Healthy After-School Child Care

by

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B.Sc., McMaster University, 2011

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Supervisory Committee

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Abstract

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The purpose of this intense case study was to explore the factors that affect implementation of quality physical activity (PA) and healthy snacks that are provided to school-aged children (kindergarten to grade 8) attending after-school child care in British Columbia. Using an orientational approach that was guided by the implementation literature, 16 staff (n = 9 managers; n = 7 frontline staff) completed surveys and participated in semi-structured interviews. The majority of the data contributed to the emergence of the primary theme "Being confined" which contains three sub-themes: "It's a moving target"; "We have to make do"; and "Centre rules and routines dictate practice". This theme contextualizes two related but distinct primary themes: "Working together to pull it off" and "It takes skill". The study contributes to our understanding of what facilitates or impedes implementation, according to staff working in typical after-school child care programs. This information can contribute to the refinement of guidelines and development of resources to help meet staff needs. Further, it will ensure that future research efforts are directed appropriately.

Keywords: after-school; physical activity; nutrition; staff

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Dedication

I would like to dedicate this to my participants. Thank you for your commitment to the profession and to this study.

Chapter 1: Introduction

Escalating levels of childhood obesity in Canada have been linked to high levels of sedentary behaviour (Colley et al., 2012), low levels of physical activity (PA) (Colley et al., 2011), and low quality diets (Anderson & Butcher, 2006; Wu, Ohinmaa, & Veugelers, 2011). School settings have been proposed as an appropriate medium to deliver health promotion initiatives since they have the capacity to reach a large number of children for a substantial amount of time (Fox, 2004; Gidlow, Cochrane, Davey, & Smith, 2008). Despite this, efforts to improve PA participation and nutrition in schools have produced modest effects (Naylor & McKay, 2009). As well, several barriers to implementation have been reported and implicated with these findings (Day, Strange, McKay, & Naylor, 2008; Downs et al., 2012; Naylor & McKay 2009; Sherman, Tran, & Alves, 2010). This suggests that other opportunities to contribute to children's PA and nutrition should be explored.

The after school time period, for instance, has been specifically proposed as a chance to offer additional opportunities for PA and healthy eating (HE) (Brockman, Jago, & Fox, 2010; Hastmann, Bopp, Fallon, Rosenkranz, & Dzewaltowski, 2013; Stanley, Ridley, & Olds, 2010). Within this time period, 33% of Canadian parents with school-aged children used a child care service on a regular basis, 55% of which used before- or after-school child care (Statistics Canada, 2011). Thus, after-school child care settings can reach a substantial number of school-aged children.

Importantly, after-school interventions have had positive effects on children's PA (Beets, Beighle, Erwin, & Huberty, 2009; Beets, Huberty, & Beighle, 2013; Beets,

Weaver, et al., 2015), nutrition (Bohnert & Ward, 2013; Slawta, Bentley, Smith, Kelly, & Syman-Degler, 2008; Slusser et al., 2013), and overall health (Gutin, Yin, Johnson, & Barbeau, 2008; Yin, Gutin, et al., 2005). However, the results have been inconsistent even when the same intervention elements have been used (Beets, 2012). In addition, interventions often use a combination of these elements, making it difficult to determine what is responsible for program success. Some of these elements include allocating and scheduling additional time for PA, and training frontline staff.

Beets and colleagues (2009) also recognized the need to understand how programs are designed and implemented in order to accurately interpret outcomes (Durlak & DuPre, 2008; Robbins, Pfeiffer, Wesolek, & Lo, 2014). In recognition of its importance, several implementation theories and conceptual frameworks have been developed (Damschroder et al., 2009; Saunders et al., 2005), including ones specific to after-school child care (Beets, Webster, et al., 2013) and schools (Domitrovich et al., 2008). Despite this, few interventions have assessed implementation as evidenced by the limited use of process evaluations (Atkin, Gorely, Biddle, Cavill, & Foster, 2011; Beets et al., 2009; Branscum & Sharma, 2012).

In order to understand the factors that affect implementation, researchers have looked to after-school child care frontline staff, since they determine whether or not program activities will proceed (Beets, Webster, Saunders, & Huberty, 2013; Langille & Rodgers, 2010). However, research to date has largely followed implementation of pre-packaged curricula, where frontline staff have been provided with training, equipment, and on-going support (Dinkel, Huberty, & Beets, 2015; Gortmaker et al., 2012; Hastmann et al., 2013; Zarrett, Skiles, Wilson, & McClintock, 2012). These findings

have limited external validity and generalizability to typical after-school child care settings and employees. Furthermore, little research on after-school child care has been conducted in Canada (Annesi, Westcott, Tennant, Faigenbaum, & Smith, 2009; Sharpe, Forrester, & Mandigo, 2011).

While assessing implementation is becoming increasingly common, understanding the factors that affect implementation under natural conditions appears important and necessary to ensure it is assessed accurately. To understand these factors, the perspectives of typical after-school child care staff could be explored. In addition, research on after-school child care settings in Canada is particularly warranted. Ultimately, this practice-based evidence could contribute to the development of guidelines and resources that better account for the constraints of the setting (Green, 2008).

Purpose

Therefore, the purpose of this study was to explore the factors that affect implementation of quality PA and healthy snacks for school-aged children (kindergarten to grade 8) attending after-school child care programs in British Columbia. The study used an orientational approach (Patton, 2002) based on conceptual frameworks described in the implementation literature (Beets, Webster, et al., 2013; Domitrovich et al., 2008).

Research question

Specifically, the following research question addressed this topic:

1. What are the factors that facilitate and/or impede staffs' ability to implement quality PA and provide healthy snacks to school-aged children in after-school child care?

Operational Definitions

After-school child care is a service that is offered Monday to Friday after the regular school day to bridge the gap between school and home while parents are at work. The service is offered in a school or community facility, and must include scheduled activities and opportunities to be active (Beets, 2012; Halpern, 2000). The program must provide care to school-aged children (kindergarten to grade 8). In addition, the program must be considered a licensed after-school child care centre by The School Age Child Care Association of British Columbia and Island Health. Island Health is the regional public health authority that issues child care licenses to after-school child care programs on Vancouver Island.

It is important to acknowledge a distinction between two types of empirical evidence (Beets, 2012) since the terminology throughout the literature varies:

1. 'Field' studies include "evaluations of enhancements to pre-existing community-based" after-school programs (ASPs) (p. 333). For the purpose of the present study, these programs will be referred to as after-school child care.
2. 'Laboratory' studies include researcher-initiated programs that are implemented by paid professionals (rather than people from the general public) and end when

the study is completed (Beets, 2012). For the purpose of the present study, these programs will be referred to as ASPs.

After-school child care frontline staff: "individuals who directly lead and interact with the children enrolled" in an after-school child care program (Beets, Webster, et al., 2013, p. 232).

After-school child care managers: individuals who supervise frontline staff and monitor the after-school child care program proceedings.

After-school child care staff: managers and frontline staff employed by a licensed after-school child care centre.

Children: boys and girls enrolled in kindergarten through grade eight in the Canadian school system.

Facilitate: "to make easy" (Dodds de Wolf, Gregg, Harris, & Scargill, 1998, p. 556).

Impede: "to hinder or obstruct" (Dodds de Wolf et al., 1998, p. 766).

Implementation: "what a program consists of when it is delivered in a particular setting" (Durlak & DuPre, 2008, p. 329).

Quality PA: PA that is scheduled for 30 minutes, including 15 minutes of facilitated moderate to vigorous physical activity (MVPA) and/or vigorous physical activity (VPA). Two of the five days should incorporate fundamental movement skills (FMS) and choice should be provided when possible (Healthy After School toolkit, 2010).

Facilitated PA: PA that is led by frontline staff (e.g., leading games, teaching children how to use equipment, participating).

FMS: a series of movement and motor skills (e.g., dodge, hop) that provide a foundation for participating in sports and PA. These skills are essential in order to become physically literate (Physical and Health Education Canada, 2015).

Healthy snack: a snack that includes at least two different food groups from Canada's Food Guide (one should be a fruit or vegetable), and is low in sugar (<8 grams sugar per serving), sodium (≤140 mg per serving), and fat (0 trans fat and <12 grams total fat per serving). The first or second ingredient of grain products that are offered must be 'whole grains', and milk or water should be provided (preferably water) (Healthy After School toolkit, 2010).

Overview

The next chapters detail the following components of the research study: in Chapter 2, a literature review examines the evidence from the after-school literature; Chapter 3 details the research design and methods including sampling, recruitment, data collection, and data analysis. The qualitative and quantitative findings are described in Chapter 4, and contextualized in light of the conceptual frameworks and literature in Chapter 5. The thesis closes with recommendations for practice and future research.

Chapter 2: Review of Literature

The following literature review is organized into five sections: background and rationale; after-school literature; intervention elements; assessing implementation; and limitations of the literature. The first section, "Background and rationale", establishes the importance of PA participation and HE for children, acknowledges research conducted in other settings (e.g., schools), and recognizes out-of-school time as a means to improve PA participation and HE in this population. Section two, "After-school literature", highlights the findings from the literature. This is followed by "Intervention elements" which outlines common strategies for improving children's PA and HE specific to ASPs and after-school child care. The fourth section describes the importance of assessing implementation, leading to the final section, "Limitations of the literature" which identifies gaps in the research and establishes the need for the present study.

Background and rationale

There has been a marked increase in childhood obesity in the last few decades (Colley et al., 2011; Tremblay, 2012), with 31.5% of 5 to 17 year olds in Canada now classified as overweight/obese (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012). Obesity and metabolic disease have often been linked to sedentary behaviour which tends to include high levels of screen time (Colley et al., 2011; Crespo et al., 2001; Tremblay & Willms, 2003). This puts Canadian children and youth (6-19 years), who are sedentary for an average of 7.6 hours per day (Colley et al., 2012), at risk. In addition, research has shown that children (6-11 years) who dedicated more than 2 hours a day to screen time

were twice as likely to be classified as overweight/obese compared to children who dedicated an hour or less (Shields, 2006).

Unhealthy eating and low levels of PA have also been linked to increased levels of childhood obesity (Anderson & Butcher, 2006; Wu et al., 2011). While the Canadian Physical Activity Guidelines recommend that children and youth (ages 5-11 and 12-17) accumulate at least 60 minutes of MVPA per day (Canadian Society for Exercise Physiology, 2015), less than 7% of Canadian children and youth engage in 60 minutes of MVPA six days a week (Colley et al., 2011). This is not surprising, given that children spend 40% of their time in school (Fox, 2004; Gidlow et al., 2008) and in-school PA only accounts for 30% of total MVPA (Gidlow et al., 2008; Heelan et al., 2005; Sallis et al., 2003).

The United Nations Educational, Scientific, and Cultural Organization's (UNESCO) International Charter of Physical Education and Sport, and the European Charter, suggest schools allocate an appropriate amount of time to physical education (PE) (Council of Europe Charter, Article 5.i.). This gives schools a tremendous amount of flexibility in the amount of PE that is offered to children. Thus, it is not surprising that only 71% of schools globally implemented PE according to guideline expectations which varied among provinces and countries (Marshall & Hardman, 2000).

This flexibility has allowed for variation in the amount of time allocated to PE among elementary schools. For instance, a study that examined the number of steps accumulated by sixth grade students throughout a segmented school day found "PE class accounted for 8 and 11% of total steps per day (on days in which children participated in

PE) for boys and girls, respectively" (Tudor-Locke, Lee, Morgan, Beighle, & Pangrazi, 2006, p. 1736).

The literature has identified several barriers to delivering PE including prohibitive environments (Sherman et al., 2010), competing priorities (Faucette & Patterson, 1989), lack of funding, and poor expertise or qualifications of teachers (Morgan & Hansen, 2008). As well, Morgan and Hansen found the quality of pre-service education in PE, and the level of confidence teaching it was significantly and moderately associated with its delivery (p. 511). Other school-based initiatives targeting the physical environment, policies, and practices, as well as PA opportunities in the classroom have shown small to modest significant effects (Naylor & McKay, 2009). However, similar barriers to implementation have been cited (Franks et al., 2007; Gibson et al., 2008; Naylor & McKay, 2009). Lack of accountability for adherence to PA schedules has also been considered a contributing factor (Langille & Rodgers, 2010).

In addition to PA, strategies to improve children's diets are important and necessary, since the majority of Canadian children are not consuming the recommended amount of fruits, vegetables, milk products, and grains (Garriguet, 2004; Shields, 2006; St. John et al., 2008). As well, more than 80% of youth in three distinct regions of Canada reported daily consumption of sugar-sweetened beverages which has been linked to increases in obesity (Vanderlee, Manske, Murnaghan, Hanning, & Hammond, 2013).

Changes to school food and beverage policies have been proposed as a strategy to improve the quality of children's diets (Cullen & Watson, 2009; Cullen, Watson, & Zakeri, 2008; Fung, McIsaac, Kuhle, Kirk, & Veugelers, 2013) and their energy intake (Fung et al., 2013; Mendoza, Watson, & Cullen, 2010). As well, school-based

interventions have been implemented to increase fruit and vegetable consumption through teacher-led classroom initiatives (Adamo et al., 2013; Upton, Upton, & Taylor, 2013) and whole-school promotion of healthy food choices (Day et al., 2008). While some interventions have been successful, the effect sizes have also been modest (Day et al., 2008; Fung et al., 2013; Mullally et al., 2010).

In addition, parents, staff, and students have resisted policy changes that have restricted the types of foods allowed for celebrations and fundraising activities, as well as foods provided for reward (Downs et al., 2012). Profit losses, lack of resources and support from staff, and lack of knowledge and skills required for guideline implementation have also been reported.

School-based interventions have encountered other challenges, including lack of fidelity to a prescribed intervention, as well as inadequate time, money, equipment, and resources (Day et al., 2008). Based on the volume of implementation barriers to improve children's nutrition and PA levels in school, other opportunities for PA and HE outside of school should be explored.

It has been suggested that the window of time after school can provide an additional opportunity for PA promotion (Stanley et al., 2010). Hastmann and colleagues (2013) reinforced that "after-school time represents a key period in a child's week day to deliver interventions to increase PA" and fruit and vegetable consumption (p. 60). Furthermore, children who engaged in active play more frequently after school tended to have higher mean levels of PA at higher intensities (Brockman et al., 2010; Stanley et al., 2010).

In addition, children who participated in programs offered after school engaged in fewer minutes per hour of sedentary behaviour and more minutes per hour of MVPA and total PA compared to children who tended to go home (Taverno-Ross, Dowda, Colabianchi, Saunders, & Pate, 2012). More recently, Vasques and colleagues (2014) published a meta-analysis evaluating the efficacy of school and after-school interventions. They were particularly interested in determining the intervention's effect on children and adolescents' body mass indices (BMI). Their findings showed that after-school interventions have a positive effect in preventing and decreasing obesity, producing an effect size of 0.065 that was comparable to school-based interventions ($r = 0.069$). These findings support the notion that out-of-school time can contribute to children's PA engagement, nutrition, and overall health.

In twelve U.S. (United States) states, many single mothers who worked full time (36%) and part time (21%) relied on after-school child care programs for 6 to 9 year old children (Capizzano, Tout, & Adams, 2000). In addition, 24% of parents who both worked full time relied on these programs for children of the same age. Eleven percent of parents who both worked full time relied on these programs for 10 to 12 year old children. Moreover, 18% of full time employed single parents and 4% of part time employed single mothers relied on these services for children of the same age. In Canada, 33% of parents with school-aged children used child care on a regular basis (Statistics Canada, 2011). More specifically, 55% of these parents used a before- or after-school child care service. The evidence shows that after-school child care services are in demand. Furthermore, it demonstrates that they can reach a substantial number of school-aged children.

After-school literature

A number of studies have reviewed the literature on programs delivered after school (Atkin et al., 2011; Beets et al., 2009; Beets, 2012; Branscum & Sharma, 2012; Pate & O'Neill, 2009; Vasques et al., 2014). In particular, Beets and colleagues conducted a meta-analysis that examined the effect of 11 after-school interventions on children's PA and other outcomes.

Of the 13 publications reviewed, 10 reported outcomes related to body composition (Barbeau et al., 2007; Gutin et al., 2008; Melnyk et al., 2007; Robinson et al., 2003; Slawta et al., 2008; Story et al., 2003; Vizcaino et al., 2008; Weintraub et al., 2008; Yin, Gutin, et al., 2005; Yin, Moore, et al., 2005). Three of these studies found significant decreases in BMI, body weight, or skinfold thickness (Barbeau et al., 2007; Melnyk et al., 2007; Vizcaino et al., 2008). Of the four studies that examined sedentary behaviour (Kelder et al., 2005; Lubans & Morgan, 2008; Robinson et al., 2003; Weintraub et al., 2007), significant reductions were reported by one study (Robinson et al., 2003). Of the six studies that measured and reported physical fitness (PF) (Barbeau et al., 2007; Gutin et al., 2008; Slawta et al., 2008; Vizcaino et al., 2008; Yin, Gutin, et al., 2005; Yin, Moore, et al., 2005), four found positive effect sizes (Gutin et al., 2008; Slawta et al., 2008; Yin, Gutin, et al., 2005; Yin, Moore, et al., 2005). For the six studies that reported PA outcomes (Barbeau et al., 2007; Herman et al., 2006; Lubans & Morgan, 2008; Robinson et al., 2003; Story et al., 2003; Weintraub et al., 2008), three had significant positive effects on PA (Barbeau et al., 2007; Herman et al., 2006; Weintraub et al., 2008). Based on these results, the authors concluded that after-school interventions

have the potential to increase youth PA engagement and other health-related outcomes (Beets et al., 2009).

Following this, Beets (2012) reviewed descriptive studies and interventions that aimed to describe/increase PA in ASPs and after-school child care. The systematic review included studies from previous reviews (Atkin et al., 2011; Beets et al., 2009; Pate & O'Neill, 2009) and others located from keyword searches. This review revealed that the majority of published research (9 of 17 studies) focused on ASPs which lack sustainable and generalizable results.

Since then, there has been an increase in the number of studies that have focused on after-school child care. The articles identified since Beets' (2012) systematic review are presented in Appendix A. In keeping with its focus, interventions that aimed to increase PA were identified. Programs that focused exclusively on a single activity, or were designed to promote PA through a club (e.g., Girls on the Run) or sports team (e.g., intra- and intermurals) were excluded (p. 329).

A total of 10 studies (11 publications) were identified: two studies on ASPs (Bohnert & Ward, 2013; de Heer et al., 2011), and eight studies on after-school child care (nine publications) (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Herrick, Thompson, Kinder, & Madsen, 2012; Huberty, Beets, & Beighle, 2013; Hughey, Weaver, Saunders, Webster, & Beets, 2014; Messiah et al., 2015; Slusser et al., 2013; Thaw et al., 2014). One of the two studies on ASPs found intervention exposure significantly predicted lower BMIs and higher aerobic capacity (de Heer et al., 2011).

