

Understanding Older Adolescent Girls' Perceptions of the Relationship Between Nature and  
Physical Activity

By

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## **Dedication**

This project is dedicated to all the girls who love physical activity and being in nature, and to those in my life who have continuously supported me.

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## **Abstract**

Over time, as older adolescent girls age they become susceptible to a decline in physical activity. This decrease may be due to gender norms and stereotypes faced by women, which often centre on their bodies. In addition, older adolescent girls' connection with nature may also be affected by gender norms and stereotypes, as nature is often perceived as a masculine space where man-dominated activities, such as hunting and fishing, are performed. As nature and PA have historically been associated with masculinity, adolescent girls may experience challenges when connecting nature and PA. The purpose of this study was to explore how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes. A constructivist worldview with a feminist qualitative descriptive approach was utilized as the methodology for this study. To explore the perceptions of ten older adolescent girls reflexive thematic analysis was used. Results suggest that girls' environments can influence their relationship between nature and PA, connecting nature and PA promotes wellbeing for girls, connecting nature and PA provides adolescent girls' with a sense of connection, and exposure to stereotypes' influences adolescent girls' connection with nature and PA. Study findings highlight that adolescent girls have a positive perception toward their relationship with nature and PA, as they actively chose to connect nature and PA; however they are mindful of gender norms and stereotypes. Findings from this study may provide an opportunity to better understand how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes.

## **List of Abbreviations Used**

PA: Physical activity

QD: Qualitative description

TA: Thematic Analysis

WHO: World Health Organization

SES: Socioeconomic status



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## **Chapter One: Introduction**

This chapter will provide a broad overview of this study. To begin, a brief introduction to the issue will be presented, followed by the study rationale. Next, the research purpose and objectives will be presented, and key terms will be identified. Then, the researchers' interest in the topic, including their position and reflexivity, will be provided. This chapter will conclude with the significance and potential implications of the study.

### **The Issue**

Physical inactivity is identified by the World Health Organization (WHO) as a problem worldwide, as physical inactivity is the fourth leading risk factor for global mortality (World Health Organization, 2020). The prevalence of physical inactivity is associated with a decline in physical activity (PA) as youth age (World Health Organization, 2020). Older adolescent girls, defined as girls aged 16-19 by the WHO, are the most susceptible to this decline (Guthold et al., 2020; ParticipACTION, 2020). As young girls transition through adolescence, they become more sedentary, and their activity levels drop by as much as 83 percent (ParticipACTION, 2020). By the age of 18, many adolescent girls will engage in almost no PA except in physical education class (Burnette et al., 2017; Kimm et al., 2002, 2006). This decline in PA may be contributed to by the stereotypes and norms older adolescent girls encounter regarding femininity, such as unrealistic standards of how they should look, dress, speak, or the interests they should pursue (Beltrán-Carrillo et al., 2018; J. Lee & Macdonald, 2010; Rosselli et al., 2020).

Societal pressures within western culture can influence adolescent girls to adhere to specific stereotypes concerning the appropriate gender appearance and behaviour (Bordo, 2004). Adolescent girls can be seen as a representation of social pressures, as they conform to cultural standards of femininity that define their bodies and social roles (Bordo, 2004). Cultural standards

can influence girls to assume they should adhere to a stereotypical feminine appearance which is fixated on being thin, slender, and pretty (Beltrán-Carrillo et al., 2018; J. Lee & Macdonald, 2010; Rosselli et al., 2020). The pressure to adhere to specific feminine stereotypes, such as to be pretty and thin, can result in adolescent girls having a complex relationship with PA, as PA has historically been perceived as masculine (Beltrán-Carrillo et al., 2018; Dwyer et al., 2006; J. Lee & Macdonald, 2010; Rosselli et al., 2020; Wesely & Gaarder, 2004).

In western culture, much like PA, nature has historically been seen as masculine due to the masculine traits needed to thrive in nature (Hively & El-Alayli, 2014; McNiel et al., 2012; White et al., 2019; Woodgate & Skarlato, 2015). Being powerful, adventurer, resilient, brave, and resourceful are examples of masculine traits used in nature, leading nature to be a place where men can assert their masculinity (Whittington, 2006). From a young age, boys are taught to use their bodies in skilled and forceful ways, and girls are taught that being feminine means limiting their strength and constraining their bodies in public spaces or nature (Bordo, 2020; Culp, 1998; Hortigüela-Alcalá et al., 2021; Suzanne Roberts et al., 2020; Whitson, 1994). As cultural beliefs position nature as masculine, girls may feel as though nature does not fit with the traditional conceptualizations of femininity (K. Green & Keltner, 2017; Kilgour & Parker, 2013; MacBride-Stewart et al., 2016; McNiel et al., 2012; Pinch et al., 2008).

As adolescent girls may feel as though they do not belong in nature, they may miss out on the associated physical and mental health benefits (Little, 2002). PA in nature can decrease the risk of cardiovascular disease, improve immune systems, and increase life expectancy (McNiel et al., 2012). Further, mental wellbeing benefits of participating in PA include reduced depression and stress, and improved quality of life, self-esteem, and life satisfaction (Bedimo-Rung et al., 2005). Performing PA in nature also allows adolescents to benefit from the natural elements,

such as being exposed to vitamin D and fresh air, which contributes to bone development and immune system function (Bento & Dias, 2017; Dymment & Bell, 2007).

Although there are countless positive outcomes from participating in PA in nature, recent research has found that adolescent girls have been spending less time outside and engaging in fewer outside activities (Beyer et al., 2018; Gladwell et al., 2013; Gray et al., 2015; Louv, 2009). This decline may be attributable to the stereotypes positioning both PA and nature as masculine in western society (McNiel et al., 2012; White et al., 2019; Whittington, 2006). As both nature and PA have traditionally been seen as male-dominated, when adolescent girls participate, they may face negative evaluation from society and their peers, as they are not conforming to the traditional conceptualizations of femininity (McNiel et al., 2012; Pinch et al., 2008). To avoid negative evaluation girls may begin to restrict their involvement in nature and PA (Herrington & Brussoni, 2015; Kilgour & Parker, 2013; MacBride-Stewart et al., 2016; McNiel et al., 2012). Girls who participate in PA in nature face a complex dilemma of resisting oppressive stereotypes of femininity while also trying to conform to some of the traditional gender norms to gain acceptance (Lugg, 2003). When girls challenge assumptions about their abilities, appearance, and behaviours, they disrupt the traditional idea of femininity and complexities may arise (Herrington & Brussoni, 2015; MacBride-Stewart et al., 2016; McNiel et al., 2012; E. A. Richardson & Mitchell, 2010; Whittington, 2006; Wittmer, 2001).

### **Study Rationale**

A study focused specifically on older adolescent girls is important to understand the unique relationships they can have with PA and nature. First, researchers have previously studied how men connect with nature (Culp, 1998; Godtman Kling et al., 2020; Khajavei, 2017; Pasanen et al., 2014; White et al., 2019). This results in a gender gap in the research, as men's

experiences may not translate to other genders. Additionally, PA research that has been done with girls focuses on early-to-middle adolescents, as only one study focusing on older adolescent girls was identified in a scoping review (Spencer et al., 2015). This gap in the literature is necessary to fill as adolescent girls become more sedentary and less active as they age (Guthold et al., 2020; ParticipACTION, 2020).

Although studies have identified that adolescent girls are spending less time outside than their predecessors (Gray et al., 2015; Larson et al., 2011; Louv, 2009), research has not uncovered what may be contributing to the decline (McNiel et al., 2012; Roth & Basow, 2004). Understanding the relationship women and girls have with nature can help us reveal and understand the stereotypes they face (Bixby et al., 2015; Gentile et al., 2018; Spencer et al., 2021). It is important to identify the specific stereotypes women and girls are expected to follow in nature in order to build a more inclusive and accepting society. By doing so, this study will add to scholarly research as few studies have researched older adolescent girls' experiences with PA and nature (B. Evans, 2006; Gray et al., 2015; Spencer et al., 2021; White et al., 2019).

### **Research Purpose and Objectives**

The purpose of this study was to use qualitative description to understand how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes. This proposed study explored the stereotypes and gender norms older adolescent girls in Nova Scotia experience while connecting with nature and PA by addressing the following research objectives:

- To understand how older adolescent girls perceive their connection with nature.
- To explore how older adolescent girls' connection with nature relates to PA.

- To understand how older adolescent girls experience gender-, nature-, and PA-related stereotypes.

### **Key Concepts and Terminology**

Physical activity (PA) is a broad term used to describe a wide range of activities. The World Health Organization (WHO) defines PA as “any bodily movement produced by skeletal muscles that require energy expenditure” (World Health Organization, 2018). This form of movement can be done through activities like walking, cycling, or sports, and can be done at any skill level (World Health Organization, 2018). In this study, I will use the term ‘PA’ to broadly refer to any type of bodily movement through sport or recreation.

Central to this work is the concept of gender. Historically, the terms sex and gender have been used interchangeably, but are now recognized as distinct concepts from one another (Government of Canada, 2020). The term “sex” refers to traits that define a human as male or female, such as physiology, genetics, and biology (Government of Canada, 2020; Kenney et al., 2015). In contrast, gender refers to socially constructed characteristics of behaviours and roles associated with self-representation, such as being a girl or boy, resulting in systems of social stratification (World Health Organization, 2021a). As a social construct, gender varies from society to society due to social, cultural, and psychological influences (Government of Canada, 2020; Kenney et al., 2015). This project is about gender, not sex, physiology, or biology. Therefore, I will use the gender terms ‘women’ or ‘girls.’ Further, much of the literature reviewed on PA used the physiology and sex terminology; as such, the focus on gender throughout this study addresses that literature gap (Tannenbaum et al., 2016). This proposed study is centred on older adolescent girls, defined by the WHO as between the ages of 16 and 19

(World Health Organization, 2015b, 2018, 2020). This study will use the term ‘older adolescent girls’ to refer to the study population.

There are many phrases that can be used interchangeably to describe nature. Many of the intersecting terms are used to explain how humans can interact with nature (MacBride-Stewart et al., 2016). For this study, the term ‘nature’ will be used to describe the natural environment, green or blue space, or landscape that includes plants and wildlife (Centers for Disease Control and Prevention, 2017). Green spaces can be defined as open, undeveloped land with natural vegetation and can include parks, forests, and playing fields, for example (R. Hunter et al., 2017). Blue spaces can be defined as visible outdoor natural surface waters with potential for the promotion of human health and wellbeing (Britton et al., 2020; Gledhill & James, 2008; Grellier et al., 2017; Völker & Kistemann, 2011). Nature can be seen as an open and constantly changing environment, where it is possible to experience freedom, active movements, and contact with natural elements (Bilton, 2010; Dymont & Bell, 2007; S. Hunter et al., 2016).

At the beginning of each interview, I provided an explanation of where my definition of nature was derived from and how I intended to use the term within my study. I then provided each participant with different examples of nature and PA, and how PA in nature can range from walking to school to going on a hike in the woods. Many participants gave their own examples and asked if these examples would be considered nature, such as going skiing, gardening, and walking around the block. As everyone’s interpretation of nature may be different, the term nature was defined broadly to allow participants to add their own interpretation of what nature meant to them.

As the purpose of this study was to explore the relationship adolescent girls have between nature and PA, it is important to understand the meaning of experiences to better appreciate

interpretations of the event. The term ‘perceptions’ was chosen to better understand the meanings older adolescent girls give to certain situations (Angell, 1906). An exploratory study such as this, using a qualitative description methodology, allows for participants experiences to be better understood from their unique perspectives (Doucet et al., 2010 Sandelowski, 2000; Thorne et al., 2004).

### **Researcher Reflexivity and Positionality**

Reflexivity is a technique in which the researcher acknowledges their own positions, assumptions, and biases, which is critical when conducting qualitative research (S. Morrow, 2005; Richman & Shaffer, 2000). Researchers should recognize, examine, and understand how their social background, location, age, socioeconomic status, education, and assumptions affect their research (S. Morrow, 2005). I am a young white woman who has lived in Antigonish, Nova Scotia, for my entire life. Due to my social position, specific groups may be more likely to participate than others. For example, others who see themselves as similar to me may be more inclined to participate. This may impact my study by disproportionately recruiting participants who are white girls of a middle-to-high socioeconomic status.

Additionally, I have always been interested in PA, as I grew up playing sports and being physically active in general. As I am from a rural area, I have also been exposed to nature and outside experiences as a primary form of unstructured PA. My background in PA and nature may influence my interpretation of the data. For example, I could interpret the data to reflect how I feel about nature and PA, which could be different from the emotions and perceptions of the participants. I am aware of my position and was mindful of the impact it may have on the study. In addition, my position as a woman may be beneficial for the study, as older adolescent girls may feel they can speak freely due to my closeness to the study population’s age and gender.



