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Effects of a Guided Imagery Intervention on Children's Active Play: A Pilot Study

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by

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ABSTRACT

The overall purpose of the present pilot study was to examine the effects of a 2-week guided imagery intervention on children's active play. Additional outcome variables were the basic psychological needs (competence and relatedness), motivation (intrinsic and identified), active play intention, and active play imagery (capability, social, and fun). The sample comprised 17 female students (M_{age} = 9.57, SD = 0.53) randomly assigned to an imagery (n = 7) or control group (n = 10). Each group listened to an automated script 3x/week for the duration of the study. Results indicated significant differences for perceived competence and autonomy, as well as capability imagery. The imagery group reported a significant decrease in perceptions of competence and autonomy from baseline to post-intervention, while the control group showed a significant increase. Further, the imagery group showed a greater decrease in their frequency of capability imagery than the control group.

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Introduction

A recent report card on the physical activity (PA) behaviours among Canadian children and youth indicated that only 7% are meeting the national guidelines of 60 minutes of daily physical activity (DPA; Active Healthy Kids Canada; AHKC, 2012). This high rate of physical inactivity does not appear to be declining, as AHKC (2012) has assigned a failing letter grade of 'F' to children's PA levels for the sixth consecutive year. The challenge to identify strategies that encourage children to increase their PA has become an important area of research, especially given regular PA in children is associated with both physical (e.g., Janssen & LeBlanc, 2010) and psychological (e.g., Biddle & Asare, 2011) health benefits. Further, studies have indicated reduced levels of PA with increasing age. Specifically, the end of late childhood (9-15 years old) has been identified as a critical stage to target (Nader, Bradley, Houts, McRitchie, & O'Brien, 2008). As such, the current study provides a preliminary examination of an imagery intervention aimed at increasing the PA levels of children in this critical stage.

Children's PA can occur in various contexts. Although the majority of studies regarding PA participation among children are limited to structured contexts (e.g., organized sport, Physical Education [PE] class), research has begun to investigate the importance of children's engagement in unstructured leisure-time PA (i.e., active play; AHKC, 2012, 2010). In fact, AHKC (2010) has recommended that children accumulate half of their DPA through active play.

Active play is defined as "unstructured PA that takes place outdoors in a child's free time" (Veitch, Salmon, & Ball, 2008, p. 870). As demonstrated in the aforementioned definition, outdoor play may be considered more favourable than indoor

play given that children may be provided with a greater opportunity to engage in unsupervised and unstructured PA (Ginsberg, 2007). However, the definition might be limiting by suggesting that active play can only take place outdoors, as it is possible for children to engage in active play anywhere, including indoors.

Despite the different forms of play (e.g., active play, imaginative play), research has identified common characteristics of play behaviours as freely chosen, personally directed, fun, and intrinsically motivated (Brockman, Fox, & Jago, 2011). Active play not only presents physical health benefits, but also contributes to children's social, emotional, and cognitive development (e.g., creativity, problem solving; Burdette & Whitaker, 2005) in ways that may not be attainable from structured PA (Brockman, Jago, & Fox, 2011; Ginsberg, 2007). Further, active play has been recognized as a viable and cost-effective avenue for increasing PA levels among children (AHKC, 2012). The question then becomes what strategies can be implemented that motivates children to increase their PA levels via active play. One such strategy may be through imagery.

White and Hardy (1998) defined imagery as "an experience that mimics real experience. We can be aware of 'seeing' an image, feeling movements as an image, or experiencing an image of smell, taste or sounds without experiencing the real thing" (p. 389). Imagery involves the individual to be consciously aware and in control of the images and experiences they create in their mind (Richardson, 1969), and therefore is different from a dream or daydreaming (White & Hardy, 1998). Although imagery research has primarily been conducted with adult athletes, a number of studies have investigated children's imagery use in sport. Research has found that child athletes use imagery for both cognitive and motivational purposes (Munroe, Giacobbi, Hall, & Weinberg, 2000). Specifically, young athletes use imagery to learn new skills and

strategies, increase their confidence, set goals, and increase their motivation for sport involvement (Munroe-Chandler, Hall, Fishburne, & Strachan, 2007).

In addition to examining imagery in sport, research has investigated the use of imagery in exercise contexts (e.g., Hausenblas, Hall, Rodgers, & Munroe, 1999). Hall (1995) was the first to propose that imagery may have a powerful effect on one's exercise behaviour. Specifically, he argued that regular exercisers may imagine themselves participating in enjoyable activities, liking their workouts, and accomplishing desired exercise goals (e.g., improved technique and appearance). Results from a qualitative study conducted with female aerobic exercisers provided initial support for Hall's contention, as the majority of participants reported using exercise imagery (Hausenblas et al., 1999). These findings led to the development of the Exercise Imagery Questionnaire (EIQ; Hausenblas et al., 1999), wherein three specific types of exercise imagery were identified: appearance imagery (e.g., imagining one's physique and fitness), energy imagery (e.g., imagining the feeling of getting psyched up for a workout), and technique imagery (e.g., imagining correct form and body positions during exercise). Since the advancement of the EIQ, research has established that frequent exercisers use imagery significantly more than less frequent exercisers (Gammage, Hall, & Rodgers, 2000; Hausenblas et al., 1999). Despite the relationship between exercise imagery and exercise participation, critics have noted the lack of theoretically driven research in explaining this relationship. One theory that may be useful is Self-Determination Theory (SDT; Deci & Ryan, 2000).

SDT is a well-established and popular framework used to understand the motivational basis of exercise participation (Hagger & Chatzisarantis, 2007). SDT comprises three general classes of human motivation (i.e., behaviour regulations), namely

amotivation, intrinsic motivation, and extrinsic motivation, which operate along a self-determination continuum (Deci & Ryan, 2002). Situated at one extreme of the continuum is amotivation, which refers to the lack or absence of motivation. Opposite of amotivation is intrinsic motivation, which is recognized as the most self-determined form of motivation. Extrinsic motivation lies between the extremes and varies in the different levels of motivation, from the highly controlled behaviour regulations (i.e., external regulation and introjected regulation) to more self-determined behaviour regulations (i.e., identified regulation and integrated regulation; Deci & Ryan, 2002). Further, Deci and Ryan (2008) postulated that autonomous motivation comprises intrinsic motivation, integrated regulation, and identified regulation, while controlled motivation includes introjected regulation and external regulation.

Research investigating imagery use through the lens of SDT is limited. Using structural equation modeling, Stanley, Cumming, Standage, and Duda (2012) examined the relationship between exercise imagery, autonomous and controlled motivation, and exercise intention and behaviour. In addition to the three types of exercise imagery put forth by Hausenblas et al. (1999), Stanley et al. also assessed enjoyment imagery (e.g., pleasurable activity; Stanley & Cumming, 2010). Results indicated that both technique and enjoyment imagery were positively associated with autonomous motivation, while appearance imagery was positively related to controlled motivation. In addition, and consistent with previous research, autonomous motivation was related to both exercise intention (e.g., Wilson & Rodgers, 2004) and behaviour (e.g., Wilson, Rodgers, Blanchard, & Gessel, 2003). The authors suggest that imagery aimed to enhance autonomous motivation (via technique imagery and energy imagery) is a viable strategy that may facilitate the internalization of exercise behaviour (Stanley et al., 2012). Future

research should consider the role of the basic psychological needs, a component of SDT, when examining how the various types of imagery influence one's exercise motivation (Stanley et al., 2012).

According to SDT, individuals have three basic psychological needs (i.e., competence, relatedness, autonomy; Deci & Ryan, 1985). The need for competence reflects a desire to effectively interact and express their capabilities within their environment. The need for relatedness involves feeling a sense of connection and belonging to others and one's environment. The need for autonomy refers to being the initiator or source of one's own behaviour. SDT posits that these needs are universal and thereby function across gender, age, culture, and time (Deci & Ryan, 2000). Indeed, when these needs are met and satisfied it can facilitate internalization and increase intrinsic motivation.

A plethora of research has investigated the relationship between the basic psychological needs and PA motivation among children within structured PA contexts such as sport and school PE (e.g., Jõesaar, Hein, & Hagger, 2012; Ntoumanis, 2001). For example, Taylor, Ntoumanis, Standage, and Spray (2010) sought to examine whether PE students' (11-16 years old) satisfaction of the basic psychological needs and motivational regulations toward PE would predict effort in PE, exercise intentions, and leisure-time PA. All three PA outcomes were subjectively measured. Specifically, leisure-time PA was assessed using the Physical Activity Questionnaire for Older Children (PAQ-C; Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997). The findings indicated that students' perceived competence and self-determined regulations (i.e., intrinsic motivation and identified regulation) were the strongest and most consistent predictors of the three PA outcomes (effort, intention, and leisure-time PA). Similarly, Standage, Duda, and

Ntoumanis (2003) found that a perceived autonomy-supportive PE environment promoted satisfaction of all three basic needs, which thereby predicted self-determined motivation. Consequently, these self-determined motives towards PE positively predicted intentions to engage in leisure-time PA (Standage et al., 2003). Additionally, Lonsdale, Sabiston, Raedeke, Ha, and Sum (2009) examined Chinese students' (M_{age} = 15.78 years) motivation for PE and their PA behaviours during a structured PE lesson and a free-choice period. Using the Situational Motivation Scale (SIMS; Guay, Vallerand, & Blanchard, 2000) to measure motivation and pedometers as an objective measure of PA, the results indicated a greater difference in PA levels between the high and low self-determined students in both the free-choice condition and structured condition. However, regardless of the self-determined motivation level, higher step count among adolescents was reported in the free choice condition compared to the structured condition. Lonsdale et al. suggested the free choice environment coupled with the lack of teacher supervision and input may have increased intrinsic motivation by allowing children to self-select activities (autonomy) in which they felt competent (competence).

Using SDT as the theoretical framework, investigators sought to examine children's use of imagery within an active play context (Tobin, Nadalin, Munroe-Chandler, & Hall, 2013). Focus group interviews revealed that children (7-14 years old) use imagery during their active play and these images were found to facilitate the satisfaction of the three basic psychological needs. Competence was illustrated by images of being skilled at active play. Relatedness was demonstrated by images of playing with their family, friends, and others (e.g., professional athletes). Autonomy was linked to images of enjoyable activities and those in which they engage most often. The results from this qualitative study provide preliminary evidence that children's use of

active play imagery promotes the satisfaction of the basic needs within an active play context.

Extending this area of research, Cooke, Munroe-Chandler, Hall, Tobin, and Guerrero (2013) developed a measurement tool to assess children's use of active play imagery. In support of Tobin et al.'s (2013) qualitative findings, the investigators identified three main themes (capability, social, and fun) associated with children's active play. Additionally, item development for the three themes was based on imagery commonly used by children in active play contexts: capability is represented by images related to feelings of competence; fun is represented by images related to enjoyment and interest; and social is represented by images related to playing with others.

As previously mentioned, the majority of children and youth are physically inactive. However, research has identified active play as a practical and cost-effective avenue for children to accumulate the recommended DPA (AHKC, 2012). Thus, identifying strategies that increase children's motivation for active play is crucial. Green-Demers, Pelletier, Stewart, and Gushue (1998) propose that the use of psychological strategies can help to internalize target behaviours (e.g., active play). One possible psychological strategy may be imagery. Within the exercise domain, specific types of imagery have been found to be associated with autonomous motivation, which in turn was positively related to self-reported exercise behaviour and intention (Stanley et al., 2012). Given these promising results, Stanley et al. (2013) propose that imagery aimed to enhance autonomous motivation can encourage the internalization of regular exercise behaviour. However, Ryan and Deci (2002) suggest that the process of internalization is influenced by the degree to which an individual experiences satisfaction of their basic psychological needs in the course of an activity. Previous research conducted with

children has demonstrated a positive relationship between the satisfaction of the basic needs and self-determined motivation and intention to engage in leisure-time PA (e.g., Standage et al., 2003). Therefore, by facilitating the satisfaction of the basic psychological needs through imagery, it may be possible to indirectly increase children's motivation to participate in active play.

The overall purpose of this pilot study was to examine the effects of a guided imagery intervention on children's active play, and to inform the planning of a larger scale study. Further, specific hypotheses relating to the outcomes variables were advanced. Given that active play was measured both objectively and subjectively, it was hypothesized that children in the imagery group would report greater pedometer step counts and self-reported active play than those in the control group after receiving the intervention. It was also hypothesized that those in the imagery group would report higher need satisfaction of those basic needs targeted in the imagery scripts (i.e., competence and relatedness) than those in the control group. It was hypothesized that children in the imagery group would report higher levels of self-determined motivation (i.e., intrinsic motivation and identified regulation) and intention to engage in active play than those in the control group. Finally, it was hypothesized that children in the imagery group would report greater increases in active play imagery (i.e., capability, social, and fun imagery) than children in the control group.

Method

Participants

The participants included 17 female students (M_{age} = 9.57, SD = .53) between the ages of 9 and 10. Students were recruited from Grades 4 and 5 from a Catholic elementary school in the Greater Toronto Area. The overall academic performance rating

for this school in 2011-2012 was 6.5 out of 10 (Cowley & Easton, 2013). This rating is slightly higher than the average overall rating in 2011-2012 for all schools in Ontario (i.e., 6.0 out of 10; Cowley & Easton, 2013). Overall academic performance ratings are based on key academic indicators of school performance (i.e., reading, writing, and mathematics skills), as assessed by the province's Education Quality and Accountability Office (EQAO).

Measures

Demographics. All participants completed two demographic questions at the initial meeting (i.e., Week 1 of the study) which assessed age and grade (see Appendix A).

Objective measurement of active play. Participants' levels of active play were objectively assessed using the Yamax Digi-Walker SW700 pedometer. The small (50 x 38 x 14mm), lightweight (21g) pedometer measures steps, distance, and calories and is sensitive to vertical motion (e.g., walking, running). The utilization of a pedometer was chosen given the goal of the present study was to monitor relative changes in PA, and therefore not concerned about the frequency, duration, or intensity of PA. Yamax pedometers have been found to be the most accurate at detecting steps taken and has demonstrated acceptable reliability in previous research with children (Barfield, Rowe, & Michael, 2004; Tudor-Locke, Williams, Reis, & Pluto, 2002).

Subjective measurement of active play. Participant's levels of active play were subjectively assessed using the Physical Activity Questionnaire for Older Children (PAQ-C; Crocker et al., 1997). The PAQ-C (see Appendix B) is a 9-item self-administered instrument used to measure moderate to vigorous PA levels among school-aged children (grades 4-8; ages 8-14) over a 7-day period. The PAQ-C describes physical activities as

"sports, games, or dance that make you breathe hard, make your legs feel tired, or make you sweat" (Crocker et al., 1997). The questionnaire includes an activity checklist of 22 common physical activities as well as items that target segments of the day applicable to children during the school year (i.e., PE class, recess, lunch, right after school, evenings, and on the weekend). A sample item reads, "In the last seven days, on how many evenings did you do sports, dance, or play games in which you were active?" All 9 items are scored using a multiple-choice response scale (5 options) ranging from *low* (1) to *high activity* (5).

The PAQ-C was used to measure children's active play, rather than overall PA. Thus, the items that included the definition of physical activities were replaced with 'active play' (e.g., "In the last 7 days, on how many evenings did you do active play?"). Further, the one item assessing PA during PE class was removed given that active play is not likely to occur in structured contexts (e.g., PE class). The final PAQ-C activity summary score was calculated by dividing the total response scores from each of the items by the number of items (i.e., 8), where a score of 1 indicates low physical activity and 5 indicates high physical activity. The PAQ-C has been shown to have adequate internal consistency (α= .89) and one-week test re-test reliability (r = .75 for boys and .82 for girls) with a sample of children (female and male; ages 9-14 years old) (Crocker et al., 1997).

Basic psychological needs. Participants' perceived satisfaction of the three basic psychological needs were assessed using the Basic Needs Satisfaction Questionnaire for Children (BNS-C; Gray, Prapavessis, & McGowan, 2009), which was derived from the Psychological Need Satisfaction in Exercise Scale (Wilson, Rogers, Rodgers, & Wild,

2006). The BNS-C (see Appendix C) is a 16-item inventory that assesses perceived autonomy, competence, and relatedness in a PA context. Autonomy refers to an individual's desire to initiate and regulate personal behaviours. This dimension contains six items with a sample item reading, "I choose what I am going to do for active play." Competence refers to an individual's desire to effectively interact with the social environment and accrue wanted outcomes. This dimension contains five items with a sample item reading "I am good at active play." Relatedness refers to the desire to experience a sense of belonging and connection with others. This dimension contains five items with a sample item reading, "The people who I do active play with are my friends." All items are scored on a 7-point Likert scale, anchored at 1 (*do not agree at all)* to 7 (*strongly agree*). Previous research using the BNS-C has demonstrated good alpha levels (Nunnally & Bernstein, 1994) ranging from .80 to .88 in a sample of 253 children (7-14 years old; Tobin, et al., 2012).

