and filled out the last page, the participant received either a \$5 bill, or a voucher to try the track.

There were a total of 688 spectators who attended the track cycling competition over all four days, including the eight sessions of competition. 498 spectators began filling out the questionnaire. 24 questionnaires were not completed, leaving a total of 474 completed (n=474), useable surveys, a 69% response rate.

### **3.3 Measures of Questionnaire Variables**

The questions included in the survey were designed to assess demographics, personality orientations, spectator experiences, and cycling-related attitudes and participation intention. A select number of questions were drawn upon from the original data set for analysis to assess the

hypotheses of this thesis. The questionnaire used to collect data for the current thesis is presented in Appendix B.

**3.3.1 Participation intention.** Intention is a measure of the extent to which people will put in effort to perform a particular behaviour (Ajzen, 1991). Based upon measures of physically active behaviour intention of previous studies (e.g., Funk et al., 2011; Potwarka 2015), spectators' intention to participate in track cycling after watching the track cycling competitions at the Toronto 2015 Pan Am Games was measured. Consistent with Funk et al. (2011), participants were asked about their cycling-related intention in the coming months “as a result of watching the event”. Using a 7-point Likert-type scale, where 1 is strongly disagree, and 7 is strongly agree, participants were asked to indicate the number that best represented their agreement with a series of statements.

The specific questions that were used in this analysis include: “I intend to track cycle in the coming months”; “I intend to track cycle at the Mattamy National Cycling Centre (Milton Velodrome) when it opens to the public in the coming months (rental bikes available)”; “I intend to register for an introductory “Try-the-track” session offered at the Mattamy National Cycling Centre in the coming months”; and “I will become a certified member at the Mattamy National Cycling Centre so that I can track cycle in the coming months”, and can be found in Appendix B, section four, *Intentions*.

**3.3.2 Positive Affect.** Watson and Tellegen's (1988) Positive Affect and Negative Affect Schedule (PANAS) was used to inform the development of the measures of affect used in the current study. Watson and Tellegen's (1988) development of PANAS was in response to the inconsistency of measures of affect due to the lack of a stringently developed, informed scale. The development of PANAS began with the identification of pure PA or NA mood factors



(Watson & Tellegen, 1988). This was done through the distribution of questionnaires that contained a large number of mood factors (Watson & Tellegen, 1988). A factor analysis revealed 20 PA and 30 NA terms with a substantial loading on one factor, and a near zero loading on the opposite factor (Watson & Tellegen, 1988). The identified terms were then checked for secondary loading factors; terms with secondary loading factors of an absolute value of .25 or greater were excluded, resulting in 12 PA and 25 NA factors. Finally, the mood factors were narrowed down to the 10 most salient terms for PA (attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong and active ) and 10 factors for NA (distressed, upset (distressed); hostile, irritable (angry); scared, afraid (fearful); ashamed, guilty (guilty); and nervous, jittery (jittery)) (Watson & Tellegen, 1988).

PANAS was tested for reliability and validity through a study at a private southwestern university in the United States, using undergraduate students enrolled in psychology courses, university employees, and a group of people not affiliated with the university (Watson & Tellegen, 1988). Using a 5-point Likert scale, the original 60 terms were included on a questionnaire, with the 20 items from PANAS distributed throughout (Watson & Tellegen, 1988). The participants were asked to rate the extent to which they felt that particular mood in that moment, in that day, in the past few days, in that week, in the past few weeks, in the past year, and in general (Watson & Tellegen, 1988). Each respondent was asked to fill out different time frames. As the length of time period increased, so did the probability that the significance of the affective state, furthermore, as the time period increased, the correlation between PA and NA decreased (Watson & Tellegen, 1988). Regardless of the timeframe being reported, PANAS was significantly stable (Watson & Tellegen, 1988). When generalized to the non-student samples, PANAS proved reliable (Watson & Tellegen, 1988). Using Cronbach's alpha test, an objective

measure for reliability through testing internal consistency of a scale (Tavakol & Dennick, 2011), each dimension for PA and NA was tested. The Cronbach's alpha values for PANAS, (moment PA:  $\alpha=.89$ ; moment NA:  $\alpha=.85$ ; today PA:  $\alpha=.90$ ; today NA:  $\alpha=.87$ ; past few days PA:  $\alpha=.88$ ; past few days NA:  $\alpha=.85$ ; past few weeks PA:  $\alpha=.87$ ; past few weeks NA:  $\alpha=.87$ ; year PA:  $\alpha=.86$ ; year NA:  $\alpha=.84$ ; general PA:  $\alpha=.88$ ; general NA:  $\alpha=.87$ ) prove the scale to be reliable, as the acceptable values are between .70 and 9.5 (Tavakol & Dennick, 2011).

Furthermore, PANAS demonstrated validity, as it captured underlying mood factors, demonstrated when the PA and NA items from the larger questionnaires were highly correlated with their regression-based factor scores. Validity was also substantiated when PANAS was employed with commonly used scales to measure selected mood factors on the schedule, and results were consistent (Watson & Tellegen, 1988).

PANAS has been used to investigate sport in a variety of contexts (i.e., Downs & Ashton, 2011; Ekkekakis, Parfitt, & Petruzzello, 2011). Downs and Ashton used PANAS to investigate the relationship between mental and physical health and vigorous physical activity, sport participation, and athletic identity among college students. It was found that college students participate in less vigorous physical activity than they did in high school, and participation in vigorous physical activity helps support mental and physical health (Downs & Ashton, 2011). These findings were supported when Ekkekakis et al. (2011) obtained similar results in the context of the work place.

Consistent with Watson and Tellegen (1988), affect was measured using a 7-point Likert scale, where 1 is "not at all", and 7 is "very strongly" with regard to mood factors. Participants were asked indicate the number that best represented the strength of their feelings while watching the track cycling event. Eight of the ten indicators of positive affect were included in

the questionnaire. The specific indicators include *attentive, determined, enthusiastic, inspired, interested, alert, excited, and proud*. The questions can be found in Appendix B, section three, *Spectator Experience*.

**3.3.3. Inspiration Scale.** Thrash and Elliot (2003) developed a 4-item scale, consisting of two sub-scales, to assess an individual's trait inspiration. Thrash and Elliot (2003) have been the first to develop a scale to measure trait inspiration. The development of the Inspiration Scale (IS) began with a pilot study, through which 19 inspiration items were presented in a survey to undergraduate students, using a 7-point Likert scale, where 1 is strongly disagree, and 7 is strongly agree (Thrash & Elliot, 2003). Four of the 19 items were selected on the basis of content (i.e., balanced triggers and targets) and psychometric criteria (i.e., internal consistency) (Thrash & Elliot, 2003). Using Cronbach's alpha, the IS was found to be reliable and internally consistent (study 1 time 1a:  $\alpha=.95$ ; study 1 time 1b:  $\alpha=.91$ ; study 1 time 2:  $\alpha=.90$ ; study 2a:  $\alpha=.92$ ; 2b:  $\alpha=.94$ ; 2c:  $\alpha=.93$ ; study 3 group 1:  $\alpha=.93$ ; study 3 group 2:  $\alpha=.94$ ; study 3 group 3:  $\alpha=.96$ ; study 4:  $\alpha=.93$ ) through replicated studies with internally consistent frequency and intensity subscales (Thrash & Elliot, 2003). Through the replication of the IS in different settings, stability, replicability, and validity was demonstrated, as the findings were consistent (Thrash & Elliot, 2003). As the IS was found to predict enduring experiences of inspiration, it is a good measure of trait inspiration, as personality traits are enduring over time, rather than temporary states (Thrash & Elliot, 2003).

The subscales that comprise the IS are frequency and intensity (Thrash & Elliot, 2003). The frequency subscale, of particular importance to trait inspiration, measures how often an individual experiences inspiration (Thrash & Elliot, 2003). The intensity subscale measures how strongly an individual feels inspired (Thrash & Elliot, 2003). Both frequency and intensity are

measured for each item on in IS scale, and all scores are combined for a total inspiration measure (Thrash & Elliot, 2003).

Thrash and Elliot's (2003) IS has been employed in the investigation of sport-based behaviour by Potwarka et al. (2017) and Gonzalez, Metzler, and Newton (2011), however, in both studies, IS was used to measure state inspiration, rather than trait inspiration. Potwarka et al. (2017) found that experiencing elite, live track cycling competitions had a positive effect on spectators' intention to try track cycling. Similarly, when investigating the role that pep-talk by coaches plays in athlete inspiration, Gonzales et al. (2011) found that football players who watched a video clip of an inspirational speech by a coach felt more inspired to perform than the football players who watched a video clip of a coach giving game instructions.

Consistent with Thrash and Elliot's (2003) IS, trait inspiration was measured using the four questions developed by Thrash and Elliot (2003), including the questions: "I experience inspiration"; "Something I encounter or experience inspires me"; "I am inspired to do something"; and, "I feel inspired". Each statement was followed by two questions: "How often does this happen", measured on a 7-point Likert scale, where 1 is never, and 7 is very often; and, "how deeply or strongly (in general)", measured on a seven-point Likert scale, where 1 is not at all, and 7 is very often". Respondents were asked to indicate their level of agreement with each statement based on how deeply/strongly they experience each statement. The questions can be found in Appendix B, section six, *Tell Us About You*.

**3.3.4. Pre-event engagement.** Based upon measures of pre-event engagement of previous studies (e.g., Funk et al., 2011), a seven-point Likert-type scale was used to measure the spectator's engagement with track cycling prior to watching the Toronto 2015 Pan Am Games track cycling competitions. Consistent with Funk et al. (2011), to assess pre-event engagement

with track cycling, four questions were asked on a 7-point Likert scale, where 1 is strongly disagree, and 7 is strongly agree. The specific questions asked include: “I know about the sport of track cycling”; “I am interested in the sport of track cycling”; “I consider myself a fan of the sport of track cycling”; and “I am aware of the programs that will be available after the PAN AM Games at the Mattamy National Cycling Centre”. The respondents were asked to indicate their level of agreement with each statement. The questions can be found in Appendix B, section two, *Track Cycling Fan Behaviour*.