Every effort was made to ensure I am cautious of my social location and its impact on the results. For example, throughout the coding and analysis process, I remained cautious and mindful of my position and how it may impact the results.

My passion for PA started at a young age. As an infant my parents enrolled me in PA groups and once I was old enough to pick my own activities, I started playing sports. More specifically hockey and soccer. In high school my friends from hockey were labelled as the sporty girls, who were too strong, tried too hard in PE class, and played a boys' sport. It was also around this time when my friends and I started developing an interest in hiking and backpacking. As a group of girls who played hockey and liked to adventure, we became subjected to judgement and stereotyped. As we played a male dominated sport we were seen as girls going against the norm and contradicting femininity. As athleticism and femininity are oftentimes contradictory, we had to go out of our way to demonstrate that we could be both athletic and socially accepted as feminine. Although valiant efforts were made from myself and my friends, many girls dropped out around this time to better adhere to societal norms. Although I was in high school many years ago, these issues still arise as my younger sister is still told that her athleticism contradicts femininity. My hope for this research is for older adolescent girls' to know that it is socially acceptable to form a relationship with nature and PA. Additionally, I hope this research highlights how stereotypes and gender norms can influence girls' relationship between nature and PA.

### **Importance and Relevance to Health Promotion**

This project is significant to the field of health promotion as PA, as well as inactivity, significantly impacts adolescents' health. Health promotion provides the opportunity to raise the health status of populations by facilitating a thriving, productive, and equitable society (IUHPE,

2020; World Health Organization, 1986). In addition, this study serves to challenge common myths and misconceptions regarding nature and PA with the hopes of enabling older adolescent girls to engage with nature and PA.

The Ottawa Charter for Health Promotion has previously identified the importance of natural environments on health, stating that the links between people and their environment are the basis for a socio-ecological approach to health (IUHPE, 2020; World Health Organization, 1986). Some of the stereotypes pertaining to nature are problematic as they discourage older adolescent girls from visiting nature and being physically active. These stereotypes are related to factors such as gender, socio-economic status (SES), and race that can be addressed through advocacy. Recently health promotion research has increased its focus on the connection between planetary health and human health (IUHPE & World Health Organization, 2021). Nature has been identified as a positive outcome towards human health and well-being as it provides conditions that foster human and environmental health resulting in potential advocacy for health promotion (IUHPE, 2020; IUHPE, 2021).

## **Chapter One Summary**

Older adolescent girls are faced with complex gender norms and stereotypes, which can impact their relationship with both nature and PA. A decrease in PA among adolescents is a growing concern, especially in adolescent girls, yet there has been limited PA research focusing on older adolescent girls. Further, adolescent girls can have a multifaceted relationship with nature due to the cultural and historical stereotypes surrounding nature. The purpose of this study was to understand older adolescent girls' perceptions and experiences with nature and PA. The proposed study fills a current gap and will add to the body of literature on older adolescent girls and their perceptions of the relationship between nature and PA.

## **Chapter Two: Literature Review**

This chapter will provide an in-depth review and critique of the literature. Specifically, this review will focus on the connection between PA, nature, and older adolescent girls' health and wellbeing. Additionally, this review will explore stereotypes and gender norms and how they influence adolescent girls' relationship with PA and nature. This review will further examine the context of the existing literature on older adolescent girls' relationship between nature and PA. To begin, PA and health will be broadly discussed. Nature and its connection to health will then be described. Finally, gender and health will be outlined by examining how girls connect with nature and PA. Overall, the connections between gender, nature, and PA will be explored.

### **Physical Activity and Health**

Regular participation in PA is strongly associated with numerous health benefits (Li et al., 2016; Ortiz-Castillo, 2011). The benefits associated with engaging in PA include but are not limited to: enhanced self-esteem; decreased risk of developing diseases, obesity, and type II diabetes; improved bone and muscle strength; maximal oxygen uptake; increased brain function and development, as well as overall higher quality of life (Eddolls et al., 2018; Ortiz-Castillo, 2011; ParticipACTION, 2020; Proudfoot et al., 2019; Thivel et al., 2019). Therefore, a physically active population should have fewer health risks than an inactive population (Eddolls et al., 2018; Ortiz-Castillo, 2011; Thivel et al., 2019).

As research has highlighted the benefits of PA, it is alarming that the current literature suggests adolescents do not meet the minimal hours of PA per day recommended by the Canadian Society for Exercise Physiology (CSEP) (Li et al., 2016; ParticipACTION, 2020). Globally, 81% of adolescents have been identified as physically inactive (Guthold et al., 2020; ParticipACTION, 2020), leading the WHO to identify physical inactivity among adolescents as a

worldwide problem (World Health Organization, 2015b, 2018, 2020). Studies have found that PA levels tend to decline as children transition into adolescence and adulthood (Li et al., 2016; Pate et al., 2009; Sallis et al., 2000; Trost et al., 2002). Older adolescent girls are the most vulnerable to this decline, as their levels decrease by approximately 83% (Dwyer et al., 2006; Guthold et al., 2020; Kimm et al., 2002; Pate et al., 2009; World Health Organization, 2019). Further, just 2% of girls aged 12–17 in Canada achieve the 24-hour movement guidelines recommended by CSEP (Colley et al., 2017; Guthold et al., 2018; ParticipACTION, 2020; World Health Organization, 2020).

Adolescent girls' decline in PA may be attributed to the unrealistic expectations of femininity (Spencer et al., 2021). As girls transition into adolescence, they feel pressure from society to conform to unrealistic standards about what it means to be a girl. For example, the societal pressure to conform extends to expectations on how they should look, dress, speak, or the interests they should pursue (Beltrán-Carrillo et al., 2018; J. Lee & Macdonald, 2010; Rosselli et al., 2020). These expectations can impact adolescent girls' behaviour, leading them to avoid participating in PA due to fear of being criticized or being perceived as too sporty by their peers (Beltrán-Carrillo et al., 2018; Dwyer et al., 2006; J. Lee & Macdonald, 2010; Rosselli et al., 2020; Wesely & Gaarder, 2004). These gender norms and stereotypes that often lead to contradictions and double standards that girls face will be further discussed below, in the section regarding gender and health.

### **Nature and Health**

Over the past few decades, there has been an increased focus within Health Promotion on understanding the connection between nature and health. Spending time in nature, as well as performing activities in nature have both been found to provide positive health benefits (Bedimo-

Rung et al., 2005; Doherty et al., 2014; Gladwell et al., 2013; Herrington & Brussoni, 2015; Shanahan et al., 2016; Thompson Coon et al., 2011). Nature can deliver many physical and psychological benefits, such as reduced mortality from cardiovascular disease (Donovan et al., 2013; Mitchell & Popham, 2008), improved cognitive performance (Berman et al., 2008), and improved concentration and productivity (Dowdell et al., 2011; Faber Taylor & Kuo, 2009; Ginsburg et al., 2007; Kuo & Faber Taylor, 2004; Zelenski & Nisbet, 2014).

Natural environments have also been identified as therapeutic, leading to improved mental and social wellbeing. For example, exposure to nature has been found to improve mental health and wellbeing by fostering positive emotional states (Bojorquez & Ojeda-Revah, 2018; Cobar et al., 2017; Mayer et al., 2009; Nisbet & Zelenski, 2011; Shan, 2014; Tannehill et al., 2015; Thomas, 2015; Thompson Coon et al., 2011). Nature has also been found to help improve awareness and restore attention (Bojorquez & Ojeda-Revah, 2018; Cobar et al., 2017; Tannehill et al., 2015; Thomas, 2015). Studies suggest that connecting with nature can lead to positive emotions, such as happiness, gratitude, and pride (Capaldi et al., 2015; Cervinka et al., 2012; Cobar et al., 2017; Gladwell et al., 2013; Mayer et al., 2009; Nisbet & Zelenski, 2011, 2011; Tannehill et al., 2015; Thomas, 2015). For instance, previous research found that walking in parks or open spaces with large amounts of green coverage improves mental health and leads to a boost in mood, thus promoting overall happiness, especially in young women or adolescent girls (Berman et al., 2012; Bojorquez & Ojeda-Revah, 2018; Cobar et al., 2017; Gladwell et al., 2013; Mayer et al., 2009; Nisbet & Zelenski, 2011).

The relationship between PA and nature can be influenced by external barriers such as pests, fear of accidents, and wildlife sightings (Allison et al., 2005; Armstrong et al., 2018; Lee et al., 2001). These barriers can act as constraints which can hinder adolescent girls' connection

between nature and PA. For example, many girls and women avoid spending time in nature for pest-related reasons, such as the presence of ticks, mosquitos, and other insects (Oppliger et al., 2019). In addition, fear of accidents, getting attacked, getting lost, and poisonous plants are other reasons adolescent girls avoid nature (Armstrong et al., 2018; Oppliger et al., 2019). Other external barriers such as, the influence of peers and family, lack of time, inaccessibility, and cost of facilities, can also act as constraints (Allison et al., 2005).

The influence of peers and family members can also hinder adolescent girls' relationship between nature and PA, as they may not want to engage in such activities alone (Allison et al., 2005). Lack of time was also considered a constraint as other commitments such as school, jobs, relationships, and responsibilities at home compete for their time after school and on weekends (Allison et al., 2005). Research has found that accessibility and cost can affect the relationship between nature and PA, as many adolescents cannot transport themselves or afford transportation fairs (Astell-Burt et al., 2014; Owen et al., 2004; Pikora et al., 2003; E. A. Richardson et al., 2013; Thompson Coon et al., 2011). For this reason, some barriers can be mitigated when locations promote free and easy access (Lee et al., 2001; Shanahan et al., 2016).

The relationship between PA and nature can be influenced by multiple characteristics, including SES, ethnicity, age, and gender (Armstrong et al., 2018; Lee et al., 2001). Constraints to accessing nature are not equally distributed, and socio-demographic characteristics play a role in the prevalence and extent of constraints (DeVille et al., 2021; Jackson & Henderson, 1995; Shores et al., 2007; Waite et al., 2021). For example, marginalized groups, such as ethnic minorities, women, and older people experience greater restrictions and barriers towards nature and PA than their counterparts (Baah et al., 2019; Crespo et al., 2000; G. Green et al., 2012; Pratt, 2019; Saffer et al., 2013; Sasidharan3/29/2023 3:21:00 PM, 2001; Waite et al., 2021).

Cultural background can also influence the use and perception of landscape, as different cultures use nature differently (Carr & Williams, 1993; Gentin, 2011; Johnson et al., 2004; Kamičaitytė et al., 2020). As noted above, constraints and barriers can influence people's abilities to form a relationship between nature and PA, yet women may encounter additional barriers as nature has historically been seen as a male-dominated space (Ardener, 1975; K. Green & Keltner, 2017; Kilgour & Parker, 2013; MacBride-Stewart et al., 2016; McNeil et al., 2012; Roth & Basow, 2004; White et al., 2019).

### **Gender and Health**

Across cultures, gender is seen as a classification that structures social life and can greatly influence the way in which people understand themselves, how others treat them, and how they interact with society (Schnebly, 2022). Society's understandings of gender and sex has evolved over time creating more ways for people to live and express their gender identities (Godman, 2018). Recent studies have found that gender fluidity, such as non-binary identification and expression is becoming more commonly accepted (Diamond, 2020; James et al., 2016). Interestingly, despite the evolving understandings of gender and sex, literature to date in both nature and PA has primarily focused on a binary understanding of gender (Tannenbaum et al., 2016). While health, gender, and social literature is moving toward a more broad and fluid understanding of gender, there is still work to be done.

People of colour, immigrants, those living in poverty, people with pre-existing health conditions, women, and Indigenous people are susceptible to gender-based inequities (Hayes & Poland, 2018). Gender-based inequities can result in differences in life expectancy, health behaviours, mortality, and morbidity (Crimmins et al., 2019; Luy & Minagawa, 2014; Mackenbach et al., 2019; Stefko et al., 2020; Vlassoff, 2007). There is almost no aspect of health

that is unaffected by gender norms (Crimmins et al., 2019; Luy & Minagawa, 2014; Vlassoff, 2007). Health inequities are primarily a function of gender inequality, resulting in differences in opportunities (Crimmins et al., 2019; Stefko et al., 2020; Vlassoff, 2007). Differences in opportunities can result in unequal access to health services, nutritious food, adequate housing, and PA (Davidson et al., 2011; Stefko et al., 2020).

