

An Ecological Model Perspective of Children's Experience of Active Play

by

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A thesis
presented to the University of Waterloo
in fulfilment of the
thesis requirement for the degree of
Master of Arts
in
Recreation and Leisure Studies

Waterloo, Ontario, Canada 2014

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Despite the many known benefits associated with active play, relatively little is known about the influences on and children's experiences of engagement in active play. The purpose of this study was to investigate the participation in and perceptions of active play by 9 to 12 year old children to uncover the nature of their experiences from their own perspectives. Guided by an ecological model of behaviour, which included intrapersonal, interpersonal, and environmental factors, children's play behaviours and perceptions were explored using a two phase investigation. In the first phase, an adapted time diary method was used with children 9 to 12 years of age to collect data on when, where, and with whom they are playing. In the second phase, a subgroup of the participants was selected for follow-up, semi-structured interviews to further explore their perceptions of their active play, how they experienced it, and to gain further insights into the intrapersonal, interpersonal, and environmental factors associated with their play. Results of the time diary indicated that children participated in active play episodes most often on weekends, and with family and relatives. Additionally, children most often participated in active play episodes inside their homes or the yards, and each episode most usually lasted less than 30 minutes. Based on the interviews, a number of categories and emergent themes that exemplified children's active play were revealed. Two aspects transcended the children's experience of active play: having fun and negotiating negative outcomes. Several categories associated with these themes aligned with the factors defining the ecological model. Intrapersonal factors that affected active play were "feeling emotional range", "playing to play", "promoting health", and "experiencing control"; interpersonal factors included "interacting with others" and "balancing conflict"; and environmental factors included "using space" and "enjoying comfort". The study concludes with several recommendations for promoting active play among children.

Acknowledgements

First and foremost I would like to thank my supervisor Dr. Bryan Smale for his guidance and support. His advice and perspectives on my research and writing influenced my work tremendously. More importantly he encouraged me throughout the sometimes difficult process. I must also thank my committee members Dr. Steve Mock and Zara Rafferty for their constructive ideas and comments throughout the project.

I owe a very special thank you to my family and friends for your encouragement and support. Additionally, thank you to the department of Recreation and Leisure Studies for making my time at the University of Waterloo enjoyable.

Finally I would like to thank the Avon Maitland District School Board and the Huron Perth Catholic School Board for their assistance with this project. The project would not have been possible without their willingness to allow me to conduct my research. Thank you to all of the principals, teachers, students, and parents who were a part of this study.

Table of Contents

List of Tables	viii
List of Figures	ix
Chapter One:	1
The Decline of Youth Active Play	1
1.1 Purpose Statement.....	5
1.2 Research Questions	6
1.3 Significance.....	6
Chapter Two:	8
Correlates of Children’s Physical Activity	8
2.1 Physical Activity	8
2.2 Active Play.....	11
2.3 Ecological Model	15
2.4 Intrapersonal Factors.....	20
2.4.1 Age	20
2.4.2 Gender.....	21
2.4.3 Attitude Towards Active Play.....	22
2.4.4 Self-Efficacy	23
2.5 Interpersonal Factors.....	26
2.5.1 Parental Influence	27
2.5.2 Peer Relationships	29
2.6 Environmental Factors	31
2.6.1 Access to Facilities.....	31
2.6.2 The Home Environment	34
2.6.3 Safety.....	35
2.7 Summary	37
Chapter 3.....	39
Methods	39
3.1 Study Design.....	39
3.2 Sample.....	40
3.3 Phase 1: Time Diary.....	41
3.3.1 Administration of Time Diary	42
3.3.2 Time Diary Measures.....	43

3.3.3 <i>Organisation and Analysis of Time Diary Data</i>	45
3.4 Phase 2: Personal Interviews.....	46
3.4.1 <i>Criteria for Selecting Interview Participants</i>	46
3.4.2 <i>Conducting the Interviews</i>	47
3.4.3 <i>Analysis of Interview Data</i>	49
Chapter 4.....	51
Characteristics of Children and Their Social and Physical Environment	51
4.1 Sample Profile.....	51
4.2 Children’s Active Play Behaviours.....	52
4.2.1 <i>Common Play Activities</i>	52
4.2.2 <i>Active Play Context</i>	53
4.3 Personal Factors	55
4.3.1 <i>Gender</i>	55
4.3.2 <i>Age</i>	56
4.4 Gender Differences	57
4.4.1 <i>Play Activities</i>	57
4.4.2 <i>Play Context</i>	59
Chapter 5:.....	62
Children’s Perceptions of their Play Behaviours	62
5.1 Sample Profile.....	62
5.2 Intrapersonal, Interpersonal, and Environmental Factors Affecting Children’s Active Play Experience.....	62
5.2.1 <i>Transcending Factors</i>	63
5.2.2 <i>Intrapersonal factors</i>	65
5.2.3 <i>Interpersonal Factors</i>	70
5.2.4 <i>Environmental Factors</i>	74
Chapter 6:.....	79
Discussion.....	79
6.1 Summary of Key Findings	79
6.1.1 <i>Children’s Active Play Behaviours</i>	79
6.1.2 <i>Intrapersonal, Interpersonal, and Environmental Factors Affecting Children’s Experience of Active Play</i>	84
6.2 Implications for Practitioners.....	90
6.3 Study Limitations.....	93

6.4 Implications for Future Research.....	94
References.....	96
Appendices.....	108
Appendix A: Information Flyer	108
Appendix B: Information Letter	109
Appendix C: Consent Form	111
Appendix D: Time Diary	112
Appendix E: Classroom Script.....	116
Appendix F: Feedback Letter I	118
Appendix G: Interview Guide.....	119
Appendix H: Feedback letter II.....	120

List of Tables

Table 1. Characteristics of the Sample	51
Table 2. Total Number of Episodes and Average Time of Each Activity	52
Table 3. Context Factors - Episode Frequency and Average Length	54
Table 4. Personal Factors - Episode Frequency	56
Table 5. Personal Factors - Episode Length	57
Table 6. Most Common Play Activities for Females.....	58
Table 7. Most Common Play Activities for Males	58
Table 8. Most Time Spent Playing Activities for Females.....	59
Table 9. Most Time Spent Playing Activities for Males	59
Table 10. Gender Differences – Descriptives	60
Table 11. Gender Differences – With Whom Did Play Occur	61
Table 12. Gender Differences – Where Play Occurs	61
Table 13. Gender Differences – Length of Play Episodes.....	61

List of Figures

Figure 1. Ecological Model of Health Behaviours	17
Figure 2. Factors Affecting Children's Experience of Active Play	63

Chapter One: The Decline of Youth Active Play

There is a growing body of evidence that a quarter of our nation's children and youth are overweight or obese (Colley et al., 2011), and as a consequence, the health of Canadian children is deteriorating. Chronic diseases, which could have origins in childhood, including type II diabetes, cancer and heart disease, are also on the rise (McGavock, Sellers, & Dean, 2007; Tell & Vellar, 1988), and anxiety and depression in children also have increased continuously and dramatically (Gray, 2011).

The causes of this deterioration of children's health are multi-factorial (Rennie, Johnson, & Jebb, 2005) although a decline of participation in physical activity has been identified as one primary cause (Colley et al., 2011).

To help reverse this trend, there are different ways in which children can meet the recommended level of physical activity. Today, there is a greater priority placed on structured physical activity including: physical education classes, organized sports, and structured activity programs. Yet, a frequently forgotten aspect of physical activity is active play. "Play is a process that is freely chosen, personally directed and intrinsically motivated" (Active Healthy Kids Canada, 2012). The term "physically active play", or "active play", is distinguished by a physical component and is therefore called active play (Pellegrini & Smith, 1998). Active play has been called the "business of childhood" (Piaget, 2007), yet it too has seen a significant and consistent decline (Hofferth & Sandberg, 2001).

Despite the many known benefits associated with active play, relatively little is known about the influences on children's engagement in active play (Sallis, Prochaska, & Taylor, 2000). A number of studies have investigated children's combined physical activity, however very few

have explored only active play. Yet, active play is a type of physical activity and studies investigating active play and physical activity as a whole will be discussed. Youth physical activity is a complex behaviour determined by many factors (Sallis, Prochaska, & Taylor, 2000), so to better understand that behaviour, a more comprehensive and holistic approach needs to be embraced. Integrative models must be used to address the joint influence of people's interactions with their physical and sociocultural surroundings (Stokols, 1992). One such approach is reflected in ecological models (Sallis, Owen, & Fisher, 2008), which emphasize multiple influences of health behaviours often including intrapersonal, interpersonal, organizational, community, and public influences. It is also acknowledged that factors interact across levels (Sallis, et al, 2008). Based on ecological models of health behaviour, the three essential conceptual levels (intrapersonal, interpersonal, and environmental) are included in this study as a guiding framework to investigate the interdependent relationships among the factors.

Intrapersonal factors which have an effect on active play can be defined as factors that represent the individual self (Sallis et al., 2008) and include such aspects as: age, gender, attitude towards active play, and self-efficacy. For example, studies of children's physical activity have consistently reported that physical activity decreases with age and that males are more active than females (Sallis, Prochaska, & Taylor, 2000). Children's attitudes towards active play have also shown to be important. Veitch, Bagley, Ball, and Salmon (2006) found that children's attitudes towards free play were raised by parents as a key influence of their child's choice of activity. Parents often described their child as either an outdoor kid or an indoor kid, resulting in a preference for outdoor or indoor activity choices. Those who were described as indoor kids generally engaged in activities that were not physically active such as television and drawing (Veitch, Bagley, Ball, & Salmon, 2006). Finally, the relationship of self-efficacy to children's

active play has shown mixed results, although overall, it appears that greater self-efficacy has been shown to be related to higher levels of children's physical activity (Pate et al., 1997; Trost et al., 1996, 1997).

Interpersonal factors are defined as factors relating to the interaction between individuals and include parental influence and peer relationships. Parental encouragement was found to be a significant predictor of their children's physical activity highlighting its importance for physical activity promotion (Welk, Wood, & Morss, 2003). However, there have been mixed results regarding whether parental modelling (i.e., parents who engage in physical activity and serve as behaviour models for their children) of physical activity is a correlate of children's physical activity (Gustafson & Rhodes, 2006). While parental influences are important to varying degrees, so too are peer relationships. In fact, Jago et al. (2009a) found peer influence is perceived by children to be more important than parental influence. Participants reported that their friends helped them begin physical activity either through modeling, cooperative play, or verbal encouragement (Jago et al., 2009a).

Environmental factors are defined as properties of the physical environment where the participants live and where active play takes place, they include: availability of facilities, the home environment, and safety. Santos, Page, Cooper, Ribeiro, and Mota (2009) found adolescent girls who perceive their neighbourhoods to have available recreational facilities to be more active. However, there have been conflicting results between the association of park availability, proximity, size, and quality with children's physical activity. Tucker et al. (2009) also observed greater physical activity was associated with youth having recreation facilities in their neighbourhood. However, they found a lack of association between park size and physical activity. They suggest that this may be due to park quality being more important than the simple

presence or size of the park (Tucker et al., 2009). Recent studies have also investigated the home environment, and suggest that children's perceptions of their home environment as supporting physical activity may be associated with their participation in active play (Hume, Salmon, & Ball, 2005). However, across studies, the findings have been inconclusive indicating further research is necessary (Hume, Salmon, & Ball, 2005). Finally, perceptions of neighbourhood safety have been investigated with conflicting results. Among parents who fear more for the safety of their children, there is little evidence to suggest such fears reduce their children's physical activity. Ries et al. (2009) studied both objective and perceived measures of neighbourhood crime and their effect on children's physical activity, finding neither type of measure was associated with park use.

Many individual factors and their association with children's physical activity have been investigated. However physical activity is a complex behaviour (Sallis, Prochaska, & Taylor, 2000); a simultaneous investigation of multiple influences within intrapersonal, interpersonal, and environmental factors on children's active play is necessary.

Although active play is important throughout childhood, it is particularly vital for children in later childhood (i.e., aged 9 to 12 years). This age range is especially important because it is the beginning of a significant drop-off in physical activity levels (Troiano et al., 2008). The significant decline in physical activity is accompanied by greater freedom. O'Brien, Jones, Sloan, & Rustin (2000) discuss that as children grow older they increase their home range; the public places and spaces they are able to access beyond their own household. The age at which significant increases in children's home range occurs is between the ages of 8 and 9 (O'Brien et al., 2000). Additionally, in a study of parental perceptions, increased independence was one of the key perceived influences on children's ability to play in places away from the

home (Veitch, Bagley, Ball, & Salmon, 2006). Parents of children 9 to 10 years old more often reported that they allowed their children the independence to walk to a friend's house or visit a local park without supervision (Veitch et al., 2006). Finally, adults or parents know little about their children's lives and wellbeing (Ben-Arieh & Ofir, 2002). However, many studies investigating youth physical activity have relied on the perceptions of parents. As Ben-Arieh and Ofir (2002) state, "it is hard to accept the ignorance of the problematic nature of a proxy interviewer reporting on someone else's well-being. It is especially striking when we consider how much we (adults or parents) know (or do not know) about our children's lives and wellbeing" (p. 239). For that reason, children should be the primary source of information to investigate their true perceptions of active play. Children are the ones who experience active play, therefore children themselves will be better able to give not only an accurate account of their active play participation, but also their perspective on their active play experiences. For that reason the perspective of children should be used to uncover factors that might explain inactivity.

1.1 Purpose Statement

The purpose of this study was to investigate the participation in and perceptions of active play by 9 to 12 year old children to uncover the nature of their experiences from their own perspectives. Guided by an ecological model of behaviour, which included intrapersonal, interpersonal, and environmental factors, children's play behaviour and perceptions were explored using a modified time diary approach and follow-up interview.

1.2 Research Questions

Due to the nature of the study, there were two phases that involved two sets of research questions. The following questions were addressed using a time diary to obtain behavioural data regarding children's active play:

- What types of activities do children engage in during their active play?
- Where do children engage in active play?
- When do children engage in active play?
- With whom do children engage in active play?

In the second phase of the study, the following questions further guided selective interviews to gain a better understanding of the children's perceptions of their experiences, as well as the associated intrapersonal, interpersonal, and environmental factors associated with their active play:

- How do children describe their experience when engaged in active play?
- What do they like best about those experiences?
- What do they like least about those experiences?
- What are the things that they describe that make their experience of active play more fun?
- What are the things that they describe that make their experience of active play less fun?

1.3 Significance

Changes in children's active play, particularly its decline, are contributing to concerns about the long-term health outcomes facing Canadian children. There is a large body of literature regarding the factors affecting children's physical activity. However, there are few studies that: (a) examine active play exclusively, (b) examine factors collectively rather than individually, and

(c) examine factors from the perspective of the child. Previous research has focused primarily on parental perceptions of individual factors because parents have substantial control over the time use of their children. However, additional research focusing on the perceptions of children aged 9 to 12 years using an ecological framework would contribute to a better understanding of the complex mix of intrapersonal, interpersonal, and environmental factors that influence children's active play. Understanding the collective effect of factors will thereby guide the development of more effective intervention strategies (Sallis et al., 2008). Intervention strategies using ecological models will target individuals, social environments, and physical environments to achieve population change (Sallis et al., 2006). Finally, the few studies from the child's perspective that have been done have used general interview techniques that rely on children recalling past events, over varying lengths of time. The use of a time diary method should reduce the error associated with recall and also provide additional information regarding where the activity occurs and with whom the children are participating.

Chapter Two: Correlates of Children's Physical Activity

This review of the literature assesses relevant research on physical activity; active play; and the ecological model, along with its constituent and intrapersonal, interpersonal, and environmental factors. To begin, physical activity will be defined and discussed along with current Canadian recommendations and trends in children's participation. Next, active play and its benefits for children will be defined and described. Current trends involving active play will also be discussed. Then, the ecological health model will be described by explaining its structure and conceptual rationale. Applications of the model in health behaviour will be described, along with a discussion of its benefits and limitations. For illustration, previous studies that have used the model specifically in the context of children's active play will then be examined. Finally, the specific effects of the intrapersonal, interpersonal, and environmental factors on children's active play will be discussed.

2.1 Physical Activity

The Canadian Society for Exercise Physiology (2011) defines physical activity as movement that increases heart rate and breathing, as well as any bodily movement produced by skeletal muscles that requires energy expenditure. They classify physical activity into three activity types: aerobic, bone and muscle strengthening, and balance and flexibility. Aerobic activities are those in which the body's large muscles move in a rhythmic manner for a sustained period of time. Aerobic activity, which can include bone and muscle strengthening activities, is important because it improves cardio respiratory fitness (Canadian Society for Exercise Physiology, 2011). The Public Health Agency of Canada divides aerobic activity into different intensities. Moderate aerobic activity is activity that makes the participant breathe harder and

their heart beat faster (e.g., skating or bike riding). Vigorous aerobic activity is activity that makes the participant's heart rate increase even more. Additionally, after vigorous aerobic activity the participant will not be able to say more than a couple of words without catching their breath (e.g., soccer or cross-country skiing).

There are many benefits of physical activity for children as reported by the Public Health Agency of Canada (2011). These include: stronger heart, bones and healthier muscles; improved fitness; better posture and balance; increased concentration; improved self-esteem; lower stress; better academic scores, and opportunities for socializing. Studies have also shown that children's physical activity plays an important role in the prevention of chronic diseases, including type II diabetes, cancer, and heart disease, which could have origins in childhood (McGavock, Sellers, & Dean, 2007; Tell & Vellar, 1988).

Due to the importance of regular physical activity, the Public Health Agency of Canada (2011) has developed guidelines for children. For health benefits, children should engage in at least 60 minutes of moderate to vigorous physical activity per day. Of that activity, vigorous physical activity should be done three days per week. Colley et al. (2011) found that boys aged 6 to 19 averaged 61 minutes of moderate to vigorous physical activity, while girls averaged 47 minutes; however, the percentage of children who engaged in 60 minutes of moderate to vigorous physical activity on at least six days of the week was only 7%. Additionally, 97% of the moderate to vigorous physical activity by children was at moderate intensity (Colley et al., 2011).

There are different ways in which children can meet the recommended level of physical activity. Today, there is a greater priority placed on structured physical activity including: physical education classes, organized sports, and structured activity programs. Research has

shown that organized sport participation makes up as much as 60% of the moderate to vigorous physical activity of children and youth (Leek et al., 2011). The trend towards prioritizing structured sports is also evident in the United States. Hofferth and Sandberg (2001) discovered that between 1981 and 1997, children increased their time participating in organized sports in a week by 27%.