Motivation. Participants' state motivation towards active play was assessed using the Situational Motivation Scale (SIMS; Guay et al., 2000). The SIMS (see Appendix D) is a 16-item measure that assesses four dimensions of motivation: intrinsic motivation, identified regulation, external regulation, and amotivation. Intrinsic motivation, which is the most self-determined regulation, comprises four items and refers to behaviours that are engaged in for the sake of interest, pleasure, and satisfaction without the presence of external rewards and constraints (e.g., "Because I think this activity is interesting"). Identified regulation comprises four items and refers to behaviours that are valued as personally important, yet are performed to obtain extrinsic benefits (e.g., "Because I think this activity is good for me"). External regulation comprises four items and refers to behaviours or actions that are solely performed on the basis of receiving an award or

avoiding negative consequences (e.g., “Because it is something I have to do”). Finally, amotivation comprises four items and refers to behaviours that are neither intrinsically nor extrinsically motivated but rather behaviours that do not demonstrate contingencies between actions and outcomes (e.g., “There may be good reasons to do this activity, but personally I don’t see any”). The stem, “Why are you currently engaged in this activity?” precedes all items which are scored on a 7-point Likert scale, anchored at 1 (*do not agree at all*) to 7 (*strongly agree*). The SIMS has demonstrated internal consistency with adequate alpha levels (Nunnally & Bernstein, 1994) for all four dimensions (.77- .95; Guay et al., 2000).

For the purpose of the current study, the SIMS was slightly modified. For example, the stem was modified to read, “Why are you currently doing active play?” and all items that included the phrase ‘this activity’ were modified to read ‘active play’. Additionally, the questions measuring amotivation were removed given that play is innately intrinsic.

Intention. Consistent with previous studies examining children’s PA intention (Chatzisarantis, Biddle, & Meek, 1997; Rhodes, Macdonald, & McKay, 2006) and based on the work of Ajzen and Madden (1986), a single item measured on a 4-point scale (1= *disagree in a big way* to 4 = *agree in a big way*), was used to assess intention to engage in active play on a daily basis for the next week (IAP; see Appendix E).

Active play imagery. Participants’ use of active play imagery was assessed using the Children’s Active Play Imagery Questionnaire (CAPIQ; Cooke et al., 2013). The CAPIQ (see Appendix F) is an 11-item self-report inventory, which assesses the frequency of capability, fun, and social imagery. All items are scored on a 5-point Likert scale, anchored at 1 (*not at all*) to 5 (*very often*). Capability imagery refers to the practice

of movements, and is represented by four items with a sample item reading, "When thinking about active play, I imagine how my body moves." Social imagery refers to the engagement of active play activities either by oneself or with others, and is represented by four items with a sample item reading, "When thinking about active play, I see myself with my friends." Fun imagery refers to feelings of satisfaction, and is represented by three items with a sample item reading, "When thinking about active play, I imagine the fun I have." The CAPIQ has demonstrated adequate internal consistencies (Nunnally & Bernstein, 1994) for all three subscales ranging from .73-.82 in a sample of 252 children (7-14 years old; Cooke et al., 2013).

Procedures

Recruitment. University of Windsor Research Ethics Board approval was obtained prior to data collection. The Principal of the school was contacted and written consent to collect data at the school was obtained (see Appendix G). The Principal recruited students from two classrooms (Grades 4 and 5). This method of recruitment was used given the distance between the current research institution and data collection site, and the resultant inability to make several visits for recruitment. The Principal informed the children that two researchers from the University of Windsor would be coming to the school to complete a research project. Children who were interested in participating in the study received an information package. Children were asked to return the completed information package to the Principal prior to the initial meeting (i.e., Week 1 of the study).

Initially, a total of 25 female students were recruited to participate in the study. All students were asked to review the information package with their parents/guardians. The information package included the recruitment script to parents/guardians (see

Appendix H), the parent/guardian letter of information (see Appendix I), the parent/guardian consent form (see Appendix J), and the child assent form (see Appendix K). Although a total of 20 female students returned the completed information package (i.e., signed consent and assent forms), only 17 participants successfully completed the intervention. During Week 1, the researchers were informed that the parents of a participant requested that their child be removed from the study given that she lost her pedometer in the first couple of days. The remaining two participants dropped out of the study at the Week 2 meeting because they no longer wanted to meet during their lunch time period.

Design. The current study employed a randomized controlled experimental design. The 4-week study involved weekly meetings wherein two researchers met with the participants during their lunch time period (approximately 10-30 minutes in duration). Given that there were multiple points of contact with the researchers and the participants, a re-assent form (see Appendix L) was provided to the participants prior to the beginning of each weekly meeting. Baseline assessments for both the imagery group and the control group were conducted at Weeks 1 (i.e., age, grade, basic need satisfaction, motivation, intention, and active play) and 2 meetings (i.e., self-reported active play), the imagery intervention was delivered during Weeks 2 and 3, and post-intervention assessments for both groups occurred at the Week 4 meeting (i.e., basic need satisfaction, motivation, intention, active play imagery, and self-reported active play). For the duration of the study, participants wore a pedometer and recorded their daily step counts (i.e., Weeks 1-4). However, only pedometer step counts at Weeks 1 (baseline) and 4 (post-intervention) were assessed.

At the Week 1 meeting, participants were assigned to either an imagery group (n = 7, 3 dropouts) or a control group (n = 10). The participants in the imagery group were referred to as the 'Tiger group', while the participants in the control group were referred to as the 'Lion group'. Next, the researchers provided the participants with definitions and examples of imagery, structured PA, and active play. All participants completed various baseline questionnaires (i.e., demographics, BNS-C, SIMS, IAP, and CAPIQ) individually. The participants were reminded that there were no right or wrong answers and that only the investigators would have access to their answers. Both investigators circulated the room while the children completed the questionnaires. Children were encouraged to ask questions if help was needed. After all the questionnaires were returned to the investigators, each participant received a pedometer (Yamaz Digi-Walker SW-700) and was instructed on how to use the device (e.g., placement, functions). The participants were asked to wear the device over their right hip (using the plastic clip) during their waking hours over the course of the study (everyday for three weeks), except when in water, during organized sport and PE class, or while asleep. The participants were provided with a pedometer log sheet (see Appendix M) and were instructed to record the number of steps taken at the end of each day and return the sheet to the investigators the following week.

At the Week 2 meeting, the participants handed in their pedometer log sheet from Week 1 and completed the final baseline questionnaire (i.e., PAQ-C). Participants received a new pedometer log sheet and were instructed to follow the same procedure as Week 1 (i.e., record daily steps and return log sheet to the investigators the following week). At the Week 3 meeting, the investigators collected the pedometer log sheets from the previous week and provided the children with a new log sheet.

At the Week 4 meeting, the investigators collected the pedometer log sheets and pedometers. With the exception of the demographic questions, participants were provided with the same battery of baseline questionnaires from Weeks 1 and 2 (i.e., PAQ-C, BNQ-C, SIMS, IAP, CAPIQ). Contrary to Week 1, the lead investigator read each question and the corresponding response option aloud followed by the children self-reporting their answers on the questionnaire. Based on some of the responses at baseline (e.g., extreme scoring), it was deemed appropriate to read the questions aloud in hopes that it would alleviate potential barriers associated with completing the questionnaires (e.g., reading ability).

Imagery Intervention

Script development. Two generic imagery scripts were developed for the current study. The objective of the first script was to enhance participants' perceived satisfaction of competence (see Appendix N), while the second script was designed to enhance perceived satisfaction of relatedness (see Appendix O).

Based on play literature and in discussion with two expert researchers in imagery and active play, the fundament movement skills of running and jumping were chosen for the scripts. Next, a list of words and phrases were generated reflecting the basic needs of competence and relatedness. Competence refers to feelings of effectiveness associated with achieving challenging tasks and the ability to express one's capabilities in their environment. Further, relatedness is reflective in feeling a sense of belonging and connection to others.

The imagery scripts also incorporated some of the findings of Tobin et al.'s (2013) qualitative study. For example, the competence imagery script incorporated images of one's body engaged in active play (e.g., body position and body feelings such as being

strong), skill execution (e.g., proper technique, specific motor tasks) and improvements (e.g., feeling confident). Similarly, the imagery script for relatedness incorporated images of active play with a playmate (e.g., friends), and the positive feelings associated with active play (e.g., happiness, excitement, and joy). Further, and in line with previous research (e.g., Lebon, Collet, & Guillot, 2010; Smith, Wright, Allsopp, & Westhead, 2007), the scripts included both stimulus and response propositions to ensure vivid images were created (Lang, 1979).

Script delivery. The imagery scripts targeting the need for competence and relatedness were delivered during Weeks 2 and 3, respectively. Both scripts were approximately five minutes in length. Children were instructed to listen to the imagery scripts three times per week but on different days. Previous research has found that three imagery sessions a week produced greater benefits compared to one or two sessions per week (Wakefield & Smith, 2009). Children were given the choice of which days they listened to the script. The lead investigator audio recorded the scripts.

Short story. Participants in the control group listened to a children's short story, *The Case of the Daily Telegraph* by James Leck. This short story was chosen because it was age and length appropriate. The short story was divided in six equal chapters, with each chapter lasting approximately five minutes long (i.e., 3x/week for 5 minutes over two weeks totals 30 minutes). Children listened to chapters one, two and three during Week 2 and chapters four, five, and six during Week 3. The lead investigator audio recorded all six chapters.

Telephone system. Both the imagery scripts and short story were delivered through a telephone system specifically designed for the current study. This component was implemented during the intervention phase (i.e., Weeks 2 and 3). At the Week 2

meeting, the lead researcher met with each group separately in order to demonstrate how to use the telephone system (see Figure 1). Computer speakers were connected to the cellular device in order to ensure the children could hear all telephone prompts. All participants were prompted with a welcome menu once they called into the telephone system. Participants in the imagery group were instructed to press "1" on their telephone keypad, whereas the participants in the control group were instructed to press "2". Children in the imagery group were immediately directed to the imagery script. However, children in the control group were prompted with a second menu wherein they were instructed to select the appropriate chapter. The control group was instructed to press "1" for chapter one, "2" for chapter two, and so on. At the completion of all audio scripts, children from both the imagery and control group were prompted to leave a voicemail including their first and last name. This allowed the researchers to record the number of times participants were calling in each week.

Results

Data Screening

Prior to the main analyses, all variables were analyzed for accuracy of data entry, missing values, and outliers (Tabachnick & Fidell, 2007). Next, assumptions of univariate analyses (i.e., *t*-tests) were examined. The dependent variables were examined separately for the experimental group and the control group at both baseline and post-intervention.

A missing data analysis was conducted to determine how much of the data was missing and the pattern of the missing data. Given the nature of the study, the small sample size, and the desire to retain as much data as possible, missing data were examined on a per case basis. With the exception of the pedometer data, the results of

this analysis revealed that all participants had less than 3% missing values and that these values were missing at random. All missing values were replaced using a case mean substitution (Fox-Wasylyshyn & El-Masri, 2005).

With respect to the missing pedometer data, seven participants (two participants from the imagery group and five participants from the control group) had incomplete baseline or post-intervention data (seven days missing) and two participants in the control group had incomplete baseline and post-intervention data (14 days missing). Participants with incomplete baseline and/or post-intervention data failed to return their pedometer log sheet(s) and therefore had missing data for that particular week (i.e., seven days). For those participants who handed in their log sheets, there was no data missing. Similar to previous pedometer research, no persons were excluded from the data analyses regardless of the amount of missing pedometer data (e.g., Kang, Zhu, Tudor-Locke, & Ainsworth, 2005; Rowe, Mahar, Raedeke, & Lore, 2004).

Prior research has suggested two statistical methods for replacing missing pedometer data: the group information (GI)-centered approach and the individual information (II)-centered approach (Kang et al., 2005). The GI-centered approach (i.e., group mean substitution) involves replacing an individual's missing value with a mean from the group from which that individual is a part (e.g., imagery participant's missing value replaced with imagery group mean), whereas the II-centered approach (i.e., case mean substitution) involves replacing an individual's missing value with a mean score of the remaining data from that particular individual (Kang et al., 2005). The current study applied the GI-centered approach given the nature of the missing data. Finally, no univariate or multivariate outliers were found, as indicated by z scores > 3 (Field, 2009) and Mahalanobis distance with $p < .001$ (Tabachnick & Fidell, 2007).

The assumptions of normality and homogeneity of variance were examined using the Kolmogorov-Smirnov test and the Shapiro-Wilk test (Stevens, 2002). Examination of these tests revealed several non-normally distributed variables at baseline (i.e., nine) and post-intervention (i.e., eight). In most cases, both groups violated the assumption of normality on the same variable. Next, the assumption of homogeneity of variance was assessed using the Levene's test. The results indicated numerous variables with significantly different variances ($p < .05$) at baseline (i.e., five) and post-intervention (i.e., three).

Given that the majority of the variables violated the assumptions of normality and homogeneity of variance, transformations were applied in order to improve the data. Further examination of the non-normally distributed variables indicated a severe negative skew. Thus, the variables were reflected to represent a positive skew prior to performing the transformations. Square root and logarithmic transformations were applied to the variables that were non-normally distributed and/or had unequal variances, but neither transformation considerably improved the data. For this reason, it was deemed reasonable to examine the data using the non-parametric equivalent of the independent *t*-test, the Mann-Whitney test, which has fewer restrictions regarding the type of data with which it can be employed (Field, 2009).

Preliminary Analyses

Prior to testing the current study's hypotheses, 12 Mann-Whitney tests were conducted to examine equivalency at baseline between the imagery group and control group among the dependent variables. Additionally, effect sizes were calculated by dividing the *z* score by the square root of the number of participants (Rosenthal, 1991). The results revealed statistically significant differences for 10 variables: competence,

autonomy, relatedness, intrinsic motivation, identified regulation, external regulation, intention, capability imagery, social imagery, and fun imagery. However, no significant differences were found at baseline for pedometer step counts and self-reported active play. A summary of the Mann-Whitney tests, medians, and ranges are presented in Table 1. With the exception of intention, participants in the imagery group had higher median scores on all of the baseline measures compared to those in the control group. As a result of these baseline differences, a post-intervention effect on the imagery group with respect to the imagery intervention could no longer be conducted. It was deemed appropriate to analyze the data using a mean difference score of the dependent variables (post-intervention score minus baseline score) in order to identify any changes that occurred over the course of the intervention. A positive mean difference score represents an increase from baseline to post-intervention, while a negative mean difference score represents a decrease from baseline to post-intervention.

In hopes that the primary analyses would be conducted using *t*-tests, the new dependent mean difference score variables were examined to determine whether the assumptions of normality and homogeneity of variance were tenable. Using the same criteria as previously stated, the results of these analyses indicated that a total of seven variables violated the assumption of normality and one variable violated the assumption of homogeneity of variance. Although normality was the main assumption that was violated, some researchers have argued that the *t*-test is robust under conditions when normality is not met (e.g., Sawilosky & Blair, 1992). For example, Sawilowsky and Blair (1992) found the previous statement to be true only when group sample sizes are roughly equal, relatively large, and a two-tailed test is applied. For these reasons, Mann-Whitney tests were performed on the dependent variables with non-normal distributions and

unequal variances (i.e., self-reported active play, relatedness, intrinsic motivation, identified regulation, external regulation, intention, and fun imagery). The decision to use Mann-Whitney tests was further supported by Skovlund and Fenstad's (2001) guidelines to choosing an appropriate test (parametric vs. non-parametric) based on the characteristics of the data such as the variances, distributions, and sample size. Finally, *t*-tests were performed on dependent variables where assumptions were met (i.e., pedometer step counts, competence, autonomy, capability imagery, social imagery). Significance levels were set to .05.

Descriptive Statistics

Participant descriptives (i.e., age and grade) and total number of telephone calls for each group are presented in Table 2. Further, means, standard deviations, and internal consistencies for the dependent variables at baseline and post-intervention for each group are presented in Table 3. With the exception of intrinsic motivation at baseline, Cronbach's alpha coefficients for all the subscales were deemed acceptable based on Nunnally and Bernstein's (1994) recommendation of values greater than .70. In general, the participants in the imagery group scored higher on most of the outcome variables at both baseline and post-intervention compared to those in the control group. Means and standard deviations for the mean difference score variables for each group are shown in Table 4. Of note, both the imagery and control groups reported a slight decrease from baseline to post-intervention among most of the dependent variables.

Primary Analyses

Mann-Whitney tests. Results revealed no significant differences between the imagery group and the control group for the six variables: self-reported active play,

relatedness, intrinsic motivation, identified regulation, external regulation, and intention. A summary of the Mann-Whitney tests, medians, and ranges are presented in Table 5.

***T*-tests.** Results indicated significant differences between the two groups for competence, autonomy, and capability imagery. Specifically, participants in the imagery group showed a greater decrease in their frequency of capability imagery than those in the control group. In terms of perceived competence and autonomy, participants in the imagery group reported a decrease in perceived competence and autonomy, while the participants in the control group experienced an increase in perceived competence and autonomy. No significant differences between the two groups were found for social imagery and pedometer step counts. A summary of the *t*-tests, means, and standard deviations are presented in Table 6.

Discussion

The overall purpose of this pilot study was to examine the effects of a guided imagery intervention on children's active play, to inform the planning of a larger scale study. The results of the hypotheses are described below followed by some possible explanations for the findings.

First, it was hypothesized that children in the imagery group would show greater pedometer step counts and self-reported active play than those in the control group. This hypothesis was not supported. That is, no significant differences between the groups were found for either measure of active play.