Despite the ongoing progress in eliminating social and health disparities, girls are still often marginalized when it comes to their health (Crimmins et al., 2019; Davidson et al., 2011; Heise et al., 2019; Luy & Minagawa, 2014; Read & Gorman, 2010; Stefko et al., 2020). Gender inequality and discrimination faced by women and girls puts their health and wellbeing at risk. For example, women and girls often face barriers when accessing health information and services (Davidson et al., 2011; World Health Organization, 2021b). These barriers include but are not limited to: restrictions on mobility, unequal power relations resulting in lack of access in decision-making, decreased access to education, discriminatory attitudes of communities and healthcare providers, and lack of awareness amongst healthcare providers of the needs and challenges of women and girls (Davidson et al., 2011; World Health Organization, 2021b). The gender inequities girls face regarding their overall health can also effect their opportunities to engage in PA in nature, which is imperative to address in order to improve health and wellbeing (Ponic et al., 2000).

**Girls and PA.** Children begin to exhibit recognition of gender stereotypes at an early age (Rosselli et al., 2020; Schmalz & Kerstetter, 2006). The development of gender stereotypes originates from our society's ideas, beliefs, and assumptions (Azzarito & Solomon, 2005). Stereotypes are a result of how we experience, think, and communicate about people, things, and the social organization of society (Azzarito, 2009; Hodge, 2012). Stereotypes are often gender-



specific and affect various components of a person's life, such as their behaviours and perceptions (Hodge, 2012). Historically, girls were expected to wear dresses, cook and clean, raise children, maintain a beautiful and delicate body, and remain passive, moral, and pure (Griffin, 1998; Woolum, 1998; Zimmerman, 2011). These traditional gender stereotypes are centred around the concept of femininity (Azzarito, 2012; Spencer et al., 2021). Femininity can refer to a set of attributes, behaviors, and roles generally associated with women and girls, such as emphasizing beauty and submissive behaviours (Azzarito, 2009; Bordo, 2004; Garrett, 2004; Whittington, 2006). In Western culture, femininity can also be linked to behaviours related to gentleness, dependency, emotionality, submissiveness, and vanity (Rathus et al., 2013). In addition, girls may be praised for being attractive, carefully groomed, compliant, sweet, pleasant, cooperative, upbeat, and sincere (Whittington, 2006).

The stereotypes connected to femininity result in complexities regarding PA, as PA has historically been linked to masculinity (Ardener, 1975; McNiel et al., 2012; Roth & Basow, 2004; White et al., 2019). Historically masculine traits may contradict feminine stereotypes, as masculinity has centred on behaviours associated with toughness, protectiveness, assertiveness, independence and competitiveness (Whittington, 2006). This creates complexity when it comes to PA, as participating in such activities may undermine the feminine identity (Garrett, 2004; J. Lee & Macdonald, 2010; Wright, 1996). The feminine identity is commonly perceived as being less capable of performing PA due to traditional stereotypes connecting PA to the masculine identity (Beltrán-Carrillo et al., 2018; Lorber & Martin, 2013; MacBride-Stewart et al., 2016).

The connection between PA and masculinity comes from culturally constituted ideas of what behaviours are associated with masculine identity (Connell & Messerschmidt, 2005). Historically, PA has been seen as a masculine activity that requires strength and aggressiveness

to perform, while, by contrast, femininity requires grace and expressivity (B. Evans, 2006; Gentile et al., 2018). In addition, masculinity has been associated with being active, and femininity with being passive (B. Evans, 2006; MacBride-Stewart et al., 2016; Rosselli et al., 2020). As PA is an active pastime, when girls participate their skills and abilities are often called into question based on the assumptions of weakness and submissiveness (Dwyer et al., 2006; B. Evans, 2006; Rosselli et al., 2020; Warren et al., 2018). These gender stereotypes can make it challenging for adolescent girls to negotiate athletic and feminine characteristics, which may result in girls' decreased PA levels (Azzarito et al., 2006; B. Evans, 2006; Garrett, 2004; J. Lee & Macdonald, 2010; Wright, 1996).

When adolescent girls participate in activities that have been traditionally viewed as masculine, they may threaten their feminine appearance (Azzarito et al., 2006; Azzarito & Solomon, 2005; Walseth et al., 2017). To prevent being labelled as less-than-feminine, older adolescent girls may reduce their PA and adhere to the stereotypical feminine appearance to avoid criticism (Beltrán-Carrillo et al., 2018; J. Lee & Macdonald, 2010; Rosselli et al., 2020). Society has constructed a framework for what is thought to be the ideal body, where it outlines what is socially and gender appropriate. Through socialization, girls become increasingly conscious of others' opinions and are taught that engaging in gender-inappropriate behaviours may lead to social disapproval and negative evaluation (Alley & Hicks, 2005; Harrison & Lynch, 2005; Weedon, 1997). When girls do not adhere to gender-specific stereotypes and engage in stereotypical masculine behaviour, such as rough and tumble play, they can become vulnerable to negative evaluation such as name-calling and teasing (McNiel et al., 2012; Schmalz & Kerstetter, 2006). To avoid negative evaluation, adolescent girls may limit their participation in specific activities to be socially accepted, which can therefore affect their ability to form a

connection with PA (Azzarito et al., 2006; Dworkin, 2001; Garrett, 2004; Gorely et al., 2003; Haines et al., 2016; McNiel et al., 2012; Schmalz & Kerstetter, 2006; Vu et al., 2006; Weedon, 1997; Zach & Adiv, 2016).

It is important to acknowledge the changes in stereotypes over the past few decades. Research has found that as the roles women and men have in society change, so has the beliefs towards the attributes of women over the years (Blau & Winkler, 2017; Eagly et al., 2020; Koenig & Eagly, 2014). As discourse is constantly reconstructed and people are continuously changing, this shift in gender stereotypes may be due to the constant renegotiation of social positions (Blau & Winkler, 2017; Eagly et al., 2020; Koenig & Eagly, 2014). Although research has highlighted possible shifts in gender stereotypes (Blau & Winkler, 2017; Eagly et al., 2020; Koenig & Eagly, 2014), it is important to note the position in time, as research studied during later or earlier times may report different findings. Therefore, it is important to continuously highlight and identify the possible shifts in gender stereotypes so we can expand on and strengthen previous research. This research specifically looks at the stereotypes and gender norms older adolescent girls may face during the time of this study; however, the findings may be transferable across time, age, and populations.

**Gender and Nature.** Historically, nature has been viewed as a masculine environment due to the traits needed to thrive in nature, such as resiliency, bravery, and powerfulness. However, during the same era nature was also seen as a representation of femininity and women's health, due to women's innate instinct to nurture their offspring (MacCormack & Strathern, 1980). For example, dated literature suggest that a woman's ability to reproduce and their natural lactation functions, resulted in them being viewed as close to nature because of the animal-like nature of raising, feeding, and caring for children (Ardener, 1975; MacCormack &

Strathern, 1980; Ortner, 1974). Feminine language such as, Fertile Land, Virgin Earth, beautiful/pretty scenery, and the term Mother Earth gives reverence to women being entwined with the environment (Bixby et al., 2015; Khajavei, 2017; McDermott, 2004; Mollett, 2017). Historically, both women and the earth have been treated as a natural resource or commodity, leading ecofeminist theorists to connect the mistreatment of women to the mistreatment of nature (McDermott, 2004; Mollett, 2017). For example, women much like the environment, have been used, altered, and manipulated for profit over the years (Bixby et al., 2015). Women and nature thus share the experiences of exploitation and oppression, resulting from masculinized culture (McDermott, 2004; Mollett, 2017). Additionally, gender can influence the intensity of different climate change effects, as extreme weather events can increase the likelihood of women and girls' experiencing gender-based violence (Alston, 2013; Hayes & Poland, 2018; Kaijser & Kronsell, 2014; Stone et al., 2022; Watts et al., 2021).

Although women and girls' relationship with nature is still complex in western society, adolescent girls and young women have begun advocating for climate change action (Stark et al., 2021). Recently, adolescent girls and young women have engaged in significant climate change advocacy. Many of these young women choose to address climate change because they have been and continue to be impacted by it (Greta's not the Only one, 2019). By advocating for climate change action, adolescent girls are contradicting the traditional, social, and cultural norms around nature. Although women and young girls in western society are beginning to advocate for climate change, Indigenous people, many whom are women, have been advocating for the protection of nature for some time now (M. K. Dennis & Bell, 2020). Furthermore, Indigenous people are among the populations that contribute the least to emissions and are seen as the protectors of the earth's biodiversity (M. K. Dennis & Bell, 2020; Garnier et al., 2020).

However, many Indigenous advocates often go unrecognized as climate change activists (M. K. Dennis & Bell, 2020).

Despite evidence that women may connect and relate to nature, historically, nature has been seen as a traditionally male environment (Hively & El-Alayli, 2014; McNeil et al., 2012; White et al., 2019; Woodgate & Skarlato, 2015). One way in which men dominate nature is through the activity of hunting, which is a predominantly male activity that is historically associated with violence and killing (Lee et al., 2001; Warren, 2015). Nature can be viewed as a place where men and boys may be powerful, adventurer, resilient, brave, and resourceful (Warren, 2015; Whittington, 2006). These masculine traits are perceived as essential for success in outdoor activities, leading PA in nature to be portrayed as a masculine domain, where man-dominated activities, such as scouting, hunting, and hiking, are encouraged (Ardener, 1975; White et al., 2019; Whittington, 2006). As PA in nature has traditionally been seen as contradictory to feminine traits, women have historically been excluded from common nature and PA pursuits.

Women's experiences in nature are often affected by constraining social beliefs about what women can and cannot, or should and should not, do in the outdoors (Brussoni et al., 2020; Lee et al., 2001; Marzi et al., 2018; McAnirlin & Maddox, 2020). Women have traditionally been socialized to put the needs of others ahead of their own (Lee et al., 2001). In addition, the idea that many nature activities are not appropriate for women is yet another example of how women and girls may feel discouraged to develop nature skills (Ghimire et al., 2014; Henderson & Shaw, 2006; Lee et al., 2001). Gendered assumptions such as, a lack of navigational skill and the fear of being alone can affect adolescent girls' relationship with nature (Brussoni et al., 2020; Ghimire et al., 2014; Henderson & Shaw, 2006; Lee et al., 2001; Marzi et al., 2018; McAnirlin &

Maddox, 2020). Stereotypes aligning nature to the masculine identity, can affect girls' abilities to form a relationship between PA and nature by enforcing the idea that outside spaces are not for girls (Hively & El-Alayli, 2014; McNiel et al., 2012).

Over the past decade, it has been found that adolescents, more specifically older adolescent girls, have been spending less time outside (Larson et al., 2011; McNiel et al., 2012; Roth & Basow, 2004). This may be due to the fact that many girls feel as though when they participate in PA in nature they can face a complex dilemma of resisting oppressive stereotypes of femininity (Lugg, 2003). Additionally, if girls challenge assumptions about their abilities, appearance, and behaviours, they may disrupt the traditional idea of femininity (McNiel et al., 2012; Whittington, 2006; Wittmer, 2001). Recent research, however, has found that adolescent girls can connect with nature and associate being outside with health and wellbeing (Spencer et al., 2021; Woodgate & Skarlato, 2015). When girls are able to navigate these challenges, they are able to demonstrate their connection with nature and its association with health and wellbeing (Chillón et al., 2013; Dunton et al., 2010; Spencer et al., 2021; Woodgate & Skarlato, 2015). In addition, a study found that nature can also provide girls with a sense of emotional safety to negotiate the complex gender stereotypes they face (Spencer et al., 2021).

**Girls, Nature, and PA.** Despite gender norms and stereotypes, adolescent girls can and do connect nature and PA. For instance, adolescent girls can connect with nature and PA through active transportation. Active transportation can act as a connector between nature and PA while improving older adolescent girls' physical, mental, and social wellbeing (Chillón et al., 2013; Dunton et al., 2010). When older adolescent girls can incorporate natural environments into their routines, they are able to perform PA independently or with family and friends (Dunton et al., 2010; Janha et al., 2020; Kudlacek et al., 2020; Ries et al., 2008; Spencer et al., 2021; Thomas,

2015; A. L. Ward et al., 2018; Woodgate & Skarlato, 2015). When adolescent girls can socialize with family and friends while connecting with nature and PA, they may feel more encouraged to engage in PA and find emotional support, familiarity, reassurance, and comfort, which can lead to stress and anxiety reduction (Bojorquez & Ojeda-Revah, 2018; Cobar et al., 2017; Shan, 2014; Tannehill et al., 2015; Thomas, 2015).