Nevertheless, structured physical activity is important for helping children and youth meet daily physical activity recommendations. Lemstra, Nielsen, Rogers, Thompson, and Moraros (2012) found that children who play organized sports more than four times per week are 40% more likely to get one hour or more of moderate to vigorous physical activity per day. Additionally, a study of children in Denmark (Romani, 2011) discovered that those who participate in organized sports had a reduced likelihood of being overweight by 8.2% and of being obese by 3.1%. However, recent research has also shown that structured physical activity does have its downfalls. Among these concerns is that participation in structured sports does not guarantee that children will meet physical activity recommendations. In their investigation of 7 to 14 year olds' participation in soccer and baseball practices, Leek, et al. (2011) concluded that only 46% of practice time is spent being moderately to vigorously active. Similarly, Scheck, et al. (2011) found that for 7 to 10 year old indoor soccer players, playing the organized sport only contributed 25% of the moderate to vigorous physical activity recommendations. Additionally, the greatest increase in the history of organized sports corresponds with today's obesity epidemic and points to a need for a different type of physical activity (Louv, 2008). Unstructured forms of physical activity, such as active play, could be one of the most promising, accessible, and cost effective ways to help children in Canada increase their daily physical activity (Active Healthy Kids Canada, 2012).

2.2 Active Play

The definition of play is complex and has long been debated. The emergence of structured play sessions and technology-based play leads to further confusion on the meaning of play (Lester & Russell, 2008). However, common characteristics of play have been recognized:

Play is a process that is freely chosen, personally directed and intrinsically motivated. That is, children and young people determine and control the content and intent of their play, by following their own instincts, ideas and interests, in their own way for their own reasons” (Gleave & Cole-Hamilton, 2012, p. 5). Play allows children to try new things, test boundaries, learn from their mistakes, but most importantly, enjoy physical activity (Active Healthy Kids Canada, 2012).

Pellegrini and Smith (1998) differentiate active play from other forms of play during childhood. The term ‘physically active play’, or ‘active play’, is distinguished by a physical component, and is therefore called active play. Recent research has also found active play to be associated with children’s physical activity. Brockman, Jago, and Fox (2010) sampled 10 to 11 year old UK children and discovered that more frequent active play was associated with a higher mean activity level, and a greater intensity of physical activity for both genders on weekdays after school.

Despite the potential of active play to contribute to the daily recommended amount of physical activity for children, recent reports have suggested Canadian children are less likely to engage in active play. Active Healthy Kids Canada (2012) found that over the last decade, the proportion of kids who play outside after school has dropped by 14%. Furthermore, 46% of Canadian children get three hours or less of active play per week, including weekends. The same can be said for children in other countries. Hofferth and Sandberg (2001) found that between 1981 and 1987 one of the greatest changes in the way American children were spending their time was the increase in structured activities and decline in unstructured play. The amount of

time that children spent playing in that seven year time span declined 16%. Similarly, a UK study found that nearly half of today's children have never played on the streets; a dramatic shift when compared to those over 65 years of age as 47% played on the street everyday and only 12% had never played on the street (Living Streets, 2009).

Active play has many benefits beyond increasing physical activity; it allows children to develop their cognitive, social, emotional, and physical capabilities. It is so central to child development that it should be incorporated in the definition of childhood (Milteer & Ginsburg, 2011).

The cognitive skills that children learn through active play are tightly intertwined with their physical, social, and emotional development. One important cognitive development is attention, which is a cognitive function involving inhibition and impulse control, and has the ability to enhance learning (Burdette & Whitaker, 2005). Barros, Silver, and Stein (2009) found that play in the school setting resulted in more attentive students and better classroom behaviour overall. Problem-solving abilities are also developed through active play (Burdette & Whitaker, 2005). While playing, children encounter situations that stimulate problem solving and creative thinking because outdoor play spaces are varied and less structured. The problem solving that occurs during these situations may promote executive functioning, which is a higher level skill that integrates attention with other cognitive functions like planning, organizing, sequencing, and decision-making (Burdette & Whitaker, 2005). Another interesting aspect of cognitive development due to active play is the reduction of phobias. Sandseter and Kennair (2011) state that risky play such as play from heights or at a high speed is a natural way of reducing phobias. These phobias have an initial function of keeping children safe when they approach a situation that they do not have the skills to deal with. However, as the children grow and play in

situations that push the boundaries, the positive feelings and thrilling experience replace the feelings of fear (Sandester & Kennair, 2011).

Active play also helps children build social relationships. “Play is children’s natural means of making friends. It is what draws them and binds them together” (Gray, 2011, p.457). Allowing children to make connections with other children leads them to learn how to share, to negotiate, and to resolve conflicts (Milteer & Ginsburg, 2011). Conflict resolution results because playing with others involves solving a social problem such as deciding who can play and the rules of the game (Burdette & Whitaker, 2005). Learning to cooperate with others in order to solve these problems could be the most important function of human play (Gray, 2011). Similarly, empathy is another aspect that children develop through active play (Burdette & Whitaker, 2005). It is defined as recognizing your own emotions and showing that recognition, which is important to feeling connected in a social group.

Finally, active play has an effect on children’s emotions. Anxiety and depression in children have increased continuously and dramatically since the 1950s (Gray, 2011). A possible explanation is that society has increasingly forced children into settings that make them unhappy and anxious, while we have deprived them of activities that make them happy (Gray, 2011). In an international survey sponsored by IKEA, 89% of the children sampled preferred to play outdoors with friends rather than watching television, while 86% preferred outdoor play with friends to playing on the computer (Family Kids and Youth, 2010). Therefore, active play has the ability to improve aspects of emotional wellbeing such as reducing anxiety, depression, aggression, and sleep problems (Burdette & Whitaker, 2005). Additionally, for many parents it is the happiness that children feel from active play that is most important, even more so than

being smart or getting along with others. Finally, because happiness is the most visible benefit of play, it is also most likely to reinforce play (Burdette & Whitaker, 2005).

Although active play is important throughout childhood, it is particularly vital for children in later childhood (i.e., aged 8 to 11 years). This age range is especially important because it is the beginning of a significant drop-off in physical activity levels. Troiano et al. (2007) found that 49% of boys aged 6 to 11 years achieved the recommended levels of moderate to vigorous physical activity, but those who participated in recommended levels dropped to 12% for the age of 12 to 15 years. The same was observed for similarly aged girls who dropped from 35% to just 3%. This dramatic decrease in physical activity is accompanied by greater freedom for the children. O'Brien, Jones, and Rustin (2000) reported that between 56 and 86% of the 10 to 11 year olds surveyed reported a fair degree of independence in their life. They were allowed to play on the streets without an adult and to walk to a friend's house without an adult. Veitch, Bagley, Ball, and Salmon (2006) found similar results in a qualitative study with parents. They found that parents of children 9 and 10 years old more often reported allowing their children greater independence to walk or bike to a friend's house or to visit a park or playground without supervision. Finally, this is when children begin to change their social relationships (Frost, Wortham, & Reifel, 2012). At this age, children tend to spend less time with their parents than they did when they were younger. Conversely, children begin to organize into peer groups that adopt a peer culture which is expressed in many ways such as uniform dress and activities such as active play (Frost, Wortham, & Reifel, 2012).

It is clear that children at the developmental age of 9 to 12 are less physically active, place a growing importance on peers rather than family, and have greater freedom to choose their activities and places to play without adult supervision. Therefore, further investigation of 9 to 12

year olds active play behaviours is necessary, particularly from the participants' perspective. Clearly, active play is a complex behaviour with many influencing factors. Building our understanding of the many factors affecting children's active play, especially among those at the point in their lives when activity typically declines, would contribute to better means of promoting children's physical activity. The ecological model provides a framework to explore these multiple influences on active play.

2.3 Ecological Model

To achieve population change in physical activity, multilevel interventions that target individuals, social environments, and physical environments must be implemented (Sallis et al., 2006). Psychological and social influences on behaviour have been two of the dominant frameworks for research on physical activity. These frameworks have led to interventions that target individuals or small groups. Ecological models have been recognized as a more productive framework for physical activity promotion because they incorporate a wide range of influences at multiple levels, rather than assuming that behaviour is influenced by a narrow range of psychosocial variables. Ecological models are particularly well suited for studying physical activity because it is done in specific places; studying characteristics of places that facilitate or deter physical activity is important (Sallis et al., 2006).

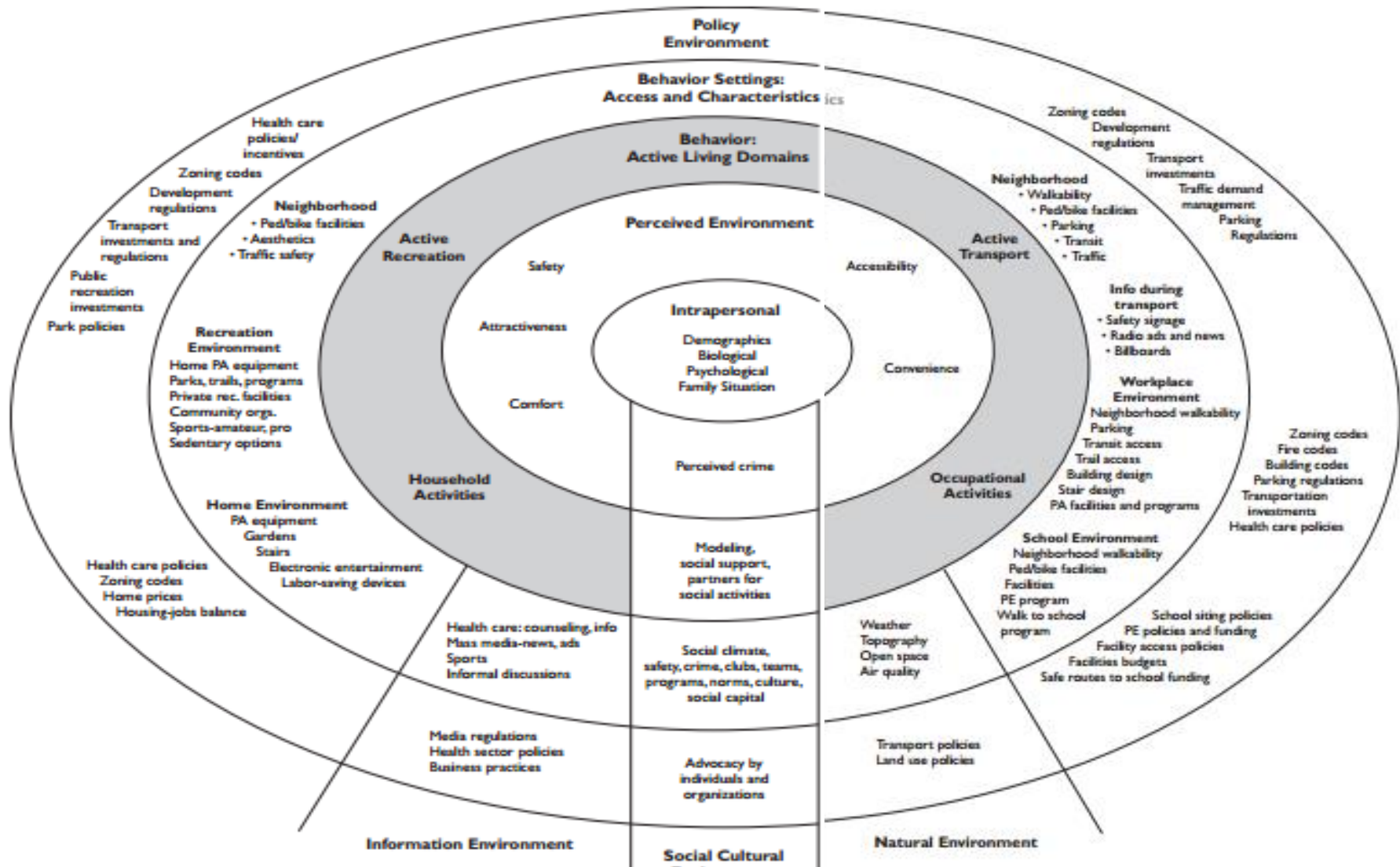
In the field of public health, ecological models describe people's relationship with their physical and socio-cultural environment (Sallis et al., 2006; Sallis, Owen, & Fisher, 2008). They are differentiated from behavioural models because of the inclusion of environmental variables that are believed to influence behaviour. Although ecological models of health behaviour put more emphasis on the environmental aspects, they also continue to incorporate social and

psychological influences. The levels of variables that ecological models often include are intrapersonal, interpersonal, organizational, physical environment, and policy.

Sallis et al. (2006) developed a multilevel model (see Figure 1) to show the various influences on four domains of active living including: active recreation, household activities, active transport, and occupational activities. At the core of their model are intrapersonal characteristics that represent the individual including: demographics such as age and gender, as well as psychological characteristics including attitudes towards active play, and self-efficacy. The outer rings of the model show behaviour settings where the activities occur. It is useful to consider both access to the settings as well as their specific characteristics. Where these personal and environmental characteristics meet is where the active living behaviours occur. This shows that behaviour represents an interaction between the person and the environment. Finally, the interpersonal environment cuts across all other levels. Social and cultural environments include: demographic variables such as family structure, behaviours such as modeling and social support, and social climate including crime, programs, and culture (Sallis et al., 2006).

Sallis et al. (2008) discuss both the strengths and weaknesses of ecological models. A key strength is the focus on multiple levels of influence that broadens options for interventions. A weakness is the lack of specificity about the most important influences. A related weakness is the lack of information concerning how the variables interact across levels. Therefore, the models broaden perspectives without identifying specific variables that are important in influencing behaviour. Psychosocial theories of health behaviour, on the other hand, specify the variables and how they are expected to influence behaviour (Sallis et al., 2008).

Figure 1: Ecological Model of Health Behaviours



Source: Sallis et al., (2006)

Although there are limitations to the model, the principles of multi-level influence and interaction across levels are regarded as the models' key assets and these have been supported in the literature. For example, McNeill, Wyrwich, Brownson, Clark, and Kreuter (2006) used structural equation modelling and discovered that both individual and environmental variables directly influenced moderate physical activity. They also found that individual and environmental variables have an interaction effect on physical activity. Specifically, both availability and quality of facilities were associated with intrinsic reasons for engaging in physical activity. The findings suggest that further exploration of the relationship between intrapersonal, interpersonal, and environmental factors will help explain physical activity behaviours (McNeill, Wyrwich, Brownson, Clark, & Kreuter, 2006).

A version of the model has been used in the study of active play. Veitch, Salmon, and Ball (2010) studied parents of 8 to 9 year old children in order to investigate the association of specific individual, social, and physical environmental factors with active free play in three outdoor locations. Their findings suggest that the presence of friends, safety issues, as well as aspects of the built environment were reported by parents as being associated with active free play. Parents who reported that their child had many friends in their neighbourhood were more likely to report that their child played more regularly. Additionally, parents who perceived that it was safe for their child to play outside their house reported their child playing outside more regularly. Finally, parents of children living in cul-de-sacs reported their children playing more regularly. A similar study by Veitch, Bagley, Ball, and Salmon (2006) used an ecological model in a study with parents who were interviewed to understand where their children played and why. The study discovered environmental factors such as the presence of age appropriate equipment at parks and playgrounds; social factors such as safety; and individual-level

influences such as level of independence and attitude towards physical activity, all positively influenced active play.

Veitch, Salmon, and Ball (2007) have also used an ecological model to investigate Australian children's perceptions regarding active play. In focus groups for children aged 6 to 12 years, the children reported that their use of open spaces for play was affected by things that were associated with intrapersonal, social, and environmental factors. Specifically, children consistently reported that their active play was influenced by the quality of play equipment at parks, lack of independent mobility, presence of friends, and personal motivation (Veitch, Salmon, & Ball, 2007). A similar study used behavioural mapping of children 8 to 12 years old to study their perceived access to open play areas, which was then compared to other variables such as socioeconomic status (Veitch, Salmon, & Ball, 2008). The results of that study demonstrated that for some children opportunities for free play may be limited due to lack of parks in close proximity to their home and restricted independent mobility.

Similarly, Brockman, Jago, and Fox (2011) used focus groups comprised of 10 to 11 year old children to investigate self-reported motivators, barriers, and facilitators of active play in the UK. Their findings indicate that a range of motivational and environmental factors influence active play. Factors frequently reported by children as motivating them to engage in active play include socializing, preventing boredom, and a sense of freedom from adult control. Neighbourhood safety was also reported as a facilitator towards the participant's active play (Brockman, Jago, & Fox, 2011).

There have been a limited number of studies that have used an ecological model to explore multiple levels of factors affecting children's active play. There have been studies, however, on the environmental, interpersonal, and intrapersonal effects on physical activity. The

following sections will provide more details on the three essential components of ecological models.

2.4 Intrapersonal Factors

Intrapersonal factors are personal factors which occur within the individual self or mind. Key intrapersonal factors which have an effect on active play and have been investigated include: age, gender, attitude towards active play, and self-efficacy.

2.4.1 Age

Studies of children's physical activity have consistently reported that physical activity decreases with age (Sallis, Prochaska, & Taylor, 2000). There is, however, disagreement on the timing and magnitude of the decline, and identifying the ages of the greatest decline would be useful in targeting interventions (Sallis, 1999).

Two studies (Sallis, 1999; Troiano et al., 2007) found the most dramatic decline in physical activity occurs in adolescence. Troiano et al. (2007) reports 42% of children aged 6 to 11 years met recommendations of at least an hour of physical activity, while physical activity for other age groups was considerably lower, especially adolescents. During adolescence, guideline adherence prevalence dropped from 49% to 12% for boys and from 35% to 3% for girls when comparing children aged 6 to 11 years with those aged 12 to 15 years (Troiano et al., 2007). In a recent study on Canadian children, 6 to 10 year olds participated in 60 minutes of moderate to vigorous physical activity at least three times per week significantly more often than both 11 to 14 year olds and 15 to 19 year olds (Colley et al., 2011).

Trost et al. (2001) also found physical activity declines rapidly during childhood and adolescence. However, contrary to other studies, they found that the greatest decrease in physical activity occurred in elementary school rather than during the teen years. Like previous

studies, elementary school students were significantly more active than middle and high school students. However, the largest decrease occurred between grades 1 to 3 and 4 to 6, not during the transition from middle school to high school (middle adolescence) (Troost et al., 2001).

The divergence may be due in part to the difficulty with measuring physical activity in children and adolescents (Troost et al., 2001). Regardless of where the greatest transition occurs, there is consensus that physical activity rapidly declines throughout childhood and adolescence.

2.4.2 Gender

Studies of children's physical activity have also consistently reported males are more active than females (Sallis, Prochaska, & Taylor, 2000). This finding was supported by a study of Canadian children where boys aged 6 to 10 years participated in, on average, 69 minutes of moderate to vigorous activity per day, which was significantly higher than girls of the same age who engaged in 58 minutes of physical activity per day (Colley et al., 2011). This pattern appears consistent across age levels as boys 11 to 14 years old participated in 59 minutes of moderate to vigorous physical activity per day which was significantly higher than the 47 minutes reported for females (Colley et al., 2011). Troost et al. (2001) measured physical activity at different intensities and found similar results as boys were more active than girls at all intensities. However, the difference was greater for vigorous physical activity than it was for moderate physical activity. These findings seem to show that boys and girls participate in close to the same amount of moderate to vigorous physical activity per day, and the majority of the gap in overall physical activity can be explained by girls' low participation in vigorous activities (Troost et al., 2001). Sallis, Zakarian, Hovell, & Hofstetter (1996) discovered similar results finding boys participated more often in vigorous activities such as basketball, jogging, and

biking; while girls participated more often in less vigorous activities such as dance, walking, and calisthenics.