Second, it was hypothesized that children who received the guided imagery intervention would report greater need satisfaction of competence and relatedness than those in the control group. This hypothesis was not supported. In fact, contrary to our hypothesis, children in the imagery group reported a significant decrease in their

perceptions of competence from baseline to post-intervention, while those in the control group experienced a significant increase. There was no significant difference between the groups with respect to relatedness.

Third, it was hypothesized that children in the imagery group would report higher levels of self-determined motivation (i.e., intrinsic motivation and identified regulation) and intention to engage in active play than children in the control group. This hypothesis was also not supported. No significant differences between the groups were found for any of the aforementioned outcome variables.

Finally, it was hypothesized that children in the imagery group would report greater increases in active play imagery (i.e., capability, social, and fun imagery) than children in the control group. This hypothesis was not supported. Specifically, children in imagery group reported a greater decrease in their frequency of capability imagery from baseline to post-intervention than those in the control group. No significant differences between the groups were found for social and fun imagery.

The findings of the current pilot study were somewhat unexpected. In general, children in both groups reported a decrease in most of the outcome variables over the course of the intervention. There are several possible reasons for these results. For instance, children in the imagery group had considerably high ratings on all outcome variables at baseline resulting in a possible ceiling effect. Therefore, it may not be surprising that children in the imagery group did not show significant increases over the course of the intervention. Beyond this explanation, several methodological issues may help to explain the results of the current pilot study.

The first methodological issue pertains to the administration of the questionnaires. Children completed the baseline questionnaire package individually, whereas the post-

intervention questionnaire package was read aloud by the lead researcher followed by the children self-recording their answers. The decision to change protocols was made after the initial meeting, as the investigators observed the frequent occurrence of extreme scoring. To illustrate, all seven participants in the imagery group indicated that they 'strongly agreed' (7 out of a possible 1-7) with each of the items on the motivation questionnaire (i.e., SIMS). This finding led the researchers to question the children's general understanding of the test instruments (e.g., vocabulary and reading decoding). The elimination of the reading component at the post-intervention assessment (i.e., questions were read aloud) may have enhanced the quality of responses, as there was greater variance found among the responses. Additionally, reading the questionnaires aloud while the children self-recorded their answers may have provided the participants with two different learning styles (i.e., visual and auditory). This amendment to the study's procedures may help to explain the findings. In line with previous quantitative research conducted with children (Scott, 1997), it may be valuable for future studies to administer the questionnaire(s) in person via audio recording in order to account for discrepancies in reading ability and to ensure standardization.

The second methodological issue that warrants discussion is the characteristics of the questionnaires. To illustrate, the BNS-C and SIMS included seven response options. It is possible that the children were unable to comprehend the differences between the multiple options. Further, the BNS-C, SIMS, and IAP comprised partially labelled scales (i.e., not all response options were labelled); therefore making it difficult for the children to interpret the meaning of the non-labelled options. Finally, with the exception of the PAQ-C, all questionnaires included response options of both written and numeric labels (e.g., 1 = *do not agree at all*) represented on a Likert-scale. It is likely that participants

did not perceive the numeric labels as simply a number representing a meaning. Rather, children may have interpreted the numeric labels (e.g., 1 to 7) to represent a worst-to-best response, with higher numbers representing a 'better' response. This may be especially true when considering the age of the participants (9-10 years old). It is likely that a Likert-scale is novel to children of this age and therefore they did not interpret the scale properly.

Despite these noted limitations, the information gleaned from the delivery of these questionnaires may inform future studies conducted with children. Previous research has established that three or four response options are most appropriate when working with children under the age 11 (e.g., Borgers & Hox, 2001). Further, studies have shown that completely labeled scales, compared to partially labeled scales, enhance the quality of responses from children (e.g., Borgers, Hox, & Sikkel, 2003). The type of labeling has also been shown to influence response quality, as children understand written labels more easily than numeric labels (Alwin & Krosnick, 1991). Thus, future research should consider written labels and fewer response options when using paper-pencil questionnaires with children.

The third methodological issue is the characteristics of the participants. Research has established that the characteristics of the respondent may also influence reliability of responses (e.g., Krosnick, 1991; Krosnick & Fabrigar, 1997). According to the question-answer model (Schwarz & Sudman, 1996), respondents will progress through four key stages in order to provide a good quality response. In the first stage, the respondent will understand and interpret the question. Next, the respondent will retrieve relevant information needed to answer the question. The respondent will then make a judgement about the information required to answer the question. Finally, the respondent will

communicate their judgement using the response scale. Completing the four stages of answering a question is referred to as an optimizing strategy (Schwarz & Sudman, 1996). Contrary to an optimising strategy, a satisficing strategy occurs when the respondent does not complete the four stages (Krosnick, 1991). If the respondent is unmotivated, perceives the task to be difficult, or lacks cognitive ability necessary for task completion, satisficing is likely to occur (Kronsick, 1991). Respondents that employ a satisficing strategy will seek out the least demanding routine in order to reach a decision (e.g., answering every question positively; Bell, 2007). As such, it is possible that some children in the current study employed a satisficing strategy.

The fourth methodological issue relates to the objective measurement of active play. Unsealed pedometers (i.e., step-count display visible) were used to assess children's active play. However, a common concern regarding the use of pedometers with children is the occurrence of reactivity (e.g., Ozdoba, Corbin, & Le Masurier, 2004; Rowe et al., 2004). Reactivity is defined as "a change in normal activity levels because of the participants' knowledge that their activity levels are being monitored" (Welk, Corbin, & Dale, 2000, p. 59). If reactivity occurs, children will purposely increase their steps in order to produce an effect on the step-count display (e.g., Rowe et al., 2005). As the testing period lengthens, reactivity will cease and activity levels will stabilize because the pedometer is no longer novel to the children (Ozdoba et al., 2004). The possible existence of reactivity in the current study could explain the higher step count averages at baseline than at post-intervention. Evidence of reactivity occurred at the initial meeting immediately after receiving the pedometers, as children began to run around and jump up and down simply to see the step count increase on the visual display.

To the author's knowledge, only two studies have examined reactivity of unsealed pedometers with children (Grades 4-8; Ozdoba et al., 2004; Rowe et al., 2004). Results from both studies indicated that reactivity did not occur. However, participants wore the pedometer for relatively short testing periods, for example, eight (Ozdoba et al., 2004) and seven days (Rowe et al., 2004) total. Thus, it is not known whether longer testing periods (i.e., three weeks) would result in the occurrence of reactivity.

Studies interested in measuring children's PA over of an extended period should consider using sealed pedometers (i.e., step-count display is restricted) in order to account for the possibility of reactivity. A study conducted by Vincent and Pangrazi (2002) demonstrated that reactivity did not occur among school-aged children (Grades 2, 4, and 6) who wore a sealed pedometer for eight consecutive days. In addition to the sealing of the pedometer, it may be valuable for future studies to use pedometers with 7-day and 2-week memory capabilities, as it would eliminate the chance of accidental resetting and reduce the amount missing pedometer data.

The fifth methodological issue is concerned with the delivery of the intervention. Participants were instructed to call into the telephone system six times during the intervention phase (i.e., Weeks 2-3) in order to listen to an automated script. Despite these instructions, only one participant in the imagery group adhered to the guidelines. As a result, the dose of the imagery intervention may have been jeopardized. To the author's knowledge, no previous studies have used a telephone system to deliver an imagery intervention. Past research has most commonly administered the imagery scripts in person via audio recording or verbally (e.g., Duncan, Hall, Wilson, & Rodgers, 2012; Munroe-Chandler, Hall, Fishburne, & Shannon, 2005). Although the aforementioned method ensures the participants are acquiring the necessary intervention dose, it is often

very time-intensive. Delivering an intervention through a telephone system can be cost-effective and may enhance standardization and generalizability. However, identifying strategies that motivate the participants to call into the telephone system presents a unique concern. One possible strategy may be through participant compensation.

Future studies wishing to implement a telephone system to deliver an imagery intervention should consider linking the incentive to the research task. This approach is referred to as the wage-payment model (Bagely, Raynolds, & Nelson, 2007). For example, in the context of the current pilot study, children who called into the telephone system six times would be rewarded with an incentive (e.g., a five dollar gift certificate to a selected store). Recent research has found this approach to be appropriate for children over the age of nine (Bagely et al., 2007) because of their ability to comprehend the meaning and value of money (Berti & Bombi, 1981). A wage-payment model may help to ensure the participants complete the research task (i.e., calling into the telephone system) and therefore receive the required intervention dose.

The sixth and final methodological issue relates to the content of the imagery scripts. In the current study, two generic imagery scripts were developed in order to ensure a level of scientific control. However, the content of the scripts may not have been meaningful to the participants. According to Ashen's (1984) Triple-Code Theory, the meaning of an image is essential when developing imagery scripts, as the imaged event should elicit significance and evoke behavioural responses that will lead to enhanced performance. The current study's imagery scripts targeted fundamental movement skills (e.g., running and jumping) that are essential to many active play activities (e.g., tag and leap frog). However, it might have been beneficial to incorporate actual active play activities into the scripts (e.g., biking, swimming, tag), as they may represent stronger

meanings than simple movements. Given that the basic psychological needs co-exist (Deci & Ryan, 1985), future studies should incorporate the targeted basic needs (e.g., competence and relatedness) in the same imagery script. Further, initial, mid-point, and final assessments of the basic needs should be conducted in order to adequately monitor changes in the target variable(s).

In addition to the noted methodological issues, the pilot study had several other limitations. The Principal of the elementary school recruited the participants from their classrooms. Children who were interested in participating in the study received an information package and returned the completed package to the Principal prior to the initial meeting. As such, the students were aware that the Principal had knowledge of who volunteered to participate. This recruitment method is less than ideal. Some children who volunteered to participate may have done so because they felt pressured to or wanted to please the Principal. Several studies have found that children who are uninterested in the research study will generate unreliable responses (e.g., Holaday & Turner-Henson, 1989). Therefore, it is possible that the uninterested participants affected the results of the present study (e.g., the occurrence of extreme scoring and not calling into the telephone system).

There is potential that the significant differences between the two groups at baseline may be due to inadequate randomization. At the initial meeting, children were informed they would be placed into one of two groups, a ‘Tiger group’ or a ‘Lion group’. The primary investigator asked children to line up and then randomly assigned each participant a numbers (i.e., one or two) wherein each number represented a group. It is possible that children positioned themselves accordingly in order to be assigned to a

desired group. A more reliable randomization technique could include a computer-generated list of numbers or a random numbers table.

Another limitation to the current study is the absence of an imagery ability measure. A baseline assessment of imagery ability would determine whether the participants are indeed capable of imaging. However, an imagery ability inventory for children has not yet been validated.

Despite acceptable alpha coefficients, the CAPIQ and BNS-C are relatively new measures and therefore need further validation. However, it should be noted that these measures were chosen because they are age appropriate (i.e., reading levels) and context specific (i.e., active play). Further, the SIMS and PAQ-C were not utilized for their intended purpose. The purpose of the SIMS is to assess children's motivation towards PE, while the PAQ-C measures overall PA (i.e., PE class, organized sport, active play). Thus, both of these measures were modified to represent only an active play context.

The last limitation concerns the problems associated with the analyses. First, the outcome variables at both baseline and post-intervention did not meet the assumptions of univariate analyses. Second, significant differences between the two groups were found prior to the start of the intervention, suggesting that a treatment effect at post-intervention could no longer be examined. Finally, the current study lacked sufficient power, as the sample size was small.

Despite the methodological issues and limitations, the general purpose of the current pilot study should not be forgotten. The term pilot study is described as a "small scale version(s), or trial run(s), done in preparation for the major study" (Polit, Beck, & Hungler, 2001, p. 467). Therefore, the current study achieved its objective by identifying potential problems and effective procedures, in advance of the larger scale study. The

fact that potential problems were identified is the main strength of the current pilot study. Further, the results and suggested amendments of the pilot study provide valuable insight to other research studies using similar procedures and instruments.

Additional strengths of the present pilot study should also be highlighted. To ensure an accurate measurement of children's active play was obtained, subjective and objective instruments were used. Previous research has exclusively depended on self-report measures of children's PA (e.g., Crocker, Eklund, & Kowalski, 2000). However, the necessity of using an objective measure to assess children's PA is crucial in PA interventions, as it has been shown that children, when self-reporting, tend to overestimate the intensity and duration of their PA (Deforche, Bourdeaudhuij, D'Hondt, & Cardon, 2009). Additionally, the delivery of the automated scripts via the telephone system was time efficient, inexpensive, and required few personnel resources. As such, the use of a telephone system should be considered as a viable mode of delivery when developing future imagery interventions.

Despite the lack of support for the current pilot study's hypotheses, important implications for the larger scale study can be drawn from the results of similar imagery interventions using SDT as the theoretical framework. For example, Duncan et al. (2012) investigated the effects of imagery on integrated regulation, a type of autonomous motivation, as outlined in SDT (Deci & Ryan, 1985). The researchers implemented an 8-week guided imagery intervention with sedentary female adults. Eight generic imagery scripts were developed and aimed to enhance females' integrated regulation to exercise. The participants in the imagery group received one guided imagery session over the course of the study, while the participants in the control group attended a general health

information session. Results indicated that participants who received the imagery intervention experienced greater increases in integration than those in the control group.

The findings of Duncan et al.'s (2012) study have important implications for the larger scale study. Results of Duncan et al.'s study demonstrated that integrated regulation is amenable to manipulation. This finding provides initial support for our contention that the basic psychological needs may also be amenable to manipulation. Additionally, given the success of their intervention, Duncan et al. reported that an imagery intervention is an effective strategy for enhancing integrated regulation. The upcoming larger scale intervention hopes to experience similar success by determining whether imagery can be an effective intervention strategy for enhancing the basic psychological needs of children engaging in active play. Further, the larger scale study will investigate whether the satisfaction of the basic psychological needs can enhance children's motivation to be physically active during their free-time. If successful, the findings will provide initial evidence that imagery is a cost-effective and practical strategy for increasing children's PA levels.

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Tables

Table 1

Medians, Ranges, and Mann-Whitney Tests for Dependent Variables at Baseline

Variable	Imagery Group	Control Group	Mann Whitney Tests			
	Mdn (Range)	*Mdn (Range)*	*U*	*z*	*p*	*r*
CAPIQ						
Capability Imagery	5.00 (0.75)	3.00 (2.00)	0.00	-3.46	.000[a]	-.84
Social Imagery	5.00 (1.25)	3.63 (1.25)	3.50	-3.14	.000[a]	-.85
Fun Imagery	5.00 (0.67)	4.33 (2.67)	11.50	-2.48	.010[a]	-.60
BNS-C						
Competence	7.00 (4.33)	5.50 (3.50)	17.00	-1.79	.039[a]	-.43
Autonomy	7.00 (2.00)	5.10 (4.00)	9.50	-2.55	.005[a]	-.62
Relatedness	7.00 (4.00)	5.40 (5.20)	9.50	-2.51	.017[a]	-.61
SIMS						
Intrinsic Motivation	7.00 (0.00)	6.50 (1.25)	14.00	-2.40	.017[a]	-.58
Identified Regulation	7.00 (0.00)	6.63 (2.25)	14.00	-2.40	.017[a]	-.58
External Regulation	7.00 (0.00)	2.88 (4.75)	0.00	-3.55	.000[a]	-.86
IAP	4.00 (1.00)	4.00 (0.00)	20.00	-2.21	.051[a]	-.54
PAQ-C	4.14 (2.11)	3.68 (1.38)	27.00	-.781	.237[a]	-.19
Pedometer Step Count	16511.29 (13154.43)	12378.74 (11865.29)	26.00	-0.88	.199[a]	-.21

Note: CAPIQ = Children's Active Play Questionnaire, BNS-C = Basic Need Satisfaction Questionnaire for Children, SIMS = Situational Motivation Scale, IAP = Intention to engage in active play, PAQ-C = Physical Activity Questionnaire for Older Children. The CAPIQ is rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very often*). The BNS-C is rated on a 7-point scale ranging from 1 (*do not agree at all*) to 7 (*strongly agree*). The SIMS is rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*strongly agree*). The IAP is rated on a 4-point scale ranging from 1 (*disagree in a big way*) to 4 (*agree in a big way*). PAQ-C is rated on a 5-point scale ranging from 1 (*low physical activity*) to 5 (*high physical activity*).