### **3.4 Data Analyses and Cleaning**

The hypothesized model was tested using structural equation modeling (SEM) with the statistical analysis software, AMOS. SEM is a confirmatory technique used in statistics (Blunch, 2013), meaning that the hypothesized model is created first, and the data is tested to see if it fits the model (Blunch, 2013). Specifically, the two-step SEM analysis suggested by Andersen and Gerbing (1988) was used. The first step involved testing the measurement model through a confirmatory factor analysis to confirm the reliability and validity of the specific measures used in the model (Andersen & Gerbing, 1988; Blunch 2013). The second step involved testing the structural model through testing the structural relationships between the concepts in the model (Andersen & Gerbing, 1988; Blunch 2013).

Prior to the conduction of the two-step SEM procedure in AMOS, SPSS was used to check the data for missing data and non-normality issues. As SEM requires that there be no missing data and that the data be normally distributed (Blunch, 2013), normality and missing data issues were addressed before proceeding to the SEM technique in AMOS.

The data was found to be normally distributed. To test for, and mitigate, missing data issues, as suggested by Allison (2003), maximum likelihood was used. Missing data was

successfully imputed for non-nominal-level variables. Three of the control variables (i.e., sex, education, and income) were re-coded to become ordinal level variables (i.e., sex: female=1, male=2; education: elementary or less=1, high school=2, college diploma=3, undergraduate=4, postgraduate=5; income: less than \$20000=1, \$20000-\$40000=2, \$40000-\$60000=3, \$60000-\$80000=4, \$80000-\$100000=5, over \$100000=6). All missing data was successfully imputed (p=.066), leaving no missing data.

## CHAPTER FOUR: RESULTS

This chapter describes the two-step SEM procedure by beginning with an outline of the specific fit indices to be considered. Results of the tests of the measurement model, structural model, indirect effects, and control effects will then be presented. This chapter will end with the results of the hypotheses testing as it relates to each relationship proposed in the model.

### 4.1 Demographic Profile of Participants

After missing data imputation took place, as demonstrated in Table 4.1, there were a total of 381 fully completed responses. The respondents were fairly wealthy, with majority earning over \$80,000 per year (\$80,000-\$100,000=14.7%; Over \$100,000=40.4%). The respondents were also very well educated, with the majority receiving a post-secondary education (College Diploma=26.8%; Undergraduate=33.1%; Postgraduate=29.6%). There were slightly more male spectators (59.1%) than female spectators (40.9%). Finally, on average, the spectators were middle-aged (M=45.43; S.D.=13.43).

Table 4.1

Descriptive Statistics of Demographic Variables		
Variable	n	Percentage
Income	381	100
	Less than \$20,000	7.9
	20,000-40,000	3.4
	40,000-60,000	14.2
	60,000-80,000	19.4
	80,000-100,000	14.7
	Over 100,000	40.4
Education	381	100
	Elementary or less	1.0
	High School	9.4
	College Diploma	26.8
	Undergraduate	33.1
	Postgraduate	29.6
Sex	381	100
	Female	40.9
	Male	59.1

## 4.2 Overall Model Fit

Fit indices are measures that are used to assess the model's fit with the data (Blunch, 2013). Consistent with the SEM literature (i.e., Blunch, 2013), the specific indices that were considered to assess model fit include: Chi-square/df ratio ( $\chi^2/df$ ); Normed fit index (NFI), Comparative fit index (CFI); Tucker-Lewis index (TLI); and, root mean square error of approximation (RMSEA) and its p-value (PCLOSE).

The  $\chi^2/df$  is an absolute fit measure, meaning that this measure does not compare the model to other models—it only considers the model under examination (Blunch 2013). For this measure, the minimum value of  $C$  (CMIN), or the end result of the minimization process, is divided by the degrees of freedom to result in a normalization of  $\chi^2$  (Blunch, 2013). Normalizing the  $\chi^2$  is important because  $\chi^2$  on its own is influenced by sample size: a large enough sample will yield a significant result, while a small enough sample will yield an insignificant result (Blunch, 2013). A  $\chi^2/df$  close to 1.00 represents a good fit.

The NFI, CFI and TLI are relative fit measures, meaning that an explicit bias model is used to judge the model fit on a common, or relative, basis (Blunch, 2013). The NFI is on an interval from 0-1.00, representing the saturated model, or the maximum fit, to the independent model, or minimum fit (Blunch, 2013). The hypothesized model is evaluated through its location between the two extremes (Blunch, 2013). CFI is used to evaluate the relative fit of the model, which also accounts for the sample size through including the degrees of freedom (Blunch, 2013). A CFI value of greater than .95 represents a good fit. TLI is also a measure of relative fit including degrees of freedom, and is measured on an interval of 0-1.0, where values close to 1.0 indicate a good fit (Blunch, 2013).



Finally, the RMSEA is a fit index that is based on the non-central  $\chi^2$ -distribution which assumes that no model is fully correct, rather it can only be approximately correct (Blunch, 2013). While accounting for degrees of freedom to mitigate sample-size bias, RMSEA measures the goodness of fit of the model while under the realistic assumption that no model can be a perfect fit (Blunch, 2013). A RMSEA value of approximately .05, and no larger than .10 is an indicator of good fit. The P-value, or PCLOSE, associated with the RMSEA should be greater than .05 (Blunch, 2013).

### **4.3 Measurement Model Testing**

Confirmatory factor analyses are run when the model is pre-determined based on theory to ensure the quality of the measuring instrument (Blunch, 2013), like the one present in this thesis. As each of the variables under examination are latent variables with more than one indicator per variable, a confirmatory factor analysis was run (Blunch, 2013). Within the factor analysis, each indicator's reliability coefficient was found, meaning that the indicators associated with the variable were tested for their explanation of variance on the variable (Blunch, 2013).

The first confirmatory factor analysis revealed that the measurement model was not a good fit ( $\chi^2/df= 2.93$ ; NFI=.92; CFI= .94; TLI=.93; RMSEA=.07; PCLOSE>.01). The model estimates were further examined to reveal that the standardized regression weights for *awareness of programs at the Mattamy National Cycling Centre* ( $\lambda=.49$ ), part of the pre-event engagement variable, and *determined* ( $\lambda=.55$ ), an indicator for positive affect, were unacceptably low, and subsequently removed from the model.

The decision to remove the awareness item can be theoretically justified. The other indicators of pre-event engagement included in this analysis are associated with global engagement with track cycling (i.e., knowledge of track cycling, interest in track cycling, and

being a fan of track cycling). However, awareness of *specific* programs at the MNCC seems conceptually different in that knowledge of specific programs offered by the facility is fundamentally different from broad knowledge of the sport. Thus, this fundamental difference is enough to justify exclusion from the model.

Table 4.2

Parameters and Estimates for CFA Model				
Factors and Items	M	$\lambda$	S.E	<i>t</i>
<b>Intention to Try Track Cycling</b>				
1. I intend to track cycle in the coming months	3.28	.93***	.05	22.82
2. I intend to track cycle at the Mattamy National Cycling Centre (Milton Velodrome) when it opens to the public in the coming months (rental bikes available)	3.51	.98***	.06	24.77
3. I intend to register for an introductory “Try-the-track” session offered at the Mattamy National Cycling Centre in the coming months	3.48	.92***	.06	24.77
4. I will become a certified member at the Mattamy National Cycling Centre so that I can track cycle in the coming months	2.65	.81***	-	-
<b>Pre-Event Engagement</b>				
1. I know about the sport of track cycling	2.97	.73***	.06	12.43
2. I am interested in the sport of track cycling	4.85	.56***	.08	10.00
3. I consider myself a fan of the sport of track cycling	4.17	.87***	-	-
<b>Trait Inspiration</b>				
1. I experience Inspiration (frequency X intensity)	22.30	.78***	.04	20.32
2. Something I encounter or experience inspires me (frequency X intensity)	21.49	.82***	.04	22.19
3. I am inspired to do something (frequency X intensity)	32.37	.90***	.03	26.85
4. I feel inspired (frequency X intensity)	23.08	.93***	-	-
<b>Positive Affect “While watching the track cycling event I felt...”</b>				
1. Attentive	5.82	.77***	.08	14.15
2. Enthusiastic	5.96	.82***	.07	15.12
3. Inspired	5.62	.71***	.09	13.12
4. Interested	6.07	.80***	.07	14.75
5. Alert	5.77	.82***	.08	15.05
6. Excited	6.07	.85***	.07	15.61
7. Proud	6.20	.70***	-	-

Note.  $\lambda$  = standardized factor loadings, \*\*\*p < .001

Moreover, with respect to the PA measure, the “*determination*” item was found to not be a good fit with the model. Interestingly, many of the indicators of PA (i.e., attentive, enthusiastic, interested, alert, excited, proud) are largely passive emotions, meaning that they are not associated with a specific action that the individual is drawn toward. The verb “determined,” however, is an emotion that distinctly leads an individual toward action. For example, if an individual is *interested* in a topic, there is no necessary further action for them to take. Whereas if an individual felt *determined* about a topic, it is implied that the individual is determined to take action in some way. Thus, as the action-oriented properties of determination are quite different from the more passive emotions included as indicators of PA, and the fit indices suggest that *determined* does not fit, *determined* was consequently excluded from subsequent analysis.

The confirmatory factor analysis was run again, with the exclusion of the two variables outlined above. As seen in Figure 4.1 and Table 4.2, the model was found to be an acceptable fit ( $\chi^2/df= 2.28$ ; NFI=.95; CFI=.97; TLI=.96; RMSEA=.06; PCLOSE=.07). Furthermore, as seen in Table 4.3, there were no validity or reliability issues associated with the measures.