Valentine and McKendrick (1997) examined gender differences for outdoor play and found that, while parents are equally concerned about the sufficiency of play opportunities for both boys and girls, boys are more likely to be described by their parents as “outdoor children.” Results indicated that while 84% of boys were described as outdoor children by their parents, only 74% of girls were. Additionally, the outdoor play of boys is less likely to be home-based (64%) compared to girls (84%). Similarly, Reis et al. (2009) found that compared to adolescent boys, girls used parks less and were also less physically active. The gender difference is believed to be due to parents feeling more concerned about girls safety than boys (Valentine & McKendrick, 1997).

2.4.3 Attitude Towards Active Play

Children have different attitudes towards active play and these differences lead to variations in the degree to which they participate. Veitch, Bagley, Ball, and Salmon (2006) identified children’s attitudes towards free play as a key influence of their choice of activity. Parents often described their children as an indoor child or an outdoor child, with indoor children participating in more sedentary behaviours. Although the study did not focus on sedentary behaviours in depth, it was observed that the opportunity for sedentary behaviours within the home has increased. Many parents did report that their children would prefer to stay indoors rather than playing outdoors (Veitch, Bagley, Ball, & Salmon, 2006). Additionally, a later study discovered that parents who reported their children preferred to engage in activities that were not physically active were also less likely to report their child playing in their yard (Veitch, Salmon, & Ball, 2010).

A study of children's perceptions towards active play found children choose to participate in active play for many reasons (Brockman, Jago, & Fox, 2011). Many of the children reported playing outdoors in order to prevent boredom. Active play was often preferred to engaging in sedentary activities. Many of the participants also realised the physical and mental health benefits of active play. Finally, many of the participants reported participating in active play for the sense of freedom. By engaging in active play they are able to escape adult control as well as rules or structured activities (Brockman, Jago, & Fox, 2011). The fact that children value the freedom from engaging in active play is significant. Greater freedom to play outdoors with friends in an unsupervised environment has been linked to higher levels of physical activity (Jago et al., 2009b).

2.4.4 Self-Efficacy

Self-efficacy can be described as, "the beliefs an individual has about his or her ability to engage in behaviours that lead to expected outcomes" (Ryan & Dzewaltowski, 2002, p. 491). These beliefs have important implications for physical activity because they influence whether a behaviour will be adopted and maintained. Among adults, greater belief in the ability to be physically active has been shown to relate to greater levels of participation in physical activity. However, results among children have not been as consistent (Ryan & Dzewaltowski, 2002). A review by Sallis et al. (2000) found that evidence for self-efficacy as a determinant of physical activity is inconsistent. Some studies have supported self-efficacy as a determinant of children's physical activity (Pate et al., 1997; Trost et al., 1996, 1997), but others have not (Stucky-Ropp & DiLorenzno, 1993).

However, examination of the self-efficacy scales used in the review show that a number of different types of self-efficacy were examined (Ryan & Dzewaltowski, 2002). Two measures

of self-efficacy have resulted in no association with children's physical activity. Ryan and Dziewaltowski (2002) used a single-item scale measuring regular physical activity efficacy, asking 6th and 7th grade students how sure they were they could do vigorous activity for 20 minutes. The use of this scale did not result in self-efficacy predicting physical activity of the students. Stucky-Ropp and DiLorenzno (1993) measured one's belief in their ability to be active relative to peers of the same age and sex in a number of physical activities. This measure of self-efficacy also resulted in child self-efficacy not predicting physical activity in children from the 5th and 6th grades.

The use of other measures of self-efficacy has resulted in positive or mixed associations with children's physical activity. Pate et al. (1997), Trost et al. (1996, 1997), and Ryan and Dziewaltowski (2002) measured self-efficacy through barriers efficacy, which refers to being physically active even though there were barriers present such as homework or bad weather. A major finding of the study by Trost et al. (1997) was the significant relationship between self-efficacy in overcoming barriers and physical activity. Interestingly, there was a strong gender difference in which barriers strongly predicted physical activity. For girls, the most important barriers were tiredness and homework, whereas for boys the only barrier relating to physical activity was weather conditions (Trost et al., 1997). Although barrier efficacy was important for both boys and girls, Trost et al. (1996) observed boys to score significantly higher than girls on barrier self-efficacy. This seems to indicate that boys are more active than girls partially because they were more confident in overcoming barriers to physical activity (Trost et al., 1996).

Interestingly, Ryan and Dziewaltowski (2002) found conflicting results. They measured barrier efficacy by asking students how sure they were that they could participate in physical activity at least three times per week, despite common barriers such as homework. They found

no significant relationship between barrier efficacy and children's physical activity. They indicate the ability to overcome barriers to physical activity might not be the strongest contributor to physical activity because coping with barriers may only be efficient in the short-term (Ryan & Dziewaltowski, 2002). However, for both boys and girls, the researchers felt we should assist children in overcoming barriers to physical activity (Troost et al., 1997).

Alternatively, Ryan and Dziewaltowski (2002) investigated environmental change self-efficacy, which measured children's ability to find and create environments that encourage physical activity. The variable included children's ability to find people with whom to be active, find places to be active, find transportation to places for physical activities, and ask parents and teachers to create opportunities for physical activity. Environmental change self-efficacy had the strongest relationship to children's physical activity relative to all the other variables in the study. The authors believe that by having strong environmental change self-efficacy, students are able to establish the environmental conditions needed to be physically active (Ryan & Dziewaltowski, 2002).

Another measure of self-efficacy that has been investigated is support seeking efficacy (Pate et al., 1997; Ryan & Dziewaltowski, 2002; Troost et al., 1996, 1997). Support seeking efficacy refers to how confident children are that they can ask their parents, friends, teachers, and coaches to be physically active with them, or lend other support such as transportation to facilitate their participation (Pate et al., 1997; Ryan & Dziewaltowski, 2002). Both studies found support seeking self-efficacy to have a positive significant relationship with children's physical activity. Interestingly, Pate et al. (1997) found that support seeking self-efficacy was correlated with physical activity for those who met vigorous physical activity standards, not those who only met moderate physical activity standards. This suggests that compared to low active children,

vigorously active children were more confident in their ability to ask others to provide physical activity opportunities (Pate et al., 1997). Therefore, interventions to strengthen the ability of children to seek social support may be important to build resiliency needed to be physically active (Ryan & Dzewaltowski, 2002).

Although the study of self-efficacy is complex and has shown mixed results depending on the particular perspective taken (e.g., barriers efficacy versus support seeking efficacy), overall, self-efficacy has been shown to be related to children's physical activity.

Fun

Humbert et al. (2006) discovered that 12 to 18 year olds continually emphasized the importance of fun for physical activity. If an activity was deemed fun, youth were eager to participate. Although fun was generally based on perceived competence, youth adapted their physical activity to their skill level. Those who perceived themselves as more skilled generally found organized activities fun; those who perceived themselves as less skilled had fun participating in a non-organized activity. However, if physical activity options were limited, and youth felt their skill level was inadequate, they were less likely to pursue the activity (Humbert, et al., 2006).

2.5 Interpersonal Factors

Two important interpersonal factors for understanding children's active play include: parenting influences and peer relationships. Both parents and peers can have an effect on children's active play through social support and modelling.

2.5.1 Parental Influence

Social Support

A study by Brockman et al. (2009) on the perceptions of 10 and 11 year old children discovered that parents had a major effect on physical activity for many reasons. Most of the children reported that their parents encouraged them to participate either verbally or through logistical and financial support. The findings also suggested participation as a family was a facilitator of physical activity, however some participants noted the lack of free time as a barrier to participate as a family (Brockman et al., 2009). A similar study on the perceptions of children by Brockman, Jago, and Fox (2011) found that parents can also be a barrier to physical activity. The majority of the participants in this study reported that their parents had rules regarding active play due to fear of strangers and street safety (Brockman, Jago, & Fox, 2011).

Parental support also has been identified as related to children's physical activity in literature based on the perspectives of the parents (Sallis, Prochaska, & Taylor, 2000; Sallis, Prochaska, Taylor, Hill, & Geraci, 1999). A literature review found a strong positive correlation between parental support and child physical activity levels (Gustafson & Rhodes, 2006). Generally, results indicated that parental support can influence physical activity directly through encouragement, involvement, and facilitation; or indirectly through improving self-efficacy. Additionally, studies show that the effects tend to be stronger for younger children and the most important forms of support are encouragement, involvement, and facilitation (Gustafson & Rhodes, 2006).

Welk, Wood, and Morss (2003) used the Youth Physical Activity Promotion model to explore influences on children's physical activity and their results confirmed that adults influence children's physical activity levels both directly and indirectly. Adult facilitation (i.e.,

provision of equipment, access to, or opportunities to be active) was also found to be a predictor of both children's interest and participation in physical activity. Interestingly, boys received more parental facilitation than girls, which may explain some of the gender difference observed in physical activity levels. The study also revealed parental support indirectly facilitates physical activity through other affective or attitudinal mediators. Parental encouragement, support and, to a lesser extent, role modeling were found to be significant predictors of physical activity (Welk, Wood, & Morss, 2003). Finally, Trost et al. (2003) constructed a conceptual model of parental influences on children's physical activity and they found that parental support indirectly influences children's physical activity by promoting self-efficacy (Trost et al., 2003).

Modeling

Modeling occurs when individuals perform behaviours they see others do (Lieberman, Gauvin, Bukowski, & White, 2001). From a physical activity perspective, a parent's participation in physical activities such as active play could influence their children to engage in the activity. However, the influence of parental modeling on children's physical activity has shown mixed results. A review by Gustafson and Rhodes (2006) summarized the mixed results, reporting some studies have found a strong positive relationship, others a weak or no relationship, and one an inverse relationship between parental modeling and children's physical activity participation.

Moore et al. (1991) found a positive relationship as children of active mothers were 2 times more likely to be active as children of inactive mothers; children of active fathers were 3.5 times more likely to be active as children of inactive fathers. When both parents were active, the children were 5.8 times more likely to be active as children of two inactive parents (Moore et al., 1991). Edwardson and Gorely (2010) found positive relationships between parental modeling,

parental involvement, and the overall physical activity of children. Furthermore, children who perceive their parents as physically active are more likely to engage in physical activity (Edwardson & Gorely, 2010).

However, some studies have failed to find support for a parental modeling association with children's physical activity. For a child to engage in physical activity, parents also may need to provide other types of support beyond modeling (Edwardson & Gorely, 2010). Earlier, Trost et al. (2003) reported similar findings, stating parental modeling may not influence children's physical activity because parental activity itself does not remove other important barriers. Similarly, even though Sallis et al. (1992) reported parental physical activity was not associated with child physical activity, they did find that the availability of parents for transportation to fitness activities was significant. Finally, a review of correlates of children's physical activity discovered parental modeling was the most frequently studied variable, but was found to be unrelated or indeterminate for children's physical activity (Sallis, Prochaska, & Taylor, 2000). There was little evidence in the review that neither mothers' nor fathers' physical activity was more likely to be related to children's physical activity. They stated further that there may be some situations when parental modeling is necessary, but the situations have yet to be identified. They believed parents may need to provide more direct assistance for their children to engage in physical activity (Sallis, Prochaska, & Taylor, 2000).

2.5.2 Peer Relationships

Parental relationships are an important influence on children's physical activity, but peer relationships are as well, if not more so. Indeed, Jago et al. (2009a) found peer influence is perceived to be more important than parental influence. Children in the study reported that their friends helped them begin physical activity either through modeling, cooperative play, or verbal

encouragement. They also discovered peers are important for sustained participation in physical activity as many participants indicated they engaged in physical activity because of the social aspects of the activity. Interestingly, the participants also indicated they would rather be engaged in active pursuits than sedentary activity when with friends (Jago et al., 2009a).

These findings are also supported by a recent review of the literature by Fitzgerald, Fitzgerald, and Aherne (2012) who concluded that research has consistently demonstrated peer support is associated with higher levels of physical activity. Additionally, friendship quality and peer acceptance had an affect on enjoyment of physical activity (Fitzgerald, Fitzgerald, & Aherne, 2012). Humbert et al. (2006) also linked adolescents' participation in physical activity with friends to the intrapersonal factor of fun. Participants stated physical activity was fun if it meant being with friends or meeting new friends (Humbert et al., 2006).

Jago et al. (2009b) investigated the importance of friends for parents allowing independent activity and found that a quarter of the parents studied indicated an adverse effect on their child's physical activity options when they did not have friends who lived close by. Similarly, a few parents indicated they limited their child's freedom to play because they had no friends who were allowed to play. Finally, some parents indicated they would only allow physical activity if it took place in groups (Jago et al., 2009b).

Although the presence of peers seems to have a positive influence on children's physical activity, the nature of the peer relationships is also important (Salvy, de la Haye, Bowker, & Hermans, 2012). Overall, the perception of support and positive relationships with peers is associated positively with children's physical activity concurrently and longitudinally. Similarly, negative peer experiences have also been related to lower levels of children's physical activity (Salvy et al., 2012).

2.6 Environmental Factors

The physical environment has been extensively studied leading to a large amount of literature on environmental attributes and their association with physical activity; however, much of the emphasis of that research has been placed on adults with much less paid to children (Davison & Lawson, 2006). However, Sallis et al. (2000) did find that access to facilities and time spent outdoors were consistently related to children's physical activity. There are a number of environmental factors that could influence children's physical activity including: access to facilities, the home environment, and concerns over safety.

2.6.1 Access to Facilities

Recent studies have discovered features of the environment that relate to adult physical activity. Some of these features include proximity, connectivity, and access to recreation facilities and parks, trails, swimming pools, and gyms, as well as the quality of these resources (Kaczynski & Henderson, 2007; Kaczynski, Potwarka, & Saelens, 2008; Norman et al., 2006). However, there have been few studies that look at the relationship between the environment and child physical activity.

Roemmich et al. (2006) found that for 8 to 12 year old children, greater numbers of park and recreation areas in the community were associated with more physical activity. Grow et al. (2008) also found that the use of recreation sites was related to proximity to home, but more important for encouraging physical activity was whether or not the park was reachable by walking or biking.

However, the perception of available facilities could be a more effective predictor of physical activity. A quantitative study involving adolescents found actual neighbourhood park availability was not positively associated with park use, but perceived park availability was (Ries

et al., 2009). Additionally, children's perception of their environment was investigated by Santos, Page, Cooper, Ribeiro, and Mota (2009) who found that both boys and girls who perceived their neighbourhoods to have a greater number of recreational facilities were more active. Pizarro, Santos, Ribeiro, and Mota (2012) found similar results indicating that the perception of increased availability of physical activity facilities and equipment in the neighbourhood were associated with higher levels of physical activity, while the perception of fewer parks or playgrounds was associated with a lower likelihood of physical activity. Finally, perceived access to recreational activities within walking distance was significantly associated with physical activity, suggesting that perceived distance is as relevant as the physical distance and may in fact be more influential on utilization of the facilities (Utter et al., 2006).

However, some research has generated contradictory results. Fein, Plotnikoff, Wild, and Spence (2004) found a non-significant relationship between the perceived presence of facilities and equipment with physical activity. They suggest that this lack of relationship may be due to individuals not perceiving the availability of facilities and equipment accurately. Utter, Denny, Robinson, Ameratunga, and Watson (2006) discovered a small but significant number of their participants (14% boys; 17% girls) who said there was nothing to do where they lived (while all others perceived some facilities within walking distance) and were significantly less likely to engage in physical activity. It is therefore important that children's perception of facility availability aligns with actual facility availability.

Park Quality

Tucker et al. (2009) found a lack of association between the availability of park space and physical activity. They suggest this may be due to perceptions of park quality as more important than the presence or the size of the park. Veitch, Bagley, Ball, and Salmon (2006)

discovered half of the parents studied raised concerns about park quality. The most common complaint was parks were built for toddlers and younger children, and older children found them boring. A literature review based on qualitative research found that this was a common deterrent of park use as both caregivers and children frequently mentioned play equipment that was age inappropriate, poorly equipped, out-dated, or not mentally or physically stimulating (McCormack, Rock, Toohey, & Hignell, 2010). Potwarka, Kaczynski, and Flack (2008) reported that both parents and children would seek out parks with known amenities and decide to visit a park further away, rather than base their decision solely on proximity. Advancing our understanding about the features of parks and playgrounds that are most useful for promoting physical activity among children would be beneficial (Potwarka, Kaczynski, & Flack, 2008).

However, although park quality has been identified as an important factor for children's physical activity, identifying which of those park features that are most conducive to physical activity has rarely been studied. Tucker, Gilliland, and Irwin (2007) investigated parents' preferences regarding city parks and found less than half of those interviewed were visiting parks closest to their home. They also found the most appealing amenities for the parents were water facilities, sufficient shade, swings, and overall cleanliness. Interestingly, swings were important because many parents indicated that they were their child's favourite activity. Having age appropriate equipment was also mentioned by most parents as it provided a space for children to play. Other important features that parents identified were lighting to deter inappropriate behaviours during evening hours, as well as other structures such as picnic tables, pavilions and water fountains that would allow patrons to eat at the park (Tucker, Gilliland, & Irwin, 2007). Very few studies have documented preferences regarding amenities in parks, and it remains unclear whether preferences expressed by parents are similarly held by their children.

2.6.2 The Home Environment

Recent research has also focused on the importance of the immediate home environment for promoting physical activity during childhood. Hume, Salmon, & Ball (2005) used a behavioural mapping technique to investigate the perceptions of children about their home environment. The children drew and photographed opportunities for both physical activity and sedentary pursuits. The results showed that some children did not draw their yard at all, or with very little detail, while others included a great deal of detail. Less than half of the children drew any physical activity opportunities at home; however, equipment for active play such as bicycles, pools, trampolines, and basketball nets were sometimes drawn, usually in the backyard. The study also investigated the availability of sedentary pursuits within the home discovering that while few children drew opportunities for physical activity in the home, two-thirds of the children drew at least one sedentary opportunity (Hume, Salmon, &, 2005). However, analysis revealed that boys who reported more opportunities for all types of sedentary behaviours were more vigorously active. This aligns with previous research that sedentary behaviours are not necessarily prohibitive of physical activity (Biddle, Gorely, Marshall, Murdey, & Cameron, 2004; Biddle, Gorely, & Stensel, 2004). A study of Canadian adolescents by Koezuka et al. (2006) found contradictory evidence when they reported television viewing was significantly related to physical inactivity for both males and females. However, time spent on the computer was not significantly related to physical inactivity for males or females.

These studies suggest children's perceptions of their home environment also may be associated with their participation in physical activity. However, given the number of non-significant findings, along with conflicting results, further research is necessary (Hume, Salmon, & Ball, 2005).