Of the six after-school child care studies that measured changes in children's PA behaviour during the program (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Herrick et al., 2012; Hughey et al., 2014; Thaw et al., 2014), four found significant positive results (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Hughey et al., 2014). All four studies that measured sedentary behaviour found significant decreases (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Hughey et al., 2014), although this was only specific to boys in the intervention group in Beets, Weaver, and colleagues' randomized control trial (RCT).

Two out of four studies (Herrick et al., 2012; Messiah et al., 2015; Slusser et al., 2013; Thaw et al., 2014) that measured changes in body composition reported significant positive results. More specifically, Messiah and colleagues found significant decreases in skinfold measures for all participants as well as significant decreases in BMI among children classified as overweight/obese. As well, Slusser and colleagues found significantly larger decreases in BMI for the intervention group relative to controls.

Of the three studies that measured PF (Herrick et al., 2012; Messiah et al., 2015; Thaw et al., 2014), two found significant positive results (Messiah et al., 2015; Thaw et al., 2014). While Thaw and colleagues found positive improvements in overall PF among intervention and control groups, these improvements were significantly greater in the control condition. They suggested that this might have been related to low levels of implementation fidelity using the Sport, Play, and Recreation for Youth (SPARK) curriculum. Furthermore, a limited amount of training was provided and no requests for additional support were received which can contribute to program efficacy (Nigg et al.,

2012; Sharpe et al., 2011). While 9 of the 10 studies found significant positive changes in the outcome variables, only 7 found significant positive results based on the outcomes of interest (PA behaviour, sedentary behaviour, PF, and body composition) (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; de Heer et al., 2011; Hughey et al., 2014; Messiah et al., 2015; Slusser et al., 2013).

Traditionally, after-school intervention models include a set of identical, pre-packaged intervention elements which are delivered to individuals in a designated treatment group (Beets, Weaver, Turner-McGrievy, et al., p. 293; Wandersman et al., 2008). Only now are researchers beginning to focus on building existing capacity of after-school child care programs, with particular emphasis on frontline staff training and developing strategies to support implementation.

Since Beets' 2012 review, three studies (four publications) have used this capacity-building approach (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Huberty, Beets, & Beighle, 2013; Hughey et al., 2014). Two of these studies reported significant positive changes in the outcome variables (Beets, Weaver, Moore, et al., 2014; Hughey et al., 2014). In addition, results from the Movin' Afterschool (MAS) intervention found significant positive changes in the proportion of children meeting PA guidelines based on accelerometer data (Beets, Huberty, & Beighle, 2013), and improvements in step counts were found at some sites (Huberty, Beets, & Beighle, 2013). These findings add support to the shift away from pre-packaged interventions to "ones that allow for more local/setting specific tailoring" (Beets, Weaver, Turner-McGrievy, et al., 2014, p. 293; Collins, Murphy, & Bierman, 2004; Hawe, Shiell, &

Riley, 2004). The section that follows expands on the findings from the after-school literature which is organized by specific intervention elements.

Intervention elements

Beets (2012) identified eight specific elements that were consistent across interventions.

> The [elements] included allocating additional time for physical activity, training of program staff to model appropriate health-related behaviours, how to get children physically active, or deliver program curricula health (e.g., benefits of physical activity) and/or behavioural change (e.g., build self-efficacy, self-monitoring, perceived competency) education, rewards/incentives, cultural tailoring, modifying or creating a mastery-oriented climate rather than a competitive-oriented climate, inclusion of parents through family nights, concurrent enrollment in the program, or assistance with program delivery, and outside organizational involvement (e.g., Cooperative Extension Services) in delivering intervention-related content (p. 338).

Four studies included in Beets' (2012) systematic review allocated additional time for PA (Gortmaker et al., 2012; Gutin et al., 2008; Kelder et al., 2005; Robinson et al., 2010). Of the two studies that measured changes in body composition (Gutin et al., 2008; Robinson et al., 2010), one study found significant improvements in percent body fat (BF) (Gutin et al., 2008). The same study also found significant improvements in bone mineral density (BMD), fat-free soft tissue, and PF. Of the three studies that reported changes in children's PA (Gortmaker et al., 2012; Kelder et al., 2005; Robinson et al., 2010), two found significant positive results (Gortmaker et al., 2012; Kelder et al., 2005).

Gortmaker and colleagues also reported significant increases in the amount of time intervention sites dedicated to PA.

More recently, the use of this intervention strategy has been associated with decreases in sedentary behaviour and increases in PA for boys and girls in after-school child care (Beets, Huberty, Beighle, & The Healthy Afterschool Program Network, 2012). Furthermore, a qualitative case study that examined frontline staff experience using the GoGirlGo! (GGG) after-school curriculum revealed that having site directors schedule time and space for the program was a major contributing factor to program implementation (Dinkel et al., 2015). These findings substantiate recommendations made by Beighle and colleagues (2010) who argued that at least half of an after-school child care program should be dedicated to PA. Moreover, PA should be scheduled in small, frequent bouts.

Interventions have also assessed other components of the after-school child care environment such as the presence of PA equipment. For example, systematic observations of the MAS intervention revealed that the presence of equipment was associated with a reduction in children's sedentary behaviour during the program (Beets, Huberty, & Beighle, 2013). Furthermore, when three or more positive program features were observed (organized PA, presence of equipment, staff engaged in or promoting PA), there was a substantial significant increase in the number of boys and girls participating in MVPA (Huberty, Beets, Beighle, et al., 2013).

The focus on the after-school environment has also extended to examining PA and HE policies which was limited when Beets' (2012) systematic review was published. Beets, Wallner, and Beighle (2010) found that a limited number of after-school child care

programs in the U.S. had standards/policies with language, either defining or relating to the promotion of PA. Subsequently, Beets, Huberty, Beighle, and colleagues (2013) assessed the association between the policy environment and children's behaviour. The assessment included 18 after-school child care programs in the U.S. It was guided by Beets, Webster, and colleagues' (2013) conceptual framework that has been proposed to influence adoption and implementation of policies in after-school child care. For the most part, the policies were unrelated to children's PA engagement in after-school child care (Beets, Huberty, Beighle, et al., 2013). The same was true for snack consumption, where findings revealed that the existing policies were unlikely to influence fruit intake (Beets, Tilley, et al., 2014).

In addition, Beets, Shah, and colleagues (2015) evaluated the prevalence of children meeting policy goals among 19 after-school child care programs with varying standards. These differences ranged from prescribing total PA (light-to-vigorous PA) (LVPA), prescribing MVPA, or designating the proportion of time that should be dedicated to PA (Beets, Shah, et al., 2015; Beets, Wallner, et al., 2010). Accelerometer data revealed children could meet total PA benchmarks. However, MVPA benchmarks were not reached. Another study examined the relationship between environmental and policy characteristics of after-school child care programs in relation to children's PA and sedentary behaviour (Ajja et al., 2014). The findings showed that policies were largely unrelated to MVPA levels or time spent sedentary. Moreover, Ajja and colleagues suggested the absence of government policies might contribute to a lack of accountability for meeting PA guidelines.

A more recent RCT conducted by Beets, Weaver, and colleagues (2015) has shown more promising results. The intervention aimed to test "the effectiveness of strategies designed to improve snacks served and increase MVPA in children" attending after-school child care (Beets, Weaver, Turner-McGrievy, et al., 2014, p. 291). Using the Strategies To Enhance Practice (STEPs) conceptual framework, program characteristics that could facilitate policy implementation were identified and separated into a series of building blocks. The results showed significant increases in the proportion of children meeting the guidelines (≥30 minutes MVPA per day) (Beets, Weaver, et al., 2015).

These policy-level changes often involve training of frontline staff since they are an essential link between policies and practice (Beets, Webster, et al., 2013; Langille & Rodgers, 2010). In addition, frontline staff behaviour is an important determinant of program efficacy (Weaver, Beets, Webster, & Huberty, 2014). In fact, research has attributed high levels of PA participation to qualified (Yin, Gutin, et al., 2005) and enthusiastic frontline staff (Slawta et al., 2008). Furthermore, Anderson-Butcher (2010) attributed program attendance to the caring and supportive relationships between frontline staff and children.

Beets' (2012) systematic review identified frontline staff training as another intervention element. This was used by six studies included in his review (Battista et al., 2005; Dzewaltowski et al., 2010, Gortmaker et al., 2012; Kelder et al., 2005; Robinson et al., 2010; Story et al., 2003), three of which found significant positive changes in children's PA (Dzewaltowski et al., 2010; Gortmaker et al., 2012; Kelder et al., 2005). Both studies that assessed opportunities for PA found intervention sites dedicated significantly more time to active recreation (Dzewaltowski et al., 2010) and PA in

general (Gortmaker et al., 2012). Only one of the four studies (Barbeau et al., 2007, Dzewaltowski et al., 2010, Robinson et al., 2010, Story et al., 2003) that measured changes in body composition found a significant decrease in the intervention groups' percent BF, BMI, and visceral adipose tissue, as well as a significant increase in BMD (Barbeau et al., 2007).

Since then, this approach has had positive effects on children's PA and sedentary behaviour. For instance, the MAS intervention provided frontline staff with training to facilitate PA policy adoption and implementation (Beets, Huberty, & Beighle, 2013). The findings showed that children's PA, frontline staff behaviour, and environmental features of the after-school child care program were associated with significant reductions in the percentage of children who were sedentary. Significant increases in girls' walking behaviour and boys' VPA were also reported.

More recently, Beets, Weaver, Moore, and colleagues (2014) collaborated with after-school child care stakeholders to develop strategies that could optimize children's MVPA during planned PA. The team included YMCA branch executive directors, managers, frontline staff, and university staff. The collaborative approach to designing a training model for frontline staff, as well as the use of weekly checklists, proved to be successful, as the number of children meeting the PA guidelines (≥30 minutes MVPA per day) increased significantly.

According to Beets (2012), the use of one or more intervention strategies has made it difficult to determine what is responsible for program success. Contrary to expectations, studies that have used the same strategies have shown varying levels of success. Therefore, the evidence suggests that more extensive evaluation (e.g., activities

offered, content and frequency of staff training) is needed "in order to understand exactly how programs were designed and implemented" (Beets et al., 2009, p. 10). Part of this may include assessing implementation.

Assessing implementation

"Implementation refers to what a program consists of when it is delivered in a particular setting" (Durlak & DuPre, 2008, p. 329). Assessing implementation appears to be an essential component of intervention studies in order to accurately interpret outcomes and draw conclusions (Durlak & DuPre, 2008; Robbins et al., 2014). In fact, Durlak and DuPre's review, which examined studies on prevention and health promotion programs for children and adolescents, found "a significant positive relationship between the level of implementation and at least half of all program outcomes" (p. 331).

Studies that do not assess implementation are vulnerable to Type III errors (Basch, Sliepcevich, Gold, Duncan, & Kolbe, 1985; Robbins et al., 2014). These errors occur when researchers attribute lack of significant results to the intervention's design, without considering implementation quality (Glasgow & Linnan, 2008; Robbins et al., 2014). Thus, measuring implementation also allows researchers "to explain why innovations succeed or fail" (Dusenbury, Brannigan, Falco, & Hansen, 2003, p. 240).

In recognition of its importance, a number of implementation theories have been developed with varying terminologies and definitions, but considerable overlap (Damschroder et al., 2009). As well, the theoretical constructs have been consolidated into various conceptual frameworks (Saunders et al., 2005) to understand how they may apply to certain contexts (Damschroder et al., 2009). In the after-school literature, Beets, Webster, and colleagues (2013) developed a conceptual framework that could influence

adoption and implementation of obesity prevention policies. Drawing on emerging literature from public health policy (Brownson & Jones, 2009; Brownson, Seiler, & Eyler, 2010), complex systems change (Foster-Fishman, Nowell, & Yang, 2007), and social ecology (Stokols, 1992), the researchers focused on multiple leverage points which operate interdependently and can be altered to facilitate organizational change. The framework, which is displayed in Figure 1, can be applied to both ASPs and after-school child care programs.

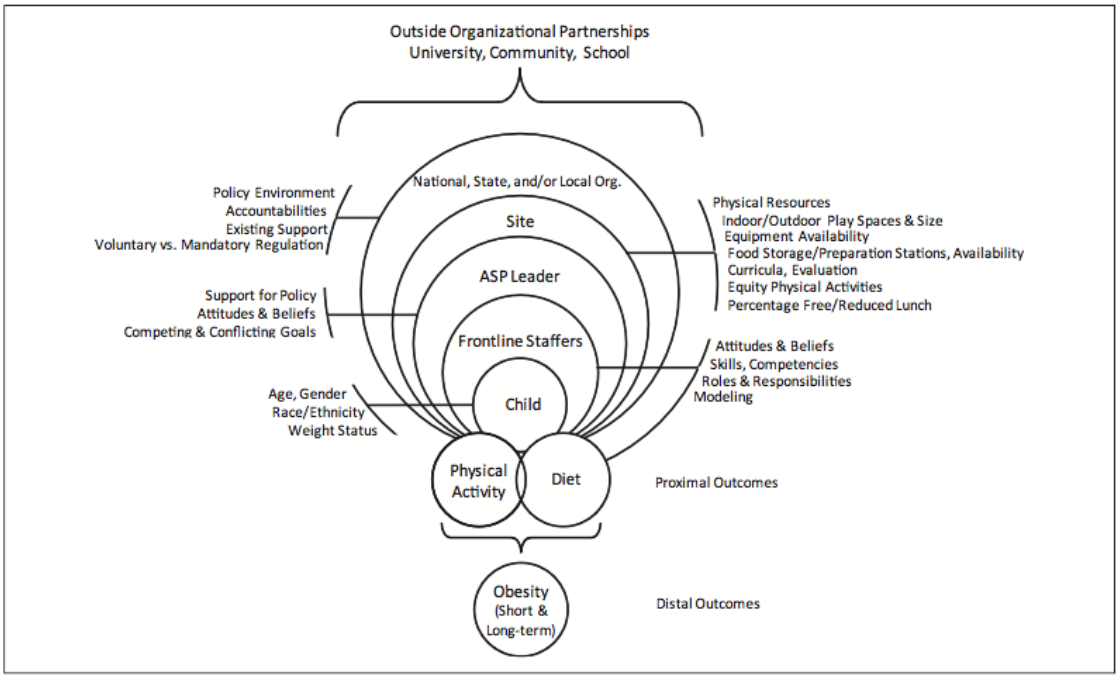

FIGURE 1 Conceptual Framework to Prevent Childhood Obesity Through Policy-Level Initiatives in Afterschool Programs

Figure 1. Conceptual Framework to Prevent Childhood Obesity Through Policy-Level Initiatives (Beets, Webster, et al., 2013)

Domitrovich and colleagues (2008) used a more comprehensive approach to develop a school-based Multi-Level Model. Drawing on a combination of empirical and theoretical research, the model outlines factors that affect the implementation quality of

evidence-based practices. These factors are divided into three levels: macro-level, school-level, and individual-level. The macro-level is comprised of community factors, including the educational system, and government and community entities. The organizational functioning of the school makes up the school-level factors which are situated at the second level of the model. The innermost ring includes individual-level factors which describe the characteristics of the implementer(s). The factors contained in the model "may also operate bi-directionally across or within levels" (p. 12). The Multi-Level Model is displayed in Figure 2.

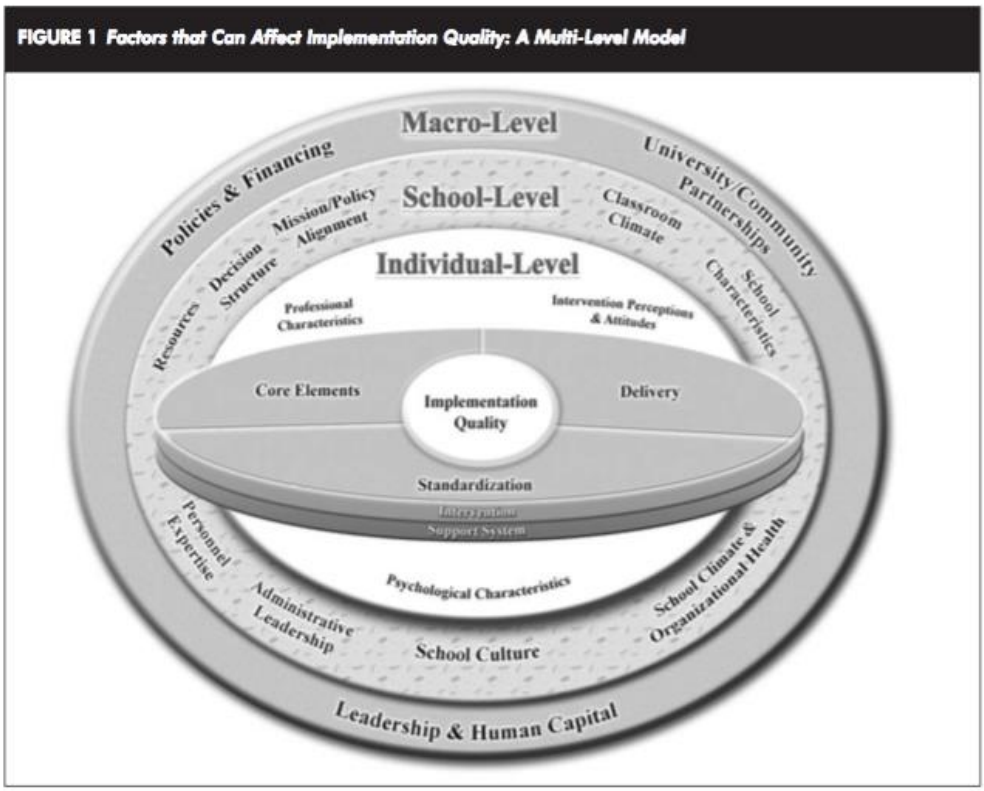

Figure 2. Factors that Can Affect Implementation Quality: A Multi-Level Model (Domitrovich et al., 2008)

It is evident that both frameworks view implementation through an ecological lens that considers an array of factors as well as the complexity of the setting where programs operate. Moving forward, the frameworks could be used to assess adoption and implementation of programs and policies (Beets, Webster, et al., 2013; Domitrovich et al., 2008). Further, they should be used to guide empirical research and inform practice.

Process evaluations are often used to assess implementation. The lack of attention to, or documentation of, this was acknowledged by Beets and colleagues' (2009) and other researchers that have reviewed the after-school literature (Atkin et al., 2011; Branscum & Sharma, 2012). In particular, "questions such as: *How often is the program being implemented?* and *Is the program being implemented as intended?*" remain unanswered for many of the studies (Beets et al., 2009, p. 536). For instance, while all studies described the intended dose to be delivered (e.g., days per week, minutes per session), only two studies provided program manual descriptions that were used to document intervention activities and track activity completion (Story et al., 2003; Vizcaino et al., 2008). Two other studies reported delivery quality (Kelder et al., 2005; Robinson et al., 2003) and no studies reported information on use, adherence, or modification of intervention activities.