To assess validity, the average variance extracted (AVE), maximum shared variance (MSV) were examined. AVE must be above .50 to meet convergent validity criteria (Hair et al., 2010). Convergent validity reveals the amount of variance explained by a latent construct for a set of indicators (Hair et al., 2010). MSV measures discriminant validity and must be less than the average shared variance, AVE, and the square root of the AVE (Hair et al., 2010).

Discriminant validity reveals if the variance among a construct is explained by its measures, and not measures of other constructs (Hair et al., 2010). Reliability was measured using Composite

reliability (CR), which measures internal consistency (Hair et al., 2010). CR must be equal or greater than .70 (Hair et al., 2010).

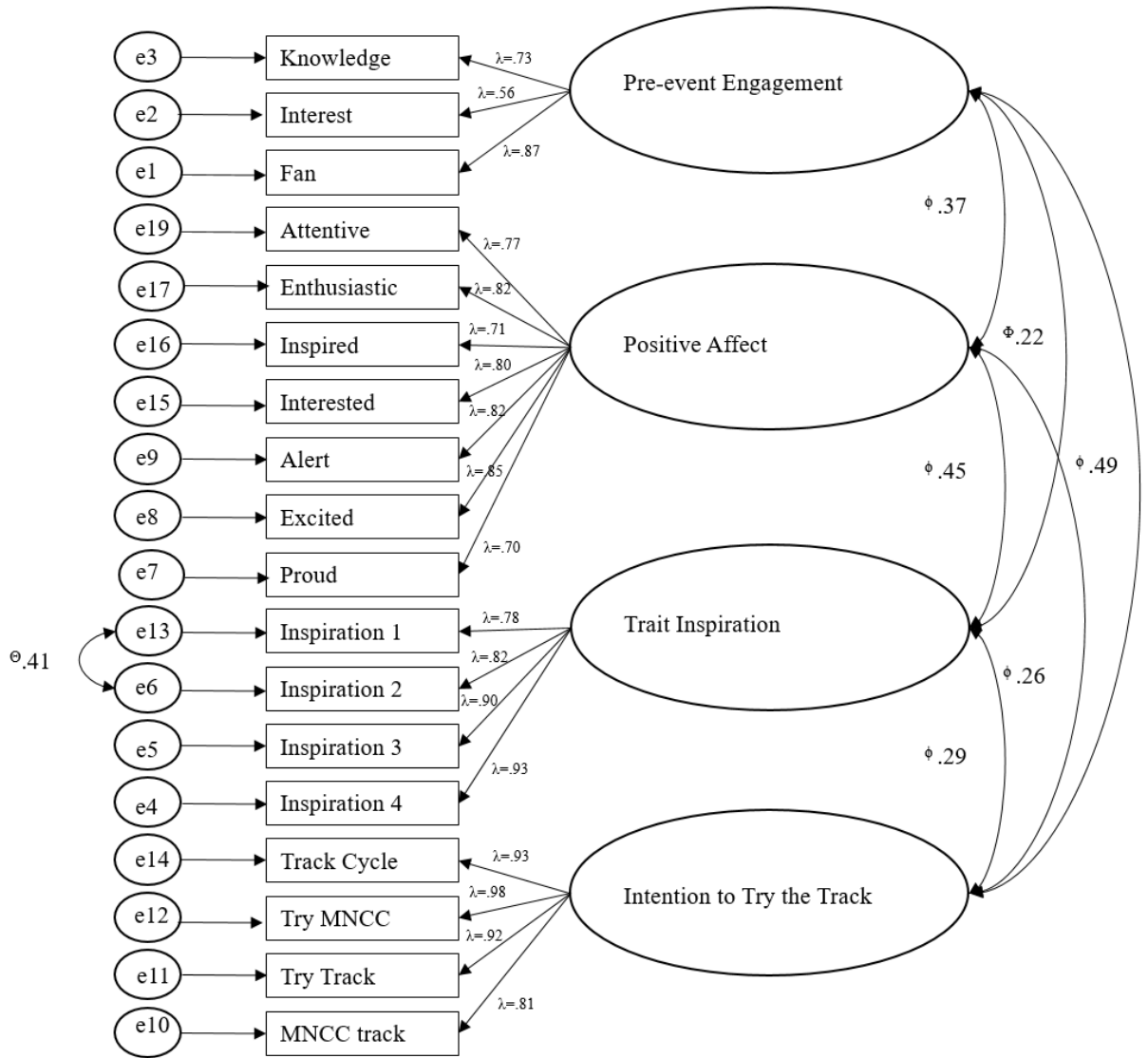


Figure 4.1 Final Measurement Model

Finally, there were no issues of collinearity. As depicted in the Pearson Correlations portion of table 4.3, there was however a significant correlation between trait inspiration and pre-event engagement. This correlation means that trait inspiration and pre-event are significantly related such that for every unit increase in one variable, the other will increase by .23 of a unit.

Table 4.3

Results of tests for construct validity and reliability

	CR	AVE	MSV	MaxR(H)	Pearson Correlations			
					(1)	(2)	(3)	(4)
Intention to Try the Track (1)	.95	.83	.24	.97	--			
Pre-event Engagement (2)	.77	.54	.24	.98	.49**	--		
Trait Inspiration (3)	.92	.74	.20	.98	.29**	.23**	--	
Positive Affect (4)	.92	.62	.20	.99	.26**	.37**	.45**	--

Notes. CR = composite reliability, AVE = average variance extracted, MSV = maximum shared variance, ASV = average shared variance, \*\*p < .01

Noteworthy, as seen in table 4.2, the means for the pre-event engagement variables of interest in the sport of track cycling (M=4.85) and identifying as a fan of track cycling (M=4.17) are quite higher than the mean of the third variable, knowledge of the sport of track cycling (M=2.97). This difference in mean scores may be present because track cycling is a very technical sport, meaning that there are many specific rules and intricate events. A spectator may enjoy watching a track cycling event, however, they may not consider themselves to be knowledgeable about the rules of competition, or how the techniques are performed. In other words, people may consider themselves to be a “fan” or “interested” in a sport because they are cheering on an Olympic athlete from their home country at a once in a lifetime mega event, yet possess little knowledge of the sport on display. For instance, those who consider themselves knowledgeable of more main-stream sports in Canadian society may know every rule of their favourite sport, or even participate themselves. When comparing that knowledge to their knowledge of track cycling, they may consider themselves to have little knowledge of the sport of track cycling. Furthermore, as the Mattamy National Cycling Centre is the only velodrome in Canada, exposure to track cycling would have been minimal for many spectators. They may have an interest in the sport, or have seen it while following other sport events (i.e., the Olympics). Their

lack of exposure could lead them to consider themselves to not be very knowledgeable of the sport.

Finally, as depicted in figure 4.1, Inspiration item one and Inspiration item two were identified to be co-varying. This could be because the two items (i.e., “I experience inspiration” and “Something I encounter or experience inspires me”) have similar wording.

#### 4.4 Structural Model Testing

The second step involved in the two-step SEM procedure is the assessment of the linear relationships between constructs (Andersen & Gerbing, 1988; Blunch, 2013). An analysis of the goodness-of-fit indicators will indicate the extent to which the model fits the data, and that meaningful relationships exist between the hypothesized constructs (Blunch, 2013).

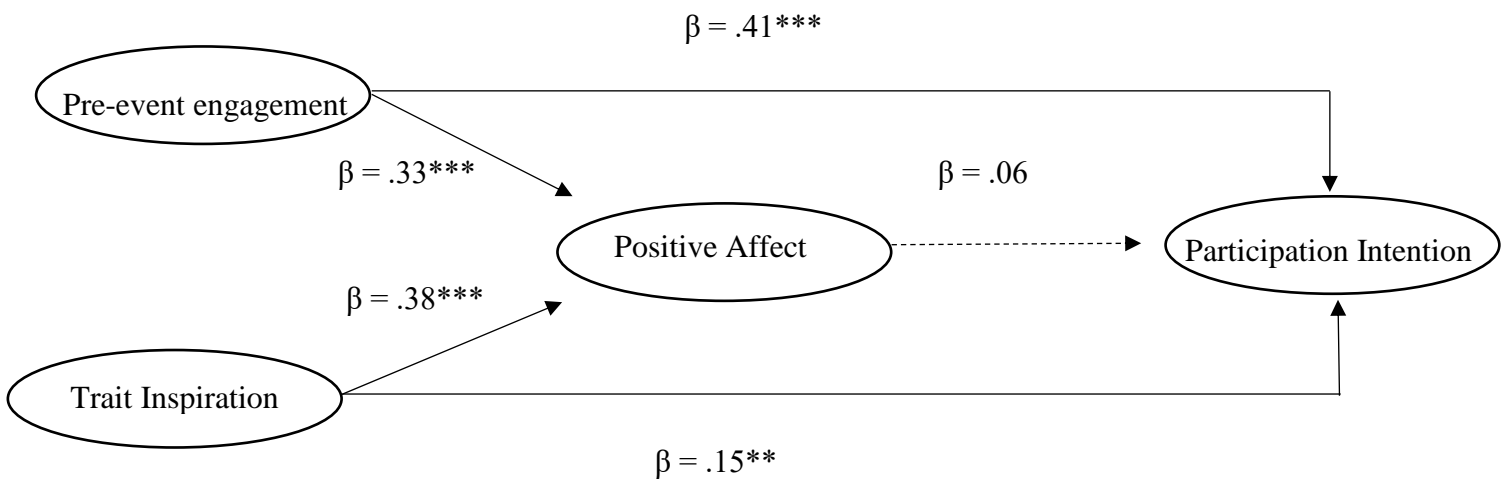


Figure 4.2 Structural Model

Notes. \* $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$ , ----- non-significant path

Additionally, to avoid type 1 error associated with sample distribution, bootstrapping was used. Bootstrapping is a common practice within mediation models (Preacher & Hayes, 2004) and involves the process of taking many sample sizes, in this case 1,000, of the original sample

size to assess the indirect effects, and thus, mitigating sample size issues related to indirect effect measurement (Preacher & Hayes, 2004). Consistent with the SEM literature (i.e., Blunch, 2013), the model is specified ( $\chi^2/df = 2.19$ ; NFI=.93; CFI=.96; TLI=.95; RMSEA=.06; PCLOSE=.09) with the control variables of sex, age, income, and education. Finally, mediating effects were examined by assessing indirect effect matrices and standardized indirect effects.