The perceived safety of outside PA environments can also affect older adolescent girls' connection between nature and PA. In particular, girls' level of fear and perception of risk can significantly affect their relationship between PA and nature (Chaparro et al., 2019; Perez et al., 2017; Roman et al., 2013; Shores et al., 2007). When older adolescent girls have high levels of fear, they are less likely to engage in PA and outdoor recreation (Brussoni et al., 2020; Carver et al., 2012; Ding et al., 2012; Kilgour & Parker, 2013; Perez et al., 2017; Rišová & Sládeková Madajová, 2020; Roman et al., 2013). When girls feel unsafe in natural environments, they may become hyper-aware, leading them to avoid specific areas or refrain from pursuing independent activities, such as walking or hiking (Carver et al., 2012; Kilgour & Parker, 2013). In addition, the proximity of a natural environment or green space may also impact the connections older adolescent girls form between nature and PA. When a neighbourhood has parks or open spaces, older adolescent girls are more likely to participate in PA (Babey et al., 2015; Humbert et al., 2008; Mitra et al., 2020; Oliveira et al., 2020; Schultz et al., 2017).

Older adolescent girls' perceptions of the infrastructure and aesthetics of natural environments may impact their connection between nature and PA. Older adolescent girls were found to engage in more PA when the natural environment had multiple features, such as playgrounds, fields, tennis courts and trails, as this promoted PA opportunities (Cohen et al., 2017; Floyd et al., 2011; Kaczynski et al., 2011; Ries et al., 2008; Sarmiento et al., 2017; Van

Hecke et al., 2018). In addition, when a natural environment is aesthetically pleasing, older adolescent girls are more likely to visit these spaces, connect with their surroundings, and engage in PA (Oliveira et al., 2020; Roman et al., 2013). When parks and outside areas incorporate aspects of beauty, scenery, colour, and views, older adolescent girls may feel more enticed to visit these environments, resulting in more opportunities for PA (Oppliger et al., 2019; Ries et al., 2008; Shan, 2014; Spencer et al., 2021). When nature and PA incorporate positive aspects, such as familiarity and comfort, adolescent girls are able to form a relationship between nature and PA regardless of the traditional gender norms and stereotypes associated with PA and nature.

### **Critique of the Literature**

As discussed, previous research has found that girls can have a complex relationship with both nature and PA, yet there has been limited research on the relationship older adolescent girls can form between nature and PA (B. Evans, 2006; Gray et al., 2015; White et al., 2019). This is a critical gap to fill as the stereotypes older adolescent girls face regarding nature and PA may contribute to their wellbeing. Although research has identified that adolescent girls are faced with stereotypes when it comes to PA and nature, it is important to identify how older adolescent girls experience these stereotypes and how they affect the perceived relationship between nature and PA.

Similarly, the existing literature is overwhelmingly focused on young girls (Colley et al., 2017; Dumith et al., 2011; Janssen & LeBlanc, 2010; ParticipACTION, 2020; Pioreschi & Micklesfield, 2016). For example, a scoping review by Spencer et al. (2015), explored gender and PA in girls and young women, and found that most reviewed documents focused on early-to-middle adolescents, with only one article focusing exclusively on older adolescent girls. This literature gap is necessary to fill as older adolescent girls become more sedentary and less active



(Colley et al., 2017; Guthold et al., 2020; ParticipACTION, 2020; Thompson & Wadsworth, 2012).

In addition, though studies have suggested that youths' connection with nature has declined over the past decade (Gray et al., 2015; Larson et al., 2011; Louv, 2009), present literature has not explored stereotypes associated with nature, such as nature being male-dominated environment, where traits such as resourcefulness and powerfulness are considered essential (Hively & El-Alayli, 2014; McNiel et al., 2012; White et al., 2019; Whittington, 2006; Woodgate & Skarlato, 2015). These stereotypes may impede girls from connecting with nature, leading to adolescent girls spending less time in nature. Stereotypes regarding nature and PA often contradict femininity, as these activities require masculine traits such as strength, aggressiveness, resiliency, and bravery (B. Evans, 2006; Gentile et al., 2018; Whittington, 2006).

Due to social norms regarding femininity, girls may restrict their participation in outdoor pursuits such as hiking, camping, and hunting, in order to avoid negative evaluation from peers (Alley & Hicks, 2005; Gentile et al., 2018; McNiel et al., 2012; Pinch et al., 2008; E. A. Richardson & Mitchell, 2010). Not only is there inadequate literature concerning PA in older adolescent girls, but there is also limited research on how girls connect with nature, specifically through PA (B. Evans, 2006; Gray et al., 2015). PA in nature has the potential to bring positive mental and physical health benefits to all people, but women may be missing out on these benefits due to constraining social beliefs and gendered assumptions about what women can and cannot do in the outdoors (McAnirlin & Maddox, 2020). This is a critical gap to fill as the stereotypes and gender norms associated with nature may be contributing to the contradictory relationship that women often have with PA in nature.

Although there are several studies that focused on how PA performed in nature can improve mental and physical health (Gladwell et al., 2013; Herrington & Brussoni, 2015; Mayer et al., 2009; Mitchell, 2013; Nisbet & Zelenski, 2011; ParticipACTION, 2020; Thompson Coon et al., 2011; White et al., 2019), there is not one specific study that considers the direct benefits older adolescent girls may receive from connecting with nature and PA. Stereotypes concerning PA and nature intersect, overlap, and blend together as both PA and nature have historically been identified as male-dominated. Further investigation of the complexities and contradictions older adolescent girls encounter while connecting with PA in nature is required to fully understand their unique experiences.

## **Chapter Two Summary**

This chapter situated the proposed study within the literature, suggesting adolescent girls may have a complex relationship between nature and PA due to gender norms and stereotypes. Historically, western society expected girls to maintain a beautiful and delicate body, and remain passive. These stereotypes contradict traditional traits that are perceived as essential for success in outdoor PA. Nature can be viewed as a place where male-dominated activities occur, which may involve being powerful, adventurous, resilient, brave, and resourceful. It is evident that adolescent girls have to navigate challenges regarding PA and nature, yet there is a gap in the literature about the perceived connection adolescent girls can form between PA and nature. Previous literature has lacked a focus on older adolescent girls and their relationship between nature and PA. This study's aim is to fill these gaps by using qualitative description to understand older adolescent girls' perceptions of the relationship between nature and PA.

## **Chapter Three: Methodology**

This chapter outlines the methodology and methods used for this study. To begin, the purpose and research questions will be restated, followed by a description of the conceptual framework that was used to inform the study. The conceptual framework included a constructivist paradigm and used qualitative description with a feminist lens as the strategy of inquiry. Characteristics of the participants and setting will then be described, as well as recruitment techniques. The processes for data collection, semi-structured interviews, and thematic analysis are explained. Predetermined measures to facilitate quality and rigour will be outlined. This section will also include the researcher's role in the study and ethical considerations.

### **Study Purpose, Question, and Objectives**

The purpose of this study was to answer the research question “What are older adolescent girls’ perceptions of the relationship between nature and PA?” The study objectives are: (1) To understand how older adolescent girls perceive their connection with nature; (2) To explore how older adolescent girls’ connection with nature relates to PA; (3) To understand how older adolescent girls experience gender-, nature-, and PA-related stereotypes.

### **Paradigm: Constructivism**

A constructivist paradigm guided this study. A constructivist paradigm seeks to understand the lived experiences from the viewpoint of those who have lived through the experiences (Creswell & Poth, 2018; Guba & Lincoln, 1994). The perceptions and realities of peoples’ lived experiences are used to describe socially constructed knowledge and answer the research question and address the three objectives (Creswell & Poth, 2018; Guba & Lincoln, 1994). Constructivism acknowledges that our understanding of lived experiences is complex,

resulting in people's perceptions of the same event to vary (Guba & Lincoln, 1994). Individual perceptions and interpretations of reality are subjective, resulting in multiple truths about one experience (Creswell, 2013; Denzin & Lincoln, 2011; Rubin & Rubin, 2021). Constructivism also emphasizes that knowledge is socially constructed, meaning that the researcher and participants will have different interpretations and understandings due to their experiences and personal, cultural, or historical values (Appleton & King, 1997; Creswell, 2013; Guba & Lincoln, 1994; Rubin & Rubin, 2021; Schwandt, 2000; Weaver & Olson, 2006).

The current study utilized a constructivist lens to understand older adolescent girls' connections with nature and PA. Constructivism was the best paradigm for this research because it allowed the focus to be on the perspective of each participant (Creswell, 2013; Doucet et al., 2010). This paradigm acknowledges participant perceptions, experiences, and realities, allowing individuals' concerns to be vocalized and acknowledged (J. Green & Thorogood, 2013; Guba & Lincoln, 1994; Weaver & Olson, 2006). A constructivist approach can provide a deep understanding of the meaning older adolescent girls have on their experiences with nature and PA (Doucet et al., 2010). As girls have unique experiences with nature and PA, it is important to understand their shared and subjective meanings (Guba & Lincoln, 1994; Lucibello et al., 2021; Weaver & Olson, 2006). A constructivist inquiry allowed this study to explore girls' views and the meanings attached to their experiences, while also considering how factors in participants' lives may shape their experiences and reality (J. Green & Thorogood, 2013).

Constructivism was used in this study to explore adolescent girls' perceptions about the relationship between nature and PA. As constructivism recognizes the value in individual perspectives, multiple perspectives were revealed during the interviews (Burr, 2015; Doucet et al., 2010; Ponterotto, 2005). In addition, using a constructivist paradigm allowed the impact of

societal norms to be explored and discussed (Jung, 2019). As, this study aimed to explore adolescent girls' relationships between nature and PA, it was important to obtain their perspectives to understand their unique experiences fully. The constructivism framework is a useful foundation as it has an interpretive structure that has been used in previous studies with adolescent girls and with similar data collection methods (Dowd et al., 2015; Hill, 2014; Laird et al., 2018; Lucibello et al., 2021; Vani et al., 2021).

### **Strategy of Inquiry: Qualitative Description**

Qualitative description (QD) was chosen as the methodology for this study as it allows for a rich straightforward description of an experience or event. QD transforms experiences into words by allowing unstructured life experiences to take on meaning and provides insights and understandings about lived events within the context in which they are experienced (Thompson Burdine et al., 2021; Thorne, 2000, 2016; Thorne et al., 1997, 2004). QD allows the researcher to stay close to the data in the analysis and dissemination processes (Thompson Burdine et al., 2021). While the use of QD as a qualitative research approach may be criticized for being too simple, lacking rigour, and being less interpretive than other approaches, when used in the proper context, it can be just as credible as other qualitative approaches (Sandelowski, 2000, 2010). QD is an applicable inquiry across health professions when a study aims to explore the subjective experience of participants to increase knowledge (Thompson Burdine et al., 2021). QD utilizes minimal interpretation, yet is not completely free of interpretation due to the presence of the researcher's perspective when describing the topic of events (Neergaard et al., 2009; Nusbaum et al., 2008; Sandelowski, 2000, 2010). This approach accepts multiple interpretations of reality through subjective interpretation supported by participants' descriptions of their experiences (Creswell & Creswell, 2018; Thorne et al., 2004).

QD was chosen as the methodology for this project because little research has been conducted on older adolescent girls' relationship between nature and PA. The exploratory nature of this project fits well with a QD approach as it recognizes multiple interpretations of reality and that multiple perspectives can be described through subjective interpretation supported by participants' descriptions of their experiences (Creswell & Creswell, 2018; Thorne et al., 2004). As QD involves little interpretation, I was able to stay closer to each participant's experiences with nature and PA, allowing for multiple truths to be revealed about each lived experience (Neergaard et al., 2009; Sandelowski, 2000). An important aspect of QD is that the information represents the perspective of the participant to ensure that the voices of those affected are heard (Sandelowski, 2000).

QD may also encompass overtones of other qualitative methodologies (Neergaard et al., 2009; Sandelowski, 2000). I therefore conducted my study using QD with overtones of feminist theory. Feminist theory utilizes research principles that aim to help decrease biases that result from sexism and other forms of oppression (Brisolara et al., 2014; Intemann, 2012). This is done by allowing different perspectives of empowerment to challenge the knowledge of those who occupy privileged positions (Hesse-Biber, 2006). Feminist theory provides opportunity to eliminate boundaries of dominant forms of knowledge and believes that what is true for dominant groups must also be true for women and other oppressed groups (Hesse-Biber, 2006). By challenging dominant discourses of knowledge, women are able to embrace the creativity and build knowledge within the tensions of differences (Brisolara et al., 2014; Hesse-Biber, 2006).