Recently, process evaluations are being reported more frequently. In examining the studies identified since Beets' (2012) systematic review, 7 out of 10 interventions included process evaluations (Beets, Huberty, & Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Bohnert & Ward, 2013; Herrick et al., 2012; Huberty, Beets, & Beighle, 2013; Hughey et al., 2014; Thaw et al., 2014). Among these studies, dose delivered (completeness) was assessed most often (Beets, Huberty, &

Beighle, 2013; Beets, Weaver, Moore, et al., 2014; Beets, Weaver, et al., 2015; Herrick et al., 2012; Huberty, Beets, Beighle, et al., 2013; Hughey et al., 2014; Thaw et al., 2014), while fewer studies reported dose received (satisfaction) (Bohnert & Ward, 2013), recruitment, and context (Beets, Weaver, et al., 2015; Thaw et al., 2014).

In addition, some studies have highlighted the relationship between the quality of implementation and the results. In particular, Bohnert and Ward (2013) examined the relationship between program attendance, quality, and implementation with study outcomes (BMI, PA and nutrition knowledge and behaviour, social-emotional development, and body image) following implementation of the Girls in the Game (GIG) after-school curriculum. In general, better outcomes in participant knowledge and behaviours were achieved when process variables were rated higher.

In a four-year evaluation of the Fun 5 after-school child care program, Nigg and colleagues (2012) found that implementation fidelity increased over time. Further, higher levels of implementation detected in the last two years of the study were associated with ongoing training and support provided to frontline staff. In part, these improvements contributed to increases in children's PA.

Comparisons between self-reported participant experiences and numerous dimensions of implementation (dose, quality of management and climate, participant responsiveness, and staffing quality) were assessed following implementation of a program on drug use and violence prevention that took place after school (Cross et al., 2010). The findings were compared across five sites and demonstrated that the majority of implementation elements co-varied with participant experiences. For example, "management and climate and student engagement showed a consistent relationship to

student experiences across sites" (p. 376-377). More specifically, high quality programs often had highly educated, well trained frontline staff who were employed for longer durations. These findings illustrate that study outcomes can be impacted by implementation quality which is often influenced by frontline staff.

Limitations of the literature

Since frontline staff determine whether or not program activities will proceed (Beets, Webster, et al., 2013; Langille & Rodgers, 2010), their perspectives on implementation of PA and HE in this setting are critically important. However, much of the research to date has followed implementation of pre-packaged curricula in ASPs and after-school child care. Specifically, Gortmaker and colleagues' (2012) After-school Food and Fitness Project included frontline staff assessments of curriculum use and interviews with site directors from 16 intervention sites at the end of the study. In addition, training, goal-setting strategies, and ongoing support were provided to frontline staff for the duration of the intervention.

Similar training was provided to frontline staff who participated in a qualitative assessment of their experience implementing the 17-week Active by Choice Today (ACT) ASP (Zarrett et al., 2012). The frontline staff who were hired for the RCT worked where the program operated and they were all state certified teachers. They also participated in a 12-hour training session which included a review of essential program elements and hands-on PA specific training. The program ended following termination of the study which limits the sustainability of the results.

Following implementation of the Healthy Opportunities for Physical Activity and Nutrition (HOP'N) after-school intervention (Dzewaltowski et al., 2010), Hastmann and

colleagues (2013) assessed the factors that influenced implementation of organized PA and healthy snacks. Data were collected from the staff (organizational leaders, managers, and frontline staff) through surveys and semi-structured interviews at the end of the first and second year of the program. Frontline staff were provided with the Coordinated Approach To Child Health (CATCH) Kids Club curriculum box ("hundreds of 5 inch × 8 inch cards describing fun, active and inclusive games and activities appropriate for children in grades K-5") (Kelder et al., 2005, p. 134), PA equipment, healthy snack ideas, three training sessions per year, monthly meetings, and ongoing web support.

More recently, a qualitative study assessed staffs' experience using the GGG curriculum (Dinkel et al., 2015, p. 186). Frontline staff and site directors were provided with one training session, scrapbooks/journals, and a guide outlining lesson topics and PA (Dinkel et al., 2015; Huberty, Dinkel, & Beets, 2014). Semi-structured interviews took place at the end of the study.

These studies have limited external validity and generalizability to typical after-school child care settings since staff evaluations were completed following implementation of new curricula, training, and equipment. Further, their perspectives offer little relevance to existing after-school child care programs which require funding to afford training and curriculum materials (Beets, 2012). The studies also neglected to include staff from the control condition in their evaluations. These assessments are important in order to understand how programs operate under natural conditions, and how resources and training may change program proceedings.

There has also been a minimal amount of research on the after-school child care setting in Canada. Annesi and colleagues (2009) tested the effectiveness of the Youth Fit

For Life PA protocol in Calgary, Alberta. This protocol was designed to be implemented in after-school child care settings, and included cardiovascular exercises, resistance training, and behavioural skills. The study found significant improvements in BMI, strength, cardiorespiratory endurance, self-efficacy, vegetable consumption, and voluntary PA. They attributed changes in voluntary PA to self-reported changes in self-regulatory and task self-efficacy, and general self.

More recently, Sharpe and colleagues (2011) completed an evaluation of after-school sites (40 of 330) that implemented the CATCH Kids Club curriculum. Sites were provided with the CATCH Kids Club curriculum box and PA equipment, as well as frontline staff training which included a curriculum overview and implementation strategies. The evaluation was completed using System for Observing Fitness Instruction Time (SOFIT) which was used to measure quantity and quality of PA. Structured interviews were conducted with 18 frontline staff from the intervention sites at the end of the study.

While Sharpe and colleagues' (2011) results highlight the important role that frontline staff play in program delivery, the study neglected to explain how interview questions were developed and there was little information about how the responses were organized. In addition, limited contextual information about the sites and frontline staff demographics (e.g., experience, education) was provided, further compromising the ecological validity of the findings (Chen, 2010). Ultimately, researchers were primarily interested in measuring program efficacy and these interviews were a smaller component of this larger study.

It is evident that numerous gaps in the literature exist, including limited research on after-school child care settings in Canada. As well, the need to understand the factors that affect implementation under natural conditions is apparent. Furthermore, typical after-school child care staff perspectives on the factors that facilitate and/or impede their ability to provide school-aged children with quality PA and healthy snacks has yet to be explored. This practice-based evidence could complement and drive evidence-based practice (Green & Ottoson, 2004) through development and tailoring of resources to after-school child care program constraints that support staff needs.

Chapter 3: Methods

Design

A qualitative assessment using an intense case study design was chosen to gain an in depth understanding of this real-life phenomenon (Yin, 2009, p. 18). Specifically, a holistic multiple case study design was used in which the global nature of programs, which operate out of schools and community facilities, was examined. The study used an orientational approach which "begins with an explicit theoretical or ideological perspective that determines what conceptual framework will direct fieldwork and the interpretation of the findings" (Patton, 2002, p. 129). Patton suggested that an orientational framework is most useful when previous research has been conducted on a given phenomenon and the goal is to obtain a deeper understanding. Given the existing knowledge of the after-school child care setting and typical employees, this approach appeared most appropriate.

Conceptual frameworks from the implementation literature helped to determine the focus of inquiry as well as the interpretation and meaning of the findings (Patton, 2002, p. 131). Particular emphasis was placed on conceptual frameworks derived from the after-school literature (Beets, Webster, et al., 2013) and school-based literature (Domitrovich et al., 2008). These conceptual frameworks portray the complexity of real-world settings using an ecological lens. Drawing on this literature helped to maintain the whole-setting research approach and allowed a comprehensive set of implementation factors to emerge.

Participant selection and recruitment

Participants included after-school child care frontline staff who were responsible for child supervision and program facilitation as well as managers who supervised frontline staff and monitored the after-school child care program proceedings. Participants were over the age of 18 and they were working in licensed after-school child care centres designated by The School Age Child Care Association of British Columbia and Island Health.

Although initially the recruitment targeted only those staff that had been working in their current after-school child care centre for at least six months, these criteria were dropped for frontline staff because of recruitment challenges. Recruitment also addressed a breadth of settings, targeting after-school child care programs that operated out of schools and community facilities. This permitted comparisons between the two settings. Finally, best efforts were made to recruit one manager and one frontline staff member from each site in order to capture a complete understanding of the proceedings at each centre.

Sampling

Based on these requirements, a combination of purposeful criterion and snowball sampling were used to recruit participants. This sampling strategy ensured that all participants could provide rich, thick descriptions of their work at a given site (Patton, 2002). Eighty child care centres in Greater Victoria, British Columbia that were listed in the Canada Child Care Directory and by the Ministry of British Columbia were identified. While the names of all child care centres were listed, additional searches were required to locate contact information for 37 of them. The contact information for 15 of

these centres could not be located. In addition, 15 of the centres were for day care and, therefore, they did not meet the inclusion criteria. This meant that staff from 50 centres (19 schools, 21 community facilities, and 10 family child care centres) were eligible or available to participate.

Managers at these centres were contacted by phone and e-mail. Thirty-two centres did not respond, and six centres declined. Nine managers that were contacted expressed interest in participating. With approval from three of these nine managers, three staff meetings were attended in an effort to recruit frontline staff.

Follow up e-mails containing an invitation letter and consent form were sent to after-school child care staff who were interested in hearing more about the study, and who had provided their name and contact information. The invitation letter and consent form made participants aware of the study's purpose, information researchers were looking to gain, how their information would be used, and "the implications for them as contributors" (Ryan, Coughlan, & Cronin, 2007, p. 741). Nine managers and three frontline staff were recruited through this process. Copies of the invitation letters provided to managers and frontline staff are included in Appendix B and C, respectively. As well, the consent form that was e-mailed to all participants is provided in Appendix D.

Snowball sampling was also used to recruit additional information-rich cases, based on referrals (Patton, 2002). Specifically, participating managers were asked to forward information about the study to frontline staff. Through this process, one frontline staff member sent a follow up e-mail expressing interest in participating. In addition, two managers and one colleague put the researcher in contact with three frontline staff who

had expressed interest in participating and subsequently agreed. Thus, four frontline staff were recruited using this strategy.

Recruitment continued until the point of saturation which was determined through iterative review of the data throughout data collection (Parahoo, 2006; Ryan, et al., 2007). The saturation point was reached when no new material emerged from the interviews. Thus, recruitment ended after data from 16 staff (n = 9 managers; n = 7 frontline staff) had been collected and reviewed. After participating in the study, all participants were provided with a small token of appreciation (a coffee card).

Data collection

Following ethical approval from the University of Victoria Human Research Ethics Board, participants were randomly assigned a number linked to their role. Specifically, frontline staff were listed as "Frontline staff member 1" to "7", and managers were listed as "Manager 1" to "9". It is important to acknowledge that staff with the same number (e.g., "Frontline staff member 1", "Manager 1") did not necessarily work for the same after-school child care program.

Data were gathered from two sources – quantitative (surveys) and qualitative (interviews) – which is a form of triangulation (Patton, 2002). Patton argued that this helps illuminate and understand inconsistencies. After returning the signed consent form, the participants were asked to complete a survey. Two surveys were developed – one for managers and one for frontline staff. The development of these surveys was informed by a modified version of the Nutrition and PA Self-Assessment for Child Care (specific to after-school child care) (Benjamin et al., 2007), conceptual frameworks from the

implementation literature (Beets, Webster, et al., 2013; Domitrovich et al., 2008), and the research question.

While both surveys requested information on staffs' experience, questions pertaining to the program were aligned with their anticipated responsibilities and where they would have the most knowledge. The frontline staff survey focused on PA proceedings while the manager survey focused on program logistics (e.g., staff-to-child ratio, pick up times), setting characteristics (e.g., gymnasium, multi-purpose room), and snacks. The surveys were used to determine participant demographics and to contextualize the findings. Survey copies for managers and frontline staff are provided in Appendix F and G, respectively.

The majority of data were accumulated through semi-structured interviews. Interviews were selected as an appropriate technique to understand how employees "view their world, to learn *their* terminology and judgements, and to capture the complexities of *their* individual perceptions and experiences" (Patton, 2002, p. 348). Using a semi-structured format with an interview guide (Patton, 2002), an organized set of questions was prepared based on the predetermined subject. This structure also allowed questions to emerge during the dialog. Furthermore, it ensured that all of the interviews were systematic and enabled valid comparisons to be made.

The research question, interview guides from the after-school literature (Hastmann et al., 2013; Zarrett et al., 2012), and conceptual frameworks from the implementation literature (Beets, Webster, et al., 2013; Domitrovich et al., 2008) were used to develop the interview questions. Like the surveys, separate interview guides were

developed for managers and frontline staff which are provided in Appendix H and I, respectively.

Each participant was e-mailed a copy of the Healthy After School guidelines to allow time for reflection prior to the interview. During the interview, each participant was shown a copy of the guidelines in order to make comparisons with their practice. The guidelines were developed by a group of experts as part of the Healthy After School toolkit and piloted with after-school providers. In the present study, their PA and healthy snack standards represent a best practices model in after-school child care. A copy of this resource is provided in Appendix E.

Interviews were scheduled for up to 60 minutes. The participants were given the option of a phone or in-person interview which took place at a convenient time and location. Two digital devices recorded conversations to minimize the risk of technological failure. Interview highlights and contextual details were recorded after each interview which helped to "establish a context for interpreting and making sense of the interview later" (Patton, 2002, p. 384). Following each interview, audio-recordings were transcribed verbatim. As well, an audit trail was used to document the procedures and processes used throughout data collection and analysis to ensure these steps were logical and traceable (Sparkes & Smith, 2013). This contributed to the study's dependability. All descriptors (e.g., participant name, after-school child care centre) were removed from the transcripts in order to maintain the confidentiality and anonymity of the participants. The transcripts were stored electronically on a password protected university research network drive.

In total, 16 staff (n = 9 managers; n = 7 frontline staff) agreed to participate in the Healthy After-School Child Care study. Of these participants, eight were working in community facilities (four managers, four frontline staff) and eight were working in schools (five managers, three frontline staff). Of the eight participants who worked in schools, two participants also worked in one school as a teacher (frontline staff member) and an administrator (manager). This frontline staff member worked with children in pre-school and kindergarten, who were part of the after-school child care program. All participants completed a survey and participated in a semi-structured interview that was 20 to 45 minutes in duration. One participant opted to participate in a phone interview, while each of the remaining 15 participants participated in an in-person interview.

Data analysis

Surveys results were recorded and analyzed using Microsoft Excel. Specifically, descriptive statistics (e.g., mean, standard deviation [SD]) were run to determine the sample characteristics and to allow for comparisons across the participating after-school child care programs. These results were used to support the qualitative findings that emerged from the interviews. They are woven throughout Chapter 4 where appropriate.

Throughout data collection, transcripts were reviewed several times for familiarity and to get a sense of them as a whole (Patton, 2002). This also helped to ensure that nothing was overlooked. Strategies outlined by grounded theory were then used to analyze the data. First, an open coding strategy was used to identify concepts, and their properties and dimensions (Strauss & Corbin, 1998, p. 101). Using the research question to guide inquiry, facilitators and barriers highlighted by the participants were recorded on paper copies of the transcripts. Once the transcripts had been uploaded to N Vivo, similar

facilitators and barriers were grouped together under a common heading or classification which Strauss and Corbin refer to as conceptualizing. Comparative analysis within and between transcripts was ongoing throughout this process. In other words, facilitators and barriers identified in the transcripts that shared common characteristics were given the same code. Reviewing the classifications helped group them into higher order concepts or categories (p. 112).

The open codes provided a foundation for axial coding which was used to explore the properties and dimensions of categories and sub-categories (Strauss & Corbin, 1998). This step also involved re-examining the context of the quotes that had been used to establish the categories and sub-categories. This ensured that they accurately represented the data and focused on the facilitators and barriers identified by the participants. In the process, categories and sub-categories were refined and, in some cases, removed when it was evident that the quotation was taken out of context and did not apply.

Because the interview guides differed for frontline staff and managers, so did the data. This meant that certain categories and sub-categories were established based on the role and responsibilities of the staff. For instance, “It takes skill” emerged as a theme describing the characteristics and experience of frontline staff since they are responsible for implementation of PA. On the other hand, “Bound by the infrastructure” emerged as a category based on the transcripts from both managers and frontline staff.

Other categories and sub-categories emerged only from interviews with certain participants and were not evident across all transcripts. These participants’ responses related strongly to specific categories and sub-categories. For instance, Frontline staff member 3 powerfully articulated her perspective which was included in the category

"Choice comes with challenges". These findings were considered of equal significance despite not being common among all participants.

After establishing the categories and sub-categories, the relationships between them were examined as well as the relationships across categories. This process of comparing one piece of data with another helped to validate the interpretations of the researchers (Strauss & Corbin, 1998). Furthermore, it was critical for determining the conditions, actions/interactions, and consequences under which implementing quality PA and healthy snacks was easier or more challenging.

Recognition of these relationships was part of the next step in data analysis: selective coding (Strauss & Corbin, 1998). This type of coding involves "integrating and refining categories" (p. 143). Several techniques were used to facilitate integration of multiple concepts in order to explain the data as a whole. First, data visuals were created to configure concepts and examine how they interrelate. This involved the creation of a network of nodes and lines which allowed multiple categories/sub-categories to be examined simultaneously (Miles, Huberman, & Saldana, 2014). The use of this technique was important given the complexity of interrelationships that emerged from the data.

Another important component in this step was conferring with the supervisory committee about the ongoing analytic strategies and emerging data patterns. According to Strauss and Corbin (1998), discussion with teachers, consultants, or colleagues "can facilitate the integrative process" (p. 153). Later, the process of writing the study results helped to refine the properties and dimension of the categories and sub-categories. More specifically, the writing process allowed for further discovery and analysis (Richardson, 2000; Sparkes & Smith, 2013) which helped to solidify the interpretation of the findings.

Throughout analysis, memos were used to document "the progress, thoughts, feelings, and directions of the research and researcher" (Strauss & Corbin, 1998, p. 218). At this stage, the memos were reviewed and used as a comparative check against the developing categories which contributed to the integrative process. The combination of techniques used throughout selective coding allowed the data to go from categories to themes (Morse, 2008).

Having established the themes, the findings were interpreted and given meaning based on conceptual frameworks from the implementation literature. Specifically, the themes, sub-themes, and categories were compared to factors identified in the literature, with particular focus on Beets, Webster, and colleagues' (2013) after-school conceptual framework and Domitrovich and colleagues' (2008) school-based Multi-Level Model. These comparisons give meaning to the findings and help situate the results. This component of the study is presented in Chapter 5.

Lastly, each participant was e-mailed a copy of his or her transcript as well as a condensed version of the results. The results included the themes and sub-themes that had emerged from the transcripts, as well as the supporting categories, sub-categories, and quotes. The participants were asked to ensure that the transcription was an accurate depiction of the interview and they were given the opportunity to comment on the findings. All participants verified that the transcripts were an accurate representation of the interview. Additional comments were received from 4 of the 16 participants. Where appropriate, these comments were integrated into Chapter 4 to substantiate the findings. This form of member verification and member checking ensured their interview responses were interpreted accurately and optimized the study's credibility (Koch, 2006;

Ryan et al., 2007). Further, this component of the study, in combination with an audit trail, triangulation, and clarification of researcher bias in framing the interpretation of data within existing literature, helped to establish the trustworthiness of the data (Thomas, Nelson, & Silverman, 2011). This optimized the quality of the results.