As seen in Figure 4.2, and described in table 4.4, regardless of age, sex, education, and income, there is a significant positive relationship between pre-event engagement and intention to try the track ( $\beta=.41, p < .001, S.E=.07$ ), and between trait inspiration and intention to try the track ( $\beta=.15, p=.01, S.E=.01$ ). Similarly, regardless of age, sex, education, and income, there is also a significant positive relationship between pre-event engagement and positive affect ( $\beta=.33, p < .001, S.E=.03$ ), and between trait inspiration and positive affect ( $\beta=.38, p < .001, S.E=.00$ ). There is, however, an insignificant relationship between positive affect and trait inspiration ( $\beta=.06, p=.28, S.E=.12$ ).

Table 4.4

*Standardized Direct Effects*

Constructs	Intention to Try the Track			Positive Affect		
	$\beta$		S.E.	$\beta$		S.E.
<i>Core Constructs</i>						
Pre-event Engagement	.41	***	.07	.33	***	.03
Trait Inspiration	.15	**	.01	.38	***	.00
Positive Affect	.06		.12	--		--
<i>Control Variables</i>						
Age	-.21	***	.01	.13	**	.00
Sex	.09		.16	-.23	***	.08
Income	.17	***	.05	.05		.26
Education	-.09	*	.07	-.01		.37

Note. \* $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

There is a significant relationship between age ( $\beta=0.21$ ,  $p < .001$ ,  $S.E=.01$ ), income ( $\beta=.17$ ,  $p < .001$ ,  $S.E=.05$ ), and education ( $\beta=-.09$ ,  $p=.04$ ,  $S.E=.07$ ) with intention to try the track, while there is no significant relationship present between sex ( $\beta=.09$ ,  $p=.07$ ,  $S.E=.16$ ) and intention to try the track. There is a significant relationship between age ( $\beta=.13$ ,  $p=-.01$ ,  $S.E=.00$ ) and sex ( $\beta=-.23$ ,  $p=-.01$ ,  $S.E=.08$ ) with positive affect, while there is no significant relationship between income ( $\beta=.05$ ,  $p=.34$ ,  $S.E=.26$ ) and education ( $\beta=-.01$ ,  $p=.78$ ,  $S.E=.37$ ) and positive affect.

#### **4.5 Control Variables Effects**

As can be observed in Table 4.4., income ( $\beta=.05$ ,  $p=.34$ ) and education ( $\beta=-.01$ ,  $p=.78$ ) had no significant influence on positive affect (PA). Age ( $\beta=.13$ ,  $p=.01$ ) and sex ( $\beta=-.23$ ,  $p<.001$ ), however, both significantly influenced positive affect. As age increased, so did the spectators' reported feelings of PA. As sex is coded as female=1, and male=2, the negative coefficient reveals that men reported experiencing higher levels of positive affect than women. Thus, in general, older males were more likely to experience positive affect.

Sex ( $\beta=.09$ ,  $p=.07$ ) had no significant influence on intention to try the track. Education ( $\beta=-.09$ ,  $p=.04$ ), age ( $\beta=-.21$ ,  $p<.001$ ), and income ( $\beta=.17$ ,  $p<.001$ ) all significantly influenced intention to try the track. The negative coefficient representing the relationship between education and intention reveals that the spectators with lower levels of education were more likely to intend to try the track, and as education increased, intention decreased. Similarly, as age increased, intention decreased. Finally, as income increased, so did intention. Thus, younger, less educated, wealthy individuals had stronger intentions to try track cycling after watching competitions.



## 4.6 Hypotheses Testing

As observed by the standardized regression weights in Figure 4.2, and the standardized direct effects in Table 4.4, hypotheses 1 and 2 were supported, however, hypotheses 3, 4, and 5 were not. The results of the tests for each hypothesis are described in more detail below.

Hypothesis 1, *pre-event engagement with track cycling will be positively associated with intention to participate in track cycling*, was supported. There was a significant positive relationship between pre-event engagement and intention to try track cycling ( $\beta=.41, p<.001$ ). Thus, individuals who had knowledge of track cycling, interest in track cycling, and were fans of track cycling before attending the events had stronger intentions to try track cycling. Specifically, the results suggest that for every unit increase in pre-event engagement with track cycling, intention to participate in track cycling increases by .41 of a unit.

Hypothesis 2, *trait inspiration will be positively associated with intention to participate in track cycling* was also supported. There was a significant positive relationship between trait inspiration and intention to try track cycling after watching competitions ( $\beta=.15, p=.01$ ). Thus, individuals with high trait inspiration had stronger intentions to try track cycling after watching competitions. In other words, individuals who reported more frequent and deep feelings of being inspired were more likely to intend to try track cycling after watching the event. Specifically, the results suggest that for every unit increase in trait inspiration, intention to try in track cycling increases by .15 of a unit.

Hypothesis 3, *PA will be directly positively associated with intention to participate in track cycling*, was not supported. The relationship between positive affect and intention to try the track is not significant ( $\beta=.06, p=.28$ ). Thus, positive affect, characterized by the feelings of

pride, excitement, alertness, interest, inspiration, enthusiasm, and intentness experienced during the event did not influence individuals' intent to try tack cycling.

**4.6.1. Indirect effect testing.** No significant indirect effects through positive affect from pre-event engagement to intention to try the track ( $\beta > .01$ ), and from trait inspiration to intention to try the track ( $\beta > .01$ ) were observed. For every unit increase in pre-event engagement through positive affect, there was less than .01 unit increase in intention to try the track, which is statistically insignificant. Similarly, for every unit increase in trait inspiration through positive affect, there was less than .01 unit increase in intention to try the track, which is also statistically insignificant. Thus, hypotheses 4, *PA will mediate the relationship between pre-event engagement and intention to participate in track cycling*, and 5, *PA will mediate the relationship between trait inspiration and intention to participate in track cycling*, were not supported by the data. Thus, it is not necessary for positive affect to be experienced for either trait inspiration or pre-event engagement to influence spectators' intentions to try track cycling.

Interestingly however, the relationship from pre-event engagement to positive affect ( $\beta = .33, p < .001$ ), and from trait inspiration to positive affect ( $\beta = .38, p < .001$ ) were significant. For every unit increase in pre-event engagement, there was .33 unit increase in positive affect, a statistically significant result. Similarly, for every unit increase in trait inspiration, there was a .38 unit increase in positive affect, also a statistically significant result. Thus, spectators with high trait inspiration also experienced high levels of positive affect. Similarly, spectators who were highly engaged with track cycling before attending the event also experienced higher levels of positive affect while watching the event.

These results suggests that pre-event engagement and trait inspiration can both lead to a positive affect experience, however, simply feeling good during an event did not translate into intent to participate in the sport on display.

As seen in Table 4.5, Hypotheses 1 and 2 have been accepted, however, Hypotheses 3, 4, and 5 have been rejected. Chapter five will further explain and interpret these results in relation to extant literature.

Table 4.5

<i>Summary of Hypotheses Testing</i>		
Number	Hypothesis	Accept/Reject
H1	<i>Pre-event engagement with track cycling will be positively associated with intention to participate in track cycling</i>	Accepted
H2	<i>Trait inspiration will be positively associated with intention to participate in track cycling</i>	Accepted
H3	<i>PA will be directly positively associated with intention to participate in track cycling</i>	Rejected
H4	<i>PA will mediate the relationship between pre-event engagement and intention to participate in track cycling</i>	Rejected
H5	<i>PA will mediate the relationship between trait inspiration and intention to participate in track cycling</i>	Rejected

## CHAPTER FIVE: DISCUSSION

This chapter explains and interprets key findings in relation to current literature. Specifically, results associated with each hypothesized relationship will be presented and discussed in relation to furthering the understanding of the demonstration effect. From here, implications of the results for practice, theory, and future research are described. Concluding remarks are presented at the end of the Chapter.

### 5.1 Summary of Results

The purpose of the current thesis was to *identify intrapersonal and experiential mechanisms that might help explain demonstration effects*. As it relates to this purpose, this thesis reveals significant findings that contribute directly to literature, practice, and theory surrounding the demonstration effect. Specifically, this thesis addresses a need for the use of more comprehensive theoretical frameworks for guiding research on the demonstration effect. Additionally, the findings contribute to the demonstration effect literature by revealing the important roles that pre-event engagement and personality (i.e., trait inspiration) play in predicting participation intention.

Furthermore, this thesis has key implications for practice and future research. Suggestions are made for event managers to help elicit a demonstration effect through engaging spectators before the event takes place, and providing informative, inspirational messaging during the event. Future research should also develop a more robust understanding of both specific emotions and personality traits that contribute to the demonstration effect.

More specifically, the hypothesized model, informed by the Stimulus-Organism-Response theory and relevant literature (i.e., Funk et al., 2011; Potwarka et al., 2017; Thrash & Elliot, 2003) was partially supported. As illustrated in Figure 5.1, hypotheses 1 (*Pre-event*

engagement with track cycling will be positively associated with intention to participate in track cycling) and 2 (Trait inspiration will be positively associated with intention to participate in track cycling) were supported, while hypotheses 3 (PA will be directly positively associated with intention to participate in track cycling), 4 (PA will mediate the relationship between pre-event engagement and intention to participate in track cycling), and 5 (PA will mediate the relationship between trait inspiration and intention to participate in track cycling) were not supported. Interestingly, significant relationships between study variables that were not hypothesized emerged upon a deeper examination of the model.