[a]One-tailed

Table 2

Frequencies, Means, and Standard Deviations for Age, Grade, and Number of Telephone Calls for Each Group

Variable	Imagery Group	Control Group	Imagery Group	Control Group
	f	*f*	*M (SD)*	*M (SD)*
Number of Participants	7	10		
Age			9.57 (.53)	9.60 (.51)
9	3	4		
10	4	6		
Grade			4.14 (.38)	4.40 (.52)
4	6	6		
5	1	4		
Number of Telephone Calls			3.57 (2.22)	3.10 (2.56)
0	1	3		
1	0	1		
2	2	0		
3	0	0		
4	0	2		
5	3	2		
6	1	2		

Table 3

Means, Standard Deviations, and Internal Consistencies for Dependent Variables at Baseline and Post-Intervention for Each Group

Variable	Baseline			Post-Intervention		
	Imagery Group *M* (*SD*)	Control Group *M* (*SD*)	α	Experimental Group *M* (*SD*)	Control Group *M* (*SD*)	α
CAPIQ						
Capability Imagery	4.79 (.30)	2.94 (.56)	.73	3.89 (.83)	2.85 (.97)	.84
Social Imagery	4.79 (.47)	3.43 (.50)	.73	4.50 (.48)	3.63 (1.21)	.90
Fun Imagery	4.90 (.25)	4.23 (.77)	.80	4.67 (.61)	3.85 (1.12)	.84
BNS-C						
Competence	6.10 (1.58)	5.18 (1.29)	.93	5.71 (1.31)	5.47 (1.50)	.95
Autonomy	6.66 (.75)	5.04 (1.44)	.86	6.31 (.75)	5.62 (1.65)	.95
Relatedness	6.34 (1.48)	5.04 (1.49)	.85	6.23 (.93)	4.70 (1.87)	.94
SIMS						
Intrinsic Motivation	7.00 (.00)	6.48 (.52)	.33	6.57 (.74)	5.67 (1.23)	.70
Identified Regulation	7.00 (.00)	6.30 (.85)	.81	6.79 (.37)	5.60 (1.41)	.78
External Regulation	7.00 (.00)	2.83 (1.60)	.97	5.89 (1.73)	1.70 (.90)	.93
IAP	3.57 (.53)	4.00 (.00)		3.71 (.49)	3.70 (.48)	
PAQ-C	3.97 (.74)	3.73 (.48)		3.98 (.62)	3.46 (.46)	
Pedometer Step Counts	15855.73 (5684.22)	12378.74 (3026.74)		15357.28 (4550.90)	10411.20 (2626.97)	

Note. CAPIQ = Children's Active Play Questionnaire, BNS-C = Basic Need Satisfaction Questionnaire for Children, SIMS = Situational Motivation Scale, IAP = Intention to engage in active play, PAQ-C = Physical Activity Questionnaire for Older Children. The CAPIQ is rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very often*). The BNS-C is rated on a 7-point scale ranging from 1 (*do not agree at all*) to 7 (*strongly agree*). The SIMS is rated on a 7-point scale ranging from 1 (*not at all*) to 7 (*strongly agree*). The IAP is rated on a 4-point scale ranging from 1 (*disagree in a big way*) to 4 (*agree in a big way*). PAQ-C is rated on a 5-point scale ranging from 1 (*low physical activity*) to 5 (*high physical activity*).

Table 4

Means and Standard Deviations for Mean Difference Score Variables for Each Group

Variable	Imagery Group	Control Group
	M (*SD*)	*M* (*SD*)
CAPIQ		
Capability Imagery	-.89 (.71)	-.09 (.94)
Social Imagery	-.29 (.49)	+ .20 (1.03)
Fun Imagery	-.24 (.37)	-.30 (1.09)
BNS-C		
Competence	-.38 (52)	+ .28 (.80)
Autonomy	-.34 (.57)	+ .58 (.84)
Relatedness	-.11 (1.32)	-.34 (1.14)
SIMS		
Intrinsic Motivation	-.43 (.74)	-.81 (1.29)
Identified Regulation	-.21 (.37)	-.70 (.79)
External Regulation	-1.12 (1.73)	-1.13 (1.23)
IAP	+ .14 (.38)	-.30 (.48)
PAQ-C	+ .01 (.30)	-.27 (.53)
Pedometer step counts	-498.45 (2914.63)	-1967.53 (3781.68)

Note. CAPIQ = Children's Active Play Questionnaire; BNS-C = Basic Need Satisfaction Questionnaire for Children; SIMS = Situational Motivation Scale; IAP = Intention to engage in active play, PAQ-C = Physical Activity Questionnaire for Older Children.
- denotes a decrease from baseline to post-intervention; + denotes an increase from baseline to post-intervention.

Table 5

Medians, Ranges, and Mann-Whitney Tests for Mean Difference Score Variables

Variable	Imagery Group	Control Group	Mann-Whitney Tests			
	Mdn (*Range*)	*Mdn* (*Range*)	*U*	*z*	*p*	*r*
CAPIQ						
Fun Imagery	0.00 (1.00)	0.00 (3.67)	28.50	-0.65	.267[a]	-.16
BNS-C						
Relatedness	0.00 (4.40)	-0.30 (3.60)	34.00	-0.10	.482[a]	-.02
SIMS						
Intrinsic Motivation	0.00 (2.00)	-0.54 (3.92)	24.50	-1.03	.159[a]	-.25
Identified Regulation	0.00 (1.00)	-0.63 (2.25)	21.50	-1.03	.099[a]	-.25
External Regulation	-0.25 (4.75)	-0.75 (3.50)	31.50	-0.35	.380[b]	-0.08
IAP	0.00 (1.00)	0.00 (1.00)	21.00	-1.84	.088[a]	-.45
PAQ-C	0.14 (0.85)	-0.23 (1.96)	20.00	-1.46	.161[a]	-0.35

Note. CAPIQ = Children's Active Play Questionnaire; BNS-C = Basic Need Satisfaction Questionnaire for Children; SIMS = Situational Motivation Scale, IAP = Intention to engage in active play, PAQ-C = Physical Activity Questionnaire for Older Children. - denotes a decrease from baseline to post-intervention.

[a]One-tailed

[b]Two-tailed

Table 6

Means, Standard Deviations, and T-Tests for Mean Difference Score Variables

Variable	Imagery Group	Control Group	*T*-Tests			
	M (*SD*)	*M* (*SD*)	*t*	*df*	*p*	*r*
CAPIQ						
Capability Imagery	-.89 (.71)	-.09 (.94)	-1.90	15	.039[a]	.44
Social Imagery	-.29 (.49)	+.20 (1.03)	-1.14	15	.136[a]	.31
BNS-C						
Competence	-.38 (.52)	+.28 (.80)	-1.92	15	.037[a]	.44
Autonomy	-.34 (.57)	+.58 (.84)	-2.51	15	.012[b]	.54
Pedometer Step Counts	-498.45 (2914.63)	-1967.53 (3781.68)	0.86	15	.20[a]	.22

Note. CAPIQ = Children's Active Play Questionnaire; BNS-C = Basic Need Satisfaction Questionnaire for Children.
[a]One-tailed
[b]Two-tailed

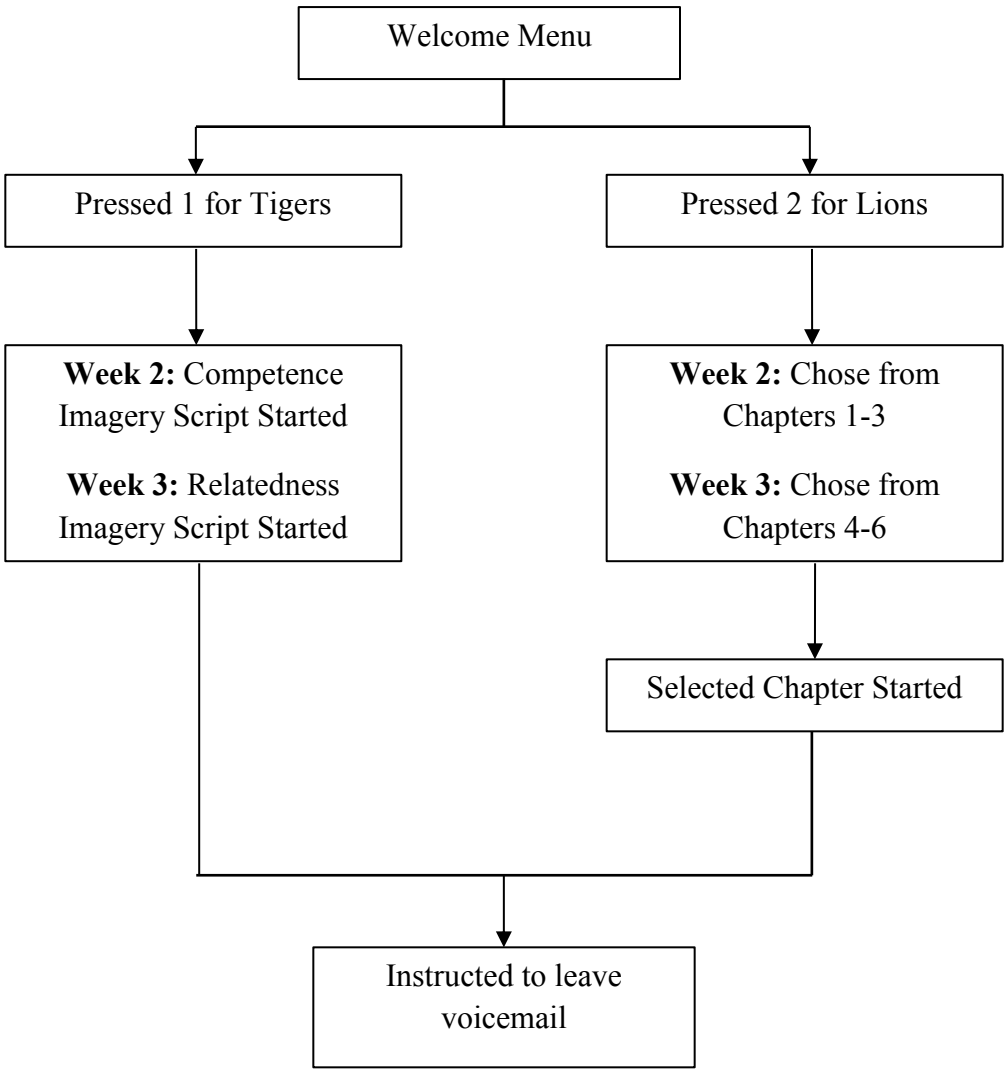

Figure 1. Flow chart of telephone system

LITERATURE REVIEW

The overall purpose of this pilot study was to examine the effects of a guided imagery intervention on children's active play. The review of literature will be divided into three parts (a) imagery, (b) self-determination theory, and (c) active play.

Imagery

White and Hardy (1998) defined imagery as "an experience that mimics real experience. We can be aware of 'seeing' an image, feeling movements as an image, or experiencing an image of smell, taste or sounds without experiencing the real thing" (p. 389). A simpler yet equally effective definition was put forth by Vealey and Greenleaf (2001), in which they described imagery as "using all the senses to re-create or create an experience in the mind" (p. 248). A commonality among imagery definitions is the notion that individuals are consciously aware and in control of the images and experiences, thereby differing from a dream or daydreaming (Murphy & Jowdy, 1992; Richardson, 1969; White & Hardy, 1998).

Theories and Models of Imagery

Bioinformational theory. Lang's (1979) bioinformational theory incorporates three domains of research: psychophysiology, information processing theory, and behavioural therapy. The theory proposes that the brain's information processing abilities are products of mental images. These mental images contain two fundamental classes, stimulus propositions and response propositions. The latter involves the physiological responses the imager experiences during an imagery scene (e.g., a child may image the changes in their cardiovascular and respiratory responses or muscle fatigue while riding their bike). Stimulus propositions involve the content, or characteristics presented in the imagined situation (e.g., a child may imagine details about the weather or the location in

which the activity took place). According to Lang's theory, the number of propositions (both stimulus and response) will result in the process of assessing critical information. As demonstrated by research, imagery scripts that include more response propositions, compared to stimulus propositions, have been shown to elicit greater physiological reactions (Bakker, Boschker, & Chung, 1996). A recognized strength of the bioinformational theory is the notion that imagery involves not only the environmental characteristics of the imaged scenario but also the physiological and behavioural responses associated with the images (Morris, Spittle, & Watt, 2005).

The triple-code theory. Ahsen (1984) suggested there are three fundamentals components of an image. The first component, the image, has been described as a centrally aroused internal sensation that represents all the characteristics of an actual sensation. Thus, the realism of the image allows the imager to interact and manipulate real life situations through their imagined environment. The second component consists of the somatic responses experienced by the imager. Specifically, the image induces psychophysiological changes in one's body while imaging a scenario. The third component involves the actual meaning of the image. This component acknowledges that, regardless of identical imagery instructions, individuals will incorporate their unique upbringing and history with all images and thus, the imagery experience will differ for each individual. This latter component, the meaning of the image, is what differentiates triple code theory from other theories. Ahsen proposed that the meaning of an image is crucial when developing an imagery script, as the imaged event should impart significance and evoke behavioural responses that will lead to enhanced performance.

Despite the strengths of the aforementioned theories, Hall (2001) noted the absence of the different types of imagery that are believed to occur within the sport

domain. Additionally, Lang's (1979) and Ashen's (1984) theories do not account for the association or influence of imagery use on performance.

Analytic framework of imagery effects. Much of the current imagery research has stemmed from Paivio's (1985) analytical framework. Imagery is thought to serve both a cognitive and motivational function (i.e., type) that operates at either a general or specific level. Cognitive specific (CS) refers to images of specific motor skills such as imaging a slap shot in road hockey while cognitive general (CG) imagery involves images associated with technical performances such as strategies, routines, and game plans. Motivational specific (MS) imagery refers to images of individual goals and achievements such as winning a tournament, while motivational general (MG) imagery refers to images of arousal states that are related to performance. Given the various types of imagery accounted for in Paivio's framework, it has been used to explain the effect of imagery on various performance outcomes, such as self-confidence and intrinsic motivation (Martin & Hall, 1995; Moritz, Hall, Martin, & Vadocz, 1996).

Despite the abundance of research that has applied Paivio's (1985) framework, Martin, Moritz, and Hall (1999) noted several limitations. First, some researchers (e.g., Hall, Mack, Paivio, & Hausenblas, 1998; White & Hardy, 1998) have suggested that individuals may use imagery for other functions than those outlined in Paivio's framework such as to improve self-confidence or become mentally tough. Second, the framework does not take into account situational or personal factors (e.g., physical activity context and imagery ability) and thus, makes it difficult to determine the type of imagery employed by the individual, and the effects of imagery. Third, the framework does not indicate which imagery types lead to specific cognitive and motivational outcomes. Considered collectively, the framework does not illustrate the relationship

between the types of imagery and the attainment of specific performance outcomes (e.g., increased confidence, arousal regulation) in contexts such as training and competition.

Conceptual Models of Imagery in Sport

The applied model of imagery use in sport (AMIUS). Acknowledging the limitations with Paivio's (1985) framework, Martin et al. (1999) developed the AMIUS by incorporating specific elements of imagery theories advanced outside the sport domain. Hence, these researchers incorporated concepts from both the triple-code model (Ahsen, 1984) and the bioinformational theory (Lang, 1979). The model emphasized that images represent different meanings to individuals and therefore would elicit different cognitive, affective, and behavioural reactions (Martin et al., 1999).

The AMIUS, as seen in Figure 1, is composed of four key constructs including sport situation, imagery type, imagery ability, and the outcomes related to imagery use. With regards to the sport situation, research has shown that athletes use imagery during training (Barr & Hall, 1992), immediately prior to or during competition (Van Gyn, Wenger, & Gaul, 1990), and during rehabilitation (Green, 1992). Research has suggested that specific imagery types may be more prevalent than others during each of the three (i.e., training, competition, and rehabilitation) sport contexts (Hall et al., 1998; Salmon, Hall, & Haslam, 1994). For example, during training phases, novice athletes are focused on learning and performing specific motor skills and strategies and therefore may use imagery for its cognitive function while a more skilled athlete may benefit more from motivational imagery, as it would assist with performance outcomes and the physiological states associated with performance (Hall, 1995; White & Hardy, 1998). Accordingly, the sport situation has shown to influence the type of imagery employed by the athlete.

The type of imagery used by the athlete is the central focus of the model as it is the basis of cognitive, affective, and behavioural changes. Initially, research regarding the types of imagery was limited as it compared the effects of positive and negative imagery on performance (e.g., Woolfolk, Murphy, Gottesfeld, & Aitken, 1985). However, in the past decade researchers have acknowledged and confirmed the various imagery types and their effect on athletic development and performance (Hall et al., 1998; Hall, Rodgers, & Barr, 1990; White & Hardy, 1998). Specifically, Paivio's (1985) original four types of imagery (i.e., CS, CG, MS, MG) was later explored and expanded upon by Hall et al. (1998). Through a series of empirical studies in sport, the authors found that MG imagery comprises two distinct components: images related to arousal, stress, and relaxation during sport competition (MG-A); and images related to being in control, confident, and mentally tough during sport competition (MG-M). According to Martin et al. (1999), athletes can either employ these types of imagery independently from each other or simultaneously.

The remaining two components of the model include imagery ability and the outcomes associated with imagery use. Imagery ability (i.e., kinaesthetic and visual) acts as a moderating variable between the types of imagery and the outcomes associated with imagery. To date, research has shown that athletes who incorporate kinaesthetic and visual imagery with physical movements experience enhanced sport performance (Highlen & Bennett, 1979; Meyers, Cooke, Cullen, & Liles, 1979). Moreover, research has documented the potential positive effects imagery use has on skill and strategy learning and performance, modifying cognitions, and regulating arousal and competitive anxiety (Martin et al., 1999).