As this research values women and acknowledges that women are the experts of their own lives, a feminist perspective was necessary (Brisolara et al., 2014; DeVault & Gross, 2012; Kushner & Morrow, 2003; Reinhartz, 1992). Feminist research places emphasis on the

experiences of women, centring and highlighting women's diverse and varied circumstances and the social and cultural norms and institutions that influence their lives (Currie & Wiesenberg, 2003; Kinser & Lewis, 2005). By placing emphasis on the experiences of each participant I was able to explore and understand the ways in which gender and power shape each participants perspective (Dankoski, 2000; Hesse-Biber, 2006; Hesse-Biber, 2013; Hesse-Biber & Leavy, 2007; Weedon, 1987, 1997). By utilizing a feminist lens during interviews participants were able to disrupts traditional ways of knowing by create their own new meanings of their experiences (Hesse-Biber, 2006; Intemann, 2012). Additionally, applying a feminist lens allowed me to ask questions that placed girls and their experiences at the center inquiry (DeVault & Gross, 2012; Hesse-Biber, 2006). A key component of feminist research is the researchers ability to pay attention to reflexivity (Hesse-Biber, 2006). As reflexivity is a key component of feminist research I recognized that my interpretation of participants words may be influenced by my own experiences and assumptions. This interpretation may have affected both the interviews and the analysis. More details regarding reflectivity can be found in chapter one under the heading Research Reflectivity.

Feminist QD allowed me to gain access to the meanings that adolescent girls attribute to their connection between nature and PA (Caelli et al., 2003; Merriam, 1998; Sandelowski, 2000). A Feminist QD inquiry allowed me to gather information directly from the adolescent girls while employing a subjective outlook and recognizing that perceptions of the relationship between nature and PA may vary (Parahoo, 2014). By using a naturalistic approach, I was able to identify the descriptions each participant gave to their experiences and how these can be influenced by both their perceptions as well as my own (Parahoo, 2014; Sandelowski, 2000, 2010). As explained in the below data collection procedures, I conducted one-on-one semi-structured

interviews with older adolescent girls. QD is well-aligned with interviews as the interviews processes allowed participants to explain their experiences and allowed for multiple perspectives to be recognized and described (Neergaard et al., 2009; Sandelowski, 2000).

## **Participants**

Inclusion and exclusion criteria were based on participants' age and gender identity. The study population includes older adolescent girls living in Nova Scotia, Canada. Older adolescent girls were the focus of this research due to the lack of research pertaining to this population (Spencer et al., 2015) and their relationship with nature and PA (B. Evans, 2006; Gray et al., 2015; Spencer et al., 2021; White et al., 2019). To be included in this study, participants had to be between the ages of 16 and 19, as this is how the World Health Organization (WHO) defines older adolescents (World Health Organization, 2020). In addition, biological sex was not used in this study, instead anyone who identified as a girl or young woman of the required age range was eligible to participate. To ensure the inclusion of girls living in Nova Scotia, potential participants had to currently reside in the province of Nova Scotia for at least one year and speak English to be eligible to participate in this study.

This study included ten participants, which is consistent with recent research investigating adolescent girls' relationships with PA (Clark et al., 2011; Vani et al., 2021; Watson et al., 2015) and within the range of sample sizes of relevant studies that used QD (Dickson, 2008; Kayes et al., 2011; Nyvang et al., 2016; Vani et al., 2021; Wiens et al., 2014). Qualitative research tends to use a small sample size to allow the researcher to connect with participants (LoBiondo-Wood & Haber, 2014; Sandelowski, 1986). The goal of this sample size was to collect rich descriptions of the experiences and perceptions of older adolescent girls' relationships with nature and PA until sufficient data containing rich information allowed



patterns to develop (Bradshaw et al., 2017; Morse, 2000; Proctor & Allan, 2006).

**Sampling.** Eligible participants for the interviews were recruited through purposeful sampling. Purposeful sampling is an appropriate method to use in qualitative research to obtain rich descriptions (Palinkas et al., 2015; Sandelowski, 2000) and allows the researcher to recruit people who are knowledgeable or experienced with the topic of interest (Bradshaw et al., 2017; Creswell & Poth, 2018). Purposeful sampling was used in this study to recruit participants with experience regarding the relationships between nature and PA (Palinkas et al., 2015; Sandelowski, 2000). Similar work in the PA field has used purposeful sampling to gain insight on a specific topic (Humbert et al., 2008; Spencer et al., 2021). By implementing purposeful sampling, participants were eligible to participate if they identified as a girl between the ages of 16-19 with experiences, connections, or relationships with nature and PA. Recruiting a sample with previous experiences within the context of interest ensured that each participant could provide rich information on their relationship between nature and PA (Patton, 2014; Sandelowski, 2000).

**Recruitment.** Recruitment occurred electronically through virtual posters to reach a wide audience. The poster included a summary of the study, its purpose, the inclusion criteria, and was emailed strategically by the researcher to relevant organizations and societies (see Appendix A for poster). In order to recruit a diverse population, community gatekeepers, such as people in leadership positions or cultural insiders who share the same background as the target population were approached (Birman, 2006; B. P. Dennis & Neese, 2000; Eide & Allen, 2005; Knobf et al., 2007; Neufeld et al., 2001; Ogilvie et al., 2008; Russell et al., 2008; Yancey et al., 2006). For example, virtual posters were emailed to organizations and societies that may be in frequent contact or connection with diverse groups, such as the International Centre, the Indigenous

Student Centre, and the Black Student Advisory Centre at Dalhousie University (Appendix B). In addition, content focused recruitment was used to recruit participants that have experiences with the study topic, such as the Adventure Earth Centre, an organization within Halifax, Halifax Outdoor Recreation, Nova Scotia Girl Guides, Nova Scotia Outdoor Network, and Hike Nova Scotia. The poster was also posted on Facebook groups such as, Women Who Explore Nova Scotia and Nova Scotia Hiking and Adventures Group.

The poster contained my contact information, so those interested in participating in the study had the means to contact me. All potential participants reached out via email expressing their interest and were sent the study consent forms, which contained a description of the study and the study's inclusion criteria. Participants were asked to review the documents to ensure they met the study's inclusion criteria. If they felt they met the inclusion criteria, they were then asked if they would like to participate in a one-on-one or group interview, and arrangements were made.

**Location.** This project's setting was remote due to the global pandemic and the location of each participant. Ten interviews took place over Microsoft Teams. Microsoft Teams interviews were recorded using a handheld audio recorder and GarageBand, an iOS audio recording software application from my computer.

### **Data Collection**

Data collection involved one-on-one semi-structured, online interviews. Participants had the option to participate in a group interview if they wished, however no participants requested group interviews. The purpose of a qualitative interview is to explore views, experiences, or beliefs about the study topic (DiCicco-Bloom & Crabtree, 2006; Gill et al., 2008). Qualitative interviews can take form in three different ways including structured, semi-structured, and

unstructured (DiCicco-Bloom & Crabtree, 2006; Gill et al., 2008). Semi-structured interviews can occur individually or in groups and are the most widely used form for qualitative interviews (DiCicco-Bloom & Crabtree, 2006; Gill et al., 2008). Semi-structured interviews are organized using a set of pre-set questions that were open-ended, with other questions forming from the dialogue between interviewer and interviewee (DiCicco-Bloom & Crabtree, 2006; Gill et al., 2008). Individual interviews allow the interviewer to dive deep into personal experiences, while group interviews focus on a broader range of experiences but produce fewer profound experiences due to the public setting (DiCicco-Bloom & Crabtree, 2006; Gill et al., 2008). Interviews align with a feminist QD approach, as their opened-ended nature allows for multiple perspectives, experiences, and knowledge to be recognized (Neergaard et al., 2009; Sandelowski, 2000). In addition, interviews can generate a depth of understanding of the participants' point of view, provide flexibility in the interviewing, and foster a relationship with the participants (Rubin & Rubin, 2021).

Interview guides contained open-ended questions and follow-up or probing questions. The interview guide (Appendix C) was developed in collaboration with my research supervisor. The open-ended questions allowed me to explore the research topic with more depth than breadth, whereas the probes were used to help maintain the specific focus of the research and clarify unclear exchanges (Rubin & Rubin, 2021). An example question is: "How does identifying as a girl or woman impact how you experience nature and PA?"

The interviews followed a conversational format to build trust, develop a bond, and help equalize the power dynamics within the interviewer-interviewee relationship (Hesse-Biber & Leavy, 2007). At the start of each interview, I introduced myself to each participant and provided some background information on myself. To start, I explained my academic background, how I

was a Masters student at Dalhousie in the Health Promotion field and that I was conducting this research for my thesis. Additionally, I provided a background on why I decided to research this topic and highlighted my personal interest in nature and PA. It was my hope that expressing my interests with nature and PA, participants would feel more opened to express their own feelings. At the start of each interview, I read the verbal consent form to each participant. In the verbal consent form, participants were asked if they consented to their interviewing being audio-recorded. All participants consented to their interview being audio-recorded.

In addition to the one-on-one or group interviews, participants were asked to complete an electronic survey on Microsoft Forms (See Appendix D). The reason for the additional survey was to collect demographic information on each participant to describe the participants as a group for transferability. The demographic survey was not used to connect individuals to their responses in the interview. A link for the demographic survey was emailed to all participants who completed the study.

### **Analytic Approach**

**Data Management.** All interviews were audio recorded as it provided a detailed record of what was said during the interview (Gill et al., 2008). Audio recordings were made with handheld audio-recorder and GarageBand, version 10.4.5 to ensure high-quality audio recordings, as this can prevent difficulties later in the research process (DiCicco-Bloom & Crabtree, 2006). Shortly after each interview, I transcribed the audio recordings. While I was transcribing each interview, I removed all personally identifying information. For example, participants' names were replaced with pseudonyms, and places or organizations were replaced with square brackets with a description such as [park] or [organization].

In addition, audio recordings were stored on a password protected file on my computer

and later deleted following transcription. After transcripts were de-identified, they were uploaded to OneDrive and shared as a password protect file to my supervisor. Transcripts were also downloaded to NVivo 12 to allow for coding. This project was labelled PA&NATURE on NVivo and requires a password to access. The demographic survey was sent out via forms on Microsoft 365. As submissions were only used to describe the participants as a group, they were submitted anonymous and only accessible through my Microsoft 365 account.

**Data Analysis.** This study utilized thematic analysis (TA) for its data analysis (Braun & Clarke, 2006, 2021b). TA is a relevant qualitative research method which involves searching for patterns and themes (Braun & Clarke, 2006, 2021a, 2021c; Sandelowski, 2000). TA does not require a detailed theoretical approach and can offer an accessible form of analysis, especially when researching a phenomenon that little is known about (Braun & Clarke, 2006). TA can be used to provide a rich description of participants' experiences and perspectives while accounting for multiple realities (Braun & Clarke, 2006). This study specifically utilized reflexive TA. A key component of reflexive TA is that the researcher's position and subjectivity is necessary, unavoidable, and an integral ingredient of the process and should not be removed or avoided (Braun & Clarke, 2021a, 2021b, 2021c). Reflexivity involves exploring and examining how the researchers own experiences, pre-existing knowledge, and social position influence and contribute to the research process (Braun & Clarke, 2021b, 2021c). The flexibility of reflexive TA as a method, rather than a fully-embedded methodology, means it can be undertaken with different guiding theories, such as the constructionist approach utilized in this study (Braun & Clarke, 2021b, 2021c). A constructionist approach seeks to examine the social construction of meaning of realities articulated by the participants, as reality is a manifestation of individuals' sense-making, there is no one true reality (Braun & Clarke, 2021b, 2021c).

Reflexive TA was selected for its flexibility, as this technique allowed me to approach the data with a feminist lens, but also to explore the unique perspectives of our participants. Reflexive TA with a feminist lens allowed me to provide a rich description of the older adolescent girls' experiences and perceptions with nature and PA, while also allowing each participant to express their own realities (Braun & Clarke, 2021a; Sandelowski, 2000). As little is known within the literature on this specific topic, reflexive TA with a feminist lens aligned well with the research questions, as it can be a useful method when studies are investigating an under-researched area and marginalized populations (Braun & Clarke, 2006, 2021c). In particular, reflexive TA with a feminist lens allowed me to code the data with an awareness of gender-based oppression and how girls and women's ways of being and identities have been marginalized in society. Within reflexive TA, the coding process is critical to theme development, in the sense that themes are outcome of coding, themes are developed through coding, and both codes and themes do not emerge from the data (Braun & Clarke, 2019, 2021b, 2021c). Themes also do not explain themselves once developed; instead it is the researcher who needs to interpret, elaborate, and explain the relevance of the themes (Braun & Clarke, 2019, 2021b, 2021c).