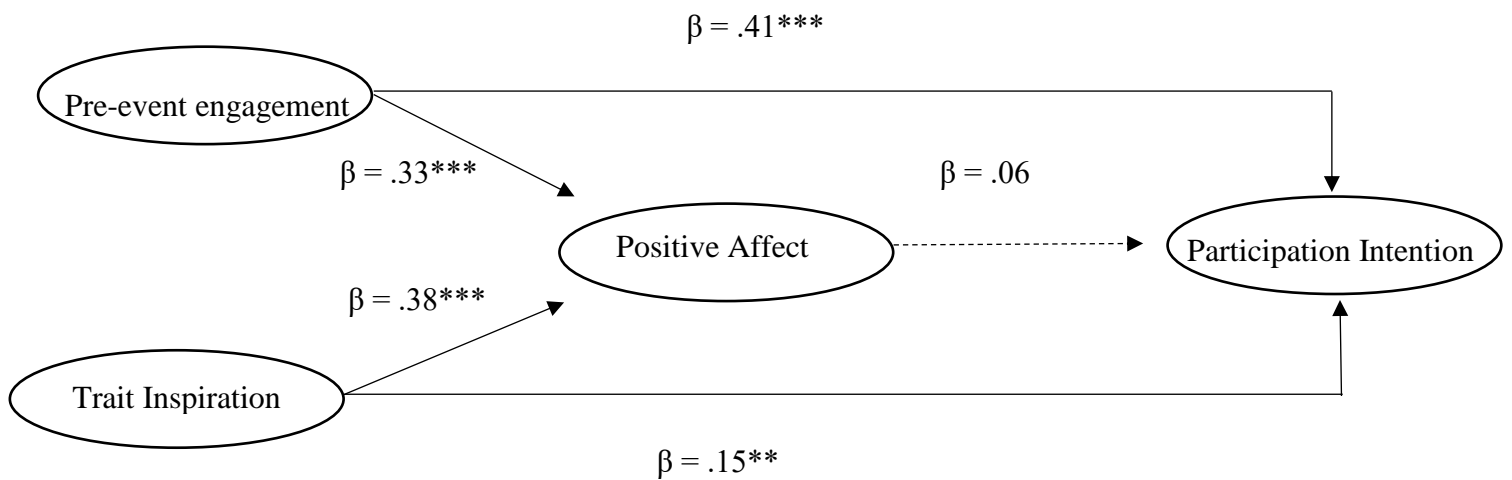


Figure 5.1 Structural Model

Note. \* $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

As demonstrated by Figure 5.1, there is a significant positive relationship between pre-event engagement and participation intention. There is also a significant positive relationship between trait inspiration and participation intention. The relationship between positive affect and pre-event engagement is not significant, and thus there are also no significant indirect relationships present through positive affect. Interestingly, there is a significant positive relationship between pre-event engagement and positive affect, and between trait inspiration and

positive affect. Neither of those relationships were originally hypothesized. These results of hypotheses testing will be explored further and interpreted in relation to extant literature in the following sections.

## **5.2 Pre-event Engagement**

Hypothesis 1: *Pre-event engagement with track cycling will be positively associated with intention to participate in track cycling* (accepted). The results indicate that individuals who engage with track cycling before experiencing the live-competition were more likely to intend to try the sport on display. This findings is consistent with the notion that participation intention is influenced by engagement with the sport on display before attending the event itself (Funk et al., 2011). For instance, Funk at al. (2011) found that the more running races an individual had attended before participating in a running event, the stronger the commitment they had to road running after the event had concluded. Moreover, Wicker and Sotiriadou (2013) found that local resident's attitudes toward the Commonwealth Games in Australia were more positive than non-local residents' attitudes, likely due to the higher level of exposure to pre-event marketing. Thus, the current model suggests that for a demonstration effect to be maximized, spectators should have prior knowledge of, and interest in the sport on display.

The findings are also supported by the notion, rooted in consumer behaviour, which suggests that brand awareness influences purchase behaviour (Esch et al., 2006; Macdonald & Sharp, 2000). In particular, the notion that prior knowledge, awareness, and interest in the track cycling can significantly influence spectator's intention to participate in the sport on display is consistent with previous consumer behavior literature (i.e., Bowden, 2009; Mittal et al., 2001). For instance, Mittal et al. (2001) found that consumers who have been engaged with their credit card company for a longer amount of time were more likely to remain engaged with their

company and purchase other services than those who had been engaged for a shorter amount of time. Furthermore, Bowden (2009) found that consumers were more likely to purchase a brand that they had an existing relationship with, rather than an unknown brand.

Finally, pre-event engagement has been largely conceptualized in two ways throughout the literature. Funk et al. (2011) and Ramchandani and Coleman (2012) conceptualize pre-event engagement as the number of events previously attended and self-reported physical activity levels. Whereas Weed et al. (2015) conceptualize pre-event engagement as engaging with leveraging efforts before the event takes place. Interestingly, in the context of this thesis, pre-event engagement is a combination of these two conceptualizations. Rather than participation in the sport on display, this thesis conceptualizes pre-event engagement as watching, or attending events; and rather than engaging with explicit leveraging efforts, this thesis considers creating unintended leverage by gaining knowledge of the sport.

### **5.3 Trait Inspiration**

*Hypothesis 2: Trait inspiration will be positively associated with intention to participate in track cycling* (accepted). The demonstration effect suggests that individuals become *inspired* to become more physically active (Weed et al., 2015). Accordingly the hypothesized model also indicates that high trait inspiration can lead to an intention try the sport on display. This finding is consistent with the literature that suggests that those with high trait inspiration are more action-oriented, and engaged with their surroundings (Thrash & Elliot, 2003).

Trait inspiration is a personality trait, or a consistent personality tendency (Kleiber et al., 2011). The enduring nature of personality traits allow individuals' behaviours to become predictable over time (Kleiber et al., 2011). This thesis reveals that those with high trait inspiration are likely to intend to participate in a new sport after watching it performed by elite

athletes. This finding provides insights into how the demonstration effect can come about with respect to trait inspiration. Those who more frequently experience inspiration in their lives are more likely to respond to sport events in ways consistent with a demonstration effect. Indeed this results suggests that through measuring specific personality traits, the demonstration effect can be further understood.

#### **5.4 Positive Affect**

Hypothesis 3: *PA will be directly positively associated with intention to participate in track cycling* (rejected); hypothesis 4: *PA will mediate the relationship between pre-event engagement and intention to participate in track cycling* (rejected); hypothesis 5: *PA will mediate the relationship between trait inspiration and intention to participate in track cycling* (rejected). These results suggest that experiencing PA alone, does not influence intention to try the track. Simply feeling engaged (i.e., excited or enthusiastic) while spectating an event does not elicit an intention to try the sport on display. It is also worth noting that age was used as a control variable, possibly leading to type two error. This error might be possible as the younger spectators were more likely to intend to try the track, their experiences of positive affect may have had a stronger influence on their intentions. Indeed, we did not remove these younger cohorts from the analysis.

Affect, or one's emotional engagement (Watson et al., 1988), describes general feeling at a particular moment in time. *Positive* affect describes general pleasant feelings at a *specific* moment in time (Watson et al., 1988). PA involves the emotional states of attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong, and active (Watson et al., 1988). Noteworthy, two of these terms (i.e., inspired and determined) are emotions that can also influence an individuals' future action intentions. In other words, they are action-oriented



emotions. For instance, the affective state of inspiration, involves a trigger stimulus object or event evoking inspiration within an individual that motivates them to a particular action (Thrash & Elliot, 2003). Consistent with the characterization of inspiration as a tripartite (i.e., transcendence, evocation, motivation), one experiences inspiration as a result of a stimulus object, and the emotion endures within the individual causing them to feel motivated toward a particular action (Thrash & Elliot, 2003). Thrash and Elliot (2004) suggest that state inspiration involves appreciation of an evocative object (inspired by) and motivation toward exemplifying the evocative object (inspired to). This is different from non-action oriented emotions captured largely by the PANAS scale. For example, the PA emotion of “proud” does not provide an individual with a specific goal to be motivated to take action toward. In other words, people can feel pride in watching their nation’s athletes perform well, but such feelings may never translate into an intention to try the sport on display.

PANAS is a valid, reliable measure of general affective feelings (Watson et al., 1988), however, as seen through the results of this thesis, general affective states do not predict participation intentions. Rather than investigating general affective experiences, perhaps affective experiences that are specifically associated with goals and actions may be better predictors of participation intention. For instance, as noted above, state inspiration elicits goal orientation toward a specific motivation (i.e., people are both inspired “by something” and to “do” something in response to the stimuli) (Potwarka et al., 2017; Thrash & Elliot, 2004). Moreover, also a part of the PANAS scale, the feeling of being determined is also an action-oriented emotion. The term *determination* is defined as a “firm or fixed intention to achieve a desired end” (“determination”, n.d.), revealing that feeling determined continues until the desired end is achieved. Thus, states of inspiration and determination may be better predictors of

participation intention, as the participation is a desired end that the emotions direct the spectators toward. Indeed, there is a need for further research on affective states that elicit a drive properties toward participation intention.

Interestingly, however, trait inspiration and previous engagement with the sport on display in terms of being a fan, having knowledge, and having awareness of the sport on display can lead spectators to experience PA while watching the event. The significant relationship between pre-event engagement and PA reveals that spectators who were aware of track cycling, had knowledge of track cycling, and were fans of track cycling before attending the event also had positive emotions while experiencing the event. As demonstrated, experiencing positive affect while watching elite sport competitions may not translate into participation intention.

Nevertheless, these findings are important for event managers, as having event attendees' enjoy their experience (i.e., experience PA) may also be a goal of event managers (Chalip, 2006; Kellette et al., 2008). As there are a variety of different intended (or unintended) outcomes of mega sport events (IOC, 2013), perhaps experiencing positive affect may contribute to the achievement of other strategic outcomes (e.g., post-event social media engagement, purchase apparel, team merchandise, etc.). In other words, post-event participation is indeed an important result of mega sport event spectatorship, however, it is not the only sought after result. Furthermore, it has been found that experiencing positive affect is associated with higher levels of engagement and lower levels of dissatisfaction (King, McInerney, Ganotice, & Villarosa, 2015), meaning that the spectators who experienced PA, likely felt engaged when watching the event, and we likely not dissatisfied. This lack of dissatisfaction could lead spectators' to be open to attending future track cycling events.