The culmination of the transcripts, codes, memos, and data visuals, as well as the process of writing, member verification, member checking, and discussion among the researchers was critical to establishing the themes. The themes and sub-themes were determined by 14 categories and 7 sub-categories. They are described and supported by quotes from the transcripts in the following chapter.

Chapter 4: Results

In total, 16 staff (n = 9 managers; n = 7 frontline staff) participated the Healthy After-School Child Care study. Detailed participant demographics are provided in Table 1 and 2. In general, the respondents were female (77.78%), and managers were older and had more experience compared to frontline staff. More specifically, the majority of managers had more than 6 years of experience working in the after-school child care setting, while the majority of frontline staff had less than 5 years of experience. At the time of the study, all participants were working in licensed after-school child care centres that operated Monday to Friday in order to bridge the gap between school and home. These programs provided scheduled activities (e.g., crafts, cooking, opportunities for homework) which included opportunities to be active.

Table 1

Manager descriptive statistics

		Total (n = 9) %/ Mean ± SD
Demographics		
Age (years)		43.44 ± 12.97
Gender (female)		77.78
Education Level		
Bachelor's degree		66.67
Master's degree		11.11
Experience		
Total after-school child care	6 – 10 Years	33.33
	11 – 15 Years	33.33
	≥ 16 Years	33.33
	11 – 15 Years	14.29
Current after-school child care	1 – 5 Years	22.22
	6 – 10 Years	33.33
	11 – 15 Years	22.22
	≥ 16 Years	22.22
≥ 1 additional training/certification		77.78

Table 2

Frontline staff descriptive statistics

		Total (n = 7) %/ Mean ± SD
Demographics		
Age (years)		30.00 ± 6.08
Gender (female)		85.71
Education Level		
Bachelor's degree		57.14
Master's degree		14.29
Experience		
Total after-school child care	6 – 11 Months	14.29
	1 – 5 Years	42.86
	6 – 10 Years	28.57
	11 – 15 Years	14.29
Current after-school child care	1 – 5 Months	28.57
	1 – 5 Years	57.14
	6 – 10 Years	14.29
≥ 1 additional training/certification		100.00

Based on the findings and data analysis, three primary themes emerged: “Being confined”; “Working together to pull it off”; and “It takes skill”. “Being confined” contains three sub-themes: “It’s a moving target”; “We have to make do”; and “Centre rules and routine dictate practice”. The themes were determined by 14 categories and 7 sub-categories through open coding of the transcripts.

Theme 1: Being confined

Table 3

Being confined

Both literal and metaphorical, staff were confined to the setting, resources, and rules/routines at each centre, in an unpredictable and changing context.		
Sub-themes		
It's a moving target	*We have to make do*	*Centre rules and routines dictate practice*
Categories and (Sub-categories)		
Unpredictable weather	Bound by your resources (Equipment) (Staff) (Financial)	Routine outdoor play periods
Flexible pick up times	Bound by the infrastructure (Storage) (Facilities on site)	Mandating organized PA participation
One size doesn't but has to fit all	Bound by limited access (Sharing space with other groups) (Sharing space with other programs)	Choice comes with challenges

Interview transcripts revealed that program operations were often dictated by what was available and accessible in each centre, and the established rules/routines. Programs also tended to lack predictability and consistency, and included a diverse group of children. The following are the three sub-themes and supporting quotes.

It's a moving target.

Based on this context, dealing with unpredictable weather, flexible pick up times, and a diverse group of children made implementation of quality PA challenging.

Unpredictable weather.

The majority of participants (12 of 15) discussed weather conditions that played a significant role in what they were able to accomplish. Its unpredictability meant staff planned ahead but they were flexible to changes in the program's schedule. In suitable weather conditions, when the ground was dry, more options existed for PA to take place since programs could make use of indoor and outdoor space. In poor weather conditions, which usually included heavy rainfall and wet ground, programs were confined to infrastructure that was often inadequate for PA. As a result, idealized recommendations for offering quality PA were irrelevant.

> …it was tough during…the winter season and then fall when it's…really raining or really bad weather…we couldn't do any of the activities because most of the activities that we were planning were…outside (Frontline staff member 2).

> ...the only time we run out of outdoor play space or using the gym is on a rainy day. If it's really, really raining, we don't go outside…(Manager 8).

In addition, four of the seven frontline staff that completed the surveys indicated that PA minutes scheduled for each session changed according to the time of year.

Flexible pick up times.

Staff indicated that programs gave parents flexibility in when they picked up their child. This meant the length of time that all children were present during after-school child care varied which affected the amount of time that children could engage in program activities. Specifically, one manager and five of the seven frontline staff felt that these varying pick up times limited the amount of time all children could participate in PA. For example, when asked, "What affects your centre's ability to provide quality PA?", Frontline staff member 6 replied:

> …the parents come pick them up any time after…3:00 pm, so we cannot guarantee the minutes...if they stay until 6:00 pm, they got everything, but some kids…pick up really early so we…bring certain activities earlier if we want them to finish or experience.

For another frontline staff member, this limited the types of PA that could be offered. This admission also alludes to her understanding of organized PA/structured games.

> …with the time frame that we have, most of the kids that we have…honestly by 5 not even half way through the program…already half of the group is picked up…so that's another structure that we have is if we do want to…program a structured active game…that's meant to be played with…10 or more kids, sometimes it's hard 'cause half the parents are already there early (Frontline staff member 2).

According to the surveys, centres were open for an average of 165 minutes a day and ranged from 120 to 194 minutes in duration. Survey results from the nine managers revealed that in most cases (78%), less than 20% of children stayed for each program's full duration.

One size doesn't but has to fit all.

Given the constraints around the after-school child care context, staff were required to create programs for children of different ages, abilities, interests, and willingness to participate. Under these conditions, four of the seven frontline staff found it challenging to implement PA, ensure activities were age appropriate, and guarantee participation. Frontline staff member 2 discussed the challenges of providing quality PA to the children in her group. Due to enrollment, the children that she cared for were from grade 1 to grade 5.

> Another thing too is because our range of kids that we have in the program is…between grade 1 to grade 5…the…younger group can't keep up with the older group or vice versa so if we're doing a game that maybe the younger kids definitely understand…it might not be challenging enough for the older group, and then…the little kids keeping up with the older kids, that's another challenge that we have…so that's another big factor that we have….

Frontline staff member 1 encountered challenges in motivating all children to participate. She acknowledged the diverse interests of the group of children that she cared for, some of whom lacked interest in PA.

> …what's challenging is…there's definitely some children who just want…quiet down time…some of them just want to sit and read a book or just do some quiet

> crafts or colouring so yeah that's definitely a challenge is encouraging them all to go out and have some extra physical activity time.

Some of the challenges were unique to certain age groups, as described by Frontline staff member 6. Since the interviews took place, she has been assigned to work with a younger group of children. After reviewing the results, she acknowledged differences between this group of children compared to the children she worked with at the time of the interview. This changed her ability to implement organized PA and provide healthy snacks.

> …I have been assigned to work with [a] different child in the much younger group since our conversation. So, I see more challenges in organized activities both inside and outside. Encouraging children to eat healthy snack is easier with younger children than with older ones.

We have to make do.

After-school child care staff tended to have limited access to facilities since they were constantly competing for space. As well, staff worked with a finite number of resources. This had implications on their ability to purchase equipment, hire an adequate number of employees and, ultimately, provide quality PA and healthy snacks. Given the limited number of available resources, staff were confined to the centre's infrastructure which was not necessarily conducive to PA.

Bound by your resources.

All of the managers made reference to resources that were essential for program operation. In particular, the available financial resources dictated their ability to purchase and replace PA equipment. As well, some centres had a limited number of employees that

worked during the hours that centres were open. This affected frontline staffs' ability to provide quality PA and healthy snacks which is described in more detail later in this section. Three of the seven frontline staff also discussed how program resources impacted implementation.

Equipment.

Seven of the 16 participants found the quality and quantity of available equipment dictated the types of PA that could be offered. One manager discussed how fortunate she felt to have an abundance of equipment available to the children enrolled in the program. It meant that children could engage in a diverse range of activities "without any difficulty":

> …we're able to do all of these types of activities after school without any difficulty. And we have lots of equipment, our school equipment, that children are able to access, so skipping ropes, balls, hoops, any of those kinds of things are available (Manager 1).

In contrast, Frontline staff member 2 felt limited by the quantity of available equipment. This dictated the types of activities that were planned.

> …if it's gonna be using a lot of equipment, we know we don't have…enough for our group of kids…And so most of the time it's gonna be…an active activity that's gonna be either little equipment or no equipment at all.

Staff.

Being understaffed also made it challenging to implement planned programs. In addition, other priorities tended to take precedence. Three of the seven frontline staff

recognized this as a barrier to implementation. In particular, they talked about having to divide their time among groups of children who had different needs. Behavioural issues (e.g., resistance to participating, children who were upset), injuries, and conversations with parents, were some of the program logistics that frontline staff had to attend to, in addition to delivering program content.

When asked if there was anything else that affected the program's ability to meet the Healthy After School guidelines, Frontline staff member 3 referred to the challenges of managing a large group of children when working with a limited number of frontline staff. Her comment also highlights a relationship between financial and human resources.

> We have certain kids in here…that should have one on one but…we don't have funding for them…So…because we don't have enough staff here, I can't sit down and be like 'you need to eat an apple'.

In other cases, managers took on more responsibility when staff positions were not filled. This interfered with frontline staffs' ability to offer quality PA. For instance, one program did not have a team lead which meant another supervisor assumed these responsibilities. When the gymnasium was not booked, Frontline staff member 4 indicated, "the kids only get a cement patch," which she found highly frustrating and only kept the children's interest for so long.

> …we didn't have a team lead…for this facility, until recently, and so…the person that was creating the…program…she is the [District's] supervisor manager, so she was doing kind of two roles. Anyways I think…she didn't really book any time in the gym. And I thought that was a big mistake….

One of the centres had an optional active program (within the after-school child care program) that was offered to two groups, according to their age, and alternated each week. A frontline staff member whose background was in outdoor recreation facilitated the program. A colleague of this person was interviewed. After describing some of the challenges she faced, she was asked if she knew anything about her colleague's experience. Her observations suggest that reducing the staff-to-child ratio might facilitate implementation of organized PA and activities that focus on FMS.

> …it sounds like [they have] a lot of success with the program…because it's…no more than 10 kids with the ratio of 1 to 10 so…they go through snack super quick…so they have a good chunk of time to do the activity…it sounds like they are getting a lot more out of it because of the ratio and the group of kids that [they have]…'cause I think our problem is that we have a lot of kids to kind of focus on (Frontline staff member 2).

Survey results revealed that six after-school child care programs had a staff-to-child ratio of 1:10. At minimum, the ratio was 1:6, with a maximum of 1:12.

Financial resources.

Participants acknowledged that the adequacy of their financial resources influenced their ability to offer quality PA and healthy snacks. All managers acknowledged the importance of these resources which were essential for programs to operate. Programs relied on one or more of the following to operate: program fees, government funding, private donors, grants, and fundraising. This funding was dedicated to purchasing snacks and equipment, employing frontline staff, and providing opportunities for professional development. When asked what affected one program's

ability to provide quality PA, Manager 4 responded, "…we have a great budget so in terms of supplies, balls and all that kind of stuff, we have anything you can think of."

While the financial resources of the centre where Manager 4 worked facilitated implementation of quality PA, other staff felt limited by these resources. In response to the same question, Manager 5 referred to the challenges they faced when trying to meet the needs of a community with a diverse socio-economic background:

> …one of the main barriers that we have from providing the best experience we can is there's financial barriers in the community here. [The community] has some of the lowest fees that you'll see in out-of-school care around the city so that said, we're trying to meet the needs of our community.

For other managers, having limited financial resources compromised their ability to provide healthy snacks. For example, one participant who managed a drop-in style program tended to offer pre-packaged food for snack. Her reliance on inexpensive and inconsistent program fees limited her ability to purchase the fresh produce that she wanted to provide:

> The only thing is it would be nice to have more money,…then I would buy, I used to buy big boxes of oranges. I can't afford to buy some of the stuff I used to buy. We used to put out a huge fruit platter and…I basically cut it out just because I can't afford it (Manager 3).

Manager 6 echoed these findings after being e-mailed a copy of the results.

> From a non-profit perspective, I think the biggest challenge we face in providing healthy snacks everyday are financial restrictions. We aren't always able to buy local and/or organic with our tight budgets.

At other centres, limited financial resources restricted opportunities for staff meetings and professional development. Two of the seven frontline staff commented on this. When asked about the types of support that frontline staff were offered, Frontline staff member 3 discussed how the program's financial resources restricted the number of hours she could work which limited opportunities for training:

> …we do do our best to try to get to as many workshops as we can. The problem is, this is a non-profit facility so we can't go over our hours. They won't pay overtime they only have allotted amount of money for every staff. So for me to go to a workshop, I would have to take out time of something else during that day. So that's…the hard part is, some of the training for some staff just won't happen unless we have other staff to cover the time…

Training was important for staff to have the competence and confidence to facilitate organized PA. Thus, it is evident that a program's financial resources links closely to the theme "It takes skill", as discussed later in this chapter.

Bound by the infrastructure.

Since staff were limited in their ability to change the infrastructure, they worked within the confines of what was available. Four of the nine managers and three of the seven frontline staff referred to this (7 of 16 participants overall). Two managers whose programs operated out of community recreation centres recognized that they were able to offer more diverse options for PA simply based on the available facilities.

> We have a huge space so even our room where these programs take place have enough room in them for the kids to run around…our outside play park which is attached here…we have access to a fitness studio…and then we have access to the

> [space] where they use the…track for running and things like that, so we're pretty fortunate here that we have a lot of facility to use (Manager 4).

> …having this program run out of a rec centre is a really great thing because we do have so much more available to us. We can go swimming, we can go skating (Manager 7).

Manager 7 reiterated how fortunate she felt to work in an after-school child care centre with these facilities after reading the results. Her e-mail read: "Thanks for attaching the summary of your results; it was interesting to read. I definitely feel lucky to have all the amenities available to my program…."

Still, staff who worked out of both schools and community facilities encountered challenges based on the infrastructure that was not always conducive to PA. Limited amounts of storage and space for PA were some of the barriers that the participants highlighted, as illustrated by Manager 8:

> It's kind of hard to get enough equipment…for everyone to be able to use something at once, well, first of all we would have nowhere to store it…I guess we really wouldn't be able to…storage is a big problem.

Most of the challenges concerning space were superseded by issues that had to do with access.

Bound by limited access.

Competing for space with other groups, in and outside of after-school child care programs, restricted access to space for PA. This was discussed by five of the nine managers, and four of the seven frontline staff (9 of 16 participants overall). For instance,

Manager 2 acknowledged that "use of the gym" affected her centre's ability to meet the Healthy After School guidelines. When asked what interfered with getting into the gym, she responded:

> School events or school bookings…the school has reserved our time up to 5:30…But if there's a science fair or tonight there's a movie night so we may not have access to the gym as they set up for a movie night. Thursday is primary gym day so…after school we can't go in until after a certain time when they've taken down all the…stuff.

At another centre, the gymnasium was used as a licensed space that was shared among all the groups in the program. This meant that different groups rotated through the gymnasium, thus requiring coordinated efforts among the frontline staff:

> …there is a group that is designated in the gym…we have two groups that switch up once in a while and one will go in and…the other group goes to the gym so they get that chance plus other groups can go to the gym as long as they coordinate with another room (Manager 8).

Centre rules and routines dictate practice.

The transcripts revealed that each centre had their own set of expectations that dictated frontline staff practices. In some cases, these expectations were the result of rules established at the centre and implemented by frontline staff. In other cases, expectations came from routines established "just [by] past leaders," as Frontline staff member 3 acknowledged. It was evident that these rules and routines made a difference in their ability to implement PA which was supported by five out of seven frontline staff transcripts.

Routine outdoor play periods.

Managers who scheduled routine outdoor play periods made it easier to dedicate an adequate amount of time to PA consistent with the Healthy After School guidelines. This was accomplished by designating time for outdoor play and, in some cases, providing equipment. At the very least, it was evident that staff tried to provide children with an active option, weather permitting. After being asked, "What affects your centre's ability to implement quality PA?", Manager 9 replied: "Our kids either go to the gym for at least 45 minutes or they go outside for 45 minutes every day…." When asked if children could choose whether to participate in PA, Manager 6 responded:

> …the nature of the program that we're running is that…we're outside, like I said, either on a field, a tennis court, or a playground until 4:00, so from my own experience,…basically all of our participants are deciding to partake in physical activity for over an hour every day.

Despite these admissions, frontline staff noted that children often chose how to spend this time and they recognized that not all children would necessarily be active. As well, the seven frontline staff that completed the survey reported programs scheduled 20 to 90 minutes of PA per day. Within that time, 15 to 60 minutes were facilitated PA.

Mandating organized PA participation.

Staff from two of the nine centres made participation in organized PA mandatory. The children were made aware of the centre's rules at the beginning of the program and they learned to accept them. This meant that frontline staff had an easier time with implementation. In discussing these requirements with Frontline staff member 2, one of the three core rules at the centre where she worked was "being a participant." When

asked if there was resistance or challenges in motivating children to participate in organized PA, she responded:

> …they kind of know the rule, by this point in the year…they kind of know what we're gonna say so…maybe one or two randomly would ask but…now…they just realize that we're not gonna…give into them and let them not do anything…
>
> I remember…the beginning of the year there's a lot of like, 'I just want to…go to the playground' like 'do we have to' kind of attitude but now in this time of year…they're pretty involved anyways with the games.

Another centre had a similar rule that required everyone to participate. When asked if children could choose whether to participate in PA, Manager 7 replied:

> They don't really get a choice, no. It's more just, 'we're all going to the gym, we're all playing this game, if you need to sit out for a little bit, that's okay but then you need to join in again' so yeah. Otherwise I think a lot of them wouldn't do it.

Her comment also illustrates that rules matter.

Choice comes with challenges.

In contrast, centres where PA participation was optional made it more difficult for frontline staff to implement. This was acknowledged by three of the seven frontline staff. As indicated in Chapter 3, Frontline staff member 3 spoke strongly to this category. She also brought a unique perspective having worked in different after-school child care centres, one of which mandated organized PA participation. The centre where she worked at the time of the interview did not have this rule and children could choose how they spent their time. Despite her attempts to engage all children in PA, she has learned to

accept “that not everyone’s going to be involved.” She discussed the change in her expectations in the following excerpt:

> Because of the expectations that happened prior to me coming here I can’t come in here and change everything,…I tried when I first started and…it was a huge battle. So I gave up what I knew for example at the last place I worked, one of our rules was ‘be a participant’. So you had to participate, you had to try for 5 [minutes]. Here, we don’t have that rule implemented.

Despite her motivation, Frontline staff member 4 also found it challenging to engage all children in PA. Some of the activities she attempted to implement included tag, basketball, and yoga. When asked to describe her provision of PA, she responded:

> …we don’t really do planned activities…regarding physical activity so there’s no…structured games…in the facility that I’m in right now anyways…I did work [at another location] and I would try to implement structured games but we couldn’t force everyone to do it really it was kind of a gong show [laugh], so it was just…whoever wanted to.