During the analysis, I utilized an inductive approach when coding each interview. Inductive analysis is a process of coding the data without trying to fit the data into a pre-existing coding frame and instead themes identified are strongly linked to the data themselves (DeVault et al, 2012). As women's perspectives have often been silenced or ignored an inductive approach with a feminist lens allowed me to develop themes directly from participants language. Additionally, as it is important to build rapport when conducting feminist research, mutual sharing was utilized in order to provide trust between interviewer and interviewee (Thwaites,

2017). Building rapport with each participant allowed me to use participants' own words when generating codes and developing themes (Jenkinson et al., 2017; McDougall & McGeorge, 2014). As reflexivity is a hallmark of feminist research, it was important for me to reflect on my own positionings, and express my reflexivity to each participant (Harding, 2007; Jankowski et al., 2017). As TA is an iterative process where the phases are not totally distinct, I was able to maintain a flexible and organic approach.

This research followed the guide to reflexive TA developed by Braun and Clarke (2006, 2021b). Reflexive TA is a non-linear process that involves 6 stages: (1) familiarizing yourself with the data; (2) systematically coding data; (3) generating initial themes from coded and collected data; (4) reviewing each initial theme; (5) defining each theme; and (6) producing the report. These six phases were used as a guideline in this study. First, I became familiar with the data through conducting transcription and then reading and re-reading the interviews (Braun & Clarke, 2006, 2021b). Once I was familiar with the data, I began initial coding which involved systematic data coding (Braun & Clarke, 2006, 2021b). To organize and code the data, open coding was conducted through reading and re-reading, which allowed the identification of codes throughout the data (Miles & Huberman, 1994). Examples of codes were: connecting with nature through PA; nature as opportunity to connect with friends, family, and self; PA- nature as an escape; and accessibility to nature. After coding the data, analysis at the broader level was conducted to generate and develop themes (Braun & Clarke, 2006, 2021c). In this step, I looked for relationships between different codes to understand how they could combine to form themes that represent the data as a whole. Recurring and significant codes were grouped and collapsed together to generate themes (Braun & Clarke, 2006; Nusbaum et al., 2008). For example, I decided to merge the following codes into one theme: “community resources”, “accessibility to

nature”, and “neighborhood resources”, and created the theme titled: “girls environment effects their relationship with nature and PA”. Each of these codes described different factors that influenced adolescent girls experiences with nature and PA (Braun & Clarke, 2006).

In the fourth phase, I reviewed themes to identify whether each theme provided an accurate representation of the data, if there was enough data to support each theme, or if they should be broken down further or removed (Braun & Clarke, 2006, 2021b). Next, I defined and named each theme so that they are easily understood and accurately represented the data (Braun & Clarke, 2006, 2021c). As this research employed QD with a feminist lens, the themes were developed from the adolescent girls’ stories and illustrate their perception of their relationship between nature and PA; however some level of interpretation was required to understand the participants’ perspectives. Additionally, my level of training, experience, and subjectivity may have also influenced my interpretation of codes and themes (Braun & Clarke, 2021a). Coding, theming, and naming was an ongoing process and was overviewed by my supervisor who offered additional insight, provided support to deepen my analysis, and enhance reflexivity (Braun & Clarke, 2021a).

### **Quality and Rigour**

Qualitative research must be evaluated differently than quantitative research in terms of quality and rigour (Bradshaw et al., 2017; Creswell, 2013). To satisfy quality and rigor, qualitative research should demonstrate credibility, confirmability, dependability, authenticity, and transferability, which all demonstrate trustworthiness (Bradshaw et al., 2017; Creswell & Creswell, 2018; Creswell & Poth, 2018; Graneheim & Lundman, 2004; Lincoln & Guba, 1985; Miles & Huberman, 1994). To achieve trustworthiness this study strived to establish the principals of credibility, confirmability, dependability, and transferability.



**Credibility.** Credibility refers to how accurately the research addresses the intended research question and objectives (Braun & Clarke, 2006, 2021). Credibility can be partly achieved during an interview by ensuring participants are well-informed. To achieve credibility, I expressed compassion and empathy during each interview and repeated specific points back to participants. I repeated certain points back to participants as I wanted to ensure I accurately understood and interpreted the meaning of their word (Korstjens & Moser, 2018; Lincoln & Guba, 1985).

**Confirmability.** Confirmability is the degree to which findings are consistent and are based on the participants' responses (Guba & Lincoln, 1982; Korstjens & Moser, 2018; Tobin & Begley, 2004). To achieve confirmability, participants demographics were described and direct quotes from the participants were used in my findings section (Bradshaw et al., 2017).

**Dependability.** Dependability refers to the extent that other researchers could repeat the study. This involves identifying and explaining changes in the research design, if there were any influences on the data collection and analysis, and how themes developed (Guba & Lincoln, 1982; Korstjens & Moser, 2018; Tobin & Begley, 2004). To ensure dependability, I recorded the reasoning for sample size and the methods for recruitment, data collection, and analysis (Bradshaw et al., 2017). In addition, I was transparent about any changes to the study and remained consistent throughout the study process (Bradshaw et al., 2017).

**Transferability.** Transferability refers to the extent to which a reader might use the information gained from a research study for their own practice and/or research (Lincoln & Guba, 1985; S. Morrow, 2005). In the case of this research, transferability was established by providing a rich and detailed description of participants' experiences and perceptions, allowing for the transferability of results to a similar context or setting (Bradshaw et al., 2017; S. Morrow,

2005). By upholding transferability, the findings from this study can be understood in different contexts and be transferred to other studies in similar fields (Bradshaw et al., 2017; S. Morrow, 2005).

### **Ethical Considerations**

Ethical approval was established through Dalhousie University Research Ethics Board and abided by the TCPS guidelines. I have completed the TCPS training and have obtained my certificate. First, as the researcher, I was responsible for respecting the participant's rights and needs. Participants were provided information regarding the study's purpose, the potential associated risks, and were advised on how the results could benefit them and others prior to providing consent. There was no deception involved in this study.

Participants were first sent the consent form (Appendix E) via email to ensure they were eligible to participate and for their review before the interview. Once participants had the opportunity to review the consent form and were deemed eligible to participate a date and time for their interview was established via email. At the beginning of each interview the verbal consent form (Appendix F) was read, and verbal consent was obtained from all participants. The informed and verbal consent forms were based on the templates and requirements from the REB website (Appendix E & F). All participants were given the opportunity to ask any questions through email or face-to-face on the day of the interview.

Confidentiality was a consideration for this study as qualitative analysis attempts to gather rich data, which heightens the risk of participant identification. Confidentiality was attempted on every aspect of the study from the researcher's end, and participants were notified of this potential risk before agreeing to participate. To mitigate the risk of identities being uncovered, I first labelled all audio recordings with participants' initials instead of their names.

Once transcription occurred, audio recordings were deleted, and transcripts were again labelled with participants' initials and stored on OneDrive with a password-protected file. All identifying information was removed during transcription, and participants were given pseudonyms.

Participants' pseudonyms were used during the data analysis and dissemination of results.

Depending on the participant's background, topics such as gender issues could evoke strong emotions or raise traumatic experiences, leading to unintended harm. Additionally, sensitive topics such as, stereotypes and gender norms can evoke strong emotions. For these reasons, a list of formal and non-formal wellbeing resources were emailed to participants along with the consent forms and were made available at every interview (Appendix G). Participants were also reminded that they could refrain from answering any questions, stop participating at any time, and take breaks if/when they wish.

### **Chapter Three Summary**

This study used a constructivism paradigm and a QD approach with a feminist lens as its philosophical underpinning. This methodology was used to explore how older adolescent girls perceive the connection between nature and PA. To understand the relationship that adolescent girls perceive between nature and PA, older adolescent girls were recruited through electronic posters. Ten older adolescent girls participated in one-on-one semi structured online interviews. Data was analyzed using reflexive TA, and trustworthiness was established throughout the analysis.

## **Chapter 4: Findings**

This study utilized a constructivism paradigm with a feminist qualitative descriptive (QD) design as its methodology. To guide the analysis, reflexive thematic analysis (TA) with a feminist lens was used for theme development (Braun & Clarke, 2006, 2021a, 2021b). Reflexive TA with a feminist lens allowed me to gain access to the meanings that adolescent girls attribute to their connection between nature PA. Additionally, it allowed me to code these meanings with an awareness of gender-based oppression and how girls and women have been marginalized in society. To start, a description of participants and their characteristics is provided. Four themes are identified as the product of my reflexive thematic analysis: girls' environments can influence their relationship between PA & nature, connecting nature and PA promotes wellbeing for girls, adolescent girls' feel a sense of belonging through connecting nature and PA, and stereotypes' effect on adolescent girls' connection with nature and PA. Each theme is organized into subheadings to present the participants' experiences logically. Subheadings were utilized over subthemes as there was not enough evidence to develop sub-themes.

### **Participants and Context**

Ten adolescent girls took part in semi-structured interviews. During the interviews, participants provided demographic information, which included age and location of living. The ages of participants varied between 16 and 19 ( $M= 17.6$ ;  $SD= 0.84$ ). Participants described where they lived, using the terms rural or urban. Six participants identified being from a rural area, and four identified as being from a city, but exact locations were not fully discussed.

An additional survey was administered electronically using Microsoft Forms to collect demographic information. Eight out of the ten participants completed the additional survey.

Through the survey, participants confirmed their age, and described the ethno-racial-cultural group(s) with whom they identify, their gender, and whether they identified as a person with a disability. A summary of participants' characteristics is summarized in table 1. Pseudonyms were assigned to each participant to present the quotes throughout this chapter. Quotes are presented verbatim, with minor edits for readability indicated by brackets.

**Table 1: Participant Characteristics**

Age		Ethno-racial-cultural Group(s)		Gender		Identify as a Person with a Disability	
	#		#		#		#
Sixteen	1	Canadian	3	Woman	8	No	8
Seventeen	4	Nova Scotian- Canadian	1				
Eighteen	3	Caucasian- Canadian	1				
Nineteen	2	Caucasian- Polish	1				
		Chinese- Canadian	1				
		Syrian	1				

This chapter presents four themes that were developed to organize and explore participants' experiences. All themes were further divided into subheadings for the purposes of clarity and organization. For a visual representation of the organization of the findings, which included themes and subheadings, please refer to Table 2.

**Table 2: Table demonstrating findings by themes and subheadings.**

Findings		
	Theme	Subheadings
1	Girls' Environments can Influence their Relationship Between Nature and PA	Resources and location essential to how girls connect nature and PA
		Opportunities available to girls' influence their relationship between nature and PA
		Fear influences adolescent girls' relationship between nature and PA
2	Connecting Nature and PA Promotes Wellbeing for Girls	Connecting nature and PA enhances girls' social opportunities and promotes social wellbeing
		Connecting nature and PA promotes emotional wellbeing for girls
		Connecting nature and PA promotes mental wellbeing for

		girls
		Connecting nature and PA promotes physical wellbeing for girls
3	Connecting Nature and PA Provides Adolescent Girls' with a Sense of Connection	Adolescent girls feel a sense of connectedness while in nature
		Adolescent girls' value the connection between nature and PA
		How adolescent girls choose to connect nature and PA
4	Exposure to Stereotypes' Influences Adolescent Girls' Connection with PA & Nature	Stereotypes and their influence on girls connecting with nature and PA
		The negative portrayal of adolescent girls in nature and PA
		Sources that reinforce stereotypes on girls

### **Theme 1: Girls' Environments Can Influence Their Relationship Between Nature and PA**

The participants in this study believed their environments affected their ability to form a relationship between nature and PA. Older adolescent girls described how factors in their environment, such as where they lived, and the resources available to them, contributed to their relationship between nature and PA. Girls also emphasized the importance of safety, as fears of being alone and wildlife negatively influenced girls' ability to connect nature and PA. This theme is divided into the following subheadings: resources and location are essential to how girls connect nature and PA, personal factors in girls' lives influence their relationship between nature and PA, and fear influences adolescent girls' relationship between nature and PA.

#### ***Resources and Location are Essential to How Girls Connect Nature and PA***

All participants highlighted that their relationship between nature and PA can be affected by the resources they have available to them. Participants identified that they had a positive perspective of nature and PA when they had access to community resources, such as walking trails, ski hills, beaches, and parks. For example, Kelsey stated, *"I like to go on runs, so I find if there is a nice trail, that I know of, there's a few around my home, I like to go on runs through the woods and such."* Tori, who also emphasized community resources, felt as though having access to nature trails motivated her to connect with nature and PA. Tori stated, *"I like to go on*

walks to the nature trail where I live, to go with my friends and walk along that trail.” Haylee also highlighted the positive influence of living close to walking trails, “I have a few different ones [walking trails] like in walking distance from my house, so I am able to get on those. They aren’t terribly long, but you know, they will keep you busy for like an hour or so.” Participants recognized the significance community resources play in their ability to form a relationship between nature and PA.