2.6.3 Safety

The effects of neighbourhood safety on children's physical activity have been studied extensively with mixed results. Of particular interest, two areas of neighbourhood safety that have been studied are fear of strangers and road safety. In qualitative studies, parents consistently raise concerns over fear of strangers and road safety (Jago et al., 2009b; Timperio, Crawford, Telford, & Salmon, 2004; Veitch, Bagley, Ball, & Salmon, 2006). Veitch et al. (2006) investigated parents' perceived influences on active play and found that 94% of the parents interviewed stated safety concerns affected their child's active play. Although parents stated fear for their safety had an effect on the children's physical activity, there is little evidence to support their claims. Carver, Timperio, and Crawford (2008a) found fear of strangers was not associated with children's physical activity. Similarly, studies regarding road safety have also shown no significant associations between parents perception of road safety and moderate to vigorous physical activity levels of their children (Carver, Timperio, & Crawford, 2008b; Sallis, Prochaska, & Taylor, 2000). Additionally, Reis et al. (2009) studied both objective and perceived measures of neighbourhood crime and their relationship to children's physical activity, finding neither measure was associated with park use.

Fear of safety has also been investigated from the perspective of children. In an investigation of children's self-reported barriers and facilitators to active play, some of the children reported fear of safety as a constraint to active play (Brockman et al., 2011). Many females felt constrained from active play because they were concerned about the presence of older children in their neighbourhoods. Interestingly, children also reported their parents' fear for their safety as a constraint to free play however, most children disagreed with their parents'

concerns (Brockman et al., 2011 & Timperio et al., 2004). Both boys and girls perceived their parents' views of their neighbourhood to be more negative than their own.

While results are limited on the association between fear for their safety and children's physical activity, it is clear that both parents and children are concerned about having a safe neighbourhood within which to play. Further investigation into the importance of safety will be beneficial for promoting active play.

Neighbourhood Design

The built environment, the physical form of our communities, plays an important role in children's physical activity (Handy & Clifton, 2007). The built environment has been defined in different ways, but generally it is defined as the part of the physical environment that is constructed by human activity (Saelens & Handy, 2008). Specifically, the built environment is defined as consisting of the following elements: "land use patterns, the location of activities across space; and the transportation system, the facilities and services that link one location to another" (Handy & Clifton, 2007, p. 171). These elements together determine access to physical activity. It is becoming increasingly clear that the built environments of most cities provide limited opportunities for children's physical activity.

A review of literature regarding adult physical activity suggests that connecting streets, and through roads are important for promoting walking for adults (Saelens, Sallis, & Frank, 2003). The relationship between neighbourhood design has also been investigated for children and adolescents. Carver, Timperio, & Crawford (2008c) discovered that the presence of road safety measures is related to increased walking and cycling, and total moderate to vigorous physical activity in adolescents. However, this was not supported for children. There was either a null or negative relationship between the number and length of sidewalks as well as number of

traffic/ pedestrian lights (Carver, Timperio, & Crawford, 2008c). As Karsten (2005) states, this may be because children are now being driven to more structured physical activities, which would not be influenced by local neighbourhood characteristics. Additionally, environments that promote walking and physical activity for adults may not be the preferred environment for children. Connecting or through streets may be perceived by parents as unsafe for children which could be detrimental to active play (Veitch, Bagley, Ball, & Salmon, 2006). Veitch et al. (2006) found that children living in cul-de-sacs appeared to have greater autonomy to engage in active play because they were perceived to be safer than connecting streets.

Carver, Timperio, & Crawford (2008c) observed interesting results when studying children and adolescents. For girls, there was a strong association between the presence of traffic lights and walking or cycling. However, for boys there was a greater increase in moderate to physical activity for those who lived in cul-de-sacs. This suggests that boys engage in physical activities such as football and skateboarding, while girls do not (Carver, Timperio, & Crawford, 2008c).

2.7 Summary

Youth physical activity is a complex behaviour determined by many factors (Sallis, Prochaska, & Taylor, 2000). To better understand that behaviour, a more comprehensive and holistic approach needs to be embraced. One such approach is reflected in ecological models (Sallis, Owen, & Fisher, 2008), which emphasize multiple influences of health behaviours including three essential conceptual levels: intrapersonal, interpersonal, and environmental. While using ecological models to explore children's active play it is important that the primary source of information be the children themselves. Children are the ones who experience active

play; therefore they will be better able to give not only an accurate account of their active play participation, but also their perspective on their active play experiences. For that reason the perspective of children should be used to uncover factors that might explain inactivity.

Chapter 3 Methods

Physical activity has many benefits, however, the prevalence of Canadian children who meet recommended physical activity guidelines is decreasing. One frequently forgotten aspect of physical activity is active play. Active play has been called the “business of childhood” (Piaget, 2007), yet it too has seen a significant and consistent decline (Hofferth & Sandberg, 2001). Active play has the potential to be a significant contributor to increasing children’s physical activity, however, we know little about children’s active play behaviours. In order to gain a better understanding of children’s active play it is important to explore children’s perspectives.

The purpose of this study was to investigate the participation in and perceptions of active play by 9 to 12 year old children to uncover the nature of their experiences from their own perspectives. The study involved two phases, the first established the nature of children’s active play, and the second explored their experience of active play in an effort to discover factors affecting it.

3.1 Study Design

The study included two phases. In the first phase, an adapted time diary method was used with children 9 to 12 years of age to collect data on when, where, and with whom children are playing. Therefore, the time diary instrument was used to collect information on the context of children’s active play. In the second phase, a sample of the participants were selected for follow-up interviews to further explore their perceptions of their active play, how they experience it, and to gain further insights into the intrapersonal, interpersonal, and environmental factors associated with their play.

3.2 Sample

The sample was drawn from classes of grade 4 to 6 students aged 9 to 12 years old. Participants were recruited through voluntary school participation. An application was sent to the Avon Maitland District School Board and the Huron Perth Catholic District School Board for their approval. The application included: (1) a brief description of the purpose of the research; (2) a more detailed description of the research process, including tasks the children were asked to complete (i.e., copy of time diary completed by everyone, and a copy of the interview guide used with a selected few), and the proposed schedule; (3) copies of the information cover letter and parental consent form, as approved by the University of Waterloo Office of Research Ethics; (4) the signed official ethics review approval of the proposed research completed by the University of Waterloo Office of Research Ethics; and (5) a written commitment to ensure the anonymity of district schools, staff, and students in any reports generated from this research.

Once approval from Avon Maitland District School Board and Huron Perth Catholic School Board was received, eligible schools within the Board were notified about the opportunity to participate in the study. After schools volunteered to participate in the study, parents were informed of the upcoming study in a take-home flyer (see Appendix A) so that they could anticipate receiving the information letter (see Appendix B), and consent form (see Appendix C). A parent information night was also held to discuss the study with interested parents. Arrangements were then made with the teachers responsible for students in grades 4 through 6 to enter their classes at a time of their convenience in order to present the study to the students and ask them to participate voluntarily. Children were given an information sheet (see Appendix B) regarding both phases of the study as well as a parental consent form (see

Appendix C) to bring home to their parents. Those students who returned signed consent forms were able to participate.

3.3 Phase 1: Time Diary

Many studies have used surveys and interviews to obtain estimates on the time use of children by asking parents to estimate how much time their children spend in certain activities. Apart from the debatable reliability of parents' estimates, these approaches also are subject to social desirability bias (Hofferth & Sandberg, 2001) as parents tend to portray their children's activity favourably. Direct observation or beeper methods are presumed to have higher validity (Robinson, 1985); however, these approaches often are difficult to arrange because of their cost, time, and complexity. Conversely, the time diary method can be less costly and more reliable than standard recall methods (Juster, Ono, & Stafford, 2003). Bolger, Davis, and Rafaeli (2003) state diary methods are more reliable than standard methods because of the dramatic reduction in retrospection, and the minimization of the amount of time elapsing between the event and reporting of the experience. Additionally, time diary methods allow for the examination of events in their natural and spontaneous context (Bolger, Davis, & Rafaeli, 2003).

However, there have been reported limitations to time diary use. First, in order to obtain reliable and valid data, participant commitment and dedication is needed more than for other types of research studies (Bolger, Davis, & Rafaeli, 2003). Repeated responses to a number of activities can place a burden on participants. Therefore, diaries need to be short and only take a few minutes to complete. Second, little is known about the effect of diary completion on participants' experiences, or their responses to those experiences. However, the same limitation

occurs for many other types of research studies (Bolger, Davis, & Rafaeli, 2003), so there is no evidence that the “research effect” is any more pronounced in a time diary approach.

3.3.1 Administration of Time Diary

Arrangements were made with the participating schools and teachers to distribute and describe the time diaries to the students that returned the information and consent forms. The time diary (see Appendix D) and how to complete it were described to the students using a prepared script (see Appendix E). Any questions regarding the time diary were answered and time diaries were distributed for use. Instructions for diary use and contact information were also included with the time diary for future reference in case any of the students had questions during the diary process.

Participants completed a modified time diary designed to have them report each instance of active play over a 4-day period. Participants were asked to fill out a diary entry as soon as possible after they engaged in active play in order to reduce recall effect, but not affect the active play experience. They were instructed to complete time diary entries for four days, including two week days and two weekend days. Time diaries were distributed to students in designated classrooms on Monday, Tuesday, or Wednesday depending on the teacher’s schedules. Children were instructed to complete time diaries from Thursday to Sunday and hand their completed diaries in on the following Monday in their classrooms. During weekdays, participants were asked to complete a diary entry only for events occurring outside of school hours.

The collection of responses followed the event contingent method, meaning the participant filled out a diary entry every time a defined event occurred (Wheeler & Reis, 1991). The event contingent method is preferred when the event can be easily defined for or by the subject, and when it is important to observe a large number of events to thoroughly examine the

variation between events (Wheeler & Reis, 1991). This study is modified from the general event contingent approach as the definition of active play was not supplied to the participants. Rather, they were asked to respond with a time diary entry every time they engaged in what they believed to be active play. However, during the introductory session, “active play” was discussed to help the participants understand that there are different types of physical activity. For example, the students understood that active play is more than just organized team sports and might involve any spontaneous play or games that involve them expending some energy. For each episode of active play the children engaged in during the study period, they were asked to record the time in which they started to play and the duration of the activity. They also recorded where, and with whom they engaged in active play, which served to give context to children’s active play as well as identify some of the factors influencing children’s active play from the three levels of the ecological model including: intrapersonal factors (i.e., attitude towards active play), interpersonal factors (i.e., parental influence, peer relationships), and environmental factors (i.e., access to facilities).

Upon completion of the first stage of the study period, arrangements were made to collect the time diaries. Arrangements were made to have the diaries dropped off in the classroom in which the introduction session was held to be collected later. A feedback letter (see Appendix F) was provided to participants to take home to their parents, thanking them for their participation in the study. It also contained information regarding how the results of the study will be shared.

3.3.2 Time Diary Measures

Time diary design was based on, and guided by, the ecological model, ensuring it included measures on intrapersonal, interpersonal, and environment factors. Intrapersonal

factors investigated included gender and age, the interpersonal factor was with whom the children played, and the environmental factor was where participants played.

Introductory Page

Demographics were obtained by asking participants to indicate their age, sex, and grade before completing the time diary. A physical activity profile developed by Smale and Shaw (1993) for adolescents was also included. The profile was used to assess levels of participation in a number of physical activities. The profile was modified to include types of physical activities that are appropriate for 9 to 12 year old children in the Avon Maitland District School Board and Huron Perth District School Board area (e.g., snowmobiling or four wheeling, aerobics such as zumba, and karate). I have lived in Listowel for over 20 years and worked for the parks and recreation department for ten years, so I am familiar with the physical activity opportunities available within the community. The index was also modified to have the children indicate the number of times in the past week they had participated in the activities, rather than the number of times in the past month. Finally, a question about the amount of time the participant typically spent engaged in each activity was added in order to obtain an overall estimate of the amount of time participants spent in each of the activities in a week.

Active play

Active play was the outcome measure of interest in this study. The measurement estimated the amount of active play on average in which the children participated. It was calculated by having the children indicate the start time of their active play episodes and how long in minutes they engaged in the activity. The total amount of time spent in active play over the four days was then calculated. They were also asked to indicate and describe the type of activity in which they were involved.

Socio-ecological factors

The interpersonal factor measured in the time diary was who children were participating in active play with. Following each episode, children indicated who they participated with on a checklist including: playing alone, with one friend, in a group, with family or relatives, or other.

The environmental factor measured in the time diary was where children were participating in active play. Following each episode, participants indicated where they participated on a checklist including: at home or in their yard, at a friend's house, at a park or arena, or other.

3.3.3 Organisation and Analysis of Time Diary Data

Following the collection of time diaries, data was organized and analyzed to look for patterns and commonalities. Differences were tested among the episodes of play rather than by the individuals in order to focus on the characteristics and nature of the play episodes rather than the individuals. While conducting analysis on episodes could introduce issues of interdependence affecting variance in the measures, an examination of the number of play episodes and the duration of these episodes were sufficiently similar among the children to assume interdependence would not adversely affect the results.

First, descriptive statistics were generated to describe the participants and the characteristics of their active play to provide the basis for further analysis. The total amount of time spent in active play was calculated for each day and for all four days, for each child as well as for the group overall. Additionally, the frequency of episodes of active play that involved solitary play, play with family, and play with friends was determined. Finally, the frequency of active play episodes that occurred at parks, other facilities, or at home was determined. T-tests and analyses of variance were used to examine differences between subgroups within the sample

such as gender and age to determine if any significant differences were revealed that might provide insights into factors that, overall, are related to active play.

3.4 Phase 2: Personal Interviews

Following Phase 1, I had an idea of where, when, and with whom children are playing. However, to further investigate the children's perceptions of their active play – including how intrapersonal, interpersonal, and environmental factors might play a part in their perceptions – personal interviews were used to explore their experiences more deeply.

3.4.1 Criteria for Selecting Interview Participants

Based on findings from the review of the literature, I expected to find some commonalities in the time diary reports of active play of the children. To begin, I expected to find that males participate in more active play than females, and active play declined with age. I also expected to find that children participated in active play with both parents and friends, with the possibility of friends being more important. Finally, I believed that children would engage in active play at a variety of facilities, however most active play would occur at home or at neighbourhood parks. In addition I expected to find some interaction between the factors. For example, I expected children who have more friends in the neighbourhood to engage in more active play, however, the number of parks in the neighbourhood may also have an effect.

Once patterns from the time diary data had been discovered, a selection of participants with a variety of profiles were invited for interviews to further investigate their perceptions and experience of active play. An equal representation of males and females were selected. Those who were chosen were contacted by phone, which was supplied on the consent form by parents who had given consent for their children to participate in this second phase of the study. Interviews were arranged on an individual basis at the children's homes when convenient for the

family. An initial sample of 12 children was selected for personal interviews. Interviews ended once no new themes emerged from the data.

3.4.2 Conducting the Interviews

Interviews were conducted in the children's homes at a time that was convenient for the family, lasting on average 15 to 30 minutes. With the parent's permission, only the children were present during the interview. Interviews were semi-structured to gain a better understanding of the interviewee's perspectives and concerns (Bryman, Bell, & Teevan, 2012). The semi-structured interview was designed to bring out how the children themselves interpreted and made sense of their active play behaviours.

An interview guide (see Appendix G) was developed to have an initial list of questions to be covered. However, questions did not follow the exact order of the guide, and some questions not on the list were asked in response to what the child said. The guide was developed as an aid to ensure I investigated the children's perceptions of their active play, including their descriptions of intrapersonal, interpersonal, and environmental factors affecting their active play. For example, I investigated which types of self-efficacy have the greatest influence on active play. Different types of self-efficacy including support seeking, barrier, and environmental change were explored by asking participants whether they had to seek support from others to engage in active play, whether there was anything that was stopping them from participating in active play that they had to overcome, and if they had to change anything in their environment to help them engage in active play. Also, I further explored the effect of parents and peers, and whether one or the other has a greater effect. The effects of others was explored by asking whether those people were necessary for active play, how they supported their active play, and if they preferred to engage in active play with others. Finally, I further examined which

environmental factors had an effect on active play such as access to facilities, the home environment, and neighbourhood safety. They were explored by asking participants why they chose their locations for active play, if they would have preferred to engage in the activity somewhere else, and why they were able to or not able to access the facility.

I also anticipated the need for a number of probing and specifying questions, for example, “can you say more about that?” These questions were used as follow up questions to explore deeper into the perceptions of the children. With permission, all interviews were tape recorded. This allowed for a richer review of the data as I was able to observe not only what the interviewee said, but how they said it. Additionally, it allowed me to be more alert to what was being said enabling me to follow up on interesting points, and probe where necessary rather than focus on writing down what was said (Bryman, Bell, & Teevan, 2012).

At the beginning of the interview process, I worked to develop good rapport with the participants. One of the most important considerations with interviewing children is how to create a natural context for the interview (Eder & Fingerson, 2002). Interviews were conducted in the home where the children felt most comfortable. I also tried to communicate with the children in a manner that made us equal. As a researcher it was important that I learned the communication norms of the children through observation during the interview as well as informal interaction before the interview process (Eder & Fingerson, 2002). In addition I attempted to make the interview feel more like a conversation, rather than a classroom type situation which would remind the children of “known answer” questions. I hoped to create an atmosphere in which the interviewees felt comfortable enough to answer about how they thought or felt, rather than provide answers they thought they are supposed to provide (Eder & Fingerson, 2002).

After each interview, I took reflective notes to guide further interviews. Reflective notes served two purposes: (1) provided more detail about the interview, and (2) facilitated reflections on what went well during the interview and what to change for future interviews. Notes included things that could not be observed on the tape recorder such as the child's body posture and facial expressions. Additionally, I used the notes to learn and improve on my interviewing ability. I reflected on what I did well, and what I needed to change in order to conduct a more effective interview.

At the completion of the interviews, parents were given a second feedback letter to be shared with students. The letter thanked the students for participating, and also included details about the purpose and predictions of the study, restatement of the provisions for confidentiality and security of data, an indication of when a study report will be available and how to obtain a copy.

3.4.3 Analysis of Interview Data

Due to the time required for transcribing, the data analysis process began during data collection. After an interview was conducted, it was transcribed rather than waiting for all the interviews to be completed. Once interviews were completed and transcribed, data analysis began. Analysis was consistent with the data analysis strategy used in a grounded theory approach to explore patterns and themes. Based on a strategy described by Charmaz (2006), coding was used to help sort and organize the data by attaching labels to segments of data to represent what each segment was about. Through coding I simultaneously categorized, summarized, and accounted for each piece of data. The coding process consisted of two main phases. I began with initial coding, which was conducted by coding incident to incident. Initial coding was done quickly, allowing me to stay close to the data, but also encouraging me to start

thinking analytically and compare events. Initial coding was followed by focus coding. These codes were more conceptual than my initial coding, as I began to organize codes into categories and explain larger segments of data (Charmaz, 2006). At this point, guided by an ecological framework, I identified major patterns and themes in the data.