The relationship between trait inspiration and PA is consistent with previous literature. Indeed, PA was one of the strongest correlates of inspiration in Thrash and Elliot's (2003) seminal work on the construct. It is interesting to observe that PA did not mediate the relationship between trait inspiration and participation intention. Although trait inspiration significantly influences both PA and participation intention, the insignificant indirect relationship lends further support for the need to explore other, more action-oriented affective states with regard to participation intention.

PA has been found to help individuals feel good about themselves and their abilities to perform a particular activity (Frederickson, 2001). Thus, PA may contribute to participation intention after an individual has participated in an activity, however, this thesis has found that PA while spectating does not influence participation intention for an activity that individuals' have not yet tried. The findings of this thesis suggest that it is not the PA, rather it is trait inspiration and engagement that may lead to the participation intention. Spectators with high trait inspiration reported stronger intention to try track cycling, and spectators who are highly engaged with track cycling before spectating also tended to have stronger intentions to try track cycling. The PA experienced by spectators, however, had little influence on their intention to try track cycling.

## **5.5 Implications**

The findings of this thesis provides insight for practice, theory, and research related to the demonstration effect. Specifically, the findings of this thesis reveal ways in which practitioners can better plan for, and take active steps toward, the elicitation of the demonstration effect. The theoretical lens used in this thesis provides further support for the use of more robust psychological theories when examining the demonstration effect. Finally, this thesis also

highlights several gaps that remain in the literature that future research should address. The specific implications associated with this thesis are discussed below.

**5.5.1 Implications for Practice.** Event leveraging is when an event is used as a catalyst to achieve further, indirect benefits for the host community (Chalip, 2006). As the current literature suggests, and this thesis supports, leveraging strategies require extensive planning (Kellette et al., 2008; Potwarka & McCarville, 2010). Furthermore, for any legacy to be successful, a carefully thought-out plan must be developed and maintained from the *outset* (Agha et al., 2012; Bauman et al., 2015; Chalip, 2006; Karadakis & Kaplanidou, 2010; Kellette, Hede, & Chalip, 2008; Potwarka & McCarville, 2010). This thesis reveals that the strongest predictor of post-event participation intention is pre-event engagement with the sport on display, including knowledge of, and interest in, and being a fan of the sport in display. This result suggests that event organizers should engage ticket-holders well before attending the event to provide more information about the sport to facilitate knowledge and awareness of the sport, and potentially create fans of the novel sport event. Furthermore, as suggested by the findings of this thesis, and supported by Searle and Hanrahan (2010) these pre-event messages should be inspirational to further engage those with high trait inspiration. For instance, as found by Searle and Hanrahan (2010), leaders' inspirational speeches led to more inspired action outcomes when the leaders' had cultivated a relationship with those they wished to inspire before the speech occurred.

Recent research has suggested that personality traits can change overtime (Allemand & Fluckiger, 2017; Boyce, Wood, & Powdthavee, 2013; Hennecke, Bleidorn, Denissen, & Wood, 2014; Hudson & Fraley, 2015; Magee, Miller, & Heaven, 2013; Roberts, Chow, Lou, Briley, & Su, 2017). Theoretically, there are two hierarchies that a trait change can follow (Allemand & Fluckiger, 2017). The first suggests that the broadest level, personality traits, are most stable over

time, followed by affective experiences, which are more changeable, and finally, momentary thoughts and feelings are most easily changeable (Allemand & Fluckiger, 2017). The second suggested hierarchy begins with affective traits, followed by moods, and finally, emotions (Allemand & Fluckiger, 2017). Indeed, it would be much simpler to change one specific behaviour, as changing overall personality can take much time, however, changes in personality can trickle-down into the lower levels of the hierarchy (Allemand & Fluckiger, 2017).

Furthermore, there is recent evidence to suggest that personality traits can be self-regulated, or deliberately changed with intervention (Allemand & Fluckiger, 2017; Hennecke et al., 2014; Hudson & Fraley, 2015; Roberts et al., 2017). This deliberate change can be a result of the desire to address psychological problems, or simply in efforts for self-improvement (Allemand & Fluckiger, 2017). For instance, Allemand and Fluckiger (2017) offer four general change mechanisms for intentional personality trait change: actuating discrepancy awareness; activating strengths and resources to realize strengths-orientation; targeting beliefs, expectations and motives to realize insight; and, practicing targeted behaviours. Moreover, Hennecke et al. (2014) and Hudson and Fraley (2015) suggest that individuals must have a desire to change their personality for personality change to occur. Individuals must also see the personality change as realistic, and the change must be continual for the personality to be considered changed (Hennecke et al., 2014).

This is not to suggest that marketing messages at the event have the power to immediately change the attendees' personalities. As suggested in the literature (i.e., Allemand & Fluckiger, 2017), personality trait change through intervention takes time. Inspirational messages, however may help those who would like to become more inspirable change that trait about themselves, if the messages are consistently present in their lives.

Furthermore, as it has been found that as individuals get older, their personalities become more stable (Allemand & Fluckiger, 2017), event managers should consider targeting these messages at younger spectators. Younger cohorts of spectators should be the target of continual marketing efforts as their personalities are more malleable. The more exposure the young people have to sport events the greater appreciation they can gain from the achievements of the athletes, and can become inspired more frequently by the achievements. Over time, the frequency of inspiration may also intensify, leading the spectators to become more inspirable. Furthermore, consistent with the findings of this thesis, the event exposure should also include an educational component about the sport on display to help build knowledge of and interest in the sport on display. As the results of this thesis suggest, educating those who are easily inspirable about the sport on display, and frequent exposure to instances where inspiration is evoked, can strengthen intentions to try the sport on display.

In terms of specific messages, as Thrash and Elliot (2003) have found that inspiration is strongly correlated with positive emotions (i.e., positive affect) and approach motivation, the messages should portray track cycling as appealing to draw the viewer to the signs. Furthermore, Thrash and Elliot (2003) also found that inspiration is associated with work mastery and intrinsic motivation, however, it is also negatively associated with competitiveness and extrinsic motivation, Their finding suggests that these messages should highlight the personal challenge of track cycling, and stay away from the messages of competition and external validation such as winning medals. Finally, as the findings of this thesis suggest, young males seemed more likely to want to try track cycling. Future messages should contain a favourable gender balance in terms of promotional images. There appears to be substantial opportunities to encourage stronger participation rates among youth female populations.

Moreover, as suggested by Misener et al. (2015), events should inform attendees of post-event participation opportunities at the event itself. Through providing post-event participation information, those with high trait inspiration can remain engaged. For instance, posters and visual promotions, along with inspirational messages from event commentators and announcers, followed by information on how to become more involved may help motivate highly inspirable spectators to take action. Thus, for practice, a demonstration effect model should include heavy pre-event engagement, inspirational messages, and communication with attendees about opportunities for participation.

**5.5.2 Implications for Theory.** Previous studies that have examined the demonstration effect have used theories such as the Theory of Planned Behaviour (i.e., Potwarka, 2015), and the Trans-Theoretical Model (i.e., Boradley, 2013; Weed et al., 2015). Though both of these theories have effectively provided a lens to examine demonstration effects, and have led to important insights into the phenomena, neither theory fully accounts for specific individuals' intrapersonal characteristics and emotions felt during the experience.

Examining the demonstration effect phenomena through the S-O-R lens accounts for individuals' personality, previous experiences, and emotions during spectatorship to help explain responses to the event. Previous models of a demonstration effect (e.g., TBP, TTM), relied simply on the stimuli to explain the response (Gucciardi & Jackson 2015; Mohiyeddini, Pauli, & Bauer, 2004; Potwarka et al., 2017). Experiencing the situation alone does not explain the response to the stimuli. As suggested by the S-O-R theory (e.g., Kleiber et al., 2011), the interaction of both the organism and the stimulus are important to understanding the response.

In particular, this thesis places an emphasis on the role of the “organism” in the Stimulus-Organism-Response relationship. What people bring to the event experience, for instance, in terms

of knowledge and personality appear to be critical antecedents in the formation of a behavioural intention to try a sport on display. As seen in the model presented in this thesis, both pre-event engagement and trait inspiration influence positive affect. The organism's pre-existing characteristics such as engagement levels and personality, combined with the stimulus of experience spectatorship of the track cycling event have proven to influence the response of intention to participate.

As the findings of this thesis have revealed, spectators' pre-existing personality traits (i.e., trait inspiration) and experiences (i.e., pre-event engagement) are strong predictors of participation intention. These factors are part of the organism in the Stimulus-Organism-Response relationship, an aspect of the event experience that has largely been omitted in previous investigations (Potwarka et al., 2017). Future research on post-event participation intention should continue to be guided by theories that account for both the individual spectators' intrapersonal factors in conjunction with the experience itself to determine the individual's response. As the individual cannot be separated from their environment (Kleiber et al., 2011; Lewin, 1935), it is necessary to account for intrapersonal factors when predicting participation intentions associated with the demonstration effect.

**5.5.3 Future Research Recommendations and Limitations.** Although pre-event engagement and trait inspiration can significantly influence both intention to participate and positive affect, the positive affect experienced by spectators did not influence the intent to participate. Future research should be conducted to investigate the spectator experience to determine why certain PA items do not influence participation intention, while others do.

Furthermore, both pre-event engagement and trait inspiration should be investigated with more detail. This thesis reveals that pre-event engagement influences participation intention,



however, the effectiveness of various forms and mediums of engagement should now be investigated. Moreover, this thesis only considered spectators who had not participated in the sport on display before spectating. The influence of pre-event *participation* in the sport on display should continue to be considered in future studies.