Location of participants’ homes, such as living in a rural or urban community, was also identified as an influence on adolescent girls’ relationship between nature and PA. Adolescent girls who identified as living in a rural area discussed how they had access to hiking trails, nature trails, beaches, and wildlife. For instance, Brigid said, “I like to just go down to the beach, cause like I said I live near a lot of beaches, so I like to just go down to the beach ... That is one of the main reasons I do it, since it’s such an accessible thing to me.” Further, Haylee, who stated that she attends University in an urban area, but was raised in a rural community, believed she had more opportunities to engage with nature while living rurally. Haylee shared: “Coming from like a rural community, we do have a lot of outdoor trails, outdoor hikes, like that kind of thing, so like that was nice to have access to that, whereas I didn’t so much, like when I was in the city for school.” Tori, who has lived in both rural and urban communities shared: “I use to live on a lake... I spent most of my time outside exploring, especially in the summer, but when I moved to town, I find I spend less time outside and more time inside doing inside activities.” According to these participants, where they lived influenced and affected their relationship between nature and PA.

### ***Opportunities Available to Girls’ Influence Their Relationship Between Nature and PA***

This study found that adolescent girls’ relationship between nature and PA can be

affected by the opportunities available to them. All of the participants mentioned opportunities and responsibilities they had that influenced their relationship between nature and PA, such as extracurricular activities, jobs, and school. For instance, three of the participants highlighted how they had the opportunity to go camping and backpacking, as it was an extracurricular activity that was available to them through their family. For example, Brigid shared: *“My family is very much a camping family, like backcountry camping family. They all love to go camping, and love to be outside, and just be outdoors doing stuff all the time.”* Kelsey also highlighted the extracurricular activities available to her, *“My family is big hikers and campers, so we go on hikes every weekend, and we don’t camp as much as we used too, but up until the age of 14 maybe, we’d go on camping trips all summer, outdoors.”* While the participants recognized their opportunities, they also noted that not everyone has the same opportunities, which can make it challenging to connect with nature and PA.

Similarly, a few participants spoke about the importance of their part-time job and academics leading to decreased opportunities for nature and PA. For example, Brigid felt she did not have enough time to connect nature and PA, as school and work took priority. Brigid shared the following:

*I was never like the kind of child that was in a lot of group sports and was not like involved in a lot of stuff. I’m a very academic person, I enjoy science and reading and being alone, so I think, like in my life I’ve been subjected to a lot of just trying to fit into the kind of person that I believe that my parents would like, which to me was academics. So, I mainly focused on being good at my academics instead of sports or outdoor activities. So, I surrounded myself with stuff that shows me that’s what girls should be like anyway. That girls need to use their brains not their bodies to get what they want,*



*that kind of thing. So, it's hard to want to actually participate in sports and nature when you're trying to focus on this whole other thing.*

Participants recognized that some activities, such as school and having a job, affected their ability to form a relationship between nature and PA. Julia highlighted how she is expected to put school first, *"I'm definitely like expected to focus on school, like more than physical activity."* Some participants also stated that as their lives get busier, they tend to prioritize nature less. For example, Olivia said, *"This year while I was at University I was really busy with academics, I think we walked the [walking trail] like maybe twice, but there wasn't a lot of, we didn't do a lot of outdoor like activities."* From these participants' perspectives the busier they were with extracurricular activities and their academics the less time they had to prioritize nature and PA.

### ***Fear Influences Adolescent Girls' Relationship Between Nature and PA***

All participants suggested that the safety of their environment had a large influence on their relationship between nature and PA. Participants suggested that being a girl makes it harder to enjoy being active in nature due to personal safety. The majority of participants highlighted how going for walks/runs on trails or in the woods puts them in a situation where no one could see them if they encountered danger. For example, Julia stated: *"Um, there are some trails, but they are very like hidden into the woods, so as a girl I would feel very scared to go in those places where no one could see where I am and like if anything were to happen to me it's very hidden."* Robyn, who also emphasized safety, felt as though safety was always on her mind while in nature. Robyn mentioned the following:

*I find nature wise, like some girls are afraid to walk alone, or if they just wanted to go for a walk like on a path in the woods, like they would never want to go alone just cause*

*they're a girl type of thing... it definitely crosses my mind just as a female. Especially if you want to go for like a walk or run at nighttime, I'm like, I think of my safety.*

Adolescent girls' personal safety can result in avoidance of nature which can influence their connect with nature and PA. For example, Haylee said *"I think there were some ways that fear lead to avoidance, going out in the woods by yourself, like that was just a big no, you never thought to do that, you thought no I am going to stay in sight, like that kind of thing. I would have never kind of ventured off by myself."* These quotes highlight how their perceived safety can influence the relationship between nature and PA. It is important to note that participants highlighted that their fear of being attacked was due to them identifying as a girl. Participants suggested that being a girl made them feel more vulnerable being alone outdoors, especially at night.

Girls also focused on wildlife, such as animals and bugs, as a barrier to connecting nature and PA. Almost every participant highlighted avoiding nature due to wildlife. Participants suggested that wildlife, such as bears, ticks, and blackflies, had a negative impact on their willingness to go outside. For example, Brigid stated: *"I love nature, but I'm like terrified of like ticks a lot, and like leaches, so that really has a big impact on my like willingness to actually go outside."* Haylee and Kalyn both mentioned bears in their area have resulted in them becoming hesitant to visit the woods. Haylee said, *"We actually do have a lot of problems with bears up in my area. So, I haven't been out walking as much recently just of fear that I'm going to you know run into one."* Kalyn added, *"Yeah like sometimes there's a few bears around towns than I'm kind of hesitant to walk in the woods."* Aside from animals, insects and bugs were highlighted as a significant barrier towards nature, as more than half of the participants stated that bugs turned them away from nature. Robyn stated: *"I hate mosquitoes, they are everywhere... I just like don't*

*want to go to a campfire, like don't want to go out like go for a walk 'cause I don't want to have to deal with it.*" According to these participants, the different forms of wildlife in their environments limited their desire to connect nature and PA. Although there are more opportunities in rural areas to connect with nature, there are also more wildlife sightings which can lead to girls becoming hesitant to connect with nature.

Two participants discussed the precautions they take in order to connect nature and PA. Haylee stated that although they have issues with ticks and bears in her community, she does still go out into nature but remembers to be careful. She stated: *"You know, you take those extra precaution, but it's still in the back of your head, like am I going to run into a bear? Am I going to come home with a tick? You know?"* Olivia also discussed the extra precautions she needs to take to go hiking. She shared the following:

*Yeah, definitely on hikes it can be stressful, like it definitely takes away from the overall like experience. You always have to be worried about like being loud, so that they can hear you, and like you have to bring bear spray, and have a bear bell, and there's a lot of prep that goes into it that a lot of people wouldn't do, like it sort of stops them from going out because of all the prep they would have to do.*

While the participants recognized the risk of running into wildlife, many participants focused more on limiting their exposure risk and ways to still go out in nature and be safe.

## **Theme 2: Connecting Nature and PA Promotes Wellbeing for Adolescent Girls**

Overall, the girls in this study perceive their relationship with nature and PA as positive, as they want to be in nature and connect PA to nature. Participants highlighted that connecting nature and PA has many positive benefits for their overall wellbeing. Adolescent girls discussed the importance of connecting with nature and PA for their social, emotional, mental, and

physical wellbeing.

Participants used many different words to distinguish between their social, emotional, mental, and physical wellbeing; therefore, it is important to note the difference between emotional and mental wellbeing. Although mental wellbeing and emotional wellbeing are sometimes used interchangeably, they are distinctly different. Mental wellbeing is influenced by many factors such as biology and psychology, and involves processing, storing, and understanding information (Centers for Disease Control and Prevention, 2018; Hasa, 2022). In contrast, emotional wellbeing involves the ability to control and express emotions (Centers for Disease Control and Prevention, 2018; Hasa, 2022). For instance, when referencing mental wellbeing, participants discussed ways in which they were able to enhance their ability to think clearly and make good decisions such as, coping with stress and managing their emotions. In contrast, adolescent girls in this study used emotional wellbeing to refer to the feelings they express, such as happiness, calmness, and freedom. It is important to note that different aspects of mental and emotional wellbeing were intertwined and that connecting nature and PA reinforces multiple aspects of wellbeing simultaneously.

During the analysis I utilized specific terms participants used to divide the findings into subheadings. For example, if a participant specifically mentioned a connection towards their mental wellbeing, I categorized this as “mental wellbeing”, as the participants understand their own realities best. Likewise, if participants referred to coping mechanisms and feeling better about oneself, I coded this as “mental wellbeing”, as mental wellbeing refers to coping with stress and managing emotions (Centers for Disease Control and Prevention, 2018; Hasa, 2022). In contrast, I coded “emotional wellbeing” when participants highlighted controlling and expressing their emotions through words such as, happiness, calmness, and freedom (Centers for

Disease Control and Prevention, 2018; Hasa, 2022). I am aware that my own interpretation of wellbeing may have influenced my coding and development of subheadings for these themes. The ways in which wellbeing enhanced participants connection with nature and PA is discussed below.

### ***Connecting Nature and PA Enhances Girls' Social Opportunities and Promotes Social Wellbeing***

Participants discussed the importance of social connections and how these social connections can influence their relationship with nature and PA. All participants felt like their relationship with nature and PA provided them with the opportunity to connect with friends, family, or their community. Adolescent girls' ability to form a social connection with others through connecting nature and PA, allowed girls to enhance their social wellbeing. Adolescent girls suggested that by having a relationship with nature and PA, they were able to interact with friends and meet others. Haylee believed that nature and PA allowed her the opportunity to meet and connect with people who are like-minded, as she stated: "*... in my community, I'm really just, you know, talking to people that have the same values as me, like you know, want the same things as me.*" Participants also highlighted that friends significantly influenced their desire to connect nature and PA. For example, participants mentioned they would rather connect nature and PA with their friends than alone. Robyn shared the following: "*... if I go hiking, I'm definitely going to go with someone else.*" Further, Silvana suggested that connecting nature and PA was more enjoyable with others. She stated: "*It depends on the activity, but I do enjoy doing it with someone else. I find that more enjoyable!*" Haylee also agreed that PA in nature was more enjoyable with others, "*Going outdoors, going on a bike ride, going on a walk, I do like to do that with people to stay engaged and stay focused, otherwise I tend to find it a little bit boring.*"

According to these participants, friends and peers enhanced their experiences while connecting nature and PA.

Adolescent girls' connection with their family was also highlighted as positively impacting their relationship between nature and PA. Many participants suggested nature and PA allowed them to form a deeper connection with their family through activities, such as hiking and walking. For example, Robyn highlighted how walking with her mom helped them reconnect by stating the following: *"I think sometimes, like I'll take my mom a lot for walks... that's like a nice way to kind of like reconnect with her, and like chat, and things like that, so it's a nice feeling, bonding with people too!"* Similarly, Haylee discussed that going on family hikes allowed them to take time to be a family and reconnect. She said, *"Yeah, I think we all perceive it pretty positively, like sometimes you know we'll go as a family, like do a hike that we haven't done before, that type of thing. So it's time away from like a busy schedule or a busy life, our technology, just to kind of connect with each other."* Participants highlighted the significance of building bonds and connecting with family through spending time in nature and doing PA as a family.

Adolescent girls also highlighted that their community connections can enhance their social wellbeing. Participants discussed how connecting nature and PA allows them to be out in their community and feel a sense of belonging to their community. For example, Robyn stated, *"I would say like, in my community in general, even just being able to go for walk in the park or something, like you know, you see people along your walk or whatever and that's like a nice way to kind of like, be out in the community."* Kalyn also shared the following: *"... even just going for a walk around town, it's like you meet people, the same people walk every day."* Kalyn further mentioned that nature and PA allowed her to form stronger connections with her

community, *“You’ll see people who like exercise at similar times, like you’ll stop and chat, it’s definitely like created some stronger connections....”* According to these participants, having a relationship between nature and PA allowed them to connect with their community in different ways. Lastly, participants discussed how during the pandemic, nature and PA allowed them to feel connected to others, as they had the ability to go for a walk and interact with members of their community. Haylee shared the following, *“During covid it was like something to do, you could, you know, get out to a gym, or you could get outside, see people in passing, it still made me feel like sort of connected to people.”* Nature and PA during the pandemic allowed people to not only get outside and perform PA, but also form a sense of connection to others during prolonged periods of isolation.