In general, studies examining the relationships between the imagery types and outcomes have been supported and thus, the model has proven to be an effective in guiding both research and applied work (Cumming & Ramsey, 2009). However, research has suggested that other types of imagery exist. For example, Nordin and Cumming (2005) found that professional dancers reported using body-related (e.g., posture and alignment) and artistic images (e.g., behaviours and emotions of characters and roles), which go beyond those noted in the AMIUS. Furthermore, kinaesthetic imagery, which is defined as "involving the sensations of how it feels to perform an action, including the force and effort involved in movement and balance, and spatial location" (Callow & Waters, 2005, pp. 444-445) is positively associated with performance outcomes such as confidence and increased skill acquisition (e.g., Hardy & Callow, 1999). Consequently, Martin et al. (1999) have suggested the possibility of including kinaesthetic imagery as a type of imagery in the AMIUS, in addition to its moderating purpose. Similarly, some researchers (e.g., Murphy, Nordin, & Cumming, 2008) have suggested that additional individual difference variables (e.g., age, gender, participation level) and moderators (e.g., duration, perspective) should also be included in the model.

The four W's of imagery use. Prior to Munroe, Giacobbi, Hall, and Weinberg's (2000) qualitative study on imagery use by athletes, the majority of research in this area was commonly examined through quantitative methodologies (e.g., questionnaires). Although several studies in the field of sport psychology have employed qualitative techniques to investigate the psychological skills used by athletes (e.g., Gould, Eklund, & Jackson, 1992; Orlick & Partington, 1988), few studies have attempted to understand the images that are perceived to be important for the athletes themselves. Therefore, through in-depth interviews with 14 elite athletes, Munroe et al. facilitated a broader

understanding of imagery within training and competition by determining *where, when, and why* imagery was being used, as well as *what* was being imaged.

The conceptual framework of imagery use by athletes, as seen in Figure 2, was developed to characterize athletes' responses to the four W's. Level 1 of the model, *where*, comprises two categories, training and competition. *When* athletes use imagery, Level 2, consists of five categories. These include during practice, outside practice, pre-competition, during competition, and post-competition. Level 3, the *why* and *what* of imagery use, comprises two categories, function and content. With regards to type, and in support of Hall et al.'s (1999) findings, Munroe et al. (2000) found athletes reported using the five different types of imagery (i.e., CS, CG, MS, MG-A, MG-M) (Level 4). In addition to these pre-existing types, another labelled flow, was most often reported during practice and assisted with maintaining the athletes flow state. Content of the image comprises sessions, effectiveness, nature of imagery, surrounding, type of imagery, and controllability (Level 4). Munroe et al. further elaborated on the *why* and *what* of imagery in Levels 5 and 6 of the model. To highlight these findings, CS images were categorized into skill development and skill execution while CG images were divided into strategy development and strategy enhancement. MS images were associated with the process of achieving a goal (performance imagery) and winning a competition (outcome imagery). MG-A imagery involves images related to excitement, control, and relaxation while MG-M imagery entails images associated with mental toughness, focus, confidence, and positivism.

The advancement of the four W's framework has led researchers to gain a better understanding of imagery use in a variety of different populations such as youth athletes (Munroe-Chandler, Hall, Fishburne, & Strachan, 2007), professional dancers (Nordin &

Cumming, 2005), injured athletes (Driediger, Hall, & Callow, 2006), and exercisers (Giacobbi, Hausenblas, Fallon, & Hall, 2003).

Measurement of Imagery

In addition to the advancement of the five types of sport imagery, Hall et al. (1998) developed the Sport Imagery Questionnaire (SIQ) to assess the use of cognitive and motivational imagery among adult athletes. The SIQ consists of 30 items that measures the five types of imagery (CS, CG, MS, MG-M, MG-A). All items are scored on a 7-point Likert scale with 1 (*not at all*) to 7 (*very often*). Moreover, alpha coefficients (> .70, Nunnally & Bernstein, 1994) of the SIQ have suggested adequate internal consistency (Hall et al., 1998). Studies have supported the construct validity in which significant relationships were found between the SIQ subscales and various outcomes (e.g., performance, confidence, and anxiety) (Callow, Hardy, & Hall, 2001; Hall et al., 1998; Vadocz, Hall, & Moritz, 1997).

Similar to adult athletes, numerous studies have qualitatively or anecdotally reported the use of both cognitive and motivational imagery among young athletes (7-14 years) (e.g., Munroe-Chandler et al., 2007; Rodgers, Hall, & Buckolz, 1991). Thus, the Sport Imagery Questionnaire for Children (SIQ-C; Hall, Munroe-Chandler, Fishburne, O, & Hall, 2009) was developed to assess the frequency of imagery use among children in sport. The SIQ-C is composed of 21 items that measures the five types of imagery. Responses are scored on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very often*). The SIQ-C has reported adequate internal consistencies for CS (0.83), CG (0.73), and MG-M (0.79), while MS (0.68) and MG-A (0.69) have approached acceptable values (Munroe-Chandler, Hall, & Fishburne, 2008).

Research Examining Imagery Use

The following section will be divided into two different areas of imagery research: (1) imagery use in sport, (2) imagery use in exercise, and (3) imagery use in unstructured PA.

Imagery use in sport. Adult athlete's use of imagery has been well documented. However, research examining how younger athletes use imagery is scarce. In an effort to fill that void in the literature, Munroe-Chandler et al. (2007) implemented a similar qualitative approach used in a previous study (i.e., Munroe et al., 2000) by exploring *where*, *when*, and *why* young athletes (7-14 years of age) use imagery. In line with Piaget's (1971) belief, the authors noted that children progress through different cognitive stages as they age and thus, young athletes' imagery use may vary depending on their cognitive development. Hence, the researchers aimed to investigate the differences in the use of imagery types among the four age cohorts (7-8, 9-10, 11-12, and 13-14). Similar to the adult imagery research, the results showed all participants in the study reported using imagery for training and competition, as well as using imagery for all five cognitive and motivational functions.

Additionally, Munroe-Chandler et al. (2007) found several differences in the types of imagery young male and female athletes used. To highlight a few, female athletes reported using MG-A imagery to control arousal and anxiety and MG-M imagery to improve confidence, while the male cohort did not report using imagery for these purposes. The authors suggested that the type of sport (i.e., dance or gymnastics versus soccer or volleyball) and the socialization of male and female athletes in sport might explain this gender difference. With respect to the latter, some research has shown that boys, as early as first grade, often have greater perceived ability and confidence in sport

than girls (Gill, 2004; Greendorfer, Lewko, & Rosengren, 1996). Finally, none of the male athletes reported using MG-M imagery to remain mentally tough. Due to the connotation associated with toughness, the authors speculated that the social desirability might have influenced the male athletes' responses in regard to this construct. Munroe-Chandler et al. (2007) were the first researchers to broaden the current understanding of children's imagery use across a variety of age groups and gender.

Another line of research that has been extensively examined in adult athletes is the relationship between imagery use and confidence (Callow & Hardy, 2001; Moritz et al., 1996; Vadocz et al., 1997). Although limited in young athletes, some research has suggested that young athletes could and do benefit from imagery in the same ways as their older counterparts. For example, Cumming, Hall, Hardwood, and Gammage (2002), in their study of elite and sub-elite young swimmers, found imagery use was similar among both younger (M_{age}= 12 years) and older (M_{age} = 16.5 years) swimmers. However, younger swimmers used MG-M imagery significantly more than the other types of imagery. Later work by Harwood, Cumming, and Hall (2003) supported Cumming et al.'s finding in an independent sample of youth athletes such that MG-M imagery was used most often than the other function of imagery.

While some studies have examined imagery use and confidence in elite youth athletes, Munroe-Chandler et al. (2008) investigated the relationship between MG-M imagery and self-confidence and self-efficacy in different levels of sport among youth athletes. The study used a sample of 125 male and female soccer athletes from both the non-elite (recreational) and elite (competitive) levels. The findings indicated MG-M was associated with both self-confidence and self-efficacy for both non-elite and elite soccer players. Moreover, MG-M imagery explained between 40- 57% of the variance for both

confidence concepts (self-confidence and self-efficacy), while MG-A and MS imagery accounted for only a small amount of variance. Given the consistent positive research findings of imagery use and confidence, it has been suggested that MG-M imagery interventions should be conducted with younger athletes as it has been with elite adults in an effort to develop or enhance self-confidence and self-efficacy (Munroe-Chandler et al., 2008).

In order to investigate the influence of CG imagery on performance, Munroe-Chandler, Hall, Fishburne, and Shannon (2005) implemented a 7-week CG imagery intervention aimed at improving three different soccer strategies with a competitive Under-13 female soccer team. A significant increase in the use of CS and CG imagery was found from baseline to post-intervention. Due to the insufficient data collected, only one strategy was used to assess the effectiveness of the intervention. Results revealed no significant changes in regards to the one strategy, however, results from the expert raters revealed a small increase in the mean rating of performance for the executed strategy. Munroe-Chandler et al. (2005) suggested the effects of the intervention might have been greater if the intervention occurred over the entire season. Additionally, modified games would ensure the execution of the strategies as only some strategies were performed during 'actual' games.

Imagery use in exercise. Hall (1995) was the first to propose that imagery may serve as a powerful motivator for exercise participation, as exercisers might imagine enjoyable experiences associated with working out and achieving desired exercise goals such as improved technique and appearance. Hausenblas, Hall, Rodgers, and Munroe (1999) further explored this area of research using qualitative and quantitative methodologies. Their results indicated that 75% of the 144 adult aerobic exercisers

reported using exercise imagery for both cognitive and motivational purposes. Those findings gave rise to the development of the Exercise Imagery Questionnaire- Aerobic Version (EIQ-AV), which consisted of three subscales: energy, appearance, and technique. A confirmatory factor analysis was performed in which various fit indices were used to assess model fit (CFI = .97, NNFI = .96, NFI = .95, GFI = .93, SRMSR = .05). The results supported the three factor structure with internal consistency ranging from .71 to .85. In the same study, Hausenblas et al. investigated the concurrent validity by examining the relationship between imagery use and exercise frequency. The results indicated that low frequency exercisers (three hours or less per week) reported significantly less imagery compared to high frequency exercisers (eight hour or more per week) on all three subscales. This finding was later supported in Gammage, Hall, and Rodgers' (2000) sample of 577 exercisers. Although the EIQ-AV was the first instrument designed to assess exercisers' imagery use, it was exercise specific and therefore could not be applied to areas outside the aerobic setting.

A deeper investigation of the nature of imagery use by exercisers (i.e., when, what, where, and why of imagery use) was conducted by Giacobbi et al. (2003) using a ground theory approach. Specifically, eight higher order themes emerged from an inductive analysis of 16 female adult exercisers' responses: exercise technique, aerobic routines, exercise context, appearance images, competitive outcomes, fitness/health outcomes, emotions/feelings associated with exercise, and exercise self-efficacy. These themes support the foundation of Paivio's (1985) functions of imagery (cognitive and motivational). For example, technique-related images may represent the cognitive function while appearance-related images may represent the motivational function. The results from Giacobbi et al.'s study offer some preliminary indication that the previously

noted functions of imagery may have been too narrow in scope. That is, exercisers use imagery for functions other than that the functions of imagery found in earlier studies (energy, appearance, technique; Hausenblas et al., 1999).

Recently, investigators (Hall, Rodgers, Wilson, & Norman, 2010; Wilson, Rodgers, Blanchard, & Gessel, 2003) have extended this line of research by examining the underlying motivational foundations of the different types of exercise imagery (appearance, technique, and energy) using the theoretical framework of Self-Determination Theory (SDT; Deci & Ryan, 2002). Wilson et al. (2003) found that introjected and intrinsic regulations were the most prominent exercise regulations related to the different types of exercise imagery, while external regulation was not significantly related to any type of exercise imagery. Additionally, Hall et al. (2010) examined the motives varying in self-determined motivation and imagery use of regular exercisers (RE), non-exercisers who intend to exercise (NE-I), and non-exercisers who do not intend to exercise (NE-N). They found that RE and NE-I used appearance imagery the most and energy imagery the least. Surprisingly, NE-N reported using the same amount and pattern of imagery as the RE and NE-I. However, the authors argued that although NE-N participants use imagery, their imagery might involve more negative images (e.g., being tired, sweating, and exercise as being difficult). Overall, Hall et al.'s (2010) findings were consistent with SDT, as the least self-determined participants represented the NE-N group, the most self-determined participants represented the RE group, and the NE-I participants in between both groups.

Imagery use in unstructured PA. Imagery research with adults in PA contexts such as sport and exercise has been well established. However, there is little known about children's use of imagery in PA contexts other than sport (i.e., unstructured leisure-

time PA). Given the recognized value and potential influence of imagery in sport and exercise, it would seem plausible to explore the nature of imagery use by children during their unstructured leisure-time PA (active play). Similar to Hall's (1995) belief, imagery may serve as a strategy to enhance children's motivation to engage in physical activity behaviours.

Recently, children's use of imagery during active play was investigated using a qualitative approach (Tobin, Nadalin, Munroe-Chandler, & Hall, 2013). Several focus groups with children ages 7-14 years were used to examine how active play-related images satisfies the three basic psychological needs (competence, relatedness, and autonomy), forwarded by Deci and Ryan (2002). Using deductive and inductive techniques, the results indicated that all participants reported using active play images related to the basic psychological needs, with several lower level themes emerging within the higher level themes (competence, relatedness, and autonomy). Specifically, there were four lower level themes that emerged within autonomy (favorite activities, fun activities frequent activities, and affective states), seven lower level themes that emerged within competence (skill level, body, improvement, skill execution, strategy, winning, and affective states), and three lower level themes that emerged within relatedness (playmates, determinants, and affective states). As suggested by Tobin et al. (2013), the findings provide initial support that children employ imagery during active play and therefore may have important implications for enhanced engagement in physical activity.

Given the preliminarily findings of the aforementioned study, Cooke, Munroe-Chandler, Hall, Tobin, and Guerrero (2013) developed an age appropriate and context specific instrument in order to measure imagery use in active play among children (7-14 years). The Children's Active Play Imagery Questionnaire (CAPIQ) was advanced using

a three-phase approach. Psychometric properties of the instrument were assessed through exploratory and confirmatory analyses resulting in an 11-item questionnaire, which measures capability imagery, fun imagery, and social imagery. The CAPIQ has demonstrated adequate internal consistency for each of the three imagery subscales. Given the infancy of the instrument, Cooke et al. suggested that future studies should examine the convergent validity of the CAPIQ and the association of between active play imagery and other constructs among children.

Self-Determination Theory

The study of human motivation and personality has been extensively examined through the popular framework of SDT (Deci & Ryan, 1985a, 2000). SDT is considered an organismic-dialectic framework of motivation whereby the assumption that individuals have innate and natural tendencies to actively grow, seek and master challenges, and develop and explore their sense of identity within their environments. However, the theory also suggests that these natural tendencies do not occur automatically, but rather require certain social-contextual factors that support and facilitate these tendencies (Deci & Ryan, 2002). Thus, social environments that promote these tendencies often lead to psychological growth and development, whereas contexts that hinder these tendencies often diminish innate interests and passions (Deci & Ryan, 2002). Taken together, the relationship between individuals and the social environments is the foundation for SDT's presumptions about behaviour, development, and well-being. Additionally, SDT is a meta-theory and therefore comprises several mini-theories, which include cognitive evaluation theory, causality orientation theory, goal contents theory, basic psychological needs theory, and organismic integration theory. However, the current proposal is focused on the latter two theories.

Basic Psychological Needs Theory

SDT proposes that people have three innate psychological needs: competence, relatedness, and autonomy (Deci & Ryan, 2002). The need for competence refers to an individual's desire to effectively interact and express their capabilities within their environment. Individuals who satisfy this need seek activities that challenge, maintain, or enhance their capabilities and skills (Deci & Ryan, 2002). The need for relatedness refers to an individual feeling integral and connected to others and one's environment. Individuals who satisfy this need seek to integrate in social networks and feel close and accepted with important others (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). The need for autonomy refers to an individual being the initiator or source, rather than the pawn, of one's own behaviour. Individuals who satisfy this need seek activities that are congruent with their personal interests and values. Considered collectively, individuals who experience certain social environments (e.g., supportive rather than controlling) are more likely to satisfy the three basic needs (Deci & Ryan, 2002). Contrastingly, individuals who lack need satisfaction are believed to experience "the darker side of human behaviour", in which ill-being, aggression, and certain types of psychopathology may emerge (Ryan & Deci, 2000a).

Although the concept of the basic psychological needs is the central focus within all the sub-theories of SDT, Deci and Ryan (2002) developed the Basic Psychological Needs Theory (BPNT) in order to justify the importance and relation of need satisfaction to mental health and well-being. According to BPNT, these needs function across all individuals regardless of gender, age, culture, and time (Chirkov, Ryan, Kim, & Kaplan, 2003) and are considered inherent aspects of human nature. Furthermore, the basic needs constitute the nutriments that are necessary for optimal development, integrity, well-

being, and psychological health of all people (Deci & Ryan, 2000; Deci & Vansteenkiste, 2004). Deci and Ryan (2002) further suggest that individuals will experience well-being when these needs are satisfied, but can lead to negative consequences (e.g.. ill-being) when not satisfied.