In terms of trait inspiration, the specific aspects of the event that triggers the inspiration should be investigated, and how to best engage those with high trait inspiration to maintain their motivation through to post-event participation. As personality traits have been claimed to predict behaviours (Abramson, 1980; Kleiber et al., 2011), it is important to consider other personality traits exhibited by individuals that contribute to the demonstration effect. Through understanding a more robust set of behavioural tendencies of those who contribute to the demonstration effect, a more comprehensive and targeted marketing plan can be created for leveraging techniques.

Furthermore, as stated previously, as general affect does not predict intentions to participate, perhaps more specific, action-oriented, affective states should be investigated further. For instance, the states of inspiration and determination should be examined. Potwarka et al. (2017) found that state inspiration both directly influenced intention to participate in track cycling after watching an elite track cycling event, and mediated the relationship between cognitive dimensions of the spectator experience and intention to participate.

Additionally, as track cycling would have been a novel live-sport experience for most spectators, as the Mattamy National Cycling Centre is the only velodrome in Canada, it would be interesting to replicate this model in both other novel contexts, and mainstream sports for Canadians. Moreover, the PanAmerican Games were a multi-sport elite competition. It would be interesting to investigate if the model would hold true across multiple sporting contexts such as professional (i.e., NHL, MLB, etc.) and single-sport (i.e., Roger's Cup) events.

This thesis is not without limitations. First, data were collected immediately after spectatorship took place. As time passes after the event, intent to participate may change. For instance, temporary increases in sport participation were found after the Athens Olympics (Pappous, 2011), Beijing Olympics (Feng and Hong, 2013) and the London Olympics (Weed et al., 2015), however these increase were not sustained.

Secondly, the study measures intentions to participate, and not the actual participation associated with the event. Indeed, behavioural change is largely dependent on intention toward a behaviour change (Ajzen, 1991; Kleiber et al., 2011). It has been found that in the case of running events, with leveraging efforts, intention to participate was strongly correlated into actual participation (Funk et al., 2011). Although intentions are strong predictor of behaviour (Ajzen, 1991), the measurement of actual behaviour would have provided stronger evidence for participation change. However, the collection of actual participation data would prove to be challenging as tracking every participant would be time consuming. Given the cross-sectional nature of the design, it is not known when people form their intentions. Intention could be measured at multiple time points in future research, including before, during, and after (i.e., immediately, days, weeks, months, years) spectatorship takes place. Finally, the data collected is self-reported. Each respondent reported their perceived agreement to statements, therefore, each response is a subjective, rather than an objective, measurement (Bryman, & Bell, 2016).

## **5.6 Conclusion**

The demonstration effect occurs when “people are inspired by elite sport, sports people or sport events to actively participate themselves” (Weed et al., 2015, p.197), and is a sought after result of hosting a mega sport event. The purpose of this thesis was to *identify intrapersonal and experiential mechanisms that might help explain demonstration effects*. This thesis reveals that

being aware of, interested in, and identifying as a fan of the sport on display is a very important predictor of intention to participate in the sport on display. Furthermore, those who have high trait inspiration are also likely to have positive intentions toward participation in the sport on display. Interestingly, however, a key finding of this thesis is that simply feeling good during the event does not influence spectators' intentions to participate in the sport on display. Although affect has been suggested to be linked with engagement and dispositions toward participation (Frederickson, 2001), no such findings were associated with this thesis. In fact, it was found that positive affect has no influence, either directly or indirectly, on an individual's intent to participate in track cycling. These findings reveal that simply feeling good during an event may not, by itself, motivate an individual to take action.

A limitation of several previous studies focusing on the demonstration effect, whether in support of (i.e., Boardley, 2013; Potwarka, 2015; Potwarka & Leatherdale, 2015; Veal et al., 2012; Weed et al., 2015; Weed et al., 2012), or contradicting the demonstration effect (Craig & Bauman, 2014; Darko & Macintosh, 2015; Feng & Hong, 2013; Mahtani et al., 2013), is the emphases placed on the event experiences. These studies have also neglected to consider previous experiences of the individual and their pre-existing personality and behaviour dispositions (Potwarka et al., 2017).

The importance of the spectators' pre-event experiences, particularly their pre-event engagement with track cycling supports the notion that active leveraging efforts must take place for legacies to occur (Kellette et al., 2008). The concept of leveraging has been suggested to help create a sustained increase in participation (Bell & Galimore, 2015; Chalip, 2006; Kellette, Hede, & Chalip, 2008). This thesis reveals that simply attending an elite sport competition does not lead to intent to participate, rather there must be active leveraging (Kellette et al., 2008;

Potwarka & McCarville, 2010). Specifically, this thesis contributes to the development of the concept of event leveraging through revealing the importance of direct communication with event attendees before the event takes place to provide information about the sport on display. These messages may help to make the future spectators more aware of, and have knowledge of the sport on display, and perhaps also contribute to making the attendees fans of the sport.

Also, trait inspiration was found to be an important predictor of intention to participate after watching track cycling competitions. This finding highlights the need to better understand the role of personality in models of demonstration effects.

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## Appendix A: Information and Consent Form



Dear Pan Am Games' spectator:

I am an Assistant Professor in the Department of Recreation and Leisure Studies at the University of Waterloo. Our research team is conducting a study of the sport participation legacies associated with the Pan AM Games cycling competitions you just witnessed.

I would appreciate if you would complete the attached brief survey. Completion of the survey is expected to take about 10 minutes of your time. As a token of our appreciation, you will receive a \$2 Tim Horton's gift card for taking the time to complete the survey. The questions are quite general (for example, do you intend to track cycle in the coming months?). You may omit any question you prefer not to answer. At the end of the survey, you will have the option of leaving contact information to participate in a follow-up study about your cycling experiences and habits. You are under no obligation to participate in any future study and you can decide this at the time of contact. Those who agree to be contacted for a follow-up study will receive a thank you gift valued at up to \$25!

There are no known or anticipated risks to participation in this study. Participation in this project is voluntary. Further, all information you provide will be considered confidential. You may decline to answer any questions by leaving them blank. You can withdraw by returning a blank or incomplete survey. The data collected through this study will be kept for a period of 2 years in my locked office at the University of Waterloo.

If you are interested in participating in this study, please return the completed questionnaire to the research assistant. If after reading this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact Professor Luke Potwarka at 519-888-4567 ext. 32745 or by email at [lrpotwar@uwaterloo.ca](mailto:lrpotwar@uwaterloo.ca)

I would like to assure you that this study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Committee. However, the final decision about participation is yours. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin in the Office of Research Ethics at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

Thank you in advance for your interest in this project.

Yours sincerely,

Luke R. Potwarka, Ph.D.

Assistant Professor; University of Waterloo

## Appendix B: Questionnaire



# **2015 PAN AM GAMES Track Cycling Competitions: Spectator and Cycling Participation Survey**

We want to get a sense of who you are, your experiences watching the track cycling event at the ***MATTAMY NATIONAL CYCLING CENTRE (Milton's Velodrome)***, and your future intentions with cycling participation.

## **Instructions:**

1. Please read each question carefully. Some questions may seem repetitive, but they are all important to our study.
2. When you are done, please return the survey to the researcher.

# Section 1: Previous Cycling Experience

Do you own a bike?

Yes                       No

How often do you participate in the following CYCLING ACTIVITIES? Check all that apply.

	Never	Seldom	Frequently	Almost always
Road biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mountain biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyclo-cross	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BMX biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

When you do these activities, with whom do you do them and for what purpose? Check all that apply.

	In a club(s)	Competition(s)/ structured program(s)	Commuting (e.g., work or school)	For recreation
Road biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mountain biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cyclo-cross	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BMX biking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Have you ever ridden a fixed gear bike for recreation or as part of a club?

Yes                       No

How would you rate your overall biking/cycling ability? Select one.

Beginner               Intermediate               Advanced               Expert

Do you belong to a cycling club?

Yes                       No

If yes, what is the **name** and **location** of the club:



Club name: \_\_\_\_\_

City: \_\_\_\_\_

## Section 2: Track Cycling Fan Behaviour

This section asks you questions about your **previous interactions** with various aspects of track cycling and track cycling competitions.

Have you watched a live track cycling event IN PERSON before today?

Yes  No

Have you watched a track cycling event ON TELEVISION/ONLINE before today?

Yes  No

Please indicate the extent to which you agree with the following items. Circle the number that best represents your agreement.

	Strongly Disagree				Strongly Agree		
I know a lot about the sport of track cycling	1	2	3	4	5	6	7
I am interested in the sport of track cycling	1	2	3	4	5	6	7
I consider myself a fan of the sport of track cycling	1	2	3	4	5	6	7
I am aware of the programs that will be available after the PAN AM Games at the Mattamy National Cycling Centre	1	2	3	4	5	6	7

Before arriving today, I knew that the Mattamy National Cycling Centre will be open for public use after the PAN AM Games

Yes  No

I have searched for information on any of the programs offered through the Mattamy National Cycling Centre (e.g., in person, over the phone, online)

Yes  No

Before arriving today, I was aware of the introductory ***Try-the-Track*** programs that will be offered at Mattamy National Cycling Centre after the PAN AM/PARA PAN AM Games

Yes  No

## Section 3: Spectator Experience

Below are statements about your **experience watching the track cycling event**. Circle the number that best represents your agreement with each statement.