The evidence also illustrates that this category is closely tied to “One size doesn’t but has to fit all”. More specifically, children who were uninterested in PA chose to participate in other activities (e.g., crafts, board games) when given the choice.

Theme 2: Working together to pull it off

Table 4

Working together to pull it off

Centre staff must work with stakeholders for their programs to operate.	
Categories	
Gaining access	Working as a team

Seven of the nine managers, and four of the seven frontline staff (11 of 16 participants overall) acknowledged the importance of working together in order for the program to run. This was important for gaining access to space and equipment, and balancing the different levels of expertise that frontline staff brought to the program.

Gaining access.

Transcripts revealed that it was important for after-school child care programs to work with the facility staff, as well as other groups in the program, in order to gain access to space and equipment. Staff from four of the nine centres (two who worked in community facilities and two who worked in schools) acknowledged this as a facilitator. At one of the community facilities, the three groups in the after-school child care program each had access to the gymnasium once a week. Therefore, coordinating times with other groups provided additional opportunities for PA in this space.

> …we don't have the gym all the time so we can't always…go to the gym for that stuff but sometimes groups will share their gym time with other groups,…so that

> gives the kids two days a week to get to go to the gym…it doesn't always happen, but sometimes it does (Frontline staff member 5).

Three of the managers acknowledged the importance of maintaining a good working relationship with facility staff. Manager 5 was particularly outspoken about their relationship with staff who worked in an adjacent school. Making use of each other's spaces was described as "a great system in many ways,…a challenging system in other ways because a lot of people need to work together." In this excerpt, Manager 5 highlights the importance of maintaining a good relationship with school staff to have access to their gymnasium and equipment:

> …when we do use the gymnasium, we are welcome to use the school's equipment…if my staff…were insufficient about putting things back, I'm going to hear about it, if it was to happen a whole bunch, it might jeopardize the relationship or our ability to use that equipment so we want to maintain everyone's good feelings.

Working as a team.

Participants also stressed the importance of working as a team in order to optimize the delivery of program content. This meant pairing together frontline staff with different strengths, sharing expertise, and having opportunities to learn from colleagues. Together, frontline staff were able to facilitate PA despite the variability in their experience. This category comprises responses from five of the nine managers and three of the seven frontline staff (8 of 16 participants overall). When asked, "What types of support are available to frontline staff?", Manager 2 responded:

> …at the beginning of the year, we might do ice breakers and the middle of the year we might do transition activities and then a favourite game. And so that you're using each other's resources to come up with ideas that you might not have thought of or games that you kind of knew but you forgot about or whatever the case may be…those are usually our most successful staff meetings…

At another centre, Frontline staff member 6 worked alongside a diverse group of frontline staff. They came from a variety of backgrounds, from college-age students to individuals who were close to retirement. Thus, frontline staff who possessed different strengths were paired together to balance their qualifications.

> …I don't think all of us are aware of the age appropriate skill development or the experiences the children should have…we are from…very different backgrounds…how…we can manage [is we can] pair up the staff and then…create each group of both…strengths…

Theme 3: It takes skill

Table 5

It takes skill

Frontline staff believed experience was critical to facilitate organized PA, especially since PA specific training was limited. The collective commitment of frontline staff was of equal if not greater importance.		
Categories		
Experience is critical	Limited PA specific training	It takes will

The theme “It takes skill” pertains to the characteristics of frontline staff. The categories “Experience is critical” and “Limited PA specific training” are composed of responses from all frontline staff, while both managers and frontline staff spoke to the category “It takes will”.

Experience is critical.

Experience gained from working in recreation, education, personal hobbies, and learning from colleagues gave frontline staff the competence and confidence to organize and facilitate PA. All frontline staff acknowledged this. Comments made by Frontline staff member 7 illustrate how the process of gaining experience contributed to his confidence:

> …I used to teach gymnastics at a competitive level, usually provincial and sometimes national and plus I worked at rec centres…doing summer camps …so it just kind of comes from experience…’Cause when I first started…I’m like, ‘I don’t know what to do’ and then after…doing it for a while…I just know what to do…

This participant also incorporated his passion and knowledge of break dancing into program content.

Frontline staff member 5 possessed a similar level of confidence in her ability to offer organized PA. When asked what had prepared her to organize and facilitate PA, she responded:

> I’ve done so many camps and so many after-school programs and I did gymnastics programs before…so I’m used to coming up with obstacle courses or…different things just to keep them moving…

The surveys asked staff to report the certifications they held and/or training they had completed. Frontline staff responses are presented in Table 6.

Table 6

Certifications/training reported by frontline staff

	Total (n = 7) %
First aid	100.00
Food safe	28.57
High five healthy child development	14.29
Fundamental movement basic coaching	14.29
Teacher training	14.29
Diploma	28.57
Swimming certifications	28.57
BCRPA* registered fitness professional	28.57
NCCP** level 3 gymnastics	14.29
Transport Canada pilots license	14.29
On site/off site training	14.29
Conferences	14.29

** British Columbia Recreation and Parks Association*
*** National Coaching Certification Program*

Having reviewed the transcripts in relation to the surveys, it was evident that frontline staff did not necessarily report all certifications they held or training they had completed. Thus, the results should be interpreted in light of this.

Limited PA specific training.

The professional development opportunities reported by staff included guest speakers on safety pieces (e.g., operating a fire extinguisher, applying an EpiPen) as well as workshops about positive behavioural management, child development, and how to safely restrain. Some of the organizations that have provided training include Recreation Integration Victoria (RIV), Regional Out of School Care Operators (ROSCO), Power To Be, Possibilities, British Columbia Recreation and Parks Association (High Five training), and Queen Alexandra Centre for Children's Health. In addition, some frontline staff participated in more extensive training to prepare for summer camps that were offered by certain centres.

Limited opportunities for PA specific training was acknowledged by four of seven frontline staff. While all frontline staff brought a substantial amount of experience and did not necessarily require PA specific training at present, they recognized the impact of this on inexperienced colleagues. Other frontline staff reflected on their experience and the need for PA specific training when they first started working.

For example, Frontline staff member 4 discussed the challenges she faced when she began working in an after-school child care program. At the time, she admitted that she did not know how to handle children and, as a result, they "were just running around like crazy,…not listening…making forts doing their own thing." Through experience and with the help of her colleagues, she gained the confidence to implement PA. However, she suggested that opportunities for PA specific training were limited by staff changeover, and she acknowledged that other people, like her, would be "thrown into it."

> …one thing with [this program] was that…they have a lot of staff changeover and so I find that the new people coming in just get thrown into it without really…shadowing anyone, and so I know that would have helped a lot…

The findings also revealed that opportunities for PA specific training were at each manager's discretion. Of the nine centres that participated, one manager and one frontline staff member from the same program had the opportunity to go through FMS training through the Pacific Institute of Sports Excellence (PISE). At another centre, opportunities for training in FMS were limited by the program's budget. When asked, "What type of support would be necessary in order to provide quality PA, as outlined by the Healthy After School guidelines?", Manager 7 replied, "As far as the fundamental movement skills, maybe if someone wanted to come in and train my staff, but that isn't something we have in the budget to do."

It takes will.

While PA specific training was limited, frontline staff possessed other qualities that were important for programs to operate. Thus, the following category describes frontline staffs' commitment to providing quality care to children in their programs. Five of the nine managers and three of the seven frontline staff (7 of 9 centres overall) discussed strategies they had developed for overcoming PA specific barriers which illustrates their creativity and resourcefulness. For instance, having restricted access to space within their facility encouraged them to take advantage of space off site in an effort to carry out program objectives. In discussing one program's ability to provide quality PA, Manager 9 commented, "…if we had to come up with our own I guess we'd go for a walk, there's the trails…."

In other cases, frontline staff planned activities that could be offered in limited space with few resources, as described by Frontline staff member 5:

> …when it comes to those times when there's…nothing left to do, we…kind of try and…get the room out and make it as wide as possible and…bring out the parachute because at least…they're still staying…contained and they're not running 'cause we're not allowed to run inside our rooms and…they're kind of getting some energy out and it's exciting and they can go underneath and play different games…kids are always so excited about the parachute, so that's always…my last resort…if there's no other…area that we can go.

The importance of having a group of high quality staff was emphasized by five of the nine managers. Although this was not related to PA specific training or experience, they attributed the success of their programs to the quality of frontline staff who were working in their centres. The word cloud in Figure 3 illustrates how these managers defined quality frontline staff.

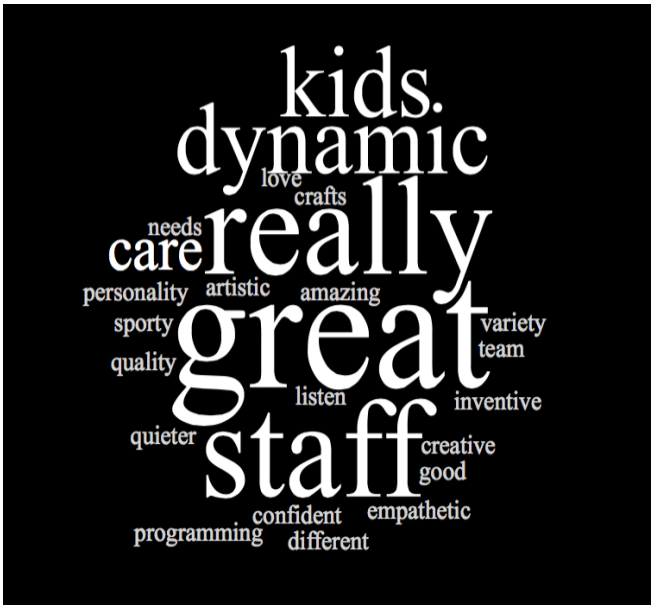

Figure 3. Quality frontline staff

An excerpt from Manager 5 best describes the qualities that the managers valued and what they felt contributed to program success.

> I think it's really important that you have a dynamic leader group…because all children are different…and are gonna be drawn to different activities…so the best way to meet the needs of the children in the program is to have a bunch of leaders that are different and they're dynamic…So having that dynamic group…then you're going to meet the needs of the vast majority of your children…*that's* what determines the success of a program. It's the frontline staff. It's not the building and it's not the resources and it's not the snack, it's the staff.

Summary

It is evident that several factors facilitate and/or impede implementation of quality PA and healthy snacks in the after-school child care setting. Consistent with the conceptual frameworks from the implementation literature (Beets, Webster, et al., 2013; Domitrovich et al., 2008), the factors in this study operate bi-directionally and overlap among the themes is evident. Most notably, the majority of the data contributed to the emergence of the theme "Being confined". This theme is the most robust, containing both macro- and organizational-level factors. It also contextualizes the other two primary themes: "Working together to pull it off" and "It takes skill". In this way, it encircles the organizational-level factors that are at play in the theme "Working together to pull it off", as well as the individual-level factors of frontline staff that encompass the theme "It takes skill". Figure 4 summarizes the way that these factors operate and includes the themes, sub-themes, and categories as indicated in *italics*.

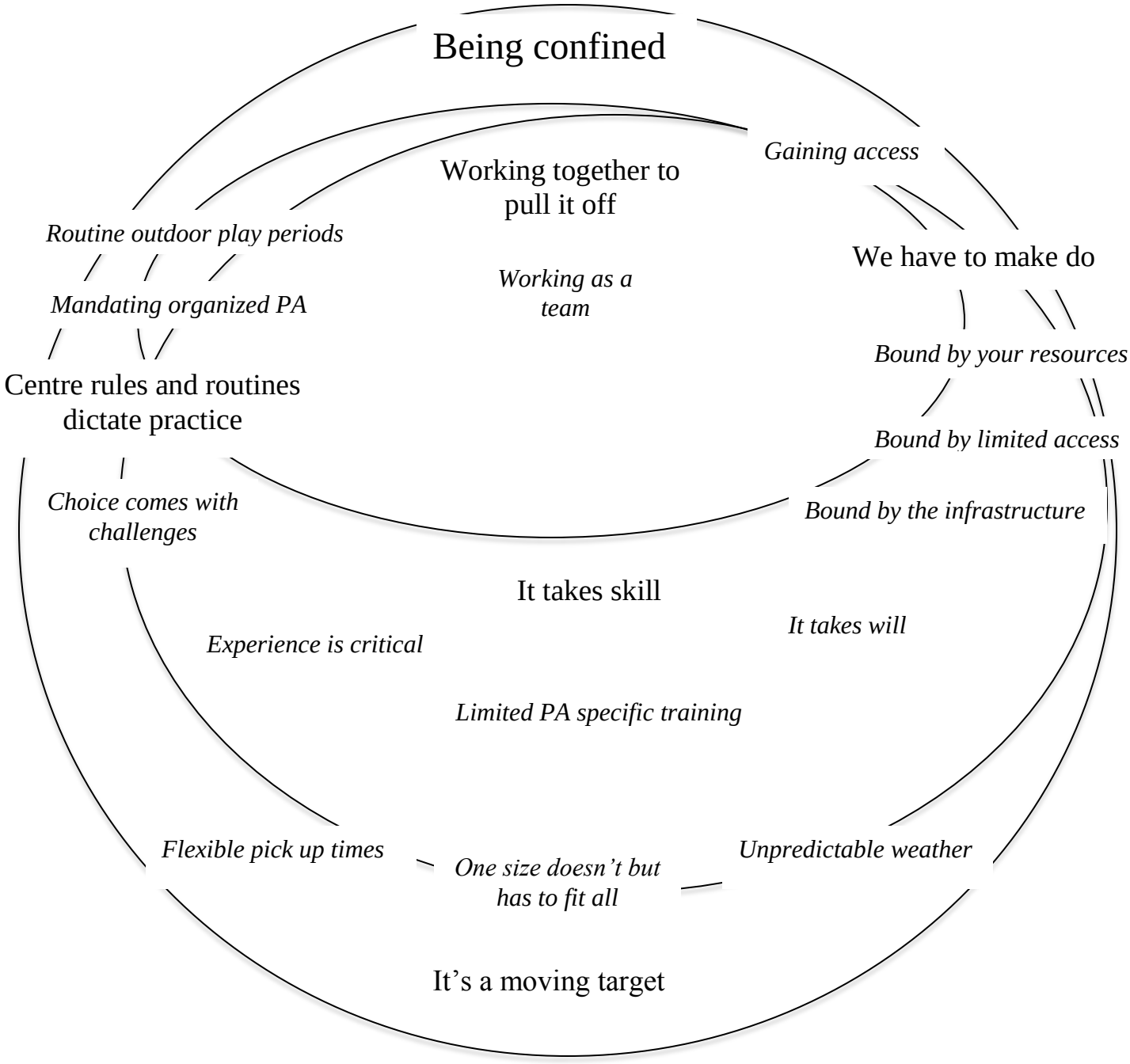

Figure 4. Summary of the themes, sub-themes, and categories that emerged

The thesis now turns to discussing the findings from this study in light of the literature with particular focus on the relevant conceptual frameworks.

Chapter 5: Discussion

This chapter will place the findings from the present study in the context of literature. The themes, sub-themes, and categories were compared with conceptual frameworks from the implementation literature, with particular focus on Beets, Webster, and colleagues' (2013) after-school conceptual framework and Domitrovich and colleagues' (2008) school-based Multi-Level Model. Tables are used to illustrate comparisons between the level of the model and the factors within them (when appropriate). This helped to situate the findings in the literature and determine the most powerful influences on the implementation of quality PA and healthy snacks in after-school child care. Additional literature was used to support the findings and/or establish comparisons with the responses from after-school child care staff who participated.

Theme 1: Being confined

The first major theme that emerged was "Being confined". This theme has three sub-themes: "It's a moving target"; "We have to make do"; and "Centre rules and routines dictate practice".

Table 7

Being confined

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
Sub-theme 1: It's a moving target		
Unpredictable weather Flexible pick up times	Site	
One size doesn't but has to fit all	Child	School-level (Characteristics of the school) (Classroom climate)
Sub-theme 2: We have to make do		
Bound by your resources	Site	School-level (Resources)
Bound by the infrastructure	Site	School-level (Characteristics of the school)
Bound by limited access		

Table 7 continued

Being confined

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
Sub-theme 3: Centre rules and routines dictate practice		
Routine outdoor play periods	Policy ASP Leader*	Macro-level (Policies and financing) School-level (School culture)
Mandating organized PA participation	ASP Leader*	School-level (Administrative leadership) (School culture)
Choice comes with challenges	ASP Leader*	School-level (School culture)

** ASP leaders' responsibilities are consistent with program managers*

Sub-theme 1: It's a moving target.

Unpredictable weather.

The majority of participants recognized that weather played a significant role in their ability to offer opportunities for PA. This was particularly challenging between

October and March when the interviews took place and when Victoria typically receives the most amount of precipitation (Environment Canada, 2015). This finding was not surprising, given that weather conditions have been shown to influence children's PA levels (Beighle, Erwin, Morgan, & Alderman, 2012). More specifically, several studies have found children's daily activity levels are significantly higher in the fall compared to the winter (Beighle et al., 2012; Fisher et al., 2005; Rowlands & Hughes, 2006; Tremblay, Barnes, Esliger, & Copeland, 2005).

In the present study, the challenge in dealing with poor weather conditions was intensified by staffs' reliance on outdoor space for PA. After-school child care programs elsewhere encountered similar challenges. In particular, staff who were responsible for implementing the ACT ASP dealt with space issues when the program could not be held outside due to unsuitable weather conditions (Zarrett et al., 2012). For the same reason, school teachers found it difficult to implement daily PA guidelines (Mâsse, Naiman, & Naylor, 2013).

Consistent with these findings, Beets, Webster, and colleagues (2013) acknowledged that the geographic location of a program might limit children's PA during winter months. In particular, programs that had inadequate indoor space for PA were often affected the most. According to the after-school conceptual framework, this is considered a "Site" level factor (Beets, Webster, et al., 2013). It is evident that this category is closely tied to the infrastructure where programs operate, given the facility related barriers that staff encountered.

Flexible pick up times.

Since after-school child care programs offer flexible pick up times, there is a limited amount of time when all children are present. This made it challenging for frontline staff to have enough time to offer PA to all children in the program. Furthermore, some frontline staff felt that it limited the types of PA that could be organized and the amount of time that could be spent off site. Research has shown that each additional minute in after-school child care adds 20 steps to a child's day (Beets, Huberty, Beighle, et al., 2012). While children who stay longer in the program have the opportunity to engage in more PA, overcoming this barrier may be particularly challenging based on parent priorities and the after-school child care culture that offers this flexibility.

It is evident that Beets, Webster, and colleagues' (2013) after-school conceptual framework do not account for flexible pick up times and their impact on implementation. The absence of this might be because the components are limited to modifiable levers within after-school child care programs. In the Multi-Level Model, the amount of time allocated to activities is recognized as part of school's capacity to implement an intervention and may be impacted by building administrators (Domitrovich et al., 2008, p. 14). While this highlights the potential for time to limit implementation of PA, this is not identified as a distinct factor in the Multi-Level Model as schools do not have flexible pick up times.