Chapter 4

Characteristics of Children and Their Social and Physical Environment

The results of this study are split into two chapters. This chapter focuses on the characteristics of the children participating in the study and their play behaviours including their social and physical environments while the second focuses on children's perceptions of their play behaviours. This chapter includes a profile of the sample and a description regarding their active play participation. In the next chapter, the children's perceptions of the intrapersonal, interpersonal, and environmental factors affecting their active play are described.

4.1 Sample Profile

A total of 79 time diaries were collected on March 26, 2014 from three different elementary schools (grades four to six) in Listowel, Ontario from the Avon Maitland District School Board and the Huron Perth Catholic School Board. Approximately 200 students were invited to participate in the study.

Table 1: Characteristics of the Sample

Characteristics	n	Pct.
Sex		
Females.....	39	50.6
Males.....	38	49.4
Age		
9.....	16	21.1
10.....	23	30.3
11.....	31	40.8
12.....	6	7.9
Grade		
4.....	21	27.6
5.....	21	27.6
6.....	34	44.7

Of the total 79 students who completed a time diary, 39 were females (49.4%) and 38 were males (48.1%) (see Table 1). Participants in the study ranged from 9 to 12 years old, the

most common age was 11 years old ($n = 31$) representing 39.2% of the sample. Students were in grades 4 to 6 with the most common grade 6 ($n = 34$) representing 43% of the sample.

4.2 Children’s Active Play Behaviours

4.2.1 Common Play Activities

To analyze active play participation, each participant’s individual play activities were recorded as individual episodes. A total of 45 active play activities were observed revealing a large variation in play activities. The most common activity was walking ($n = 66$) accounting for 14.8% of the active play episodes (see Table 2). The average episode time per activity was also calculated. The activity in which children participated in the longest per episode, on average, was swimming ($M = 93.0$, $SD = 50$).

Table 2: Total Number of Episodes and Average Time of Each Activity

Activity	Rank Order	N	Pct.	Minutes per episode	
				Mean	Std. Dev.
Walk	1	66	14.8	31.30	29.63
Walk to/ from school.....	2	52	11.7	17.19	8.79
Mini Sticks	3	38	8.8	56.97	32.99
Street hockey	4	28	6.3	47.93	31.18
Walking dog	5	24	5.4	20.92	15.47
Tag.....	5	24	5.4	34.04	24.04
Scootering.....	7	22	4.9	72.73	98.11
Sledding.....	8	21	4.7	79.52	34.17
Building a snow fort/ man.....	9	20	4.5	68.95	55.70
Swimming	10.5	16	3.6	92.50	50.00
Played outside	10.5	16	3.6	72.50	65.14
Playing with pet.....	12	16	3.6	36.79	21.98
Running	13	13	2.9	32.31	20.17
Snowball fight	14	12	2.7	51.36	39.94
Aerobics	15	9	2.0	22.44	16.55

4.2.2 Active Play Context

To analyze the context of children's active play, several factors for each episode were observed including the day of the episode, with whom the episode occurred, where the episode occurred, when the episode occurred, and how long the episode lasted.

Children participated in the highest number of active play episodes on Friday ($n = 127$) accounting for 28.5% of the active play episodes (see Table 3). The day in which participants engaged in the fewest number of active play episodes was Sunday ($n = 98$) accounting for 22% of the active play episodes. However, a comparison of days revealed that on Sunday children participated in longer episodes of active play on average ($M = 53.4, SD = 46.2$), whereas on Thursday children participated in shorter episodes on average ($M = 34.3, SD = 26.2$). This difference, as well as with Saturday is significantly different ($F = 4.565, p = .004$). This suggests that although children are involved in fewer episodes of active play on the weekend, the episodes they do engage in tend to be longer compared to weekdays.

Additionally, children participated in the highest number of active play episodes with family and relatives ($n = 140$) accounting for 31.5% of the active play episodes (see Table 3). Conversely, children participated in the fewest number of active play episodes alone ($n = 69$) accounting for 15.5% of the active play episodes. Furthermore, when children participated in active play alone, episodes were shorter on average ($M = 29.4, SD = 33.2$), whereas when they participated in groups, episodes were longer on average ($M = 57.4, SD = 41.2$). This difference is statistically significant ($F = 4.548, p = .001$). This suggests that children engage in more active play in groups and episodes tend to last longer when playing in groups compared to when playing alone.

Table 3: Context Factors – Episode Frequency and Average Length

	N	Pct	Mean	SD	F-ratio	p
Day of Play Episode						
Thursday	110	24.7	34.25 ^a	26.16	4.565	.004
Friday.....	127	28.5	45.55 ^{ab}	42.77		
Saturday.....	110	24.7	53.34 ^b	55.65		
Sunday	98	22	53.42 ^b	46.27		
With Whom play episode occurred						
Alone	69	15.5	29.38 ^a	33.15	4.548	.001
One Friend.....	99	22.2	43.70 ^{ab}	60.17		
Group.....	104	23.4	57.37 ^b	41.82		
Family/ relatives	140	31.5	49.35 ^{ab}	36.75		
Other	17	3.8	37.81 ^{ab}	43.05		
Where the play episode occurred						
At home/ yard.....	163	36.6	49.72 ^{ab}	39.12	8.055	<.001
Neighbourhood.....	132	29.7	32.85 ^a	29.47		
Park/ arena.....	18	4	70.25 ^b	37.83		
Other.....	98	22	56.68 ^{ab}	63.54		
When play episodes occurred						
7:00 - 8:55	41	9.2	21.83 ^a	13.77	3.122	.005
9:00 - 10:59	27	6.1	57.11 ^b	50.35		
11:00 - 12:59	24	5.4	55.46 ^b	42.18		
1:00 - 2:59	51	11.5	51.30 ^{ab}	48.86		
3:00 - 4:59	132	29.7	42.08 ^{ab}	50.92		
5:00 - 6:59	82	18.4	50.17 ^{ab}	34.81		
7:00 - 8:59	55	12.4	47.22 ^{ab}	35.74		
How long play episodes lasted						
0 – 29	169	38.0				
30 – 59	112	25.2				
60 – 89	93	20.9				
120+.....	44	9.9				

Note: Superscripts indicate contexts significantly different from each other ($p < .05$)

Next, participants engaged in the highest number of active play episodes at home or in the yard ($n = 163$) accounting for 36.6% of the active play episodes (see Table 3). On the contrary, the fewest number of episodes were reported at parks or arenas ($n = 18$) accounting for 4% of the active play episodes. However, when participants engaged in active play at a park or arena episodes were longer on average ($M = 70.28$, $SD = 37.8$), whereas when they participated

in the neighbourhood episodes were shorter ($M = 32.85$, $SD = 29.5$). This difference is statistically significant ($F = 8.055$, $p = <.001$). This suggests that children are engaging in more episodes of active play in the neighbourhood, however when they participate in the neighbourhood episodes are shorter than when they participate at parks or arenas. Furthermore, participants engaged in the most active play episodes between 3:00 and 4:59pm ($n = 132$) accounting for 29.7% of the episodes, conversely they participated in the fewest episodes between 11:00am and 12:59pm ($n = 24$) accounting for only 5.4% of the episodes (see Table 3). Although, it is important to note that participants were instructed not to record diary entries during school hours. However, data still suggests that children engaged in active play directly following school or right before dinner. In contrast, student participated in the fewest number of active play episodes over lunch.

Finally, children participated most often in active play episodes lasting less than thirty minutes ($n = 169$) accounting for 38% of the episodes, followed by episodes lasting between thirty minutes and an hour ($n = 112$) which accounted for 25.2% of the active play episodes (see Table 3). This suggests that children are engaging in short bouts of active play.

4.3 Personal Factors

4.3.1 Gender

Males in the study sample reported a higher number of episodes in comparison to females (see Table 4). Males reported a mean participation of 5.8 episodes ($SD = 2.6$) and females a mean participation of 5.5 episodes ($SD = 3.5$). Additionally males reported longer episodes in comparison to females (see Table 5). Males reported participating in 51.9 minutes ($SD = 19$) per episode on average, while females reported participating 41.9 minutes ($SD = 30.8$) per episode on average. Therefore, on average males reported participating in more episodes of active play

in comparison to females. They also reported on average having longer episodes of active play than females. However the difference is not statistically significant.

4.3.2 Age

With respect to age, findings demonstrate that active play stays relatively consistent as age increases (see Table 4 & Table 5). The mean number of active play episodes does decline from age 9 ($M = 5.2, SD = 2.3$) to 12 ($M = 4.8, SD = 2.6$), however the relationship is non-significant. Additionally 10 and 11 year old children have a higher mean number of episodes than 9 year olds. Similarly, findings demonstrate that active play episode length is consistent as age increases. The average length per episode does decrease from age 9 ($M = 50.0, SD = 36.1$) to age 12 ($M = 34.9, SD = 36.2$), however the relationship is non-significant ($F = .847, p = .469$).

Table 4: Personal Factors - Episode Frequency

Characteristic	N	Mean*	Std. Dev.*	t/F*	p*
Gender					
Female.....	215	5.51	3.46	.398	.486
Male.....	220	5.79	2.57		
Age					
9.....	83	5.19	2.26	.447	.720
10.....	141	6.13	3.92		
11.....	174	5.61	2.78		
12.....	29	4.83	2.64		
Grade					
4.....	132	6.29	3.13	.722	.489
5.....	110	5.24	3.33		
6.....	185	5.44	2.82		

Note: * Based on aggregate data

Table 5: Personal Factors - Episode Length

Characteristic	n	Mean	Std. Dev.	t	p
Gender					
Female.....	214	41.79	50.13	2.249	.539
Male.....	216	51.44	38.17		
Age					
9.....	81	50.05	36.12	.847	.469
10.....	140	47.58	52.13		
11.....	172	45.91	43.78		
12.....	29	34.90	36.20		
Grade					
4.....	130	49.76	53.05	.982	.376
5.....	109	48.42	42.18		
6.....	183	43.04	40.08		

Note: Based on episode data

4.4 Gender Differences

4.4.1 Play Activities

When comparing the top ten activities in which males and females reported the greatest number of episodes, there is some similarity. For example both males and females frequently reported walking, and walking to and from school (see Table 6 & Table 7). Both males and females also reported playing tag, street hockey, mini-sticks, playing in the snow, and sledding. However there was a large difference in rank order as males reported playing mini-sticks, street hockey, tag, and sledding more often than females. Conversely females reported participating in activities not reported as often by males such as scootering, playing outside, running, swimming, and aerobics. Interestingly, females reported a wider range of activities than males which can also be seen by the distribution throughout the top ten activities.

Table 6: Most Common Play Activities for Females

Rank Order	Activity	Episodes	
		N	Pct.
1	Walk to/from school.....	37	17.2
2	Walk.....	33	15.3
3	Scotering.....	16	7.4
4	Playing outside.....	11	5.1
6	Walking dog.....	10	4.7
6	Running.....	10	4.7
6	Swimming.....	10	4.7
8	Tag.....	9	4.2
10.5	Street Hockey.....	8	3.7
10.5	Mini sticks.....	8	3.7
10.5	Playing in the snow.....	8	3.7
10.5	Aerobics.....	8	3.7

Table 7: Most Common Play Activities for Males

Rank Order	Activity	Episodes	
		N	Pct.
1	Mini sticks.....	31	14.1
2	Walk.....	28	12.7
3	Street hockey.....	20	9.1
4.5	Tag.....	15	6.8
4.5	Walk to/ from school.....	15	6.8
6	Sledding.....	14	6.4
7	Walking dog.....	13	5.9
8	Playing in the snow.....	12	5.5
9	Playing with pet.....	11	5.0
10	Snowball fight.....	8	3.6

There are some similarities between activities that are participated in often and activities that are participated in for long periods of time (see Table 8 & Table 9). For example, females reported swimming, scootering, and playing outside often and for long periods of time, while males reported sledding and playing in the snow often and for long periods of time. However, for both males and females the rank order is much different. For example, males reported

playing mini-sticks most often, however it ranks low on average time spent per episode. Additionally, new active play activities were identified. For example, females identified gymnastics and Just Dance, while males identified snowmobiling and swimming.

Table 8: Most Time Spent Playing Activities for Females

Rank order	Activity	Episodes	
		n	mean
1.5	Swimming.....	10	100.0
1.5	Gymnastics.....	3	100.0
3	Scotering.....	16	82.5
4	Sledding.....	7	80.7
5.5	Played outside.....	11	70.0
5.5	Just dance.....	3	70.0
7	Playing in the snow.....	8	51.5
8	Playing with a pet.....	5	48.0
9	Mini-sticks.....	8	44.4
10	Running.....	10	37.0

Note: Must have three or more episodes

Table 9: Most Time Spent Playing Activities for Males

Rank order	Activity	Episodes	
		n	mean
1	Snowmobiling.....	3	160.0
2	Swimming.....	4	97.5
3	Playing in the snow.....	12	80.6
4	Sledding.....	14	78.9
5	Played outside.....	5	78.0
6	Snowball fight.....	7	70.7
7	Shinny hockey.....	4	65.0
8	Bowling.....	3	62.3
9	Mini-sticks.....	30	60.3
10	Street hockey.....	20	52.4

Note: Must have three or more episodes

4.4.2 Play Context

In order to examine differences between males and females active play behaviours three variables were compared including: with whom did the episode occur, where did the episode

occur, and length of episode. When examining with whom the play episode occurred, there are differences between males and females. While males more often reported participating with family/ relatives ($n = 81$) or in a group ($n = 53$) females more often reported playing alone ($n = 37$) or with one friend ($n = 66$) (see Table 10 & Table 11). These differences are statistically significant ($X^2 = 20.207, p = <.001$).

Table 10: Gender Differences - Descriptives

	Male		Female	
	n	Pct.	n	Pct.
With whom did episode occur				
Alone.....	32	15.2	37	17.6
With one friend.....	33	15.7	66	31.4
Group.....	53	25.2	51	24.3
Family/ relatives.....	81	38.6	50	23.8
Other.....	11	5.2	6	2.9
Where the episode occurred				
Home/ yard.....	93	45.1	70	35.9
Neighbourhood.....	56	27.2	71	36.4
Park/ arena.....	10	4.9	7	3.6
Other.....	47	22.8	47	24.1
Length of episode				
0 – 29.....	58	26.9	107	38.4
30 – 59.....	62	28.7	46	21.5
60 – 89.....	56	25.9	36	16.8
90 – 119.....	14	6.5	7	3.3
120+.....	26	12	18	10.2

Next, when examining where children prefer to play there were also small differences. Males reported playing in their yard ($n = 93$) more often while females reported playing in the neighbourhood ($n = 71$) more often (see Table 10 & Table 12). Additionally, both males and females reported playing the least amount of episodes at a park or an arena. Although small differences were observed, they were not statistically significant ($X^2 = 5.249, p = .154$).

Finally, when observing how long average episodes of active play last there were also differences. Females reported engaging in episodes that lasted 0-29 minutes ($n = 107$) much

more than males ($n = 58$) (see Table 10 & Table 13). Conversely, males reported engaging in episodes that were 30+ minutes more than females. This difference is statistically significant ($X^2 = 25.049, p = <.001$).

Table 11: Gender differences - With whom did play occur

Gender of Child	Number of play episodes					Total
	Alone	With one friend	Group	Family/ relatives	Other	
Male.....	32 (15.2)	33 (15.7)	53 (25.2)	81 (38.6)	11 (5.2)	210 (100.0)
Female.....	37 (15.7)	66 (31.4)	51 (24.3)	50 (23.8)	6 (2.9)	210 (100.0)
Total.....	69 (16.4)	99 (23.6)	104 (24.8)	131 (31.2)	17 (4.0)	420 (100.0)

^arow percentage shown in parenthesis
 $X^2 = 20.207; df = 4; p = <.001$

Table 12: Gender Differences - Where Play Occurs

Gender of Child	Number of play episodes				Total
	Home/ yard	Neighbourhood	Park/ arena	Other	
Male.....	93 (45.1)	56 (27.2)	10 (4.9)	47 (22.8)	206 (100.0)
Female.....	70 (35.9)	71 (36.4)	7 (3.6)	47 (24.1)	195 (100.0)
Total.....	163 (35.9)	127 (36.4)	17 (4.2)	94 (23.4)	401 (100.0)

^arow percentage shown in parenthesis
 $X^2 = 5.249; df = 3; p = .154$

Table 13: Gender Differences – Length of Play Episodes

Gender	Length of play episodes					Total
	0 to 29	30 to 59	60 to 89	90 to 119	120+	
Male.....	58 (26.9)	62 (28.7)	56 (25.9)	14 (6.5)	26 (12.0)	216 (100.0)
Female.....	107 (50.0)	46 (21.5)	36 (16.8)	7 (3.3)	18 (8.4)	214 (100.0)
Total.....	165 (38.4)	108 (25.1)	92 (21.4)	21 (4.9)	44 (10.2)	430 (100.0)

^arow percentage shown in parenthesis
 $X^2 = 25.049; df = 4; p = <.001$

Chapter 5: Children's Perceptions of their Play Behaviours

This chapter focuses on children's perceptions of their play behaviours including the intrapersonal, interpersonal, and environmental factors affecting their active play.

5.1 Sample Profile

Twelve participants were selected for follow-up interviews to further explore their perceptions of their active play, how they experienced it, and to gain further insights into the intrapersonal, interpersonal, and environmental factors associated with their play. Participants were selected based on mean episode frequency and average episode length reported in the time diary. Six males and six females were interviewed, two who were highly active, two who were medium active and two who were low active.

5.2 Intrapersonal, Interpersonal, and Environmental Factors Affecting Children's Active Play Experience

Interviews were transcribed during data collection. Once all interviews were completed and transcribed, initial coding was done line by line. Throughout initial coding I was reflective about the process, and tried to resist the ecological model. Therefore data was not put into predetermined codes, rather data was allowed to emerge naturally. Following initial coding, focused coding was used to form categories. Patterns began to emerge and categories affecting children's active play experience were then organized guided by the ecological model framework (see Figure 2). First, two factors that transcended the model were "having fun" and "negotiating negative factors". Next, intrapersonal factors that affected active play were "feeling emotional range," "playing to play," "promoting health," and "experiencing control." Third, interpersonal factors included "interacting with others" and "balancing conflict." Finally, environmental factors included "using space" and "enjoying comfort." It is important to note that all factors are

not independent from each other, conversely they are interdependent. Many of these relationships and their effect on children’s experience of active play will be discussed further in this chapter. More specifically, I will discuss what children like about their active play experiences, what children do not like about their active play experiences, and things that make their active play experiences more or less fun. In addition to being interdependent, factors can also be organized differently based on different interpretations. For example, we regard a child’s gender as an intrapersonal factor, but it might be considered interpersonal because of the way in which males and females might be treated differently by parents based on gender role expectations.