<i>While watching the track cycling event I...</i>	<b>Strongly Disagree</b>				<b>Strongly Agree</b>		
Critically evaluated the performance of the athletes	1	2	3	4	5	6	7
Analyzed the performance of the track cyclists	1	2	3	4	5	6	7
Critiqued the quality of a track cyclist's performance	1	2	3	4	5	6	7
Imagined that I am one of the track cyclists	1	2	3	4	5	6	7
Fantasized that I am participating in the action	1	2	3	4	5	6	7
Envisioned myself as one of the track cyclists	1	2	3	4	5	6	7
Got so into the action that I lost touch with what is happening around me	1	2	3	4	5	6	7
Felt as if time stood still because I was so focused on the action	1	2	3	4	5	6	7
Was so "zoned into" the action that I lost sense of time	1	2	3	4	5	6	7
Focused only on those track cyclists who are most famous	1	2	3	4	5	6	7
Concentrated on only those track cyclists who are most prominent	1	2	3	4	5	6	7
Was attentive only to track cyclists representing a nation of interest to me	1	2	3	4	5	6	7
Admired the artistry displayed in the sport	1	2	3	4	5	6	7
Admired the beauty of the sport	1	2	3	4	5	6	7
Was moved by the gracefulness of the sport	1	2	3	4	5	6	7
Admired the physiques of the track cyclists while they were performing	1	2	3	4	5	6	7
Admired the bodies of the track cyclists as they competed	1	2	3	4	5	6	7
Was captivated by the appeal of the track cyclists bodies as they performed	1	2	3	4	5	6	7

Below are statements about **how watching the track cycling event made you feel**. Circle the number that best represents how strongly you felt each response.

<i>While watching the track cycling event I felt...</i>	<b>Not at Very All Strongly</b>						
Attentive	1	2	3	4	5	6	7
Determined	1	2	3	4	5	6	7
Enthusiastic	1	2	3	4	5	6	7
Inspired	1	2	3	4	5	6	7
Interested	1	2	3	4	5	6	7
Alert	1	2	3	4	5	6	7
Excited	1	2	3	4	5	6	7
Proud	1	2	3	4	5	6	7
Afraid	1	2	3	4	5	6	7
Nervous	1	2	3	4	5	6	7
Scared	1	2	3	4	5	6	7

<b>I experienced inspiration.</b>									
How deeply or strongly while watching the event?	Not At All	1	2	3	4	5	6	7	Very Deeply
<b>Something I encountered or experienced inspired me.</b>									
How deeply or strongly while watching the event?	Not At All	1	2	3	4	5	6	7	Very Deeply
<b>I was inspired to track cycle.</b>									
How deeply or strongly while watching the event?	Not At All	1	2	3	4	5	6	7	Very Deeply
<b>I felt inspired.</b>									
How deeply or strongly while watching the event?	Not At All	1	2	3	4	5	6	7	Very Deeply

## Section 4: Intentions

The following items ask you about your **cycling-related intentions in the coming months as a result of watching the event**. Circle the number that best represents your agreement.

	<b>Strongly Disagree</b>							<b>Strongly Agree</b>		
I intend to increase my overall level of physical activity and/or sport participation in the coming months	1	2	3	4	5	6	7			
I intend to increase the amount of cycling/biking that I do in the coming months	1	2	3	4	5	6	7			
I intend to start a cycling/biking activity that I haven't done for a long time in the coming months	1	2	3	4	5	6	7			
I intend to track cycle in the coming months	1	2	3	4	5	6	7			
I intend to track cycle at the Mattamy National Cycling Centre (Milton Velodrome) when it is open to the public in the coming months (rental bikes are available)	1	2	3	4	5	6	7			
I intend to register for an introductory " <u><i>Try-the-Track</i></u> " session offered at the Mattamy National Cycling Centre in the coming months	1	2	3	4	5	6	7			
I will become a certified member at the Mattamy National Cycling Centre so that I can track cycle in the coming months	1	2	3	4	5	6	7			
I will become a member at the Mattamy National Cycling Centre so that I can use non track cycling facilities in the coming months (e.g., walking/jogging track, fitness facility, recreational sports)	1	2	3	4	5	6	7			
I intend to purchase track cycling-related gear or equipment	1	2	3	4	5	6	7			
I intend to follow track cycling events/athletes in the media	1	2	3	4	5	6	7			

Any/all of my responses to the above intention questions are attributable to my watching the PAN AM Games Track cycling competition(s)									
<b>Strongly Disagree</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>Strongly Agree</b>	

# SECTION 5: Track Cycling

## Opinions

*Based on your opinion, please **CIRCLE** the appropriate number on the rating scale.*

*For me to try track cycling in the coming months would be...*

<b>harmful</b>	:	1	:	2	:	3	:	4	:	5	:	6	:	7	<b>beneficial</b>
<b>unimportant</b>	:	1	:	2	:	3	:	4	:	5	:	6	:	7	<b>important</b>
<b>bad</b>	:	1	:	2	:	3	:	4	:	5	:	6	:	7	<b>good</b>
<b>boring</b>	:	1	:	2	:	3	:	4	:	5	:	6	:	7	<b>fun</b>
<b>unenjoyable</b>	:	1	:	2	:	3	:	4	:	5	:	6	:	7	<b>enjoyable</b>

*My participating in track cycling would help me develop a healthier lifestyle in the coming months:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Developing a healthier lifestyle would be:*

**extremely bad** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely good**

*My participating in track cycling would allow me to meet new people:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Meeting new people would be:*

**extremely bad** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely good**

*Most people who are important to me would approve of me trying tracking cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*Most people like me will try tracking cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*My friends/family would think that I should try track cycling in the coming months*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*When it comes to your sport/recreation activity choices, how much do you want to do what your friends/family think you should do?*

**not at all** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **very much**

*Most of my friends/family will try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*When it comes to participating in sport/recreation activities, how much do you want to be like your friends?*

**not at all** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **very much**

*I am confident that I can try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*My trying track cycling in the coming months is up to me:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*For me to try track cycling in the coming months would be:*

**very difficult** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **very easy**

*I would have time to try track cycling in the coming months:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Having time would enable me to try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*I would have money to try track cycling in the coming months:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Having money would enable me to try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*It would be easy/quick for me to get to and from the Mattamy National Cycling Centre to track cycle in the coming months:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Getting to and from the Mattamy National Cycling Centre easily/quickly would enable me to try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

*I would have the physical ability/competence to try track cycling in the coming months:*

**extremely unlikely** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **extremely likely**

*Having physical ability/competence would enable me to try track cycling in the coming months:*

**strongly disagree** : 1 : 2 : 3 : 4 : 5 : 6 : 7 : **strongly agree**

## Section 6: Tell Us About You

Rate the statements below for how accurately they reflect the ways **you generally feel and behave**.

	<b>Not At All Extremely</b>						
I actively seek as much information as I can in new situations	1	2	3	4	5	6	7
I am the type of person who really enjoys the uncertainty of everyday life	1	2	3	4	5	6	7
I am at my best when doing something that is complex or challenging	1	2	3	4	5	6	7
Everywhere I go, I am out looking for new things or experiences	1	2	3	4	5	6	7
I view challenging situations as an opportunity to grow and learn	1	2	3	4	5	6	7
I like to do things that are a little frightening	1	2	3	4	5	6	7
I am always looking for experiences that challenge how I think about myself and the world	1	2	3	4	5	6	7
I prefer jobs that are excitingly unpredictable	1	2	3	4	5	6	7
I frequently seek out opportunities to challenge myself and grow as a person	1	2	3	4	5	6	7
I am the kind of person who embraces unfamiliar people, events, and places	1	2	3	4	5	6	7

Below are four statements, each followed by two questions. The questions concern how often and how deeply/strongly you experience what is described in the statement. Please answer both questions after each statement by circling numbers from 1 to 7.

**I experience inspiration.**

1a. how often does this happen? Very Often

Never  
1            2            3            4            5            6 7

1b. how deeply or strongly (in general)? Very Deeply

Not At All  
1            2            3            4            5            6 7

**Something I encounter or experience inspires me.**

1a. how often does this happen?  
1            2            3            4            5            6 7

1b. how deeply or strongly (in general)?  
1            2            3            4            5            6 7

**I am inspired to do something.**

3a. how often does this happen?  
1            2            3            4            5            6 7

3b. how deeply or strongly (in general)?  
1            2            3            4            5            6 7

**I feel inspired.**

4a. how often does this happen?  
1            2            3            4            5            6 7

4b. how deeply or strongly (in general)?



1 2 3 4 5 6 7

What is your age? \_\_\_\_\_ years old

What is your sex?  Female  Male

What is your highest level of education attained?

- Elementary or less  High School  
 College Diploma  Undergraduate  
 Postgraduate (e.g., MSc, MA, MD, PhD)

With which racial group do you *most* identify (e.g., White/Caucasian; Latin; Black)?  
\_\_\_\_\_

What is the location of your current residence?

Postal/ZIP code: \_\_\_\_\_

City: \_\_\_\_\_

Province/State: \_\_\_\_\_

What is your marital status?

- Single, never married  Married or domestic partnership  
 Widowed  Divorced or separated

What is your annual income?

- less than \$20,000  \$20,001-\$40,000  
 \$40,001-\$60,000  \$60,001-\$80,000  
 \$80,001-\$100,000  over \$100,000

Do you identify as a person with a disability?

- Yes  No

# THANK YOU!

Most of your work is done now, but would you be willing to be contacted to potentially participate in a follow-up survey? **Those who do will receive a thank you gift!** In addition, you will be provided with additional incentives for participating in the follow-up survey.

- Yes, you can contact me using my contact information provided below

(please print clearly)

Name: \_\_\_\_\_

Email: \_\_\_\_\_

Phone number: \_\_\_\_\_

Address: \_\_\_\_\_

We would like to thank you for your participation in this study. As a reminder, the purpose of this study is to explore the sport participation legacies associated with the Pan AM Games cycling competitions you just witnessed. The data collected during this study will contribute to a better understanding of participation legacies associated with mega-sport events. Please be advised of the following:

Any data pertaining to you as an individual participant will be kept confidential. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or [maureen.nummelin@uwaterloo.ca](mailto:maureen.nummelin@uwaterloo.ca).

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Section to be completed by the research assistant:

Voucher ID: \_\_\_\_\_ Website Card ID: \_\_\_\_\_ Date: \_\_\_\_\_

Time: \_\_\_\_\_