The challenge with time has also been documented in the school setting. Specifically, it was considered "the most prevalent category related to implementation" (Naylor et al., 2015, p. 99). In combination with competing demands and other

challenges, these participants felt limited by the amount of time they had to deliver PA sessions. The findings from this systematic review are supported by other literature examining implementation of school-based PA (Naylor, Macdonald, Zebedee, Reed, & McKay, 2006) and PE (DeCorby, Halas, Dixon, Wintrup, & Janzen, 2005; Morgan, 2008; Morgan & Hansen, 2008). In tandem with the results from the present study, it is evident that lack of time limits PA implementation in after-school child care.

The implications of these findings are twofold. It is clear that lack of time for implementation based on flexible pick up times must be considered when designing guidelines and resources. Further, it calls for the refinement of conceptual frameworks that account for the complete set of factors which affect implementation of quality PA and healthy snacks. Secondly, the diversity of interpretations of what constitutes organized PA highlights the need for rich discussion between PA advocates and after-school child care program staff. In addition, scheduling PA at the start of the program may be particularly important in order to maximize opportunities for engagement which is consistent with recommendations from the literature (Beighle et al., 2010; Tudor-Locke et al., 2006). This may include a set of choices with related equipment. Later in the session, more individual activities (e.g., circuits, dance) could be offered to the children who stay for the duration of the program.

One size doesn't but has to fit all.

Frontline staff highlighted challenges in creating a program for a diverse group of children. In particular, the age, ability, and interests of the children in the program drove practice. It also made it challenging to design a program that appealed to all children and ensure participation. In the after-school conceptual framework by Beets, Webster, and

colleagues (2013), similar challenges were identified at the "Child" level, including diversity in age, gender, race/ethnicity, and weight status. Further, they acknowledged the importance of understanding and implementing activities that appealed to the children enrolled.

The "Characteristics of the school" and "Classroom climate" contained in the Multi-Level Model were most closely associated with the challenges of the one size fits all model (Domitrovich et al., 2008). While "Characteristics of the school" focused on common characteristics (e.g., a substantial number of at-risk students) that made implementation challenging, in the present study, the diversity of children enrolled was the biggest concern. "Classroom climate" is considered to be "the array of social and psychological aspects of the classroom environment, including the sense of belonging, the level of cooperation and mutual respect among classroom members, and the relationships between teacher and students" (Domitrovich et al., 2008, p. 16; Wang, Haertel, & Walberg, 1997). While frontline staff reported challenges with behavioural issues, the root of this barrier was creating a program for a diverse group of children. This challenge was intensified in the absence of centre-based rules, as described later in the chapter.

Similar challenges with implementation have been documented in the literature. For instance, frontline staff found it challenging to implement organized PA from the CATCH Kids Club curriculum in a community agency-driven initiative (Sharpe et al., 2011). Their efforts were met with resistance from the children since participation was compulsory and many children were opposed to this. In order to balance their preferences with the requirements from the agency, a number of frontline staff only implemented

certain components of the curriculum. Others modified the number of days per week that the curriculum was used.

In a study by Hastmann and colleagues (2013), frontline staff encountered similar barriers to implementation. Researchers reported that frontline staff preferred to offer other activities, since the games from the CATCH Kids Club curriculum were not well received by the children. In addition, many staff incorporated games chosen by the children that met the CATCH guidelines. They also modified games to appeal to the children and to meet the guidelines which has been shown to contribute to successful implementation (Dinkel et al., 2015). In fact, Dinkel and colleagues found that tailoring the GGG curriculum to the girls in the program lessened time dedicated to behavioural management. Zarrett and colleagues (2012) also suggested that fun and interesting activities for youth are critical for engagement which was acknowledged most frequently by all staff members who were interviewed.

The findings from the literature and present study indicate that children's buy-in is paramount in order for frontline staff to deliver program content. Therefore, frontline staff involvement in designing curricula is important for implementation. Furthermore, tailoring activities to the needs, interests, and abilities of the children enrolled is important for frontline staff uptake and implementation. Activities that are tailored to a diverse range of children or developing stations to mitigate these challenges could also be valuable.

Sub-theme 2: We have to make do.

Beets, Webster, and colleagues (2013) acknowledged the diversity of characteristics between program sites. This makes it easy for some programs to meet

policy goals, while others may find it challenging. Program diversity represents the "Site" level factors described in Beets, Webster, and colleagues' after-school conceptual framework.

Bound by your resources.

The amount and type of resources that were available reflected a program's capacity to implement PA and healthy snacks which is a school-level component described in Domitrovich and colleagues' (2008) Multi-Level Model. In the present study, implementation of PA was impacted by the availability of program equipment which can contribute to implementation of structured PA. In fact, the presence of equipment and whether an activity was organized, was associated with increases in PA during after-school child care (Huberty, Beets, Beighle, et al., 2013). Likewise, being able to access equipment during PE in school was related to student PA engagement (Bevans, Fitzpatrick, Sanchez, Riley, & Forrest, 2010).

Other staff from the present study felt the quantity of available equipment restricted the types of PA that could be offered. Likewise, limited availability and access to equipment hindered implementation of PA in after-school child care programs elsewhere (Dinkel et al., 2015) and during PE class in school (Sherman et al., 2010). The variability in the type and quantity of equipment that after-school child care programs work with has implications for the development and refinement of PA resources. This may include developing activities that require low-, moderate-, and high- equipment quantities which may offer more utility to after-school child care programs.

Another barrier to implementation was the limited number of staff who worked during the after-school hours. Studies have recognized the importance of maintaining a

low staff-to-child ratio (Baldwin Grossman, Lind, Hayes, McMaken, & Gersick, 2009; National Afterschool Association, 2000) which may be particularly important during PA (Beighle et al., 2010). Results from an after-school intervention designed to increase children's water consumption echoed its importance (Lee, Okechukwu, Emmons, & Gortmaker, 2014). Given that children consumed 1.19 fewer ounces of water when the staff-to-child ratio was 1:10, Lee and colleagues recommended that staff develop policies to keep the staff-to-child ratios low.

These findings are consistent with results reported in the school-based literature. In particular, Bevans and colleagues (2010) found students who attended schools with a low student-to-teacher ratio engaged in more PA during PE class. Reductions in the amount of time dedicated to behavioural management were also reported and implicated with the results. In another study, large class size was ranked as one of the top barriers to implementing quality PE (Barroso, McCullum-Gomez, Hoelscher, Kelder, & Murray, 2005). Still, Beighle and colleagues (2010) acknowledged an idealized student-to-teacher ratio of 1:8 might not be cost effective for after-school child care programs.

Participants also revealed the adequacy of their financial resources impacted their ability to purchase program equipment, offer healthy snacks, and provide opportunities for professional development. Likewise, financial barriers to PE specific professional development have been reported (Morgan & Hansen, 2008). More specifically, teachers felt that this limited opportunities to expand their knowledge and improve their confidence. In addition, lack of funding meant teachers did not have access to a full set of equipment for PE which made classroom management more challenging.

Alternatively, financial barriers experienced by after-school child care programs have been associated primarily with the cost of employing additional staff to prepare and clean up snacks (Hastmann et al., 2013). The staff also found it difficult to provide fruits and vegetables at a minimal cost which is consistent with the barriers reported by staff in the present study. As well, a clear distinction between programs where budgeting was or was not of concern was perceivable. This was not specific to the types of facilities where the programs were offered. Rather, it appeared more likely that these differences reflected the socio-economic status of the community and corresponding program fees that were established to meet community needs.

Findings from a study by Costa-Giomi and Chappell (2007) support this explanation. While investigating band programs in schools of varying socio-economic backgrounds, researchers found that schools "with fewer minorities or with lower proportions of disadvantaged students had more financial resources" and more adequate facilities (p. 13). Furthermore, they suggested that opportunities to participate in band programs depended on the socio-economic status of the students.

While staff continue to work with the resources available, the findings and literature underline their importance. It may be appropriate for regional public health authorities to reconsider the suitability of the staff-to-child ratio as well as the financial resources provided which echoes Marmot and colleagues' (2010) call for proportionate universalism. The strategic redistribution of financial resources could also help to facilitate consistent implementation of quality PA and healthy snacks. This may be particularly important given the population health implications of healthy child development (Marmot et al., 2010).

Bound by the infrastructure.

Given the financial constraints of each program, staff endeavoured to provide quality care in the setting where they worked. The infrastructure is part of the "Site" level characteristics described in Beets, Webster, and colleagues' (2013) after-school conceptual framework. Some of these characteristics include diverse program locations and available resources. Similarly, Domitrovich and colleagues (2008) acknowledged that "school size and student mobility" can impact implementation quality and resulting outcomes (p. 15).

For some participants in the present study, inadequate storage space made it difficult for programs to operate. Likewise, frontline staff who worked for several YMCAs in the U.S. found it difficult to offer fruits and vegetables for snack due to insufficient storage space (Hobbs & Hofman, 2014). In addition, space to store PA equipment has been difficult in schools (Sherman et al., 2010).

Other participants from the present study recognized the relationship between program facilities and the types of PA that could be offered. For some staff, the facilities of the centre made it easy to offer a diverse range of PA. For others, inadequate indoor space made PA implementation more challenging. Lack of space has been of concern for other frontline staff (Zarrett et al., 2012) and PE teachers, who were challenged to offer developmentally appropriate PE (Sherman et al., 2010). Inadequate indoor and outdoor facilities were some of the barriers that teachers highlighted. In another study examining the impact of barriers to teaching PE, inadequate facilities were considered a moderate strength barrier (Morgan & Hansen, 2008). More specifically, gaining access to outdoor

space was challenging based on diminishing playground space and expansion of buildings.

Dwyer and colleagues (2003) highlighted similar concerns that made it challenging to schedule daily PE. In particular, teachers felt that many of the school facilities were inappropriate in size for the number of students enrolled, and the outdoor facilities were also inadequate. Likewise, some participants in the present study acknowledged that their designated rooms were not large enough to offer opportunities for PA. Challenges with limited indoor space were more difficult during inclement weather since PA outdoors was not always feasible. Similarly, Dwyer and colleagues acknowledged that use of outdoor space depended on nice weather and suitable outdoor facilities.

Consistent with recommendations from the literature, PA resources must be tailored to the after-school child care site. This was illustrated following implementation of the Pax Good Behaviour Game (GBG) curriculum (Smith et al., 2014). In particular, the site director found it useful to have the coach, who was responsible for training frontline staff, visit the site in order to develop a program that accounted for the constraints of the setting and the children enrolled. This shows that a one size fits all model is not always appropriate. Furthermore, it highlights the importance of having practitioners and researchers work together to develop strategies that can be adapted to meet the needs of each program and facilitate implementation of quality PA (Wiecha et al., 2014). After-school child care staff may also play a critical part in this process. As illustrated by the findings, their resourcefulness and their understanding of context may contribute to resource development, uptake, and utility.

Bound by limited access.

Working with a limited amount of program space meant that access was critical. Beets, Webster, and colleagues' (2013) acknowledged the importance of available indoor and outdoor space at the "Site" level of the after-school conceptual framework. However, challenges associated with access as it relates to competing for or sharing space were not described. This was an important finding from the present study, since access was restricted by having to share space. This problem is consistent with challenges reported by other after-school staff (Hastmann et al., 2013; Zarrett et al., 2012) and similar challenges have been documented in the school-based literature. In particular, coordinating PE among different classes (DeCorby et al., 2005) and competing for access to space (Dwyer et al., 2003) have been reported.

This issue has been attributed to the lack of administrative and/or managerial support (Hastmann et al., 2013) which is a school-level component of Domitrovich and colleagues' (2008) Multi-Level Model. Under "Administrative leadership", they emphasized the importance of having an administrator who endorses and contributes to the planning, training, and implementation of an intervention. However, the issue with access is more closely associated with their discussion on "Resources" where they recognized the importance of designating time and space for program activities in order to support implementation.

Other school-based literature has published results more consistent with findings from the present study. For instance, Barnett, O'Loughlin, Gauvin, Paradis, and Hanley (2006) suggested that school principals play an important role in determining opportunities for PA. In the after-school child care context, access to space was limited

when the principal allowed other groups to use the gymnasium (Hastmann et al., 2013). Furthermore, alternative locations for PA were not available.

Limited access to space was also seen as a barrier to implementing PA outlined in the GGG curriculum (Dinkel et al., 2015). Conversely, other frontline staff from the same study encountered fewer barriers to implementation when site directors designated space for PA. Along with other studies, this strategy has been found to support implementation of PA in after-school child care (Beets, Huberty, & Beighle, 2013; Beighle et al., 2010; Dinkel et al., 2015). This suggests that buy-in and instrumental support from administrators (within whatever facility the program operates) is critical for quality PA to be offered since these individuals often control access to space.

Sub-theme 3: Centre rules and routines dictate practice.

According to Beets, Webster, and colleagues (2013), policies can be divided into three system levels: national, state, and local. In the present study, regional and local policies could be analyzed due to the sample and focus of the study. Regional policies are outlined by Island Health which is the public health authority that issues child care licenses to centres on Vancouver Island. This includes after-school child care programs whose staff participated in the present study. As well, the impact of local policies initiated by staff working for some of the centres was also examined.

Routine outdoor play periods.

Results revealed that the majority of centres provided routine outdoor play periods which is consistent with the guidelines from Island Health. According to the guidelines, applicants/licensees are expected to provide each child with daily outdoor

play periods (unless weather conditions make it unreasonable to do so) (Vancouver Island Health Authority, 2013). Since Island Health's guidelines aligned with the practice of participating staff, it is evident that policies matter. This is supported by the Multi-Level Model which suggests that the implementation of evidence-based programs may be impacted by macro-level policies (federal, state, and district) (Domitrovich et al., 2008).

Except in poor weather, children were encouraged or, in some cases, required to spend time outside which helped to promote PA engagement. According to the literature, designating time for PA has been shown to support implementation in after-school child care (Beets, Huberty, & Beighle, 2013; Beighle et al., 2010; Dinkel et al., 2015). In addition, Weaver, Beets, Webster, Beighle, and Huberty (2012) suggested that scheduling PA when children arrive "may lead to a reduction in the amount of time spent managing/disciplining children and an increase in time-on-task and focus" (p. 192). Consistently starting the program outside, for example, may help shape the way things are routinely done. This is a component of "School culture" in the Multi-Level Model (Domitrovich et al., 2008).

Research has also shown that the presence of fixed and loose equipment, as well as playground access, can contribute to children's PA levels (McKenzie, Crespo, Baquero, & Elder, 2010; Parrish, Yeatman, Iverson, & Russell, 2012; Willenberg et al., 2010). This suggests that this strategy may be effective for promoting PA engagement. While frontline staff acknowledged that not all children would participate in PA during this time, the results and supporting research suggest that managers should continue to use these strategies to encourage PA engagement.

Mandating organized PA participation versus Choice comes with challenges.

Establishing centre-based rules that require children to participate in organized PA also facilitated implementation. Findings from a policy-level intervention designed to increase PA in after-school child care programs support the use of this strategy (Beets, Huberty, & Beighle, 2013). After introducing frontline staff to PA policies/standards through training, reductions in the number of children who were sedentary, increases in the number of girls walking, and increases in the number of boys participating in VPA were observed.

At two of the nine centres in the present study, organized PA participation was mandatory which made it easier for frontline staff to implement. In fact, making frontline staff aware of centre-based expectations can contribute to effective implementation of program content (Beighle et al., 2010; Pate et al., 2003). Evidence also suggests that youth prefer when teachers establish rules and hold them accountable (Chiu & Tulley, 1997; Weaver et al., 2012). These rules may help to minimize time dedicated to behaviour management and allow more time to be dedicated to PA. At the majority of the centres in the present study, however, PA was optional and guaranteeing participation was not staffs' top priority. For some frontline staff, this was a barrier to implementation which is consistent with the challenges faced by frontline staff elsewhere (Hastmann et al., 2013).

Several factors may explain why PA expectations varied between centres. First, this could be the result of limited direction on PA requirements provided by licensing. In fact, the preference for voluntary self-regulatory policy models is common (Beets, Webster, et al., 2013; Mello, 2008; Mello, Pomeranz, & Moran, 2008). In the present

study, this freedom gave centre staff the ability to establish their own policies, rules, or expectations which were often initiated by the manager. Beets, Webster, and colleagues argued that administrative leadership of the manager is critical, since they control programming, staffing, and operations. They can also significantly impact successful implementation (Domitrovich et al., 2008; Gottfredson & Gottfredson, 2002; Kam, Greenberg, & Walls, 2003; Payne, Gottfredson, & Gottfredson, 2006) which has the potential to establish routines (Domitrovich et al., 2008). Again, these routines are part of "School culture" which "reflects the norms, values, and shared beliefs or assumptions" of the members of an organization (p. 15).

In the school setting, positive outcomes have been implicated with encouragement and support from administrators (Beets, Webster, et al., 2013; Han & Weiss, 2005). In addition, teachers had stronger intentions to teach PE when they perceived stakeholder support (Faulkner, Reeves, & Chedzoy, 2004). This suggests that support from after-school child care stakeholders is important in order to maximize intentions to implement PA. Likewise, Domitrovich and colleagues (2008) acknowledged that there is greater accountability when administrators and staff make a commitment to the intervention or activity (Rohrbach, Ringwalt, Ennett, & Vincus, 2005). This is a component of "Administrative leadership" in the Multi-Level Model (Domitrovich et al., 2008).

Without this leadership, motivation for implementing a program may degrade (Beets, Webster, et al., 2013; Elliott & Mihalic, 2004). In another program, the absence of managerial support was seen as a barrier to the implementation of organized PA (Hastmann et al., 2013). While frontline staff expressed a need for support from their bosses, the majority of them did not consider implementation of organized PA to be a

requirement. Hughey and colleagues (2014) also found that "without clear direction, staffers were observed using excessive time to facilitate activities, leading to child idle-time" (p. 165).

The research suggests that PA advocates must help after-school child care staff and stakeholders to recognize the value of PA to maximize uptake and implementation. Furthermore, the findings and literature underline the important role assumed by the manager, since this individual is responsible for establishing centre-based rules that are implemented by frontline staff and followed by the children. These findings also illustrate that the establishment of these expectations may help mitigate resistance from children who are less inclined to participate. It is evident that policies and guidelines matter, as they contribute to the establishment of these group norms and expectations. In addition, increasing the specificity of Island Health's PA policies should also be considered in order to facilitate consistent implementation of quality PA.

Theme 2: Working together to pull it off

Table 8

Working together to pull it off

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
Gaining access		School-level (School climate and organizational health)

Table 8 continued

Working together to pull it off

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
Working as a team		School-level (School climate and organizational health) (Personnel expertise)

Maintaining strong interpersonal relationships among staff and other after-school child care stakeholders proved critical for gaining access to space and equipment as well as program success. This is part of what makes up "School climate and organizational health" in the Multi-Level Model (Domitrovich et al., 2008). The school's organizational personality is often measured by the perceived communications between members of a school community, that is, the way they feel they relate to each other (Domitrovich et al., 2008; Halpin & Croft, 1963). The importance of maintaining a positive climate has been recognized in the after school literature as well. In particular, Cross and colleagues (2010) found that program management and climate (e.g., structure, supervision, and social climate) were associated with the experiences of enrolled youth.