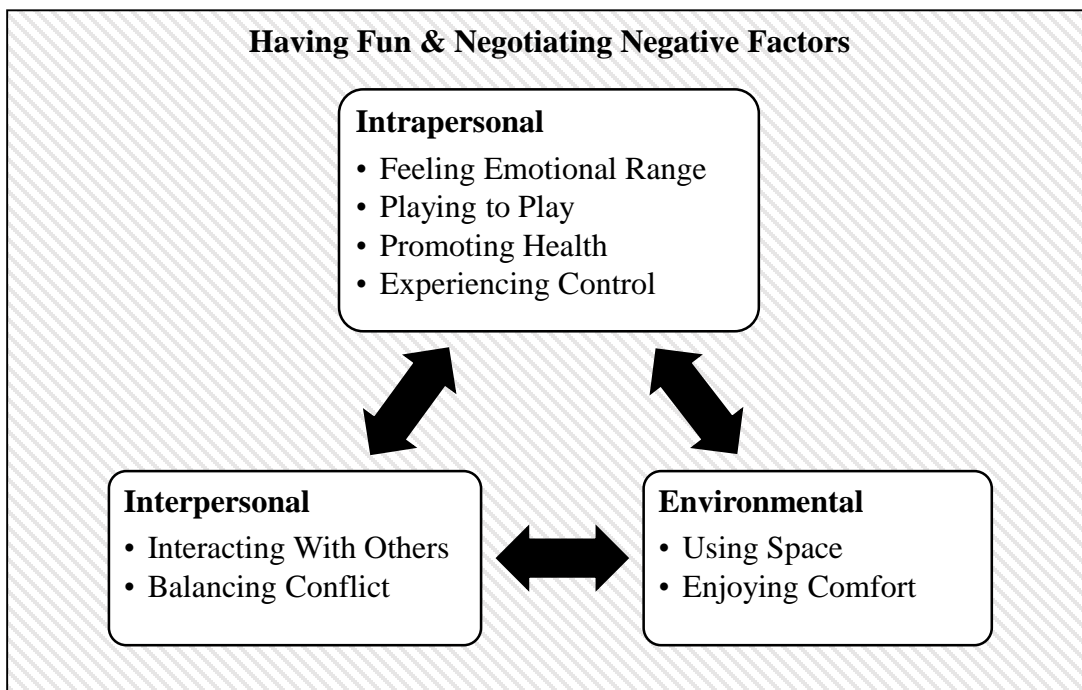


Figure 2: Factors Affecting Children’s Experience of Active Play

5.2.1 Transcending Factors

Two factors were found to transcend all other factors affecting children’s experience of active play. These factors were “having fun” and “negotiating negative factors.”

Having Fun

When participants were first asked “why do you enjoy these activities?” or “why is play fun for you?” many of the children had a difficult time answering. This may be because for many of the participants, play was just fun, it was hard to know *why*. We know that it is not quite that simple; as the rest of the results suggested, children’s participation in active play is a complex behavior. Once the participants became more comfortable with the interview process they did begin to reveal the importance of other factors affecting their active play. However, for almost all of those interviewed, in order to have a positive play experience it had to be fun. For example, Mitchell said, “[The one thing I like best about playing is] just how much fun it is!” Similarly, Justin said, “[The one thing I like best about playing is] getting the time to do something fun that you need to do every day.” Finally when asked what his favourite part about playing was Bryce answered, “Well, having fun!” and he further stated “because what’s a kid who doesn’t like to play!” It is clear that having fun is central to children participating in active play and many factors can affect whether or not children have fun while engaging in active play. The different aspects affecting children’s experience of active play including intrapersonal, interpersonal, and environmental factors are discussed further in the chapter.

Negotiating Negative Factors

Although children generally felt positive about active play, there were a couple of participants that reported negative aspects affecting their experience of active play. These aspects included both interpersonal and environmental factors but also manifested in interpersonal reflections.

Participants indicated many negative aspects affecting active play such as risk of injury, conflict, broken play equipment, trouble accessing play equipment, house chores, homework,

allergies, asthma, lack of friends, and lack of space. However many of the participants indicated that they were usually able to overcome these factors to be able to engage in active play.

Additionally, other negative aspects such as conflict and negative emotions associated with active play emerged. However, it appears that there is a normal balance in which an acceptable amount of conflict or negative emotions does not affect children's positive experience of active play. The ability to negotiate these factors and their impact on having a positive experience is discussed further in this chapter.

5.2.2 Intrapersonal factors

Four factors emerged revealing intrapersonal effects on children's active play including "feeling emotional range," "playing to play," "promoting health," and "experiencing control."

Feeling Emotional range

Participants reported feeling a variety of emotions while they played, many of which were positive emotions revolving around having fun. Kristin indicated, "[When I am playing I] usually feel excited or really happy" she continued to say "[I feel happy] 'cause I guess I'm having fun...makes me feel elated." Heather also indicated that she felt excited and happy when she was playing, but she also identified different stages saying, "Well, first, if I know that they are going to come over and play then I'm going to get excited, really excited. Then they start coming over I'll be happy. Then once we start playing I'll start talking to them and having fun."

Michelle indicated that she felt a much greater range of emotions. Similarly she indicated that when she was playing she felt happy saying, "[When I am playing I] normally feel happy, excited. I feel happy because I get to have fun." However, she also indicated that sometimes while she was playing she also felt nervous or scared. She reported feeling nervous stating, "[I feel nervous] because sometimes when other people are watching me I feel

uncomfortable sometimes” and continued to discuss feeling scared saying, “[I feel scared] because sometimes it’s a new game and you don’t know what to do so you have to ask somebody that maybe someone you don’t know or you’re scared to ask.” However, although these emotions are perceived as negative emotions, they seemed to be a regular part of her play experience and did little to discourage her from playing as she stated, “it can be fun, it can be scary, it can be nervous and it is always fun.”

It is clear that children feel a variety of emotions when engaged in active play that can affect their experience. Most emotions children felt were positive emotions that led to the child having fun. Although, there were also negative emotions that could lead to children having a less positive experience. However, if negative emotions are limited to a manageable level it appears that children are able to accept these emotions as a natural part of active play.

Playing to Play

Although participants indicated a variety of reasons for participating in active play, many of the participants reported engaging in active play simply because they liked the activity. It is clear that the play activity itself is important for children to have a positive play experience. Kristin reported, “[I like to play what I do because] umm it’s just fun to do things, I just like to do them.” Similarly Heather said, “[I enjoy playing because] well, there are so many games that we can play.” Many of the participants mentioned that they had one favourite play activity that accounted for much of their play behavior. For example Ronan describes that in the summer time she is always in the pool saying, “you will never see me out of the pool, actually, until the mosquitos come out!” Similarly, Michelle and Heather both described being on the trampoline as what they liked best about play. Michelle states, “[I enjoy the trampoline because] you get to jump, I like, do flips, cartwheels. It’s mostly fun because you’re having fun and being active at

the same time.” while Heather says, “[I have fun on the trampoline because] once you get used to barely any gravity, well jumping easier, then I like to go on the ground and try jumping and you don’t get very high!”

Participants also enjoyed certain active play activities because they were practicing for other types of physical activity including team sports. For example Mitchell stated that he felt happy when he played because he was getting better at those sports saying, “[The most important thing about play is] just that I’m probably getting better at what I like to do.” Similarly Kyle mentioned that he liked to play baseball and basketball because he knows that he will be playing these team sports saying, “I’m used to playing baseball and it’s fun for me, and I like playing basketball cause I already tried out for a team at school.”

Participants were also very excited to describe games they had made up. While many of the participants struggled answering questions about why they enjoyed playing, their tone quickly changed when describing games or play activities that they had invented. Two participants in particular, Bryce and Mitchell were more than eager to describe play activities they had invented. Bryce described that when he plays he likes to be creative saying, “If I make up a game, which I don’t really do very often, I usually would add lots of surprises and stuff, and stuff like that.” Similarly Matthew described a game that he and his brother had invented stating,

In our basement we have a little line on the floor and so we use the net that has the screen on it that has like a bunch of holes in it that you have to shoot into. And so what we do is one person starts, so what you have to do in it is score, like get the ball in the net, and so, to do that you have to, so the net is on one side of the line and you have to bring the ball over the line and bring it back in, or you can stay outside and shoot it, and you have to try to score. And if somebody like gets, touches it with their stick before it goes over the line then it’s the person who touched it with their sticks goal. And you have to try and touch it.

In addition to playing because they liked the activity, participants also indicated that they played to prevent boredom. Emma suggested that she enjoyed playing to prevent boredom

saying, “[I like to play because] it’s better than being bored.” Similarly Mitchell, and Michelle both felt that playing was better than doing nothing. Michelle states, “[I enjoy active play activities because] they make me feel better instead of just sitting around doing nothing” while Mitchell enjoyed playing to prevent boredom stating “[I play because] I know I’m not being lazy just sitting on the couch.”

It is clear that children enjoy playing certain activities for many different reasons. In order to help children have positive play experiences, we need to provide them with the opportunity to explore many different play activities.

Promoting Health

Many of the participants also realized the health benefits of active play. Sarah indicated that she enjoyed being active for health benefits saying, “[I enjoy being active because] you are burning off all of the calories that you have.” Emma holds similar beliefs stating “[I enjoy being active because] I know if I’m active than I know I’m healthy, so then, being healthy makes me happy.” Justin was particularly interested in using active play to contribute to a healthy lifestyle. When he played he timed himself so he knew that he had played long enough that day. He did this because he knew that being active had health benefits stating, “[I’m active because it] keeps me fit and makes me a better person, a more physical person.” He adds that this makes him feel good because he is being active everyday saying, “I complete a goal that people say to play for sixty minutes per day.”

However some participants identified negative factors associated with active play. Both Kristin and Kyle suggested that one negative aspect of active play was the risk of injury. Kristin indicated that she feared injuring herself while scootering saying, “there’s this little part by our driveway you can fall off of it easily so you can hurt yourself easily.” However she indicated

that the fear of injury would not stop her from scootering. Similarly Andrew indicated that sometimes he did not like participating in active play stating “[Sometimes I don’t like to play because] you get really tired and you start to sweat.”

Similar to feeling negative emotions, it appears that children accept a certain level of risk as being a natural part of play. Risk is also an important part of healthy child development, as risky play (e.g., playing from heights or at a higher speeds) is a natural way of reducing phobias (Sandseter & Kennair, 2011). These phobias have an initial function of keeping children safe when they approach a situation with which they may not have the skills to deal. However, as the children grow and play in situations that push the boundaries, the positive feelings and thrilling experience replace the feelings of fear (Sandester & Kennair, 2011). In order to promote positive active play experiences we must keep these negative factors to a manageable level but also continue to promote the unstructured nature of play and the positive experiences associated with being active and healthy.

Experiencing Control

Finally a few of the participants indicated that they enjoyed playing because it enabled them to get away and feel in control of the situation. Bryce indicated that he sometimes liked to go to his backyard to play alone just to get away from the busyness and rushing inside. Additionally he mentioned that while he was enjoying freedom play he liked that there was no rules stating, “You can do whatever you want, and you are free to do that stuff any time.” Similarly Kristin reported that she would rather play than watch television or be on her iPad because she has more control of what she is doing saying, “things on your iPad or watching TV aren’t what you’re doing. Outside is what you’re doing and you have control of it but on your iPad it’s not what you’re doing. It [being outside] can be much funner.”

Children today are involved in so many structured activities that they rarely have time to control their own experiences. Active play is one avenue that will allow children to escape from the structured activities that dominate their lives.

5.2.3 Interpersonal Factors

Two subcategories emerged revealing interpersonal factors affecting children's active play including "interacting with others," and "balancing conflict."

Interacting With Others

To begin, as time diary data suggests, most of the participants indicated that when they played they preferred to play with others, rather than alone. Many of them indicated that it was being around others that made play fun. For example, Bryce proposed that the thing that made play fun was togetherness saying, "[I like to play because I like] being together with brothers, friends, family, people." Similarly, Justin indicated that he enjoyed playing activities because he could be around others stating, "[The activities I play] are really fun because I have other people that I know playing with me that makes it fun." On the contrary Justin indicated that one thing that made play less fun was playing alone saying, "[Something that makes play less fun is] playing alone cause there's, um, really there's not a lot of excitement going on." Michelle felt the same way about playing alone stating, "Sometimes I'd rather be at a friend's house so I wouldn't be so lonely just playing by myself."

Clearly both friends and family were important for active play behaviours, and it appears that children of this age are comfortable playing with both friends and family depending on the situation. However, participants discussed the importance of friends impacting their active play more often. When asked what makes play fun, participants regularly discussed being around friends. Heather stated, "[Playing is fun because] usually we get to hang out with friends for a

while.” Kyle also mentioned that one of the things that made active play fun was being around friends saying, “[The best thing about play is] playing with my friends, having fun with them.” Being involved in active play is also a way to make new friends. Michelle said, “[Play is fun for me because] when I play group games because group games, they make me, feel like so I, I meet new friends.”

Some of the participants indicated that they preferred playing with friends because they are the same age. For example Emma indicated that most of her family is younger or older, while her friends are more her age so she plays with them a lot. Similarly Ronan indicating that all of her family was older than her while her friends are more her age, so they hang out more and do the same stuff. She continued to say, “My friends pretty much keep me in the world and in my own space and in my own head.”

A couple participants also indicated that they were able to do more activities when they played with their friends. Justin enjoyed playing with friends saying, “there are not a lot of sports that my family does that my friends do.” Similarly Kristin stated, “Well, I can do a lot of other things with my friends that I can’t do with my family ‘cause sometimes they just don’t want to.”

One situation where participants appeared to prefer to play with their friends was when they wanted to talk. Andrew indicated that he liked playing with friends saying, “We talk about everything.” Justin shared the same belief saying he liked to play with friends because he had someone to talk to. Emma also felt more comfortable talking to friends stating “[I like to play with friends because] when you are playing with friends you can actually talk and feel more open.” However, Olivia indicated the opposite stating that she was more comfortable with family than other friends stating, “[I like playing with my family because] it’s just family, you’re

more, like, comfortable with them and it's okay to, like, kinda talk to them in a different way than you would talk to your friends.”

One common factor reported by many of the participants was not having friends around to play with. Kyle indicated that his least favourite part about playing was that sometimes there is nobody to play with. Similarly, Heather sometimes has trouble playing because she has friends that do not live very close. The amount of available friends also affected activity choice. Olivia said, [My least favourite part about playing is] when it's just kind of like a few people where you need a group of people it's hard to find a group.” She further stated that this made it hard to do certain activities saying, “Um, like, it's hard to play catch with, like, yourself because you're technically just throwing it up in the air and catching it. It's not like baseball we can, like, do a ground ball and you can do a fly ball and that.” Justin also mentioned that sometimes it was difficult to play saying, “sometimes some sports take a lot of people to play and we don't have that many.”

When friends were not available to play, participants often mentioned ways in which they were still able to play. For example, Thomas indicated that he enjoyed playing with both friends and family. However, he did not have many friends in the area so he enjoyed playing with his family saying, “I know them a lot, um, and I play with them a lot.” It was clear that when friends were not available to play participants also enjoyed playing with their family, and both friends and family have an important influence on active play.

It is clear that interacting with others is important for children to have a positive active play experience. Children sometimes indicated that they had a negative play experience because they did not have enough friends to play with. However, it appears that participants were able to

adapt who they were playing with or what they were playing in order to have a positive experience.

Balancing Conflict

Although participants reported enjoying playing with others, there were situations when being with others made it difficult to play. As Kristin said, “[One thing that makes play less fun is] sometimes, people that they, sometimes ruin it for you.”

Two participants reported fighting with siblings as affecting their active play. Andrew stated one thing that made play less fun for him was when he and his sister were fighting and she hurt him. Similarly, Thomas reported that play was less fun for him when he and his sister were not getting along, or they were playing a game that he did not really enjoy.

Justin also indicated that play was less enjoyable when friends were playing something he did not know how to play and he would have liked to play something else. Similarly Ronan stated that play was not fun when friends told her what to do. Rather she says, “It is more fun to use your imagination when you do stuff.”

Participants also discussed that being around the same friends for too long sometimes resulted in conflict. Kristin stated, “[One thing that makes play less fun is] sometimes cause when I play with my friends that I usually play with I kind of get sick of them and I want to play with someone else.” Emma discussed a similar situation saying, “usually I’m fine with just, like, staying with my normal people but, like, if we’re, like, in fights or something or if I’m just really annoyed with them then I’ll wanna hang out with different people.”

Another form of conflict arose when participants played with other children they did not know. For example, Bryce stated, “well there is this boy around there somewhere, I don’t know

where it is really, but one time when we were playing at that dirt place he wasn't really nice and we were playing games and stuff then he like turned and just wasn't very nice."

Finally, conflict also arose due to competition. Michelle reported this as her least favourite thing about playing saying, "[I don't like to play when] people get a little bossy or competitive." She further stated, "sometimes it makes it less fun when people are bragging or being a poor sport or like competitive games, competitive people." Similarly Mitchell indicated that when things got competitive it made things less fun for him. He said, "[One thing that makes play less fun is] probably that it's just when I'm with friends it's a little bit more competitive, trying to do a lot better than I normally do with just my family." He continued to describe the example of street hockey when he played with friends he says, "[It is competitive] when someone dekes you out really bad and basically makes you fall over" while when playing with family it was more relaxed as he says, "[When I play with my family] people are basically just doing simple things with the ball and passing it and stuff like that."

Clearly, conflict can cause children to have a negative active play experience. However it is reasonable to assume that a certain level of conflict is natural within active play. In order to help children have positive active play experiences we need to ensure conflict remains at a manageable level.

5.2.4 Environmental Factors

Two subcategories emerged revealing environmental factors affecting children's active play including "enjoying space," and "feeling comfort."

Enjoying Space

To begin, when participants were asked where they enjoyed playing, they most often reported playing at spots that had a lot of space. For example, Justin said, "[I enjoy playing at

the park or my backyard] because mostly there is a lot of space to play that activity.” Similarly when Matthew was asked what he looked for when choosing a place to play he said, “Basically just a flat area that I can play in.” Participants often reported playing in their yard or natural landscapes close to home. For example, Heather said, “I usually play outside at our neighbours hill or if it’s winter in the middle (snow hill), or building stuff. And in the summer we usually play outback (field).” Bryce also described a natural landscape close to home saying:

As you can see across the road you can see there is a big patch of land with no hills, we are allowed to go there to play there anytime we want. So we play baseball there and soccer there and stuff... There’s also this like old dirty hill place way back at the back of the tracks there. You turn there and then you’ll find hill place and stuff then we play stuff there too... And at the dirt place back there there’s a bush right beside it so we can build big forts and stuff there.

When asked to describe what was important for him to play he further described, “Well you gotta have lots of space to play in, with unique materials around you to play with.” For some of the participants necessary space was available in their back yard or in their neighbourhood. However, others had to look for other areas in order to have enough space or activities to play. For example, Justin enjoyed playing at a park saying, “There are things; if you get bored of those things, there are other things that you can do at the park and that.” Similarly, Michelle would rather play at a park saying, “[I like to play at the park because] well, um, like, ‘cause usually a lot of parks have big spaces and it has, like, a playground to play on and the other one (yard), like, it’s just a big space you don’t have and like other things to do.”