Organismic Integration Theory

Originally, motivation was thought of as a unitary concept (deCharms, 1968; Harter, 1981). Rather than focusing on the types of motivation that individuals have for particular behaviours or activities, theorists believed that the amount of motivation an individual had was more important. However, according to several researchers (Koestner, Ryan, Bernieri, & Holt, 1984; Ryan, 1982; Ryan & Connell, 1989), individuals can experience different types of extrinsic motivation while, at the same time, experience feelings of autonomy. According to organismic integration theory (OIT), people are inherently inclined to "internalize, elaborate, refine, and integrate inner structures or representations of themselves in their world" (Deci & Ryan, 2008, p. 16). Furthermore, Deci and Ryan (2002) hypothesized that individuals will shift their locus of causality towards an uninteresting activity if externally prompted by significant others or resources. The degree to which the extrinsically motivated behaviour is experienced as autonomous will depend on the extent to which the individual feels a sense of regulation over their behaviour (Deci & Ryan, 2008). However, in order for the internalization process to operate successfully, the individual must experience satisfaction of the basic psychological needs.

Unique to OIT is the notion that the process of internalization operates on a self-determination continuum (Figure 3) (Deci & Ryan, 1985a, 2000). OIT offers that the more an individual internalizes a particular behaviour, the more autonomous and self-

determined the behaviour becomes as it is believed to be integrated in one's sense of self. Extrinsically motivated behaviours, therefore, can vary in the degree of self-regulation and autonomy. Furthermore, Deci and Ryan (2002) proposed the self-determination continuum consists of three global types of motivation: amotivation, extrinsic motivation, and intrinsic motivation.

Amotivation, anchored at one end of the continuum, is described as neither a form of extrinsic nor intrinsic motivation. Instead, amotivation refers to a lack of intention and absence of motivation (Deci & Ryan, 2002). Individuals who are amotivated do not perceive the activity as valuable, feel incapable of successfully performing the activity, and believe the outcomes of the activity are insignificant.

Intrinsic motivation is anchored at the opposite end of the continuum from amotivation and is recognized as the most self-determined type of motivation (Deci & Ryan, 2002). That is, individuals who are intrinsically motivated are fully self-regulated and perform activities for the pure sake of interest, satisfaction, and enjoyment regardless of any external rewards or demands. According to Deci and Ryan (2002), intrinsic motivation is an ideal state of motivation that exhibits the satisfaction of basic needs and the promotion of psychological growth and well-being.

Extrinsic motivation comprises four different types of regulatory styles (i.e., external, introjected, identified, and integrated) and is positioned between amotivation and intrinsic motivation on the self-determined continuum. The least autonomous form of extrinsic motivation is external regulation, in which the individual engages in a particular behaviour in order to receive tangible rewards or to avoid punishment (Ryan & Deci, 2000b). External regulation is evident when an individual does not internalize the behaviour and behaves solely to satisfy external demands. Rooted in operant theory

(Skinner, 1953), this type of extrinsic motivation has been found to undermine intrinsic motivation (Deci & Ryan, 2002). Individuals who display external regulation have an external perceived locus of causality and therefore will continue to perform the behaviour as long as the reinforcement exists.

Introjected regulation involves behaviours that are partially internalized and therefore not truly accepted as one's own (Deci & Ryan, 2002). Introjected behaviours are performed to avoid feelings of guilt and anxiety or to attain ego enhancement, pride, and feelings of self-worth. Similar to external regulation, the individual tends to feel quite controlled by external forces. However, in the case of introjected regulation, the individual replaces the role of the pre-existing external source with themselves as they reward and punish their own behaviour.

Identified regulation is the next most self-determined or autonomous form of extrinsic motivation. This is described as having an internal perceived locus of causality whereby the individual values the behavioural goal and accepts the action as personally important (Deci & Ryan, 2002). Individuals who identify and endorse the action as their own experience a greater sense of autonomy and thus, feel less pressured and controlled by the behaviour. Deci and Ryan (2002) note the importance of this particular type of extrinsic motivation as it represents the process of transforming external regulation behaviours into autonomous or self-determined behaviours.

Integrated regulation is the most self-determined form of extrinsic motivation. It occurs when identified regulations are fully incorporated with the self (Deci & Ryan, 2002). That is, the action has been completely internalized and transformed, resulting in the congruence with one's values, goals, and needs. Studies have found that the more integrated the extrinsic motivation, compared to the less internalized forms of extrinsic

motivation, have resulted in more positive experiences (Deci & Ryan, 2002). Contrary to intrinsic motivation, integrated regulations are considered a form of extrinsic motivation because they are not performed for their innate pleasure and interest of the action, but rather to attain personally important outcomes.

Measurement of Motivation

Within the SDT literature, many studies that have examined the intrinsic- extrinsic motivation dichotomy have focused on situational motivation, which is characterized as the current motivation an individual experiences when engaging in an activity (Guay, Vallerand, & Blanchard, 2000). The notion that situational motivation is useful in understanding an individual's current self-regulatory processes gave rise to the development of the Situational Motivation Scale (SIMS; Guay et al., 2000). The SIMS is a 16-item measure that assesses four dimensions of motivation: intrinsic motivation (4 items), identified regulation (4 items), external regulation (4 items), and amotivation (4 items). Intrinsic motivation, the most self-determined form, refers to behaviours that are engaged in for the sake of interest, pleasure, and satisfaction. Identified regulation refers to behaviours that are valued and judged as personally important, yet are performed to obtain extrinsic benefits. External regulation refers to behaviours or actions that are solely performed on the basis of receiving an award or avoiding negative consequences. Amotivation refers to behaviours that are neither intrinsically nor extrinsically motivated but rather behaviours that do not demonstrate contingencies between actions and outcomes. All items are scored on a 7-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*strongly agree*) and are preceded by the stem, "Why are you currently engaged in this activity." The SIMS's four dimensions have demonstrated adequate Cronbach alpha values (Nunnally & Bernstein, 1994) ranging from .83 (identified and external

motivation) to .90 (amotivation), as illustrated with a sample of school aged children (12-14 years old; Standage & Treasure, 2002). Further, results from a confirmatory factor analysis supported the questionnaire's construct validity (GFI = .92, AGFI = .89, CFI = .96, TLI = .95, RMSEA = .068).

Gray, Prapavessis, and McGowan (2009) developed the Basic Need Satisfaction for Children questionnaire (BNS-C), which was specifically designed to assess the three basic psychological needs (autonomy, competence, and relatedness) within a physical activity context. The BNS-C was derived from the Psychological Need Satisfaction in Exercise Scale (Wilson, Rogers, Rodgers, & Wild, 2006). Autonomy (6 items) refers to an individual's desire to initiate and regulate personal behaviours. Competence (5 items) refers to an individual's desire to effectively interact with the social environment and accrue wanted outcomes. Relatedness (5 items) refers to the desire to experience a sense of belonging and connection with others. All items are scored on a 7-point Likert scale, anchored at 1 (*do not agree at all*) to 7 (*strongly agree*). In a sample of 253 children (ages 7-14), Tobin et al. (2012) indicated the adequate internal consistencies (.80 - .88) for all three subscales of the BNQ-C. Further, the results of Tobin et al.'s (2012) confirmatory factor analysis provided evidence of the BNQ's factorial validity: X^2 (3) = .531, p = .912, CFI = 1.00, NFI = 1.00, TLI = 1.04, RMSEA = .00, SRMR = .01.

Research Examining SDT

SDT and children in PA. Positive experiences in school Physical Education (PE) can play an important role in increasing children's PA levels during their leisure-time (Hagger, Chatzisarantis, Barkouskis, Wang, Baranowski, 2005). Thus, researchers examining students' motivational processes in PE have increasingly used SDT to guide their research questions. For example, Standage, Duda, and Ntoumanis (2003) examined

the influence of perceptions of an origin climate (autonomous versus controlling) on PE students' (12-14 years old) perceptions of autonomy, competence, and relatedness using constructs of SDT and achievement goal theory. When perceiving an autonomy-supportive environment, students reported feeling more autonomous, competent, and related compared to an environment with controlling characteristics. Further, competence and relatedness were the strongest predictors of intrinsic motivation, while autonomy revealed a significant, yet weak, relationship to intrinsic motivation. Additionally, the study examined the impact of students' motivation toward PE on their intention to partake in leisure-time physical activity. Intentions to be physically active were positively predicted by students who were self-determined in PE. This particular research finding supports those of Ntoumanis (2001) and Hagger et al., which found a significant relationship between autonomy supportive PE contexts and intentions to be physically active after school.

Additionally, Lonsdale, Sabiston, Raedeke, Ha, and Sum (2009) examined Chinese students' (M_{age}= 15.78 years) motivation for PE and their PA behaviours during a structured PE lesson and a free-choice period. Using the SIMS (Guay et al., 2000) to measure motivation and pedometers as an objective measure of PA, the results indicated a greater difference in PA levels between the high and low self-determined students in both the free-choice condition and structured condition. However, regardless of the self-determined motivation level, higher step count among adolescents was reported in the free choice condition compared to the structured condition. Lonsdale et al. suggested the free choice environment coupled with the lack of teacher supervision and input may have increased intrinsic motivation by allowing children to self-select activities (autonomy) in

which they felt competent (competence). The authors note that importance of developing a need-supportive environment in PE as it may foster self-determined motivation.

SDT-Based PA Interventions

Although research has consistently demonstrated the benefits of an autonomy supportive environment, many PE teachers tend to employ controlling motivational strategies (e.g., rewards; Taylor, Ntoumanis, & Smith, 2009). Thus, using SDT-based interventions, researchers have examined the effects of teachers' interpersonal style in PE on students' need satisfaction and motivation. For example, Tessier, Sarrazin, and Ntoumanis, (2010), investigated the effects of an autonomy-supportive training program on need satisfaction and self-determined motivation. Teachers in the experimental group attended an information session regarding the benefits of an autonomy-supportive teaching style and participated in an individualized-guidance program aimed to improve their ability of motivate students. Teachers' behaviours were rated using an observation tool including 15 categories (i.e., negative communication, criticism) of teachers' verbal interactions with students. In general, the results indicated an increase in need supportive behaviours among teachers after receiving the intervention. Students' perceived need satisfaction for relatedness increased from pre- to post-intervention, but no changes were found in autonomy and competence. Additionally, results indicated that improvements in teachers' interpersonal style were associated with reductions in students' non/low self-determined motivation.

Rather than manipulating the interpersonal style of the PE teachers, Vansteekiste, Simons, Soenens, and Lens (2004) promoted exercise participation among children by reframing PE activities as intrinsic goals (i.e., physical health) rather than extrinsic goals (i.e., appearance). Students were taught exercises of an Asian sport (Taiboo) in four

different goal conditions contexts: future intrinsic, future extrinsic, future content-free, and non-future goal control group. The social context was manipulated by instructing the participants to engage in the exercise for different reasons (e.g., autonomous-supportive conditions used phrases such as "we ask you to" whereas controlling conditions used phrases such as "you are obliged"). Parallel to beliefs of SDT, the results demonstrated that an autonomy-supportive environment enhanced students' performance and self-determined motivation. Despite Vansteenkiste et al.'s findings, it is important it note that the study was conducted during PE classes and therefore did not provide an accurate investigation of generality of behavioural change and thus, cannot be universal to other contexts such as leisure time physical activity (Deci & Ryan, 1985b).

Studies, both correlation and experimental, have examined SDT through children's structured leisure-time PA (i.e., PE class; Standage et al., 2003; Vansteekiste et al., 2004). Despite the encouraging findings within a PE context, most of a child's potential for PA is outside of school. Thus, literature exploring BPNT and children's unstructured leisure-time PA (i.e., active play) is warranted. Active play has been recognized as a strong contributor to youth physical activity engagement (Burdette, Whitaker, & Daniels, 2004) and a viable means for children to accumulate daily PA.

Active Play

According to Active Healthy Kids Canada (AHKC; 2012), only 7% of children and youth are meeting Canada's guidelines of 60 minutes of PA per day, thereby receiving an overall grade of "F" in physical activity on the report card for the sixth consecutive year. Additionally, the guidelines recommend that children should accumulate half of their daily physical activity (DPA) through active play (unstructured leisure-time PA; AHKC, 2010). In general, active play shares all the essential

characteristics of play (i.e., fun, freely chosen, and personally directed), but differs in the amount of energy expenditure (Bergen, 2009). Play involves some degree of physical spontaneity (Bergen, 2009), while active play involves energy costs that occur above resting levels but below 'exercise' levels (Brockman, Fox, & Jago, 2011). An operational definition forwarded by Veitch, Salmon, and Ball (2008) defines active play as, "unstructured physical activity that takes place outdoors in a child's free time" (p. 870). Outdoor play may be considered more favourable than indoor play given that children may be provided with a greater opportunity to engage in unsupervised and unstructured PA (Ginsberg, 2007). Having said that, however, the definition might be somewhat limiting by suggesting that active play can only take place outdoors, as it is possible for children to engage in active play anywhere, including indoors.

Benefits of Play

Play has been recognized as the business of childhood as well as essential to the learning and development of a child (Piaget, 2007). Theorists and researchers have acknowledged the importance of children's play as it has shown to foster and improve creativity, motor function, and conflict resolution (Brockman et al., 2011; Gray, 2011). In fact, play has a significant effect on children's mental health as research (Gray, 2011) has found it stimulates children to (a) develop personal interests and competencies; (b) make decisions, solve problems, practice self-control, and follow rules; (c) learn how to manage their emotions; (d) create friendships and behaviour in a corporative manner; and (e) experience joy.

Children engage in play for intrinsic reasons rather than to receive external rewards separate from the activity itself (Witherspoon & Manning, 2012). In play, children value the means more so than the ends. Intrinsic goals such as making friends,

learning about their environment, and developing competencies at an activity all occur during play (Gray, 2009). Contrastingly, when a child is in school, they often strive for good grades and acknowledgement (extrinsic goals) that, in fact, are dependent upon others' judgement. In play, however, children can engage in an activity they desire regardless of external rewards.

Decline in Play

Unfortunately, research has demonstrated a consistent and significant decline in children's outdoor play dating back to 1955 (Gray, 2011). The degree of the decline was first documented by researchers at the University of Michigan who assessed, over a 16-year period (1981-1997), how American children spent their free time (Hofferth & Sandberg, 2001). Parents were instructed to keep records of their children's activities on random days selected by the researchers. The results demonstrated that children played less and had less opportunity for self-selected activities in 1997 than in 1981. More specifically, the researchers found that children (6 to 8 years) decreased their time spent playing (25%) and time spent communicating with others in their home (55%). On the other hand, children increased their time spent in school (18%), at home working on schoolwork (145%), and shopping with their parents (168%). The decline in children's free play was further examined by Clements (2004) who compared American mothers' childhood free play experiences to their children's current free play experiences. The findings indicated that the mothers reported playing outdoors significantly more often and for greater time lengths than their children.

This continual decline of children's play, especially outdoor play, is believed to be a consequence of over-protective and controlling parents (Gray, 2011). During the 1970s and 1980s, parents experienced a series of panics and fears regarding childhood (e.g.,

stranger abductions, sexual abuse, and youth violence) as the idea of a 'prepared' childhood was replaced with idea of a 'protected' childhood (Mintz, 2011). Not surprisingly, many of these parental fears about childhood still persist. A study conducted by IKEA (2010) found that the majority of parents believed they should be over-protective of their children due to concerns and fears of outdoor play. Similarly, Clements (2004) indicated that 82% of mothers reported restricting their children from playing outdoors due to crime and safety concerns. More encouragingly, however, is that the majority of mothers agreed that active, outdoor play positively impacts children's physical and motor, social, and creative skills. Additionally, children's opportunities to engage in unstructured play are even being threatened within the educational system (i.e., schools), as adults believe this free time is better spent in academic study (AHKC, 2012).

Measurement of Physical Activity

Subjective measures. Self-report measures of PA in children and adolescents are most frequently employed because they are cost-effective and can be easily distributed to large populations (Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997). The Physical Activity Questionnaire for Older Children (PAQ-C; Crocker et al. 1997) is one self-administered instrument used to assess PA levels over a 7-day period. The PAQ-C consists of 10 items and was designed to be distributed throughout the school year for students in grades 4 to 8. The first item is an activity checklist of 22 common physical activities scored on a 5-point frequency response scale (*none* to *more than 7 times in a week*). The next six items assess PA in PE class, recess, lunch, right after school, evenings and on the weekend. A single item asks which statement describes you best for the past week, with five statements describing low to high activity. The final question asks about the frequency of moderate to vigorous activity for each of the previous 7 days. All items

are scored on a 5-point response scale ranging from *low* (1) to *high activity* (5). The total PAQ-C activity score is calculated by adding the response scores from all items (9) and dividing by the number of items. The activity score can range from 1 (*low activity*) to 5 (*high activity*). The PAQ-C has been shown to have adequate internal consistency (α=.79) and one week test re-test reliability (r = 0.75 for boys and 0.82 for girls) with a sample of children ages 8-14 years old (Crocker et al., 1997).