Gaining access.

In the present study, staff needed to work with after-school child care stakeholders in order to gain access to space for PA. In other programs, working with stakeholders was important for providing healthy snacks. Specifically, Hastmann and

colleagues (2013) acknowledged the importance of building relationships with food service staff who worked in the school in order to create an appropriate snack menu. This suggests that it is imperative for staff to provide a clear understanding of their mission that will help stakeholders recognize the program's value as well as staff needs and objectives.

Working as a team.

In addition, it was important for staff to work as a team, given the reliance on frontline staff expertise and limited opportunities for PA specific training. This meant pairing together frontline staff with different strengths to ensure PA could be offered. Working as a team has been found to contribute to a positive program atmosphere (Cross et al., 2010). In the present study, frontline staff also acknowledged that learning from their colleagues played a part in how they gained experience. Likewise, Smith and colleagues (2014) recognized that people turn to their associates for information on best practices which can support innovations (Moolenaar, 2012; Moolenaar & Daly, 2012). Furthermore, providing the opportunity to share ideas among staff can be fulfilling and motivating (Smith et al., 2014).

For one of the after-school child care programs, meetings that took place twice a year provided opportunities for frontline staff to share their expertise. According to Manager 2, they were considered their "most successful staff meetings." This strategy may help to optimize "Personnel expertise" which is another component of the Multi-Level Model (Domitrovich et al., 2008). Staff who are key opinion leaders (KOL) may assume an important role in this process. These individuals, who serve as influential models for others, have been identified as "a promising resource for diffusion" of

evidence-based practices (Atkins et al., 2008, p. 907). In after-school child care programs, opportunities for KOLs to share their expertise could be used to disseminate knowledge and skills among staff.

Theme 3: It takes skill

Table 9

It takes skill

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
Experience is critical	Frontline staffers	Individual-level (Professional characteristics) (Psychological characteristics) (Perceptions of and attitudes to the intervention)
Limited PA specific training	Frontline staffers	Individual-level (Professional characteristics) (Psychological characteristics) (Perceptions of and attitudes to the intervention)

Table 9 continued

It takes skill

Findings	Conceptual framework (Beets, Webster, et al., 2013)	Multi-Level Model (Domitrovich et al., 2008)
It takes will	Frontline staffers	School-level (Personnel expertise) Individual-level (Psychological characteristics)

Experience is critical and Limited PA specific training.

In the Multi-Level Model, individual-level factors include "Professional characteristics", "Psychological characteristics", and "Perceptions of and attitudes to the intervention" (Domitrovich et al., 2008). Likewise, the after-school conceptual framework includes similar factors at the "Frontline staffers" level of the model (Beets, Webster, et al., 2013). More specifically, Beets, Webster, and colleagues suggested that frontline staffs' perceptions of support, skills, confidence, training, and role modelling, determine the quality of implementation (Beighle et al., 2010). It is evident that these individual-level factors relate to implementation of PA which frontline staff are responsible for, and they are interconnected. As a result, "Experience is critical" and "Limited opportunities for PA specific training" will be discussed together.

Frontline staff acknowledged that experience was critical since it enabled them to facilitate PA. Many participants had a wealth of experience and they were comfortable

facilitating PA. However, not all of their colleagues had the same level of confidence and skills which is consistent with the literature (Beets, Webster, et al., 2013; Kelder et al., 2005). As well, Dinkel and colleagues (2014) found that new staff who had been employed by an after-school child care program for less than a year lacked confidence in their ability to lead PA. It is reasonable to suggest that this variability led to implementation of diverse program content and inconsistent delivery of PA. These inconsistencies may be attributed to the limited PA specific training that frontline staff were offered. This training is important for enabling implementation of policies that can lead to improvements in children's PA engagement and eating behaviour (Weaver et al., 2012).

Limited opportunities for PA specific training have been documented elsewhere (Hastmann et al., 2013) and this may explain why staff tended to rely on their experience. Consistent with the findings from the present study, frontline staff recognized that confidence and PA specific training were important factors for program success (Sharpe et al., 2011). In addition, high self-efficacy facilitated implementation of organized PA outlined in the CATCH Kids Club curriculum (Hastmann et al., 2013). Results from a study by Henderson, MacKay, and Peterson-Badali (2006) emphasized the importance of providers' sense of self-efficacy. Their analysis revealed that mental health professionals' self-efficacy significantly predicted implementation of an arson prevention program for children.

Frontline staff also acknowledged that receiving PA specific training when they first started working in the profession would have been helpful, in addition to ongoing refreshers. As well, they recognized the value in experiential learning and they expressed

a desire for more hands-on training. Likewise, Beighle and colleagues (2010) suggested that this approach to training optimizes learning. Frontline staff made similar recommendations to improve the GGG after-school curriculum (Dinkel et al., 2015). In particular, staff expressed a desire to observe a session being implemented (in-person or using video), to practice or role-play different situations, and they wanted to have the opportunity to follow-up with trainers in order to address barriers to implementation.

In order for all frontline staff to have the confidence and competence to offer quality PA, the results from the present study highlight the need for training and ongoing support which is reinforced by the literature (Beets, Huberty, & Beighle, 2013; Huberty, Beets, Beighle, et al., 2013). As well, increasing opportunities and access to PA specific professional development, by reducing or eliminating costs, may also be important given the limited availability of resources.

It takes will.

Beyond PA specific training and experience, frontline staff possessed other qualities that were important for programs to operate. According to Domitrovich and colleagues (2008), the traits possessed by those responsible for implementation have been implicated with the quality of implementation (Lochman et al., 2008). This encompasses the "Psychological characteristics" of the implementer at the individual-level of the Multi-Level Model (Domitrovich et al., 2008). In the present study, the creativity and resourcefulness that frontline staff possessed contributed to the development of strategies for overcoming barriers to implementation. The strategies they created and used may be helpful to other staff who encounter similar challenges with space. It also shows that frontline staff have valuable insight in overcoming barriers to implementation.

Comments from managers who participated in the present study underline the importance of the qualities that staff possess. Likewise, Sharpe and colleagues (2011) considered frontline staff to be a critical part of program success. Further, Domitrovich and colleagues (2008) recognized the importance of hiring high quality staff. This encompasses "Personnel expertise" at the school-level of the Multi-Level Model. Zarrett and colleagues (2012) also acknowledged that high quality staff hired to implement the ACT ASP contributed to its logistical strength. In addition, Cross and colleagues (2010) suggested that staff quality could be the most important determinant of program success. Furthermore, they argued that the quality of frontline staff could influence other components of implementation.

Interestingly, findings from the present study revealed that managers tended to associate high quality staff with their commitment to the program and their ability to manage behaviour. Having the ability to design and facilitate program content that was well received by the children was also important. This suggests that PA advocates have more work to do. In particular, after-school child care stakeholders must recognize the value and importance of providing frontline staff with the tools to offer quality PA in addition to the other key attributes they possess.

Contributions to the literature

The present study contributes to the literature on implementation of PA and healthy snacks in the after-school child care setting from the perspective of frontline staff and managers. Unlike previous qualitative research examining staff perspectives in this context (Gortmaker et al., 2012; Hastmann et al., 2013; Zarrett et al., 2012), the present study uncovers the realities of typical after-school child care centres in the Canadian

context without the addition of resources, training, and ongoing technical support. As well, these findings consider the array of factors that facilitate or impede implementation which offers a unique contribution to the literature relative to Beets, Webster, and colleagues' (2013) after-school conceptual framework. Moreover, this means that strategies for overcoming all barriers to implementation can be developed and tested.

The research also provided an opportunity for knowledge translation and exchange between participants and researchers (Green, 2008). For instance, the category "It takes will" highlighted strategies that staff have developed and used to cope with the challenges in providing quality PA. It is our hope that sharing the results with the participants can contribute to practice.

Practical implications

Having situated the findings within the implementation literature, it is evident that organizational factors are powerful, and they can facilitate or impede implementation of PA and healthy snacks in the after-school child care setting. The findings illustrate that practice was often dictated by licensing requirements and centre-based rules and routines which suggests that policy matters. These findings support the need for revisions to the PA requirements outlined by the health authority in charge of regulations. Their influence could help make quality PA a priority, and maximize accountability and uptake. Involving after-school child care stakeholders in this process could help foster a greater sense of ownership and develop buy-in (Beets, Webster, et al., 2013; Cargo & Mercer, 2008; Israel, Schulz, Parker, & Becker, 1998). In the absence of these revisions, it is evident that PA advocates have more work to do in order to enable recognition that quality PA is of utmost importance. Targeting managers may be particularly important,

given their role in developing centre-based policies and making frontline staff accountable (Beets, Webster, et al., 2013).

The results also show that the infrastructure and geography of program sites must be considered. Tailoring of guidelines and resources that support diverse program sites is particularly important, given that the one size fits all model does not appear to be appropriate (Beets, Webster, et al., 2013). Therefore, discussion among policy makers, after-school child care stakeholders, and PA advocates, may help to ensure guidelines set realistic expectations and resources effectively influence practice.

The findings also highlight the need for further discussion with after-school child care stakeholders. This will enable a complete and consistent understanding about how organized PA is defined and what strategies can be used to support implementation. The theme "It takes skill" illustrates that frontline staff already have a deep understanding of these strategies. More specifically, participants recognized the utility of PA specific hands-on training that is essential for implementation of PA (Beighle et al., 2010; Dinkel et al., 2015). Videos that demonstrate organized activities and games could also be used to provide additional training (Smith et al., 2014). This cost effective approach may be particularly appealing given the limited availability of financial resources.

Assumptions, limitations, delimitations

Despite the practical implications of the study and its contribution to the literature, it is equally important to acknowledge its assumptions, limitations, and delimitations. It was assumed that study participants responded willingly and truthfully to interview questions, and their responses were interpreted accurately and reliably. Since an intense case study design was used, the results may have limited generalizability to

other after-school child care settings and staff. Further, the decision to use an orientational approach to guide inquiry and analysis influenced the way in which data was collected, analyzed, and interpreted.

The data were limited to self-reported responses from after-school child care staff, suggesting that the responses were vulnerable to social desirability. The study was also subject to recruitment bias since the sample included those willing to volunteer. As well, it is possible that participants may have agreed to participate based on the coffee card incentive. For pragmatic reasons, no objective assessment of the after-school child care settings was completed and no other after-school child care stakeholders were invited to participate.

Based on recruitment challenges, an uneven number of after-school child care staff participated (n = 9 managers; n = 7 frontline staff). This meant the study could not capture a complete picture of PA and healthy snack proceedings at two of the participating centres. As noted in Chapter 3, two surveys were developed – one for frontline staff and one for managers. The questions pertained to each employee's role and responsibilities and where we anticipated they would have the most knowledge. Since only seven frontline staff participated, two centres were missing data that primarily focused on PA proceedings at the after-school child care centre. Thus, the findings from these surveys should be interpreted with caution.

As Patton (2002) argued, the use of multiple data sources through triangulation may uncover data inconsistencies. Similarly, review of the transcripts, in light of the surveys, revealed some inconsistencies. For instance, the survey provided a checklist of the anticipated training they may have completed or certifications they may have

obtained. Additional space was provided for them to report training or certifications which were not part of this checklist. Based on conversations with the participants, it was clear that not all participants reported every certification they held or training they had completed. For example, some participants reported that they went through summer camp training which was organized through the centre where they worked. For other participants, this was only acknowledged during the interview. As a result, we felt that findings from the interviews provided a more comprehensive understanding of the individual-level factors that may facilitate or impede implementation of quality PA and healthy snacks.

As well, some of the survey results did not necessarily support the findings that emerged through the interviews. For example, the managers were asked to complete a setting based checklist to gain a deeper understanding of the facilities that were available. The degree of access to these facilities was determined by asking how often they were available (always, sometimes, or never). Despite our best efforts to create a comprehensive checklist of after-school child care program facilities, conversations with the participants revealed additional facilities were available (e.g., swimming pools, skating rinks) outside of the checklist. This meant that certain survey results were not reported if the interview data could provide a more accurate and reliable depiction of the factors that facilitate or impede implementation.

While a diverse sample of participants were recruited, some characteristics of the sample should be considered in light of the results. Specifically, one frontline staff member cared for 3 to 5 year old children in a centre that offered child care to pre-school and school-aged children (kindergarten to grade 8). Since the focus of the study was to

understand frontline staffs' experience caring for school-aged children (kindergarten to grade 8), it is possible that her experience may be unique relative to other frontline staff that participated. Therefore, the findings should be interpreted with caution.

According to Beets (2012), frontline staff are typically "hired/employed from schools (e.g., classroom or physical education teachers), are non-research-related college-age or high school-age students seeking part-time employment, or volunteers within the community (e.g., faith-based setting)" (p. 337). While one frontline staff member was also employed by the school, the majority did not represent the typical after-school child care employees that Beets described. This likely reflects differences between after-school child care programs in Canada and the U.S., where research by Beets is conducted.

Future research

Future research efforts could engage other after-school child care stakeholders in a discussion to develop a more complete understanding of what influences implementation of quality PA and healthy snacks. For example, discussion with policy makers that regulate child care licensing requirements could illuminate their priorities and provide insight into the development of higher level policies. Exploring parent perspectives may also be worthwhile in order to understand how their preferences may influence implementation of quality PA and healthy snacks. Given that children's preferences and enjoyment of PA is important for implementation and leader uptake, their perspectives on the types of PA offered could also be important. Understanding their preferences could help frontline staff to develop PA options that align with the age, abilities, and interests of the children enrolled.

Continuing to develop and test strategies to maximize implementation of quality PA and healthy snacks in after-school child care programs would be an appropriate next step (Beets, Webster, et al., 2013). Drawing on after-school and school-based literature could contribute to this research direction. Further, innovative methods such as participatory action research should be considered as a way to advance knowledge that can benefit both the academic and after-school child care communities (Beets, Weaver, Moore, et al., 2014).

It is clear that the present study makes a valued and unique contribution to the literature and after-school child care practice. In addition, the findings can enable the development of resources that account for the constraints of the after-school child care setting. Furthermore, it will ensure that future research efforts are directed appropriately.

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Appendix A

After-school interventions since Beets' (2012) systematic review

Study	*Type*[a]	*Design*[b]	*Process*[c]	*Participants*	*Sites*	*Outcome measure(s)*	*Significant finding(s)*
Beets, Huberty, & Beighle (2013)	ASC	PE	Y	$N = 580$ 4.3-13.1 yrs $\bar{x} = 8.7$ yrs	12	Children's PA, staff behaviour (observation)	↓ Sedentary behaviour ($p < 0.05$) ↑ VPA, boys ($p < 0.05$) ↑ VPA, organized activities, boys ($p < 0.05$) ↑ Walking, girls ($p < 0.05$) ↑ VPA, indoor activities, girls ($p < 0.05$)
Huberty, Beets, & Beighle (2013)				Pre-test ($n = 490$); Post-test ($n = 335$) 5-12 yrs $\bar{x} = 8.7$ yrs		PA (pedometers)	9/12 sites ↑ $\bar{x}$ steps/day during the program ($p < 0.05$)

Beets, Weaver, Moore, et al. (2014)	ASC	PE	Y	*N* = 450-550 5-12 yrs $\bar{x}$ = 7.5 yrs	4	PA (accelerometers)	↑ MVPA ($p < 0.05$) ↓ Sedentary behaviour ($p < 0.05$) ↑ Proportion of children meeting activity standards ($p < 0.05$)
Beets, Weaver, et al. (2015)	ASC	RCT	Y	*N* >1700 6-12 yrs Intervention (baseline) $\bar{x}$ = 8.1 yrs; Control (baseline) $\bar{x}$ = 7.9 yrs	20 (10 Intervention ; 10 Control)	PA (accelerometers)	Relative to controls, intervention groups ($p < 0.05$): ↑ MVPA minutes/day ↓ Sedentary behaviour, boys ↑ Proportion of children meeting activity standards

Bohnert & Ward (2013)	ASP	RCT	Y	*N* = 76 Intervention (*n* = 52); Control (*n* = 24) 8-12 yrs $\overline{x}$ = 9.13 yrs	5	Anthropometry (BMI); nutrition knowledge & behaviour, PA knowledge & behaviour, social-emotional development, body image (self-report)	Relative to controls, intervention groups ↑ nutrition knowledge (*p* = 0.02) Participation & nutrition knowledge varied by curriculum implementation (*p* < 0.001) & participant engagement (*p* = 0.008) Consumption of unhealthy foods varied by attendance (*p* = 0.012) PA knowledge varied by program quality (*p* = 0.009)

de Heer et al. (2011)	ASP	RCT	N	*N* = 901 Intervention (*n* = 292); Control (*n* = 354); Spillover (*n* = 252) $\bar{x}$ = 9.2 yrs	6	Anthropometry (BMI); aerobic capacity; dietary knowledge & intentions (self-report)	↓ BMI percentile, intervention group (*p* = 0.015) Intervention exposure predicted: ↓ Post-test BMI (*p* = 0.045) ↑ Post-test aerobic capacity (*p* = 0.012) ↑ Intentions to eat healthy (*p* = 0.046)
Herrick et al. (2012)	ASC	QE	Y	*N* = 100 Intervention (*n* = 48); Control (*n* = 52) Intervention $\bar{x}$ = 10.3 yrs; Control $\bar{x}$ = 10.4 yrs	6 (3 Intervention ; 3 Control)	Anthropometry (BMI); PA (accelerometers); PF; frequency of exercise, enjoyment of sports, perceptions of PA engagement (self-report)	Relative to controls, intervention groups ↑ perceptions of PA engagement (*p* = 0.011)

Hughey et al. (2014)	ASC	PE	Y	*N* = 500 5-12 yrs	4	Children's PA, staff behaviour (observation)	↓ Sedentary behaviour during enrichment activities, free play, and organized PA ↑ MVPA during enrichment activities and free play ↑ MVPA during organized PA, girls
Messiah et al. (2015)	ASC	PE	N	*N* = 349 5-16 yrs $\bar{x}$ = 8.9 yrs	23	Anthropometry (BMI, waist circumference, skinfold thickness); systolic/diastolic blood pressure; PF (flexibility, muscular endurance, aerobic fitness);	↓ BMI, overweight/obese group ↓ $\bar{x}$ subscapular skinfold measurements, overweight/obese group (p = 0.001) ↓ $\bar{x}$ skinfold measurements, normal-weight group (p = 0.01)

						health & wellness knowledge (self-report)	↑ PF normal-weight (p = 0.01) and overweight/obese group (p = 0.04) ↑ Proportion of normal systolic blood pressure, overweight/obese group (p = 0.03) ↑ Health & wellness knowledge (p < 0.01)
Slusser et al. (2013)	ASC	QE	N	N = 121 Intervention (n = 73); Control (n = 48) 8-9 yrs	8 (4 Intervention ; 4 Control)	Anthropometry (BMI); PA knowledge & behaviour, nutrition knowledge, dietary behaviour (self-report)	Relative to controls, intervention groups: ↑ Nutritional knowledge (p = 0.009) ↓ Junk food consumption (p = 0.035) ↓ BMI (p = 0.000)

Thaw et al. (2014)	ASC	QE	Y	*N* = 659 6-17 yrs $\bar{x}$ = 8.91 yrs	41 (21 Intervention; 20 Control)	Anthropometry (BMI); PA (observation); PF	Overall ↑ PF (p = 0.01) Relative to intervention groups, controls: ↑ %BF (p = 0.04) ↑ MVPA (p = 0.01) ↑ PF (p = 0.01)

a. Type of study – after-school child care (ASC), after-school program (ASP)
b. Research design – randomized control trial (RCT), quasi-experimental (QE), pre-experimental (PE)
c. Process evaluation – yes (Y), no (N)

Appendix B

The following invitation letter was provided for managers.