One limitation to children’s active play was a lack of space. Participants often indicated that they had to either choose a different activity or find another space in order to play. For example Kristin was not able to hit balls in her backyard, however she acknowledged that she could either play catch in the backyard or find a baseball field to hit balls in. Kyle also mentioned that he was not allowed to bounce a ball in his backyard however he could in his front

yard and across the street as he said, “[There is] a lot of space and more area for us to play better games.” Finally, Olivia said that it was difficult to play when she did not have a big enough space but sometimes it was easier to play in the park because there was more space.

As time diary data suggests, participants generally indicated that they were quite happy playing around their neighbourhood. When asked if there was anywhere else they would rather have played, there was a very limited response. Many of the participants seemed content to play in the spaces that were around them. For example, Ronan stated that she was not interested in going to play elsewhere saying, “it is too much fun in the backyard I have enough room!” Additionally children were able to adapt to play in the space available. For example, Andrew indicated that sometimes he would have liked to have gone to the arena to play hockey, however he could not, saying, “I don’t have my driver’s license.” But he also indicated that, although he could not go to the arena, he could have played around the house and done something like mini-sticks. Alternatively he could have asked his dad or someone to drive him. Similarly, both Justin and Kristin reported that sometimes they would have liked to have played something but did not have enough space. They both indicated that if this happened they would simply find a spot with more room.

Participants’ play experiences almost always occurred outside. A couple of the participants mentioned that being outside was part of what made play fun. For example, when asked what some things were that made play fun, Kristin said, “Um, being outside I guess, that’s just what makes it fun. The fresh air.” Michelle stated she enjoyed playing outside because when she was outside she could do way more exploring. Finally, Ronan said, “In the summertime you will never find me inside, unless I need food!” Additionally there was only one participant who said sometimes she would have rather been inside. Heather said one thing that

she did not like about play was that you usually have to go outside stating, “Usually I enjoy it, but sometimes I don’t.”

Although most participants reported enjoying being outside, it was also reported as a barrier to active play. Two participants indicated that sometimes they could not play when they would have liked to due to weather. Kristin stated, “In the winter it makes it difficult cause you can’t always go places that you want.” Similarly, Bryce noted that in the winter time he was always stuck inside.

Evidently, space is important for children to have a positive play experience. Although proper space for certain play activities are not always available, it appears that children are able to adapt their activities and still have a positive experience.

Feeling Comfort

Children not only identified space as being important for active play, they also identified the importance of place. Children were able to identify the importance of place because they were able to recognize qualities they had given to the physical space or the social environment of that space. Participants often reported playing in places where they felt comfortable. This was consistently places close to home because children knew both the spaces and the children within those spaces. For example, Thomas reported playing in his backyard because it was a place that he knew really well. Similarly, Michelle said she liked to play in her neighbourhood saying, “I am already used to this place so I know the places I know to have fun.” Alternatively, when she was playing in a new space she said:

sometimes it’s difficult when like im playing at, um, like, at a place I have never been before because, like, if a ball goes somewhere that you don’t know where it is, like, you know where it is, like, you are at a place where you don’t know where and you get lost there, get scared.

Participants also described playing in places that made them feel private and protected. Olivia said she normally enjoyed playing in her backyard stating, “It’s kinda more private than the front yard where everyone could see you and then back there you are kinda covered with all the trees.” Similarly, Emma felt that she was safe around the neighbourhood because she knew everybody around her. Kayla also felt safe in her neighbourhood saying, “I know it’s safe, and there’s, I know the people I guess. It wouldn’t really be as fun like other places ‘cause if it’s not always safe, other places, then it’s not as comfortable I guess.”

It is evident that children’s perception of places and the comfort attributed to them can greatly affect their active play experience. It seems that children choose activities they are able to play in places in which they are comfortable. In order to promote positive play experiences we need to offer opportunities to play within the neighbourhood but also need to promote parks and arenas as safe places.

Chapter 6: Discussion

The following chapter will discuss some of the key and interesting findings from this study. Implications for practitioners including municipal parks and recreation programmers, public health officials, school board members, principals, teachers, and parents are discussed. Limitations to the study are also considered in this chapter. Finally, suggestions for future research are offered.

6.1 Summary of Key Findings

6.1.1 Children's Active Play Behaviours

Common Play Activities

Children reported a total of 45 active play activities revealing a wide variety of activities. Interestingly, the most common activity was walking, followed by walking to school. Somewhat surprisingly, children find walking to be active play; this could be of great significance for influencing children to walk to school.

The great variation in reported play activities also indicates how useful active play can be to promote overall physical activity. With such a wide range of activities, it seems that most children are able to participate in activities that they enjoy within their own neighbourhood. This means that, unlike structured activities, children will be able to participate in active play activities more freely and at varying lengths of time. For example, males may decide to play mini-sticks most often because they are able to enjoy the activity in a short period of time. The same can be said for females who enjoyed walking because it too can be enjoyed over a short period of time. However, as the time diary revealed, there are also opportunities for extended active play experiences, especially on weekends. With such a wide variety of activities, it is clear that active play could be particularly useful for promoting physical activity for both males

and females. Males and females both participated in a group of common activities, however, both genders did report play activities that were not reported by the opposite gender. For this reason, active play can be used to offer differing activities to both males and females to help them engage in more daily physical activity.

Active Play Context

Children participated in the highest number of active play episodes on weekdays and engaged in the fewest number of active play episodes on weekends. However, a comparison of days revealed that, on weekends, children participated in longer episodes of active play on average whereas, on weekdays, children participated in shorter episodes on average. Therefore, although children participate in fewer episodes of play on the weekend, on average episodes are longer than on weekdays. This shows that active play is beneficial because it can be adapted to any situation. First, short episodes of active play are not necessarily a bad thing. Children typically have less time throughout the week to engage in long episodes of physical activity. Therefore, they are able to use short bouts of active play a few times a day in between other commitments. This will enable children who are involved with other commitments such as homework or team sports, to increase their daily physical activity. This is significant as many other types of physical activity, such as organized sports, must be scheduled into the day in order to ensure enough time, however active play can be much more spontaneous. This is important because it gives children time to try new things that they are not able to do with structured sports. Second, children tend to have more time on the weekend to engage in active play. Therefore they are able to play in longer episodes at a lower frequency.

Additionally, children participated in the highest number of active play episodes with family and relatives while they participated in the fewest number of active play episodes alone.

Furthermore, when children participated in active play alone, episodes were shorter on average whereas when they participated in groups, episodes were longer on average. Therefore, children participate in fewer episodes of active play alone, and on average episodes were shorter than when they participated with others. Specifically active play episodes were longest on average when active play occurred in a group. This makes intuitive sense as during interview analysis children often indicated enjoying active play solely for the social aspects. Children indicated having more fun when they were playing with others which would make playing more often and for longer periods of time easier for participants.

Furthermore, participants engaged in the highest number of active play episodes at home or in the yard while the fewest number of episodes were reported at parks or arenas. However, when participants engaged in active play at a park or arena, episodes were longer on average, whereas when they participated in the neighbourhood, episodes were shorter. Therefore, children participated in fewer episodes of active play at parks and arenas, however active play episodes that occurred at a park or arena were longer on average than episodes that occurred elsewhere, specifically the neighbourhood. This also makes intuitive sense as it was easier for children to play in their own home or neighbourhood because it was highly accessible. This made it easier for children to engage in active play for short periods. Additionally, children indicated during interview analysis that they felt more comfortable and in control when they were playing in their own neighbourhood. On the contrary, while most parks are relatively accessible in Listowel they are not as accessible or as comfortable as the participants' own yard.

Next, participants engaged in the most active play episodes between 3:00 and 4:59pm, conversely they participated in the fewest episodes between 11:00am and 12:59pm. This may indicate that children played more right after school or right before dinner. Conversely, children

appear to have played less over lunch time. This is significant as it shows that after school programs may be very successful. Children are already participating in a large amount of active play during this time. If we could facilitate active play at schools, community centers, and churches during this time, it may help to further facilitate active play. Additionally, it may make it easier for children to participate with friends and other children.

Finally, children participated most often in active play episodes lasting less than thirty minutes followed by episodes lasting between thirty minutes and an hour. This could indicate that active play episodes were generally shorter bouts of physical activity which, as previously mentioned, could be a useful way to increase overall physical activity.

Personal Factors

To begin, studies of children's physical activity have consistently reported that physical activity decreases with age (Sallis, Prochaska, & Taylor, 2000). This study however found that there was no significant decline in active play between ages. However this may align with previous studies that found the most dramatic decline occurring in adolescence (Sallis, 1999; Triano et al., 2008). Perhaps the participants in this study are only beginning to see a decline in physical activity. Additionally, most previous studies have looked at the decline of overall physical activity. Perhaps active play does not see as steep of a decline as other types of physical activity such as organized sports. This may be because this active play activities vary based on the preferences of the participant and are much more accessible than other types of physical activities. Regardless, the age group in this study is an important age group to keep involved in active play. If practitioners can interest children in active play at this age, and keep them participating through the adolescent years it would be a great benefit to youth health.

Next, studies on children's physical activity have also consistently reported males are more active than females (Sallis, Prochaska, & Taylor, 2000). However, this study found that there was no significant difference between males and females average number of active play episodes and average episode length. This may conflict with previous studies because the type of physical activity must be accounted for. There is some evidence to suggest that the greatest difference between males and females was for vigorous physical activity rather than for moderate physical activity (Sallis, et al., 1996; Trost, et al., 2001). This may suggest that males engage in vigorous activities such as team sports more often than females (Sallis, et al., 1996), however, both males and females still participate in similar amounts of moderate activities such as active play. The results of this study suggest that although there was a variation in the types of activities most often reported by males and females, both genders had a wide variety of active play activities in which they enjoy participating.

Although there was no significant difference between genders, when episode length was categorized, females participated in active play episodes lasting between 1-29 minutes much more than males who reported participating in active play episodes 30 minutes or higher more than females. This seems to show that although there is no significant difference between males and females average episode length, females do tend to engage in shorter episodes of active play when separated into meaningful categories.

Gender differences were also observed regarding who children tended to play with. Interestingly, males more often reported playing with family or in a group, while females more often reported playing alone or with one friend. This is supported by previous research finding that males prefer group interaction more often than females, and male's friendships are also more interconnected than females (Markovits, Benenson, & Dolenszky, 2001; Parker, & Seal, 1996).

However, it was not supported by interview analysis as both male and female participants reported the importance of both friends and family on their play experiences.

6.1.2 Intrapersonal, Interpersonal, and Environmental Factors Affecting Children's Experience of Active Play

Transcending Factors

Results indicated that two factors transcend the ecological model and are affected by intrapersonal, interpersonal, and environmental factors. First, results indicated that the most important factor effecting children's experience of active play was having fun, which has been supported by previous research (Humbert et al., 2006). Many of the participants indicated that they were involved in active play purely because it was fun. Some of the participants had a hard time describing why active play was fun, they just knew that it was. This is important to remember because in order to keep children involved in active play, we need to ensure that they are provided with a proper context to have a positive active play experience.

Second, participants also revealed that there were negative aspects affecting their active play experiences such as lack of space, improper equipment, or lack of friends. Although, similar to previous research, participants demonstrated self-efficacy was positively related to physical activity (Ryan and Dzewaltowski, 2002; Trost et al., 1996, 1997). When confronted with a barrier, participants consistently mentioned either changing their choice of activity, finding a new space to play, finding someone else to play with or asking a parent to help. Participants also identified negative emotions and peer conflict as affecting their active play experiences, although, children were quite often able to negotiate with these negative aspects. Interestingly, it appears that children are often able to identify negative aspects and negotiate them so that their experience of active play is not affected. For example, it seems as though a

certain level of negative emotions are acceptable within active play. This is why unstructured active play is beneficial. It allows children to choose their activity with their own rules so they are able to experience different emotions, conflict and risk. However, it is important to keep these negative aspects of active play to manageable levels so children continue to have positive active play experiences.

Intrapersonal Factors

Like previous research, participants indicated engaging in active play for many reasons including: to reduce boredom, for health benefits, and for a sense of freedom (Brockman, Jago, & Fox, 2011; Veitch, Salmon, & Ball, 2007). First, children enjoyed experiencing a variety of emotions when they were engaged in active play. Most emotions were positive and revolved around having fun. However, there were also negative emotions such as feeling scared or being nervous. However, these feelings rarely had a negative impact on the participant's experience of active play. Once again, it appears that children are able to negotiate a certain amount of negative emotions as being a normal part of the active play experience.

Additionally, children often reported participating in active play solely for the activity they were involved in. With such a wide range of activities reported, it was clear that children enjoyed being involved in many different activities. Although, many participants reported favourite activities that accounted for much of their play behaviour. Additionally, a couple of the participants also enjoyed describing activities in which they had invented. Finally, children also consistently indicated that they would play to prevent boredom. Many of the children indicated that they would prefer to play than do nothing at all.

Additionally, many of the participants realized the health benefits of being physically active. This is encouraging because it is evident that children do know the importance of physical

activity and the impact active play can have on their health. Participants were aware of the health benefits of active play and that being active contributed to them being a better person. However, a few participants did indicate negative aspects affecting their active play experience, such as risk of injury and getting sweaty. However, it appears that children were able to accept a certain level of risk as fear of injury did not inhibit the participants from engaging in active play.

Similar to previous research, it was clear that children enjoyed active play because they felt a sense of freedom and control over what they were doing (Veitch, Salmon, & Ball, 2007). This unstructured nature of active play is valuable because of the clear connection between control and having fun. If children are able to choose between a wide variety of activities and develop their own rules, then they are more likely to be involved with active play and therefore engage in more physical activity.

Interpersonal Factors

Previous research has found that support from family and friends has a strong influence on children's physical activity (Sallis, et al., 1999). The findings in this study generally agree with this idea that children tend to participate in active play when they are supported by others. For the most part, participants reported positive influences from both their friends and family on their active play behaviours. It was quite clear that children would rather play with someone rather than on their own. Many of the participants indicated that it was being around others – a sense of togetherness – that made play fun.

While both friends and family were perceived as being important, it appears that at this age friends have a greater influence on children's active play. This aligns with previous research by Jago et al. (2009a), reporting that friends were important not only for initiating active play behaviours but also for sustaining participation in active play over time, as children tend to play

for the social behaviours. Many of the participants in the study indicated this as well. Much of the time children participated in active play for the social aspect alone. Participants indicated that it was easier to play with friends because they were close to the same age. Additionally, a few of the participants indicated that they were able to play more activities when they were with their friends compared to with their families. Most children indicated that they were more comfortable talking to friends rather than family. This may once again indicate that children of this age experience more freedom and feel more comfortable playing with and talking to friends of the same age. Finally, many of the participants indicated that the thing that made play most fun was being around friends, which is also supported by previous research (Humbert et al., 2006).

Although peer relationships appeared to be an important influence on children's active play, the nature of the relationships was also important. Previous research has demonstrated that, although positive peer relationships are associated with physical activity, negative peer experiences have also been related to lower levels of children's physical activity (Salvy et al., 2012). The results of this study concur as participants often mentioned conflict with both peers and siblings as negatively affecting their active play. Conflict was reported for a variety of reasons, including: sibling rivalry, playing with the same friends too often, friends making up rules, playing with new friends, and playing with children who were too competitive. It is important to note that a small amount of conflict is normal during active play. This is how children learn conflict resolution such as deciding who can play and the rules of the game (Burdette & Whitaker, 2005), and cooperation by working with others to solve these problems (Gray, 2011). However, children identified conflict as the most common negative aspect

affecting their play. Therefore we need to be sure to monitor conflict while children are playing to encourage healthy development and continued active play.

Even though children generally preferred to play with friends, sometimes they were not able to. Additionally, some activities needed a large group of friends which was sometimes not possible. When this occurred, participants relied on their parents and family for social support. This has also been supported by previous research that found parental support can influence physical activity through encouragement, involvement, and facilitation (Gustafson & Rhodes, 2006). Many of the participants indicated that, when needed, they were confident in their ability to ask their family to either play with them in an activity or help them facilitate that activity in some way. Previous research has shown that this type of parental support can indirectly influence children's physical activity by promoting self-efficacy (Troost et al., 2003). This may be true in the current study as the majority of the children interviewed demonstrated both environmental change and support seeking self-efficacy.

Finally, previous studies have found confounding or little evidence that parental modelling influences children physical activity (Gustafson & Rhodes, 2006; Sallis, Prochaska & Taylor, 2000). This study concurs with those results as none of the participants mentioned their parents being physically active unless the child asked them to play. It is believed that parents may need to provide more direct assistance for their children to engage in physical activity (Sallis, Prochaska, & Taylor, 2000), which was supported by this study.

Environmental Factors

When considering environmental factors that influenced active play this study found varied results compared to previous literature. Much of the previous literature has focused on access to facilities, and quality of facilities. Within previous literature, there are conflicting

results regarding whether or not park availability is positively associated with children's physical activity (Grow, et al., 2008; Pizarro, Santos, et al., 2009; Reis et al., 2009; Roemmich et al., 2006). There is evidence however indicating that the quality of park space is more important than park availability (Potwarka, Kaczynski, & Flack, 2008; Veitch et al., 2006). However, although park quality has been identified as an important factor for children's physical activity, identifying which of those park features that are most conducive for physical activity has rarely been studied.

This study did not investigate whether park availability or quality was associated with active play. However, many of the participants indicated that the most important thing for active play was available space. Many of the children indicated that all they needed to engage in active play was space. Additionally, many of the participants indicated that they were happy with the spaces within their neighbourhood for engaging in active play. Children were happy to play in their own back yard, or other areas around their neighbourhood. Few of the participant indicated that they would prefer to play at a park, however some participants did indicate that they sometimes do not have enough space to play what they would like at home. When this occurred, children often indicated that they were able to find a different space or change activities to be able to play. This finding has also been reported by previous research. In a study investigating children's perceptions of their play spaces, Burke (2005) found that children photographed and discussed playing in open spaces more than any other place. In contrast, formal playgrounds were not photographed as often.

Previous studies have also investigated the importance of the home environment for promoting children's physical activity with conflicting results. Using behavioural mapping Hume, Salmon, & Ball (2005) discovered many participants did not identify any physical

activity opportunities at home (Hume, Salmon, & Ball, 2005). However, this study found that many of the participants perceived their home environment as being positively associated with active play. Play episodes not only occurred most often within the participants neighbourhoods, but participants were also able to identify the opportunities they had within their home environment.

Children not only identified the importance of having space to play, they also identified the importance of place. Children were able to identify a sense of place because they had given qualities to the physical and social environment of their play spaces. Therefore they were able to see their spaces as being safe, private, known and accessible (Gieryn, 2000). It was clear that children played in places where they felt comfortable, which often included places where they knew the space as well as the people within that space. This may be one factor that influenced children to engage in active play in their own neighbourhood more than anywhere else.