Objective measures. An accurate assessment of PA levels among children is crucial when evaluating the effectiveness of interventions (Barfield, Rowe, & Michael, 2004). Despite the benefits of self-report measures of PA patterns, research has demonstrated that children are often incapable of recalling specific activities and often overestimate the intensity and duration of the activities when self-reporting (Adamo, Prince, Tricco, Connor-Gorber, & Tremblay, 2008; Deforche, Bourdeaudhuij, D'hondt, & Cardon, 2009). Thus, the combination of subjective and objective measures (i.e., pedometer), have been used to accurately assess PA levels among children. Specifically, pedometers manufactured by the Yamax Corporation have been found to be the most accurate at detecting steps taken, recording within 1% of all steps taken under controlled conditions (Tudor-Locke, Williams, Reis, & Pluto, 2002). In a recent study, researchers examined the interinstrument consistency of the Yamax Digi-Walker (Model SW-200) in children (grades 2 to 5) over a one week period and found a high reliability of .98 (Barfield et al., 2012). A recent upgrade from the Yamax SW-200 is the SW-701. Beyond step counts, the SW-701 model has the capabilities of a 7-day and 2-week memory for steps and can record distance, calories, and activity time and has also proven

to be a valid measure of children's PA behaviours (Kilanowski, Consalvi, & Epstein, 1999; Lonsdale et al., 2009).

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FIGURES

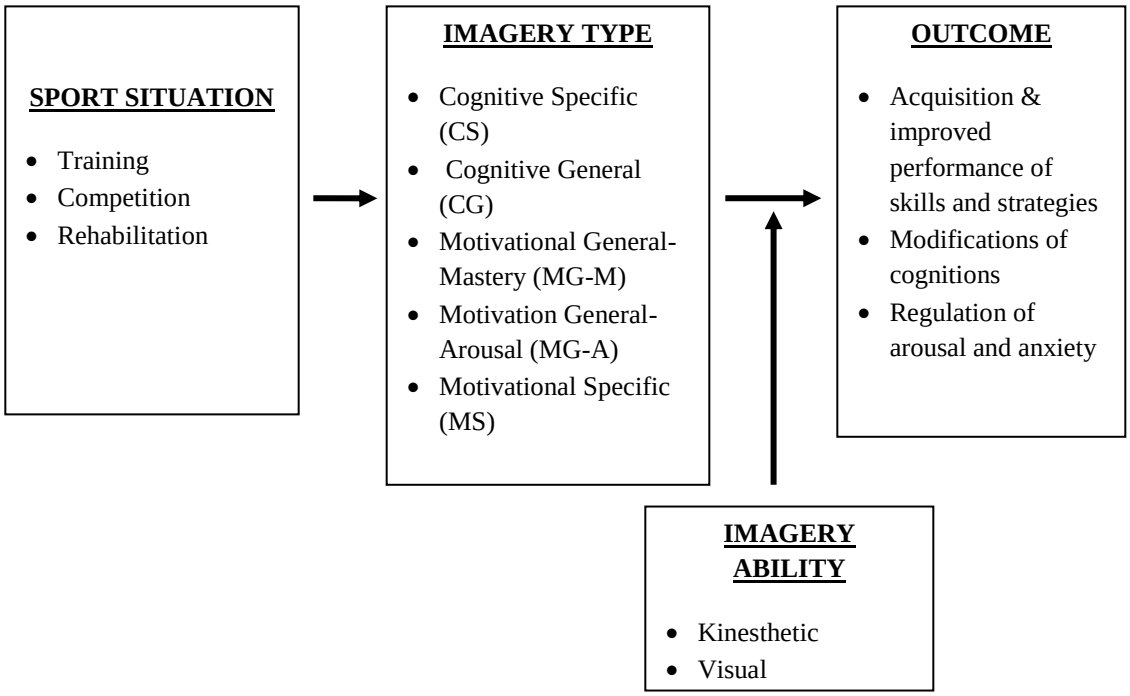

Figure 2. Applied model of mental imagery use in sport. Adapted from "Imagery Use in Sport: A Literature Review and Applied Model," by K. A. Martin, S. E. Moritz, and C. R. Hall, *The Sport Psychologist, 13,* p. 248. Copyright 1999 Human Kinetics Publishers, Inc.

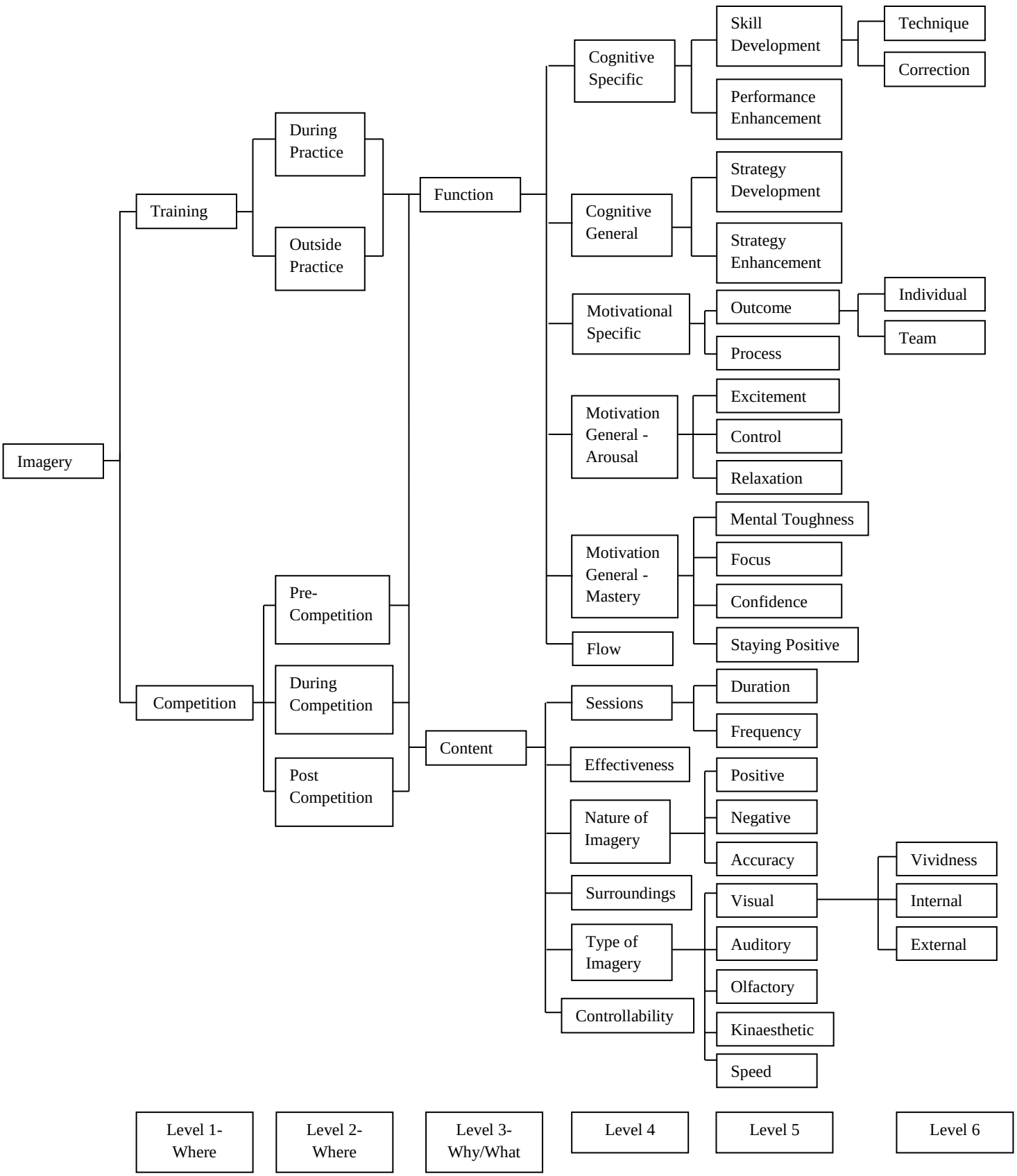
Imagery
Training
During Practice
Outside Practice
Competition
Pre-Competition
During Competition
Post Competition
Function
Content
Cognitive Specific
Skill Development
Technique
Correction
Performance Enhancement
Cognitive General
Strategy Development
Strategy Enhancement
Motivational Specific
Outcome
Individual
Team
Process
Motivation General - Arousal
Excitement
Control
Relaxation
Motivation General - Mastery
Mental Toughness
Focus
Confidence
Staying Positive
Flow
Sessions
Duration
Frequency
Effectiveness
Nature of Imagery
Positive
Negative
Accuracy
Surroundings
Type of Imagery
Visual
Vividness
Internal
External
Auditory
Olfactory
Kinaesthetic
Speed
Controllability
Level 1- Where
Level 2- Where
Level 3- Why/What
Level 4
Level 5
Level 6

Figure 3. A conceptual framework for athletes' imagery use. Adapted from "The Four Ws of Imagery Use: Where, Where, Why, and What," by K. J. Munroe, P. R. Giacobbi, C. R. Hall, and R. Weinberg, 2000, *The Sport Psychologist, 14,* p. 126. Copyright 2000 Human Kinetics Publishers, Inc.

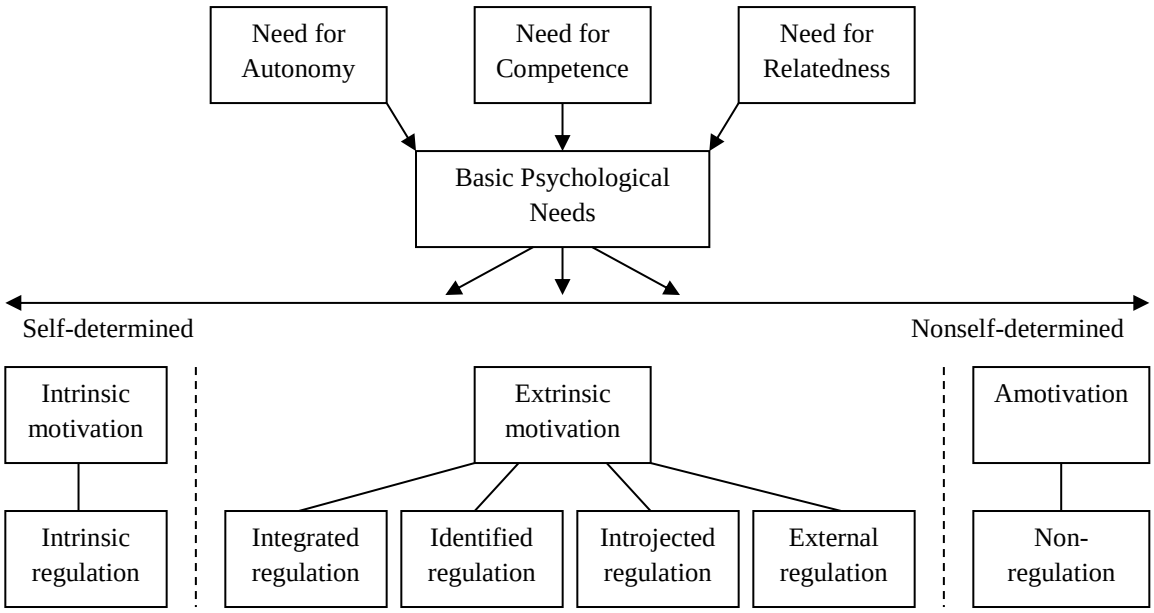

Figure 4. Schematic representation of self-determination theory. Adapted from *Intrinsic Motivation and Self-Determination in Exercise and Sport* (p. 8), by M. S. Hagger & N. L. D. Chatzisarantis, Champaign, IL: Human Kinetics. Copyright 2007 by Martin S. Hagger and Nikos L.D. Chatzisarantis.

APPENDICES

APPENDIX A

Demographics

Name: _____

Age: _____

Grade: _____

APPENDIX B

Physical Activity Questionnaire for Older Children

(Crocker, Bailey, Faulkner, Kowalski, & McGrath, 1997)

1. Physical activity in your spare time: Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? (Check mark only one box per row)

	No	1-2	3-4	5-6	7 times or more
Skipping					
Rowing/canoeing					
In-line skating					
Tag					
Walking for exercise					
Bicycling					
Jogging or running					
Aerobics					
Swimming					
Baseball, softball					
Dance					
Football					
Badminton					

	No	1-2	3-4	5-6	7 times or more
Skateboarding					
Soccer					
Street hockey					
Volleyball					
Floor hockey					
Basketball					
Ice skating					
Cross-country skiing					
Ice hockey/ringette					
Other: _____					

2. In the last 7 days, what did you do most of the time at *recess*? (Circle one only.)
   A. Sat down (talking, reading, doing schoolwork)
   B. Stood around or walked around
   C. Ran or played a little bit
   D. Ran around and played quite a bit
   E. Ran and played hard most of the time

3. In the last 7 days, what did you normally do at *lunch* (besides eating lunch)? (Circle one only.)
   A. Sat around (talking, reading, doing schoolwork)
   B. Stood around or walked around
   C. Ran or played a little bit
   D. Ran or played a quite bit
   E. Ran and played hard most of the time

4. In the last 7 days, on how many days *right after school*, did you do active play in which you were very active? (Circle one only.)

A. None
B. 1 time last week
C. 2 or 3 times last week
D. 4 times last week
E. 5 times last week

5. In the last 7 days, on how many *evenings* did you do active play in which you were very active? (Circle one only.)

A. None
B. 1 time last week
C. 2 or 3 times last week
D. 4 or 5 times last week
E. 6 or 7 times last week

6. *On the last weekend*, how many times did you do active play in which you were very active? (Circle one only).

A. None
B. 1 time
C. 2-3 times
D. 4-5 times
E. 6 or more times

7. Which one of the following describes you best for the last 7 days? Read all five statements before deciding on one answer that describes you. (Circle one only.)

1. All or most of my free time was spent doing things that involve little physical effort
2. I sometimes (1-2 times last week) did physical things in my free time (e.g., played sports, went running, swimming bike riding, did aerobics)
3. I often (3-4 times last week) did physical things in my free time
4. I quite often (5-6 times last week) did physical things in my free time
5. I very often (7 or more times last week) did physical things in my free time

8. Mark how often you did active play for each day last week.

	None	Little bit	Medium	Often	Very often
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

9. Were you sick last week, or did anything prevent you from doing active play? (Circle one.)

A. Yes
B. No

If yes, what prevented you?

_____

APPENDIX C

Basic Needs Satisfaction for Children

(Gray, Prapavessis, & McGowan, 2009)

Statement	Do not Agree At All		Slightly Agree		Agree		Strongly Agree
1. I am good at active play.	1	2	3	4	5	6	7
2. I choose what I am going to do for active play.	1	2	3	4	5	6	7
3. During active play I get along with the people I play with.	1	2	3	4	5	6	7
4. I do well in active play when compared to others.	1	2	3	4	5	6	7
5. During active play, I do what I want to do.	1	2	3	4	5	6	7
6. The people who I do active play with are my friends.	1	2	3	4	5	6	7
7. I've got a lot of skill when doing active play.	1	2	3	4	5	6	7
8. When I am doing active play, I can really do what I want.	1	2	3	4	5	6	7
9. When doing active play, it is with my buddies.	1	2	3	4	5	6	7
10. I like the kids who do active play with me.	1	2	3	4	5	6	7
11. I am able to complete active play that is hard.	1	2	3	4	5	6	7

Statement	Do not Agree At All		Slightly Agree		Agree		Strongly Agree
12. I am skilled at active play.	1	2	3	4	5	6	7
13. I decide what I want to do for active play.	1	2	3	4	5	6	7
14. I feel good about my ability to do active play.	1	2	3	4	5	6	7
15. I am able to do active play in any way I want.	1	2	3	4	5	6	7
16. The kids I do active play with are my pals.	1	2	3	4	5	6	7

APPENDIX D

Situational Motivation Scale

(Guay, Vallerand, & Blanchard, 2000)

Statement	Do not Agree At All		Slightly Agree		Agree		Strongly Agree
Stem: Why are you doing active play?							
1. Because I think that active play is interesting.	1	2	3	4	5	6	7
2. Because I am doing it for my own good.	1	2	3	4	5	6	7
3. Because I am supposed to do it.	1	2	3	4	5	6	7
4. Because I think that active play is pleasant.	1	2	3	4	5	6	7
5. Because I think that active play is good for me.	1	2	3	4	5	6	7
6. Because it is something that I have to do.	1	2	3	4	5	6	7
7. Because active play is fun.	1	2	3	4	5	6	7
8. By personal decision.	1	2	3	4	5	6	7
9. Because I don’t have a choice.	1	2	3	4	5	6	7
10. Because I feel good when doing active play.	1	2	3	4	5	6	7
11. Because I believe that active play is important for me.	1	2	3	4	5	6	7
12. Because I feel that I have to do it.	1	2	3	4	5	6	7

APPENDIX E

Intention to Engage in Active Play

(Adapted from Ajzen & Madden, 1986)

	Disagree in a big way			Agree in a big way
1. I plan on doing active play every day for the next week.	1	2	3	4

APPENDIX F

Children's Active Play Imagery Questionnaire

(Cooke, Munroe-Chandler, Hall, Tobin, & Guerrero, 2013)

Statement	Not at All	A Little Bit	Some-times	Often	Very Often
1) When thinking about active play, I imagine the moves that are needed.	1	2	3	4	5
2) When thinking about active play, I imagine joining in with others.	1	2	3	4	5
3) When thinking about active play, I picture myself having fun.	1	2	3	4	5
4) When thinking about active play, I imagine the positions of my body.	1	2	3	4	5
5) When thinking about active play, I see myself with my friends.	1	2	3	4	5
6) When thinking about active play, I imagine the fun I have.	1	2	3	4	5
7) When thinking about active play, I picture myself doing it in a group.	1	2	3	4	5
8) When thinking about active play, I imagine enjoying myself.	1	2	3	4	5
9) When thinking about active play, I imagine the movements that my body makes.	1	2	3	4	5
10) When thinking about active play, I imagine my friends with me.	1	2	3	4	5
11) When thinking about active play, I imagine how my body moves.	1	2	3	4	5

APPENDIX G

Letter of Permission for Conducting Research

PURPOSE OF THE STUDY

The purpose of this research project is to examine the effectiveness of an imagery intervention to help increase leisure time physical activity in children 9-12 years old. The study will attempt to understand if using imagery will influence children's motivation to participate in leisure-time physical activity (free time active play).