Dear after-school child care manager,

My name is Kendra MacFarlane and I am a graduate student in the School of Exercise Science, Physical and Health Education at the University of Victoria working under the supervision of Dr. Patti-Jean Naylor. I am interested in examining the provision of physical activity and/or healthy snacks in after-school child care. Therefore, the purpose of this study is to explore the factors that affect implementation of quality physical activity and healthy snacks for school-aged children in after-school child care programs in British Columbia.

I am hoping to interview employees working for licenced after-school child care organizations on Vancouver Island. I would like to speak with staff who are responsible for child supervision and program facilitation, as well as after-school child care managers who are responsible for staff supervision and monitoring of site proceedings. Therefore, I am contacting you to invite you to participate in this study and to pass on the attached invitation letter to your staff.

The study will involve a questionnaire (approximately 30 minutes to complete) which will be provided in person and/or by e-mail (attached as a PDF file). The survey may be returned in person or by fax. Alternatively, the survey may be completed over the phone with the primary investigator as the recorder.

The study will also involve an interview (approximately 60 minutes). Afterwards, you will be asked to review the interview transcript (approximately 30 minutes). Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study, your data will not be used in the analysis and will be destroyed.

If you decide to participate, you will be provided with a $5 Starbucks gift card as a thank you for your participation after the survey and interview have been completed. If you consent to participate in this study, this form of compensation to you must not be coercive. It is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation was not offered, then you should decline. In the event that you decide to withdraw from the study, you are allowed to keep the gift card.

All participants will be anonymous in the dissemination of results. However, during the data gathering phase of the research the principal investigator will be able to associate the data with individual participants. Your confidentiality and the confidentiality of the data will be protected by randomly assigning a code to each participant. Each participant's ID

attached to his or her name and after-school child care organization that they work for will be stored in a separate file. No personal information will be replicated in other files. The file will be locked via encryption in a computer located in a locked room. Any printed documents will be stored on a local network research directory in a double locked area (i.e. in a locked cabinet in a locked office).

Your contribution to this study will contribute to our understanding of what it is like to work in after-school child care centres in Canada. As well, this information will help us to understand how best to support working in this setting.

To participate in the study, it is required that managers are over the age of 18 and must have worked for the after-school child care program for at least six months.

If you are interested in participating or have any additional questions regarding this research study, please contact me at kmmacfar@uvic.ca; (647) 629 6262, or my supervisor at pjnaylor@uvic.ca; (250) 721 7844.

Appendix C

The following invitation letter was provided for frontline staff.

Dear after-school child care employee,

My name is Kendra MacFarlane and I am a graduate student in the School of Exercise Science, Physical and Health Education at the University of Victoria working under the supervision of Dr. Patti-Jean Naylor. I am interested in examining the provision of physical activity and/or healthy snacks in after-school child care. Therefore, the purpose of this study is to explore the factors that affect implementation of quality physical activity and healthy snacks for school-aged children in after-school child care programs in British Columbia.

I am hoping to interview staff working for licenced after-school child care organizations on Vancouver Island. Therefore, I am contacting you to invite you to participate based on a referral from your manager.

The study will involve a questionnaire (approximately 30 minutes to complete) which will be provided in person and/or by e-mail (attached as a PDF file). The survey may be returned in person or by fax. Alternatively, the survey may be completed over the phone with the primary investigator as the recorder.

The study will also involve an interview (approximately 60 minutes). Afterwards, you will be asked to review the interview transcript (approximately 30 minutes). Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study, your data will not be used in the analysis and will be destroyed.

If you decide to participate, you will be provided with a $5 Starbucks gift card as a thank you for your participation after the survey and interview have been completed. If you consent to participate in this study, this form of compensation to you must not be coercive. It is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation was not offered, then you should decline. In the event that you decide to withdraw from the study, you are allowed to keep the gift card.

All participants will be anonymous in the dissemination of results. However, during the data gathering phase of the research the principal investigator will be able to associate the data with individual participants. Your confidentiality and the confidentiality of the data will be protected by randomly assigning a code to each participant. Each participant's ID attached to his or her name and after-school child care organization that they work for will be stored in a separate file. No personal information will be replicated in other files. The file will be locked via encryption in a computer located in a locked room. Any

printed documents will be stored on a local network research directory in a double locked area (i.e. in a locked cabinet in a locked office).

Your contribution to this study will contribute to our understanding of what it is like to work in after-school child care centres in Canada. As well, this information will help us to understand how best to support working in this setting.

To participate in the study, it is required that frontline staff are over the age of 18.

If you are interested in participating or have any additional questions regarding this research study, please contact me at kmmacfar@uvic.ca; (647) 629 6262, or my supervisor at pjnaylor@uvic.ca; (250) 721 7844.

Appendix D

The following consent form was provided for all participants.

Healthy After-School Child Care

You are invited to participate in a study entitled "Healthy After-School Child Care" that is being conducted by Kendra MacFarlane.

Kendra MacFarlane is a graduate student in the department of Exercise Science, Physical and Health Education (EPHE) at the University of Victoria and you may contact her if you have further questions by e-mail (kmmacfar@uvic.ca) or 647-629-6262.

As a graduate student, I am required to conduct research as part of the requirements for a Masters of Science degree in Kinesiology. It is being conducted under the supervision of Dr. Patti-Jean Naylor. You may contact my supervisor by e-mail (pjnaylor@uvic.ca) or telephone (250 721 7844).

Purpose and Objectives
The purpose of this research project is to explore the factors that affect implementation of quality physical activity and healthy snacks for school-aged children in after-school child care programs.

Importance of this Research
Research of this type is important because it will provide insight into typical after-school child care settings in Canada and ensure staffs' ability to provide quality care to children is being accurately assessed. In addition, this information can be used to tailor guidelines and resources to typical after-school child care settings and meet staff needs.

Participants Selection
You are being asked to participate in this study because after-school child care staff play an important role in putting after-school child care guidelines into practice. Staff members offer a unique perspective on the resources that are available to them that are useful. More importantly, they can help those responsible for resource and guideline development to understand how their needs may or may not be met.

What is involved
If you consent to voluntarily participate in this research, your participation will include a questionnaire/survey to document your age, gender, and experience working with children/in after-school child care. This questionnaire/survey will take approximately 30 minutes. You will be provided with a copy of the questionnaire/survey in person and/or by e-mail (attached as a PDF file). The survey may be returned in person or by fax. Alternatively, the survey may be completed over the phone with the primary investigator as the recorder.

Afterwards, the primary investigator will conduct an interview that will last approximately 60 minutes. The time and location of your interview will take place at your convenience. Should there be any issues with scheduling, a phone interview can be conducted in place of an in person interview.

With your permission, two digital recording devices will be used to ensure all elements of the interview are captured. The recording will be transcribed after the interview has been completed. Interviews will be facilitated by the primary investigator (Kendra MacFarlane). A sample copy of the Healthy After School guidelines will be provided to you ahead of the interview for discussion.

After the interview has been transcribed, you will be asked to review the transcription to ensure your interview responses have been interpreted accurately and reliably. It is estimated that this will take approximately 30 minutes.

Inconvenience
Participation in this study may cause some inconvenience to you, including approximately two hours of time away from other activities of interest are required to participate.

Risks
There are no known or anticipated risks to you by participating in this research.

Benefits
The potential benefits of your participation in this research include improvement of guidelines and resources that apply to typical after-school child care settings in Canada. It is hopeful that your participation in the present study will enable after-school child care employees to complete their work with greater efficiency and ease. As well, the research will help after-school child care programs in Canada ensure they're providing quality physical activity and healthy snacks to children.

Voluntary Participation
Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will not be used in the analysis and will be destroyed.

If you decide to participate, you will be provided with a $5 Starbucks gift card as a thank you for your time. If you consent to participate in this study, this form of compensation to you must not be coercive. It is unethical to provide undue compensation or inducements to research participants. If you would not participate if the compensation was not offered, then you should decline. In the event that you decide to withdraw from the study, you are allowed to keep the gift card.

Anonymity
All participants will be anonymous in the dissemination of results. However, during the data gathering phase of the research the principal investigator will be able to associate the data with individual participants.

Confidentiality
Your confidentiality and the confidentiality of the data will be protected by randomly assigning a code to each participant. Each participant's ID attached to his or her name and after-school child care organization that they work for will be stored in a separate file. No personal information will be replicated in other files. The file will be locked via encryption in a computer located in a locked room. Any printed documents will be stored on a local network research directory in a double locked area (i.e. in a locked cabinet in a locked office).

Dissemination of Results
It is anticipated that the results of this study will be shared with others in the following ways: thesis, presentation at scholarly meetings, published article, and directly to participants involved. Specifically, participants will receive an executive summary of the results.

Disposal of Data
The education computer staff will dispose of data from this study after five years. Research files will be shredded**.**

Contacts
Individuals that may be contacted regarding this study include the primary investigator (Kendra MacFarlane) and/or supervisor (Dr. Patti-Jean Naylor) at the e-mail or phone numbers listed at the beginning of the consent form.

In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

Your signature below indicates that you understand the above conditions of participation in this study, that you have had the opportunity to have your questions answered by the researchers, and that you consent to participate in this research project.

_____	_____	_____
Name of Participant	*Signature*	*Date*

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix E

The Healthy After School guidelines were provided to each participant prior to and during the interview. Their PA and healthy snack standards represent a best practices model in after-school child care (Healthy After School toolkit, 2010).

Healthy After School Guidelines

Healthy Eating

Healthy snacks should include:

1. A variety of food each day of the week.
2. At least 2 different food groups from Canada's Food Guide – including 1 from the vegetables and fruit food group.
3. Whole grain as the first or second ingredient in all grains products that are served.
4. Choices low in sugar, fat, and sodium*.
5. Water or milk as a drink choice. Choose water most often.

When serving snacks:

Staff should consume the same snacks served to children, in the same quantities. This will model healthy eating.

Physical Activity

- Physically active playtime is scheduled for 30 minutes a day
- A minimum of 15 minutes of that time dedicated to facilitated moderate/vigorous activities
- Twice a week, activities are scheduled that incorporate fundamental movement skills that enhance some aspects of physical literacy (eg. throwing, kicking, hopping etc)
- Choice based activities offered when possible

Appendix F

Manager survey

Date: _____

Age: _____ years

Gender *(circle one)*: Male Female

Your Position: _____

1. Please indicate:

(a) How long you have worked within the after-school child care context *(check one that applies):*

- ☐ 6 to 11 months
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 15 years
- ☐ 16 years or more

(b) How long you have worked with the *current* after-school child care provider *(check one that applies):*

- ☐ 6 to 11 months
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 15 years
- ☐ 16 years or more

(c) Check off ALL certifications you hold and/or training completed.
If applicable, please indicate the Bachelor's or Master's degree you hold.

☐	First aid
☐	Food safe
☐	Food flair
☐	HOP (Healthy Opportunities for Preschoolers)
☐	ECE (Early Childhood Education)
☐	Bachelor's degree: _____
☐	Master's degree: _____

Other training or certifications *(please list)*

-
-
-
-
-

2. On average, how many children from the following grades are cared for each week in your after-school child care program/facility?

Grades K-1 _____ Boys

_____ Girls

Grade 2-4 _____ Boys

_____ Girls

Grade 5-8 _____ Boys

_____ Girls

3. Not including you, how many staff members (e.g. employees, volunteers) work in your care facility during the after school hours? _____

4. What is the staff-to-child ratio? _____ Staff to _____ Children

5. How long is your facility open for each day after school?

   _____ to _____

6. In general, what percentage of children stay for the entire session *(check one that applies)*?

☐	80 to 100%
☐	60 to 79%
☐	40 to 59%
☐	20 to 39%
☐	0 to 19%

7. Please indicate whether the following facilities and/or equipment are available at the after-school child care site where you work. If available, please indicate how often these facilities and/or equipment are available for use.

	Is it available?		**Frequency of availability** *(check one that applies)*		
	Yes	No	Always	Sometimes	Never
Outdoor play space					
Soccer field					
Baseball diamond					
Outdoor track					
Playground with equipment					
Sandbox					
Park space					
Natural environment space					
Trees					
Rocks					
Walking trail(s)					

	Is it available?		**Frequency of availability** *(check one that applies)*		
	Yes	No	Always	Sometimes	Never
Gymnasium					
Physical activity equipment (e.g. balls, cones, skipping ropes)					
Dance studio					
Multi-purpose room					

Kitchen

Cooking utensils					
Oven					
Microwave					
Fridge					
Freezer					
Toaster or toaster oven					
Kettle					
Eating area (seating)					
Food storage area					

8. Does the after-school child care program provide a snack in the session *(circle one)*?

   YES NO

   If YES,

   (a) When is the snack served? _____ pm

   (b) Do all the children in the after-school child care program receive the same snack *(circle one)*? YES NO

   (c) Do all the children in the after-school child care program eat their snack at the same time *(circle one)*? YES NO

   (d) Do staff members eat snack with the children during this time *(circle one)*? YES NO

Appendix G

Frontline staff survey

Date: _____

Age: _____ years

Gender *(circle one)*: Male Female

Your Position: _____

1. Please indicate:

   (a) How long you have worked within the after-school child care context *(check one that applies):*

   - ☐ 1 to 5 months
   - ☐ 6 to 11 months
   - ☐ 1 to 5 years
   - ☐ 6 to 10 years
   - ☐ 11 to 15 years
   - ☐ 16 years or more

   (b) How long you have worked with the *current* after-school child care provider *(check one that applies):*

   - ☐ 1 to 5 months
   - ☐ 6 to 11 months
   - ☐ 1 to 5 years
   - ☐ 6 to 10 years
   - ☐ 11 to 15 years
   - ☐ 16 years or more

(c) Check off ALL certifications you hold and/or training completed.
If applicable, please indicate the Bachelor's or Master's degree you hold.

☐	First aid
☐	Food safe
☐	Food flair
☐	HOP (Healthy Opportunities for Preschoolers)
☐	ECE (Early Childhood Education)
☐	Bachelor's degree: _____
☐	Master's degree: _____

Other training or certifications *(please list)*

-
-
-
-
-

2. On average, how many other staff members do you work with directly during the after school hours? _____

3. On average, how many minutes of physical activity are scheduled for each session? _____ minutes

   (a) Does this change according to the time of year *(circle one)*?

   YES NO

(b) Are all children required to participate in physical activity *(check one that applies)*?

☐	Yes, for the full time
☐	Yes, but NOT for the full time
☐	No, participation is voluntary

(c) Out of the total amount of time dedicated to physical activity, how many minutes are *facilitated* (e.g. leading games, teaching children how to use equipment, participating) by staff? _____ minutes

(d) Is there any motor skill development planned (e.g. games or activities that teach children to throw) and incorporated into the physical activity period *(circle one)*? YES NO

If YES,

(i) How often is motor skill development planned and incorporated into the physical activity period *(check one that applies)*?

☐	1 day per week
☐	2 to 3 days per week
☐	4 to 5 days per week

Appendix H

Manager interview guide

1. Define your role as a manager.

    Probe: What are your responsibilities?

2. After reflecting on the Healthy After School guidelines, what affects your child care centre's ability to provide quality PA?

    Probe: What is in place right now that makes it easy?

    Probe: What makes it challenging?

3. What influences your availability of space and/or programming decisions (e.g., weather, other bookings)?

    Probe: How do you overcome these (potential) challenges as it relates to PA?

4. *After reflecting on the Healthy After School guidelines, what do you think affects your child care centre's ability to provide healthy snacks to children in after-school child care?

    Probe: What helps you to provide healthy snacks?

    Probe: What makes it challenging to provide healthy snacks?

    Probe: If there are children who require specialty snack items, what are the policies surrounding this?

5. What type of support would be necessary in order to meet the Healthy After School guidelines?

    Probe: What type(s) of support is currently in place (e.g., manuals, training)?

6. Who provides you with funding?

7. What is responsible for the success of the program (e.g., resources)?

8. Is there anything else you think is important to tell me about what you do related to PA and snacks in your program?

*Participants were question 4 if the program offered a snack

Appendix I

Frontline staff interview guide

1. Describe a typical day working in after-school child care.

    Probe: What types of activities do children participate in?

2. When thinking about the definition of quality PA provided by the Healthy After School guidelines, how would you describe your PA provision?

    Probe: What are your strengths?

    Probe: What are your weaknesses?

3. What helps you provide quality PA to children in the after-school child care program (e.g., experience, equipment)?

    Probe: What has prepared you to accomplish this?

    Probe: What has been the most useful/relevant to you?

    Probe: How else could your facility prepare you to do this?

4. What makes it challenging to provide quality PA to children in the after-school child care program?

5. How much of what is planned is actually implemented?

6. Are children provided with the choice to participate in PA?

    Probe: What are their options?

    Probe: At what point(s) in the session are choices provided?

7. Is there anything else you think is important to tell me about what you do related to PA and snacks in your program?

Appendix J

Certificate of approval

University of Victoria

Human Research Ethics Board
Office of Research Services
Administrative Services Building
PO Box 1700 STN CSC
Victoria British Columbia V8W 2Y2 Canada
Tel 250-472-4545, Fax 250-721-8960
ethics@uvic.ca www.research.uvic.ca

Certificate of Approval

PRINCIPAL INVESTIGATOR:	**Kendra MacFarlane**	**ETHICS PROTOCOL NUMBER** Minimal Risk - Delegated	**14-259**
UVic STATUS:	**Master's Student**	ORIGINAL APPROVAL DATE:	26-Aug-14
UVic DEPARTMENT:	**EPLS**	APPROVED ON:	26-Aug-14
SUPERVISOR:	**Dr. Patti-Jean Naylor**	APPROVAL EXPIRY DATE:	25-Aug-15

PROJECT TITLE: **Healthy After School Child Care**

RESEARCH TEAM MEMBER Joan Wharf-Higgins, Committee Member, UVic

DECLARED PROJECT FUNDING: **None**

CONDITIONS OF APPROVAL

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Modifications
To make any changes to the approved research procedures in your study, please submit a "Request for Modification" form. You must receive ethics approval before proceeding with your modified protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a "Request for Renewal" form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a "Notice of Project Completion" form.

Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria Research Regulations Involving Human Participants.

Dr. Rachael Scarth
Associate Vice-President Research Operations

Certificate Issued On: 26-Aug-14

14-259 MacFarlane, Kendra