6.2 Implications for Practitioners

The findings from this study offer many implications for practitioners including parents, municipal recreation departments, and school principals and teachers. First, throughout the study we saw that the most important part about active play was having fun. Parents, teachers, and recreation professionals can do many things to ensure children can enjoy active play. First, they can let children choose active play activities they wish to participate in. Children enjoy participating in a wide variety of activities, which vary by gender. Practitioners need to ensure that children are given time to enjoy free play activities of their choice. They must also ensure that children are able to try new active play activities. When children try different activities they will be exposed to new things which they may continue to participate in the future. Additionally, practitioners need to let children experience unstructured play and the emotions and conflict that

come with it. It is clear that children are able to negotiate a certain degree of negative emotions and conflict involved with active play. If kept at a manageable level these factors are a natural part of active play that are beneficial to healthy child development.

Next, children indicated that they participated in active play for many reasons including health benefits. Schools and recreation officials should continue to promote the positive effects of physical activity. Children at this age are beginning to become aware of the benefits of being physically active. By promoting these benefits, along with how play is fun, children will be more likely to continue to be physically active.

Children indicated that being around others was essential to having fun while engaging in active play, however, they were not always able to play with friends. Parents, schools, and recreation professionals need to ensure children are able to enjoy playing with friends, and meet new ones. Parents can do this by promoting play with other children. This can include things like allowing children over to play at other houses, or inviting another child over to your house. Teachers and recreation professionals can also help children enjoy active play with friends by promoting the importance of friendship. Schools and camps should focus on helping children meet new friends while engaging in active play activities.

Children should also be given the space and equipment needed during recess. If children are given enough space and the necessary equipment they will be able to participate in a variety of activities. Although recess is a short period of time, active play activities are generally short as well. The short breaks throughout the school day could be an opportune time to promote physical activity.

Furthermore, adequate space needs to be provided outside of the school environment. Within this community, participants often indicated having enough space to play in their yard or

neighbourhood. Recreation professionals can continue to promote play at home, but should also work to promote the use of open spaces in their parks. Although many of the parks within Listowel are very accessible, very few participants indicated that they would prefer to play at area parks. Generally, children indicated that they preferred to play in their neighbourhood because they were more comfortable with the physical environment and the people around them. Recreation professionals need to promote safe and fun active play experiences in their parks and for those communities where adequate space is not available (e.g., communities with higher population densities and fewer backyards), alternative sites should be made available. For example schools could make their gyms available after school, which is also a key time for active play.

One interesting finding of the study was that participants enjoyed walking to school and viewed it as being active play. With this in mind parents, principals and teachers should work to promote walking or biking to school. Schools could do something very simple such as class room competitions promoting walking to school or something more complicated such as developing a walking school bus. A walking school bus is a group of children who walk to school with one or more adults. It could be as simple as a couple of families taking turns walking their children to school to a structured route with meeting points and regularly scheduled volunteers. It is clear that many of the participants valued the time they had when walking to or home from school and this time could be used to promote physical activity.

Schools and recreation professionals should also work to promote physical activity after school. Children participated in active play episodes most often immediately following school. Both recreation professionals and school principals should work to help enable children to engage in active play during this time. This is also a good time to help expose children to a

variety of different active play activities. Although children enjoy participating in active play at home, they are limited in the activities they can do. By offering an after school program children will have the space available to try new activities. Similarly, it is also a time to promote common play activities. For instance males enjoyed playing mini-sticks, therefore an after school program could be put in place to allow children to play in a mini-sticks tournament once a week.

6.3 Study Limitations

One limitation to this study is the self-report time diaries used for the first phase of research. Although the study was designed to reduce recall error, there is still the possibility of social desirability bias. Children may have recorded more active play episodes than they actually engaged in. On the contrary some participants may have also forgot to fill out their time diaries for certain days such as weekends or may have forgotten to record individual play episodes as well.

Second, this was my first time as a researcher experiencing the interview process. Although the first few interviews were a learning process, I did feel much more confident by the end of the interview process. Additionally, some of the participants were very difficult to interview as they had difficulty expressing complex ideas about the nature of their play experiences. However, to make the interview easier for the participants, I worked to develop good rapport with them and to create a natural context for the interview (Eder & Fingerson, 2002). Interviews were conducted in the home where the children felt most comfortable. I also tried to communicate with the children in a manner that made us equal. I accomplished this through informal interaction before the interview, as well as creating a conversational atmosphere during the interview (Eder & Fingerson, 2002). In doing so, I created an atmosphere

in which the children felt comfortable enough to answer how they thought or felt about their active play experiences (Eder & Fingerson, 2002).

Next, the study only focused on one type of physical activity. We know that there are many different types of physical activity in which children engage. This study only measured active play, an indication of other physical activities such as organized sports would have been interesting to see if there are any relationships between different types of physical activities.

Additionally, the first phase of this study was completed in March and therefore the activities in which the children participated were influenced by the weather, as well as other commitments such as organized sports. In order to completely understand the active play behaviours of children in Listowel, the study should be completed during all four seasons which might reveal different, or additional, play activities, partners, and locations.

Finally, this study was completed in a town with a relatively small population. Additionally, the town has a number of parks, trails, ice rinks, pool, and splash pad that are highly accessible. This is much different than the environment in larger urban cities. However, the data recorded during this study may be useful for other small communities, who may wish to follow the same procedure within their own community.

6.4 Implications for Future Research

Further qualitative research should continue to investigate factors discovered during this study. For example further qualitative research could continue to explore children's perceptions of what makes play fun for kids, how children negotiate negative aspects that are natural with play, the importance of friendships, and the importance of space and place. Further quantitative research could also explore whether these factors are associated with active play behaviours.

Additional research should also be conducted during different seasons in order to examine whether children's active play behaviours and their experiences change due to weather and organized sports participation as well as other factors.

Finally, future research should also investigate active play behaviours of both younger and older children. It would be useful to know whether the context of active play differs with age and whether different age groups experience active play differently.

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Appendices

Appendix A: Information Flyer



ACTIVE PLAY STUDY IN NORTH PERTH HELP BRING BACK PLAY!

The health of Canadian children is deteriorating; the causes of this deterioration are multifactorial, although a decline of participation in physical activity has been identified as one primary cause. There are many types of physical activity, however, unstructured active play could be one of the most promising, accessible, and cost effective ways to help children in Canada increase their daily physical activity.

This study will be used to investigate the active play behaviours, and the perceptions of these behaviours, of children in North Perth in an effort to provide more effective programs and increase levels of active play within the community.

**Participating
Schools:**
Listowel Eastdale
Listowel Central
St.Mary's Catholic
School

**Supported by the
Municipality of
North Perth**

**Please look forward to
an information letter
describing the study and
a consent form coming
home with your child
soon!**

BRETT MILLER

University of Waterloo
Department of Recreation
and Leisure Studies

b3miller@uwaterloo.ca
519-291-0956

Appendix B: Information Letter

Dear Parent(s) or Guardian(s)

I am writing to ask your permission for your child to participate in a University of Waterloo research project being conducted by Brett Miller, a graduate student in the Department of Recreation and Leisure Studies, under the supervision of Dr. Bryan Smale. This project will be conducted at your school over the next few months. We are interested in investigating the active play behaviours of children in North Perth, as well as what factors influence those behaviours in an effort to increase children's physical activity in the community. These factors include personal factors such as attitude towards play, social factors such as parental and peer influences, and environmental influences such as availability of facilities.

Participation by children in physical activity has many known benefits. Immediate benefits such as better fitness, weight management and healthy growth and development have been identified. Additional immediate benefits include a reduction of stress and anxiety in children, increased opportunity for socializing and improved academic performance. Long term benefits for children's participation in physical activity have also been proposed such as a reduced risk of chronic diseases, which could have origins in childhood, including type II diabetes, cancer and heart disease. However, few children meet the recommended guideline of 60 minutes of physical activity per day. Children's active play is one aspect of physical activity that has not been studied as extensively as structured physical activity such as organized sports. Therefore, an investigation of the factors that influence children's active play is necessary in order to help encourage them to be more active.

The project in which your child has been invited to participate is expected to be an enjoyable experience, and will require less than 30 minutes of time out-of-class. However, this study will require the student to participate outside of school hours. The decision about participation is yours; to help you with your decision a brief description of the project is provided. The project involves two phases. The first will involve the children filling out a time diary, the second will be interviews. The diary contains a set of short questions that the students will complete each time after they engage in active play. Specifically the diary contains questions regarding what, how long, where and with whom play took place. Students will be asked to carry and complete time diary entries for two weekdays and two weekend days. After analysis of the time diaries, a small selection of students will also be invited to participate in the second phase of the study. This will include follow-up interviews to elaborate on time-diary results. Discussion will revolve around the children's perceptions of their active play experiences including: what do they like best about their play experiences, what do they like least about their play experiences, what are the things that they describe that make their experience of active play more fun, and what are the things that they describe that make their experience of active play less fun? From this personal, social, and environmental factors affecting their active play will be explored.

All of the children's responses are considered confidential and individual children's results will not be shared with school staff. However, information based on the results of the group of participants will be provided. To maintain students confidentially time diaries will be stored in a locked cabinet in the Department of Recreation and Leisure Studies for two years, and then

destroyed. Children in grades 4 through 6 who have parental permission, and who themselves agree to participate, will be involved in the study. Also, children or parents may withdraw their permission at any time during the study without penalty by indicating this decision to the researcher. There are no known or anticipated risks to participation in this study.

We would like to assure you that this study has been reviewed and received ethics clearance through the University of Waterloo Office of Research Ethics. In addition, it has been approved by the Research Committee at the Avon Maitland District school board, and has the support of the principle at your child's school. However the final decision about participation is yours. Should you have any concerns or comments resulting from your child's participation in this study, please contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 1-519-888-4567, Ext. 36005 or Maureen.nummelin@uwaterloo.ca.

We would appreciate if you would permit your child to participate in this project, as we believe it will contribute to furthering our knowledge of the factors that may encourage children's play and physical activity. Please complete the attached permission form, whether or not you give permission for your child to participate in both the time diary and interview portions of this study, and return it to the school by_____.

If you have any questions regarding the study, or if you would like additional information to assist you in reaching a decision, please feel free to contact us at the University of Waterloo.

Yours sincerely

Brett Miller
MA Candidate

Appendix C: Consent Form

Parental Consent Form for Child's Participation

I have read the information presented in the information letter regarding the research project being conducted by Brett Miller and Dr. Bryan Smale of the Department of Recreation and Leisure Studies at the University of Waterloo.

I am aware that my son or daughter may withdraw from the study at any time, without penalty, by advising the researchers.

I realize that this project has been reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. I was informed that if I have any comments or concerns resulting from my child's participation in this study, I may contact the Director, Office of Research Ethics at 519-888-4567 ext. 36005

Child's Name: _____

Child's Birth Date: _____

Sex of Child: Male Female

Permission Decision Stage 1 Yes, I would like my child to participate in stage 1 of this study

No, I would not like my child to participate in stage 1 of this study

Permission Decision Stage 2 Yes, I would like my child to participate in stage 2 of this study

No, I would not like my child to participate in stage 2 of this study

Signature of Parent/ Guardian: _____

Date: _____

Appendix D: Time Diary

INSTRUCTIONS

The diary will be kept for four consecutive days from Thursday_____ to Sunday _____. During weekdays, only record active play episodes after school hours. Record sheets are included in this booklet and can be used to keep track of every active play episode you are involved in during that time.

Remember, a definition of active play is not provided; you must decide what is and what is not active play. Please fill out an entry in the time diary, as soon as possible, every time you have participated in what you consider to be active play. Make sure to indicate: the time of day, a short description of what you are playing, how long you were playing, who you are playing with, where you are playing, and how much you enjoyed playing.

If you have any questions please feel free to contact me by phone: 519-291-0956 or email: b3miller@uwaterloo.ca.

Before you begin with the time diary, we would first like you to tell us about yourself and your physical activity. First answer a few questions about yourself followed by a short survey. For each activity listed below, please write the number of times in the past week you did that activity. For those activities that you played in the past week, write in how much time you usually spend doing that activity.

Name: _____ Age: _____

Grade: _____ Gender: _____

Activities	How many times in the past week did you participate in this activity	Each time you participated, how long did you usually spend doing this activity	
		Hours	Minutes
Team Sports			
Basketball			
Volleyball			
Hockey/ ringette			
Football			
Soccer			
Baseball/ softball			
Ball/ street hockey			
Tennis/ badminton			
Other: _____			
Individual Sports			
Swimming			
Track and field			
Downhill/ Cross-country skiing/ Snowboarding			
Bowling			
Snowmobiling/ four-wheeling			
Gymnastics/ dance			
Karate			
Golf			
Other: _____			
Physical Activities			
Skipping			
Active games (e.g., tag)			
Running/ jogging			
Walking			
Bicycling			
Aerobics (e.g., zumba, yoga)			
Ice skating (not including ice hockey)			
Rollerblading/ skateboarding			
Other: _____			

DAY 1¹				
Time	What were you playing?	How long were you playing?	Who were you playing with?	Where were you playing?
			Alone One friend Group Family/ relatives Other:_____	Home/ Yard Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____

¹ Only page one of the time diary is shown here. All four days followed the same format.

DAY 1

Time	What were you playing?	How long were you playing?	Who were you playing with?	Where were you playing?
			Alone One friend Group Family/ relatives Other:_____	Home/ Yard Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____
			Alone One friend Group Family/ relatives Other:_____	Home Neighbourhood Park/ Arena Other:_____

Appendix E: Classroom Script

Hello, my name is Brett Miller and I am a graduate student at the University of Waterloo. I work in the Department of Recreation and Leisure Studies and I am interested in finding out about your physical activity. Specifically, I am interested in your active play behaviours. So what is active play? It has a few characteristics that I will go over with you:

- Active play is different than other forms of physical activity because it is not structured. Structured activities include things like physed class, or sports like hockey and soccer.

- Active play is what you do in your free time at your house, your friend's house, or your neighbourhood park. It is what you choose to do yourself.

- Importantly active play has to be active. This means that when you are playing you will feel your heart beating faster and maybe shortness of breath. Finally, I am interested in your perceptions of active play rather than your parents

Now, I am going to spend a few minutes telling you about the project, and then if you want to participate in the project you can let me know.

There are two parts to the project, and you can agree to take part in none, one, or both. If you decide to take part in the first phase of the study, I have a booklet called a diary that I would like you to take a look at. Inside the diary there are pages that have been prepared for you to fill out after you have participated in active play. You will be asked to answer very simple questions such as: what were you playing, how long did you play, who did you play with, and where did you play? On the first page of the diary there are instructions that we are going to read over carefully. (READ INSTRUCTIONS)

Once you have completed the diaries you will bring them back to school. I will collect the diaries and answer any questions you have. I will then take some time to look over your diaries. If I need some more information from you I may ask that we set up a follow-up interview. Not all students will be asked for an interview, if you would like to complete the diary but not an interview that is okay.

During interviews I will be asking you about your perception of active play. That means I will be asking you questions like: what do you like best about you play experiences, what do you like least about your play experiences, what are some things that make playing more fun, and what are some things that make play less fun?

I am interested in hearing from you about your play experiences because the answers that you give will help us understand what we need to do to help you participate in active play. We hope that with your help we will be able to tell schools and cities what they can do to help you participate in, and enjoy active play.

I will be sending you home with an information letter and permission form that I would like you to go over with your parents. It is important that you let them know there are two phases to this study and you must give your permission to participate in both (READ CONSENT FORM). Please bring your form back to your teacher so we can give you the time diary. Those students who choose to participate will receive a free pass for a community active play event!

If there are any questions in the diary that you do not want to answer, you do not have to answer them. I will not let anyone see your answers, or information about you. Your parents, teachers, and principle will never see your answers.

If you decide you don't want to be in the study you don't have to, just tell me that you don't want to be in the study. If you decide you want to be in the study, but change your mind later, you can tell me you don't want to be in the study anymore.

Does anyone have any questions? If you have any questions while you are finishing the diaries over the next few weeks please let me know. I have supplied my contact information in the instructions on the diary.

Thank you very much for helping me with this project! I hope you enjoy it, have fun!

Appendix F: Feedback Letter I

Date:

Dear _____

I would like to thank you for participating in this study. As a reminder, the purpose of this study is to examine children's perceptions of active play and the factors related to their play. Such factors include personal, social, and environmental factors such as attitude towards play, parental and peer relationships, and access to places for play.

The data collected during the diary process will contribute to a better understanding children's active play behaviour and the context in which it takes place. Following analysis, interviews will explore factors associated with children's play and physical activity. With these findings we hope to provide parents, schools, and cities with suggestions to help encourage active play among children.

Please remember that any data pertaining to students as individual participants will be kept confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through seminars, conferences, presentations, and journal articles. I also plan on providing your school, and the municipality with a brief summary of the findings. Results will also be used in partnership with the municipality to promote active within the community. If you are interested in receiving more information regarding the results of this study, or have any questions or concerns, please feel free to contact me.

As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. Should you have any comments or concerns resulting from your child's participation in this study, please feel free to contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 519-888-4567 ext. 36005.

Thank you again!

Sincerely,

Brett Miller
519-291-0956
b3miller@uwaterloo.ca

Appendix G: Interview Guide

How do children describe their experience when engaged in active play?

Did you enjoy the activity you were involved in? Why?

Would you rather have participated in another activity? If so what?

Why did you choose to play?

What are the things that they describe that make their experience of active play more fun?

What made play more fun?

- Did you enjoy playing with friends or family?
- Did you enjoy the sense of freedom?
- Did you enjoy where you were playing?
- Did you enjoy being active?

What do they like best about those experiences?

What was the best part about playing?

What are the things that they describe that make their experience of active play less fun?

What made playing less fun?

- Was there anything that made it difficult to play?
- Did you have to ask for help to be able to play? If so from who.
- Would you rather play elsewhere?
- Would you rather play with someone else?

What do they like least about those experiences?

What was your least favourite thing about playing?

Appendix H: Feedback letter II

Date:

Dear _____

I would like to thank you again for participating in this study. As a reminder, the purpose of this study was to examine children's active play behaviours, as well as children's perceptions of active play.

The data collected during the diary process contributed to a better understanding of what, where, when, and with whom children play. Secondly, analysis of interviews will help to explore factors associated with children's play and physical activity. With these findings we hope to provide parents, schools, and cities with suggestions to help encourage active play among children.

Please remember that any data pertaining to students as individual participants will be kept confidential. Once all the data are collected and analyzed for this project, I plan on sharing this information with the research community through seminars, conferences, presentations, and journal articles. I also plan on providing your school, and the municipality with a brief summary of the findings. Results will also be used in partnership with the municipality to promote active within the community. If you are interested in receiving more information regarding the results of this study, or have any questions or concerns, please feel free to contact me.

As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through a University of Waterloo Research Ethics Committee. Should you have any comments or concerns resulting from your child's participation in this study, please feel free to contact Dr. Maureen Nummelin, the Director, Office of Research Ethics, at 519-888-4567 ext. 36005.

Thank you again!

Sincerely,

Brett Miller
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