POTENTIAL RISKS AND DISCOMFORTS

There are no perceived risks associated with participation in this study.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

This study is part of a larger study examining imagery use in leisure time physical activity. The information gained from this study may be used in further research studies exploring imagery use and psychological needs among children. The researchers may gain valuable insight regarding imagery use during leisure time physical activity among children. A written summary of the study's findings will be posted at the University of Windsor's Ethics Board website by December 2013 (www.uwindsor.ca/reb). The study's findings will also be posted in the school's newsletter.

RIGHTS OF RESEARCH SUBJECTS

The parent and/or child may withdraw their consent at any time and discontinue participation without penalty. If you, the child and/or parent(s) or guardian(s) have any questions regarding the rights as a research subject, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF VENUE CONTACT/LOCATION REPRESENTATIVE

I understand the information provided and purpose for the study, **to examine imagery use in children's leisure time physical activity,** as described herein. I permit the use of my facility for the recruitment of participants and agree to support my consent to potential subjects. I understand if I have the right to discontinue involvement in the study, and the researcher will no longer utilize my venue. I have been given a copy of this form.

_____	_____
Name of Venue Contact	Telephone Number
_____	_____
Signature of Venue Contact	Date

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____	_____
Signature of Investigator	Date

APPENDIX H

Recruitment Script to Parents/Guardians

Hello, my name is Krista Chandler and I am Professor at the University of Windsor. Working with collaborators at the University of Western Ontario, we are conducting a study on children's imagery use (visualization) during their active play. Clearance to conduct this research study has been received from the University of Windsor Research Ethics Board and the School Board/school principal of your child's school.

I want to request your permission for your child to participate in our study. The goal of the study is to determine if imagery can be used as a motivator to help engage children in physical activity during their leisure-time. Once a week for 4 weeks your child will meet with my co-investigator during their lunch period at school to fill out a questionnaire which will take approximately 5-30 minutes to complete. For the 4 weeks, your child will also be asked to (1) wear a pedometer (placed on their waistband above the right hip) which will measure your child's physical activity patterns (the device is non-obtrusive and very small), and (2) listen to audiotapes on focused on imagery in physical activity or a children's short story (5 minutes in duration). Thank you for your time.

Sincerely,
Dr. Krista Chandler

APPENDIX I

Parent/Guardian Letter of Information

Title of Study: **Children's Imagery Use in Leisure Time Physical Activity**
Your child is being asked to participate in a research study conducted by Dr. Krista Munroe-Chandler from the Faculty of Human Kinetics at the University of Windsor. Working with Dr. Craig Hall from the School of Kinesiology at the University of Western Ontario, imagery use in leisure time physical activity (active play) will be investigated. If you have any questions or concerns about the research, please feel free to contact Dr. Krista Munroe-Chandler (519) 253-3000 X 2446, chandler@uwindsor.ca or Dr. Craig Hall (519) 661-2111 ext. 8388, chall@uwo.ca.

PURPOSE OF THE STUDY

The purpose of the present pilot study is to see if a 4 week imagery intervention can help increase physical activity in female children (9 or 10 years old). The study will attempt to understand if using imagery will influence children's motivation to participate in leisure-time physical activity.

PROCEDURES

If you volunteer your child to participate in this study, we would ask he/she do the following:

- **Week 1:** Your child will be asked to meet the researcher during their lunch time period to fill out several questionnaires (approx. 25-30 minutes). The first questionnaire will assess how frequently children employ imagery during their leisure time physical activity (11 items). The second questionnaire will assess how one feels when they engage in physical activity (16 items). The third questionnaire, comprised of one item, will assess the child's intention to engage in physical activity over a specific amount of time. The fourth questionnaire will assess reasons for participation of leisure time physical activity (12 items). Your child will be given a pedometer (approximately the size of a child's palm), which will measure physical activity patterns and instructed on how to use the device (i.e., placement on the hip). Your child will be asked to wear the pedometer for the duration of the study (i.e., during all waking hours except when in water, during organized sports or physical education classes, or sleeping). The pedometer is small and non-obtrusive. Your child will also be provided with a pedometer log sheet in which they will be instructed to record the number of steps taken at the end of each day. Children will be asked to return their pedometer log sheet their step count number of daily steps and return the sheet to the investigators the

following week. Your child will be asked to meet with the researcher once a week for the next 3 weeks.

- **Week 2:** Your child will meet with the researcher at school during lunch hour (approx. 20 minutes) to hand in their pedometer log sheet from Week 1. During this meeting your child will be provided with a 1-800 number by the researcher. The researcher will demonstrate how to use the phone system, as your child will be expected to repeat this procedure three times over the next week from home. Your child will be prompted to listen to an audiotape on imagery in physical activity or a children's short story (age appropriate and neutral in nature). The audiotape will last no longer than 5 minutes. After your child has listened to the audiotape they will be asked to state their first and last name as well as their pedometer number (provided by the researcher). Your child will be asked to listen to this audiotape two times before the next meeting with the researcher following the same procedure (i.e., dial 1-800 number, follow prompts, listen to audiotape, state their first and last name).They will be reminded to call in to the 1-800 number three times over the next seven days (before the next meeting with the researcher).
- **Week 3:** Your child will meet with the researcher at school during their lunch hour (approx. 10 minutes). Your children will return their pedometer log sheet from Week 2. They will be reminded to call in to the 1-800 number three times over the next seven days (before the next meeting with the researcher).
- **Week 4:** Your child will be asked to meet with the researcher to hand in their pedometer log sheet from Week 3 and complete the complete the same questionnaires as those given in Week 1 as well as the questionnaire assessing physical activity during free time (10 items). Children will be asked to return their pedometer to the researcher.

POTENTIAL RISKS AND DISCOMFORTS

There are no known risks associated with taking part in this study. The questionnaires that will be administered have been employed in the past and we have received no indication of any reported discomfort. Also, pedometers are an accurate, reliable, and safe measure of children's physical activity. The imagery and short story audiotape will pose no risk.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

This study is part of a larger study examining imagery use in active play. The information gained from this study may be used in further research studies exploring imagery use and psychological needs among children. The researchers may gain valuable insight regarding imagery use during active play among children and imagery as a motivator for children to be physically active.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission. All responses from the questionnaires will be kept in strict confidentiality. The information collected from the pedometer will be kept confidential. The information obtained from the study will not be used for any purpose other than the research and the communication of the results.

PARTICIPATION AND WITHDRAWAL

Participation in this study is voluntary. Your child can choose whether to be in this study or not. If your child volunteers to be in this study, he/she may withdraw at any time. You may remove your child's data from the study. Your child may also refuse to answer any questions he/she doesn't want to answer and still remain in the study. Each time the researcher and your child meet, your child will be provided with a re-assent form in order to confirm they want to continue to participate in the study. However, you or your child may withdraw at any time throughout the study.

FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

A written summary of the study's findings will be emailed to the participants at their request. If you have any additional concerns or questions you can email or call the investigator at the address or number provided above. Please keep this Letter of Information.

SUBSEQUENT USE OF DATA

These data may be used in subsequent studies in publications and in presentations.

RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: ethics@uwindsor.ca

SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

_____ _____

Signature of Investigator Date

APPENDIX J

Parent/Guardian Consent

I have read the Letter of Information, have had the nature of the study explained to me and I agree to allow my child to participate. All questions have been answered to my satisfaction.

Consenting Signature:

Participant's Name (Child's name) (print): _____

Parent or Guardian Name (print): _____

Parent or Guardian Signature: _____

Date: _____

Researcher Name (print): _____

Researcher's Signature _____

Date: _____

APPENDIX K

Child Assent Form

I am a student researcher, and I would like to learn about the pictures you create in your mind about active play. **Active play** can be riding your bike, dancing, playing tag, kicking a ball, or going swimming. It makes you sweat, makes your legs feel tired, or makes you breathe harder. When we meet, I will give you a piece of paper with some questions I would like you to answer. These questions will help me learn more about the pictures you create in your mind when you are playing. You will then be given a small electronic device. This will let me see how much you are moving when you play each day. You will be asked to wear it (on your waistband) all day except when in water, during sports or gym class, or sleeping. You will be asked to make a phone call from your home where you will listen to a 5 minute story I've made for you. I will come to your school to meet you once a week for a couple of weeks for during your lunch. I'll give you a piece of paper with some questions I would like you to answer. The final week I will ask you to answer some questions on the pictures you create in your mind about active play.

I want you to know that I will not be telling your teachers or parents or any other kids what you answer. The only time I would tell someone else is if you tell me that someone has been hurting you. If I think that you are being hurt I will need to tell someone else who can help you. Otherwise, I promise to keep everything that you tell me to myself. Your mom and/or dad have said it is okay for you to answer my questions on the pictures you create in your mind about active play. Do you think that you would like to answer them? You won't get into any trouble if you say "no". If you don't want to be in the study, just say so. Even if you say yes now, you can still change your mind later. If there is a question you don't want to answer you don't have to. You will still stay in the study. Would you like to do this?

I understand what I am being asked to do to be in this study, and I agree to be in this study.

Your Signature: _____ Date: _____

Witness Signature: _____ Date: _____

APPENDIX L

Child Re-Assent

Your name: _____

Date: _____

1. Do you still want to answer my questions on the pictures you create in your mind about active play?

YES **NO**

I want to let you know that you won't get into any trouble if you say "no". If you don't want to be in the study, just say so. Even if you say yes now, you can change your mind later. If there is a question you don't want to answer you don't have to. You will still remain in the study.

APPENDIX M

Pedometer Log Sheet

Your Name: _____

Pedometer Number: _____

Group you are in (please circle): TIGER or LION

WEEK 1						
Day 1: Mon June 4th	**Day 2: Tues June 5th**	**Day 3: Weds June 6th**	**Day 4: Thurs June 7th**	**Day 5: Fri June 8th**	**Day 6: Sat June 9th**	**Day 7: Sun June 10th**

APPENDIX N

Competence Imagery Script

Before we begin I want you to find a quite place, free of any distractions...a place where you can sit comfortably for the next 5 minutes and listen to this audio recording I've made for you. If you would like, you can close your eyes as you listen.

I want you to picture your desk in your classroom. Can you picture it? Where is it located in the classroom? Who are you sitting next to? Now, I want you to change the picture in your mind to your bedroom. Be aware of all your things in your bedroom- like your clothes, and books, and what's on your bedroom walls. When you picture things in your mind like your desk at school or your bedroom at home, you are using imagery. You can even use imagery to picture things when you are playing - like seeing yourself running quickly in tag or imagining your legs move when you are riding your bike. So imagery is when you picture things in your mind and active play is when you are moving your body. Active play can include things like skipping, swimming, kicking a ball around, or dancing. Remember, active play does not mean organized sport like playing on a hockey team or competing for a gymnastics club.

I want you to imagine yourself at a park. It's a bright sunny day with a light breeze. It's a great day to do active play because it's the perfect temperature. You can feel the wind against your back and smell the freshly cut grass beneath your feet. Now I want you to picture yourself getting ready to jump off a big rock onto the ground. Imagine yourself in the perfect position just about to take off. Picture yourself bent at the knees and pushing your arms forcefully behind you. Feel yourself stretch both arms forward and upward reaching all the way above the head towards the clear blue sky to create the momentum. Picture yourself taking off and landing softly on the grass on both feet at the same time. You continue to jump off the big rock and try to go further with each jump because you feel you are good at it and this gives you confidence. Now picture yourself completing difficult jumps...like jumping off one rock and landing on another. Others can see how confident and comfortable you are with the jumps. Feel the sense of accomplishment, the feeling of happiness and confidence, the feeling that you can do this with ease. Imagine how proud you are about your ability to make the jumps and do them so well.

Now picture yourself being so confident while playing at the park that you decide to do something else ...like running to a big tree on the far side of the park. As you begin to start running you enjoy the breeze giving you that extra push from behind. Feel the grass being squished beneath you as your feet push hard off the ground. Imagine for a brief period that when you are running, both feet are off the ground. Be aware of how perfect your movements are. Imagine yourself being very good at running. Feel your leg muscles working hard with each stride and your arms pumping to gain speed. As you begin to feel

more and more confident with your running you start to quickly move around objects at the park. Picture yourself darting through a row of smaller trees. You know in your mind you can do active play that it is fun...like jumping far and running quickly. Let yourself feel the success, the joy, and the happiness.

Now I want you to imagine what your body feels like while you are jumping and running. Picture your body feeling strong and energized...you feel like you could keep going and going without stopping. Imagine the feeling of your heart beating faster and faster as you move quicker and quicker. Picture your chest. Imagine yourself looking down at it and watching it rise up as you breathe in. Now imagine your chest slowly lowering as you breathe out. Imagine the air you breathe in fills you with lots of energy. When you move your body you increase the amount of air you breathe in. Imagine yourself feeling energized as you continue to move your body. Now I want you to think about your muscles. Picture your muscles keeping healthy when you move your body. Imagine your body enjoying the feeling of when you jump and run.

Now imagine yourself slow down after successfully completing the jumping and running. As you walk around the park, still enjoying the beautiful weather, think about how you feel...be aware of how successful you were at completing the running and jumping. You feel satisfied and happy. You look forward to the next time you do active play.

APPENDIX O

Relatedness Imagery Script

Before we begin I want you to find a quite place, free of any distractions...a place where you can sit comfortably for the next 5 minutes and listen to this audio recording I've made for you. If you would like, you can close your eyes as you listen.

I want you to picture your playground at school. Can you picture it? What playground equipment does it have? Can you picture where the grass or the pavement is your playground? Now, I want you to change the picture in your mind to your school's gymnasium. Be aware of the big open floor space, the equipment. Picture yourself with your classmates in that gym. When you picture things in your mind like your playground or gym at school, you are using imagery. You can even use imagery to picture things when you are playing - like seeing yourself swimming with your friends or playing catch. So imagery is when you picture things in your mind and active play is when you are moving your body. Active play can include things like balancing on a rock, playing tag with your friends, or climbing trees.. Remember, active play does not mean organized sport like playing on a soccer team or competing for a track and field team.

I want you to imagine yourself playing with your friends at a park either near your house or at school. The air is warm; the beams of sunlight are beating on your skin. You are excited to do active play today because it's a beautiful day. From a distance, you can hear the sound of people laughing and talking. Picture you and your friends taking turns jumping off a big rock at the park. Think about how much fun you are having with your friends. Imagine some of your friends making silly poses as they fly through the air and land on the grass. Imagine you and your friends are laughing really hard together. Try to hear the sound of your friends laughing together. Think of the feelings you get when you are having a really good time with your friends being active. Just thinking about you and your friends playing together makes you happy. Now I want you to imagine you and your friends jumping off one rock and onto another. Think of how glad you are to be able to do active play with people you like. Imagine yourself having lots of fun doing active play with your friends at the park. Think about how much you enjoy your friends' company and how much they enjoy your company while you are playing. Picture how good it feels to have great friends you can play with. Think about how you feel when you're with your friends being active outside: you feel cheerful, and happy, and you're glad to know you and your friends enjoy the same activities.

Now I want you to imagine you and two of your friends running and chasing one another at the park. Imagine how much fun you are having with your two best friends. You and your friends are laughing and smiling as you run around having fun. Now, I want you to picture two more friends come to join you. Now you and four other friends are playing

together. Think of how happy you are to see everyone and how excited you are to play with everyone. All five of you are happy to be playing together. Picture yourself running quickly to catch one of your friends. You are having even more fun with everyone together. Think about how happy being with those friends' makes you feel. You enjoy being active with your friends because you all get along and like the same things. Think about the joy you feel when playing with your friends. Let yourself feel all sensations you get when you play with your friends. Feel the happiness and the joy. The more you let yourself feel the sensations of happiness and joy, the more you want to play and be active with your friends. Think about yourself connecting with all of your friends and do different activities together like jumping and running.

Now imagine yourself at the end of the day after playing with your friends. Think about how much fun you had with your friends at the park being active. You enjoy that your friends like to jump and run as much as you do. Imagine how it feels to do active play every day with your friends. Imagine all the joy you felt playing with your friends. Think about how enjoyable it was to spend the day playing with your friends. You look forward to the next time you do active play so you can laugh and play with your pals. Be sure to end it.

VITA AUCTORIS

NAME:	Michelle D. Guerrero
PLACE OF BIRTH:	Toronto, ON
YEAR OF BIRTH:	1989
EDUCATION:	Banting Memorial High School, Alliston, ON, 2007
	Laurentian University, B. A. (Hons) Sport Psychology, Sudbury, ON, 2011
	University of Windsor, M. H. K., Windsor, ON, 2013