### ***Connecting Nature and PA Promotes Mental Wellbeing for Girls***

In addition to social wellbeing, adolescent girls also highlighted the role that nature and PA can have on their mental wellbeing. Many participants stated how nature and PA can transform their mental wellbeing. Connecting nature and PA allowed many participants to feel better about themselves. For instance, Robyn stated that, *“It can be really good for my mental health especially, because I find when I’m like getting moving I’ll just feel a lot better about myself.”* Adolescent girls discussed how being active in nature helped change their perspective about themselves when they felt down. Kelsey said, *“I find if I’m having like a bad day, or I’m feeling sad, I find if I go to the gym or just like going on a walk it’s kind of like a coping mechanism for me...”* Julia also agreed that nature and PA helped transform her mood by stating the following: *“When I’m like, really down I like to just workout. So, when I feel extra down, I like to go outside and go for a walk and just clear my mind. I feel like that brings me a lot of, like it redeems myself a little bit, and I feel very calming, soothing when I’m outside doing*

*something physical.*” It is apparent through these quotes that the participants perceived their mental wellbeing to be enhanced through their ability to connect nature and PA.

Further, some participants felt like they could see a difference in their day-to-day life when they did not have the opportunity to connect nature and PA. Silvana believed that by connecting nature and PA, she was able to enhance her wellbeing by stating the following, “*Sometimes you start off in a bad state, kind of because like you don’t want to do it, but once you do it [go out into nature or PA], it makes you feel good, so, I find it definitely makes you feel better, like mental.*” Jodie highlighted how not being able to get out into nature had a negative effect on her wellbeing by stating the following:

*I think it definitely benefits my mental health, um, like not being able to get out for like my morning run, or like in the summer I work at a summer camp so like that definitely improves like my mental health a lot. It makes me feel very good about myself and happy, so if I don’t like get that kind of activity, whether be like on a run or just kind of like getting outside for a little walk or anything like I don’t get that done, then my day just kind of goes to crap.*

Here this participant defined her own experience as benefiting her mental health and was therefore coded as mental wellbeing.

### ***Connecting Nature and PA Promotes Emotional Wellbeing for Girls***

Along with enhancing adolescent girls’ mental wellbeing, nature and PA can positively influence their emotional wellbeing. Throughout the interviews, participants used a variety of terms to describe their relationship between nature and PA. They connected nature and PA to happiness, as they felt happier while connecting the two. For example, Julia stated: “*When I think of nature I think of happy and calming. I feel a sense of happiness while I’m active in*



*nature.*” Further, participants suggested that going out into nature and being active also allowed them to feel calm, relaxed, and at peace. For example, Robyn said the following, “*Um, so when I’m going out for like a walk or a run when you are like on a track or trail or something, I guess kind of like what I said before like I feel a little bit more relaxed and like a little bit less stressed out, calming effect.*” Participants also used words, such as “*tranquil*” (Kalyn) and “*solitude*” (Silvana) when referring to the relaxation effect that nature was able to provide them.

Participants in this study highlighted the significance of freedom. All participants expressed how they felt a sense of freedom while connecting nature and PA. This freedom was expressed in different ways, such as freedom from the outside world, freedom from technology, and freedom in the sense of solitude. For example, Haylee highlighted how nature and PA allowed her family to escape, “*There’s no chance of you using your phone or getting that text, or I know like my family is pretty prone to distractions... so it’s nice to kind of get away from that.*” Further, Olivia highlighted freedom in the sense of unplugging from her devices and recharging her emotional wellbeing. Olivia described her sense of freedom through the following, “*I think even just like going out for walks is really nice, like it’s definitely a good way to like get away from like technology and stuff too. It’s an excuse to like not be on your phone or like not be doing schoolwork on your laptop and such.*” Robyn also highlighted freedom through the sense of disconnect through the following, “*Um, definitely relaxed and like unplugged, like not focusing on like devices and things like that.*” Participants words, as well as my own interpretation allowed me to code “emotional wellbeing” as emotions participant express through words such as, happiness, calmness, and freedom.

### ***Connecting Nature and PA Promotes Physical Wellbeing for Girls***

Adolescent girls’ physical wellbeing is closely connected to their mental wellbeing, as

being physically active has many positive mental benefits. For example, Robyn suggested that “... I find when I’m like getting moving, I’ll feel a little bit more productive, so I think definitely physical wellbeing and mental health benefit.” Further, adolescent girls stated that being active in nature helps them improve their physical wellbeing, as physical activity and time spent in nature can help decrease health issues. For example, Kalyn suggested that, “If you’re like staying active and like trying to like be physically active every day like it decreases your risk of like a lot of health issues, and like heart disease, and different things like that.” Similarly, Olivia added, “I think if I do it consistently it definitely benefits my well-being, like physical.” All participants believed that overall, forming a connection between nature and PA increases all aspects of wellbeing.

During the pandemic, having the ability to form a relationship between nature and PA allowed girls to stay physically active. For example, Robyn stated, “I definitely, like over covid, especially, like this is kind of what helped me like stay sane, like the outside and going for walks or runs and things like that, I was able to still prioritize my physical health.” Connecting nature and PA during the pandemic provided girls with a safe space to focus on their physical health. As Julia suggested, “It improved my health a lot, like my physical health, during covid.” Further, Haylee added that during the lockdown being active in nature allowed her to stay physically healthy, “It would definitely affect it like a positive way, I know like during the lockdown I really relied on physical activity, like as something to do to stay healthy.” These examples illustrate how connecting nature and PA allowed participants the opportunity to enhance their physical health and wellbeing, especially during the recent pandemic.

### **Theme 3: Connecting Nature and PA Provides Adolescent Girls with a Sense of Connection**

The participants in this study believed that connecting nature and PA allowed them to

feel a sense of connection to nature and themselves. These participants believed that by connecting with nature, they were able to feel a more profound sense of connectedness and enhance their relationship with PA. Also, as previously mentioned, the participants discussed how they felt as though they valued their time in nature more with age. A few participants mentioned that with age they began to appreciate nature more which resulted in them personally choosing to connect nature and PA. Whereas, when they were younger their parents/guardians persuaded them to spend time outdoors and be active. The participants' stories on how they perceived their sense of belonging and connection regarding nature and PA are divided into the following subheadings: nature allows adolescent girls to feel a sense of personal connection, adolescent girls want to connect nature and PA, and how adolescent girls choose to connect nature and PA.

### ***Adolescent Girls Feel a Sense of Connectedness While in Nature***

Adolescent girls discussed how spending time in nature allowed them to feel a sense of connectedness to nature. This sense of connectedness allowed them to enhance their overall sense of belonging in nature, which influenced their PA. Participants spoke about the positive effects nature can have on their sense of personal belonging and connectedness. One participant described her sense of belonging in nature through her time as a camp counselor. Jodie explained her connection as the following:

*Oh, I really like that question! Um I feel like, we can go back to camp again, since that is where I spend most time in nature, but I feel like when you work at a place like that, like I've been going to camp, this will be my tenth summer, so being able to spend so much time with the same people like year after year, in nature it makes you feel like you really do belong, like with those people, or like maybe it's just the environment that you're in*

*that makes you feel like you belong, like I don't know it's just, it makes you feel good when you're out in nature.*

As discussed above, Jodie explained in her own words how nature was able to enhance her sense of connectedness to nature and herself. Julia discussed how spending time in nature helped her feel a sense of connectedness to nature and more broadly to the world, *“Um, I feel like it, I think it's a really positive thing, when I'm like outside in nature I feel more like connected to the world in a way.”* These quotes illustrate the importance of feeling connected to the outside world and the positive benefits of this connection.

Participants further drew connections between their relationship with nature and stewardship. For example, Robyn connected her relationship with nature to a feeling of purpose, *“I feel like, as like humans, that is where we are meant to be, so I definitely feel more connected. I feel like more of a purpose when I'm like in nature and outside.”* Further, Haylee highlighted how her stewardship towards nature influenced her relationship with nature, *“I would say, you know, spending time in nature it like, it really connects me, like grounds me, you know back to my roots... So, definitely I do feel like grounded I would say would be like the best way to describe it.”* Jodie took her connection to her roots further by suggesting that being a girl allowed her to form a deeper connection due to the stereotypical notion of mother nature. Jodie stated, *“Um, like I don't really know. Personally I see nature as like female, I don't know if that's weird to say, but like I picture like nature as like a woman and like it's stereotypical to say that like women need to be cared for, but like I don't know, Mother Nature, everything like that comes to mind, females are the mothers of their children.”* Jodie went on to further connect her relationship with nature to Indigenous people, although she stated she was not an Indigenous person, she loved the idea. Jodie said:

*I love the idea that like Indigenous people have, like women are very well respected in their cultural and in their practices and they are the seers of the water, like the protectors of the water 'cause like their life givers. So I like to think, although I'm not Indigenous person, but I really like that idea that like women are the protectors of the land and were like life givers, so we're able to protect like our waters and everything like that, so I think I have a deeper connection because of my girlness.*

These quotes and examples illustrate girls' deeper connection with nature due to their rooted connection to nurturing and protecting their offspring through mother nature.

### ***Adolescent Girls' Value the Connection Between Nature and PA***

Participants discussed how they genuinely enjoy being in nature and that they choose to connect the two. For instance, four participants highlighted how they have the opportunity to go on backpacking and camping trips. Brigid highlighted her family's camping experiences, "*My family is very much camping family and like country camping family and they all love to go camping and loves to be outside and just be outdoors doing stuff all the time.*" Kelsey also highlighted that she goes camping with her family. Further, Jodie highlighted how camping trips allowed her to feel connected with nature. Jodie shared:

*Um, I have a very strong relationship with nature I would say. At camp we go on things called out trips. So like we leave the camp premise and we either canoeing or hike to these different sites and we practice like no trace camping. So we really respect like the nature that surround us, so we make sure that all the kids that come into our care also practice the same. So, um yeah, love I love the nature.*

Olivia also agreed that camping allowed her to enjoy and connect with nature by stating the following, "*I really enjoy being outside I think I've had a good experience with it. When I was*

*younger, I did a lot of outdoor stuff. I think it was when I was 12 my cousin [name] and I we flew to Ontario and we always did a canoe trip and camp in [national park] for 22 days.”* These examples highlight how participants want to engage with nature as they are actively performing activities that involve both nature and PA.

As discussed above, adolescent girls want to participate, and some participants further highlight that PA in nature is more engaging than PA indoors, leading them to choose to go out into nature when being active. For example, Olivia said, *“I think that it’s definitely more fun, and like engaging to be doing physical activity outside versus inside.”* Tori also agreed by saying, *“... I like to be physically active outside more than inside.”* These examples highlight how girls enjoy their time connecting nature and PA as they find it engaging.

Participants discussed their experiences with nature and PA as they transitioned from young to older adolescents. They suggested that they appreciate nature more now that they are older. Jodie suggested that she grew more appreciative with age, *“Yeah, I definitely started respecting nature more with age.”* Jodie added to this further by providing an example, where she stated the following:

*Um, I think so. So, when I was a kid I used to always pick it grass, like I would pull it up and everything. I remember like I was sitting outside and my dad got mad at me, or it might not have been my dad, I don’t know, but someone got mad at me for picking at the grass and told me not to do that because that is what the bees use to, like for, for the dandelions to grow for the pollen, so like I feel like I kind of changed my relationship I guess, and started to respect nature more.*

Further, many participants stated that although they appreciate nature more now, they spend less time in nature. Tori highlighted this by saying, *“I don’t spend as much time outside, but I*

*appreciate my time spent outside more now rather than when I was a kid.*” Julia added to this by stating, *“I feel like when I was younger, I would not be like outside in nature as much and I didn’t really appreciate it as much as I do now.”* Silvana also stated that, *“I definitely value my time more now when I get to spend outside, definitely.”* These quotes illustrate how as adolescent girls’ value their relationship between nature and PA.

### ***How Adolescent Girls Choose to Connect Nature and PA***

All participants discussed the ways in which they chose to connect with nature and PA. In some instances, girls discussed how they use nature to perform PA and that they did not make the connection between nature and PA. In contrast, many participants stated that they deliberately go out in nature and engage in PA in an effort to form a deeper connection between the two. For example, Robyn stated how she deliberately made an effort to spend time in nature by stating, *“I like need to make a conscious effort to get out in nature and like you know even just do like a walking trail or like things like that, [sometimes] I forget to appreciate it, but I try my best.”* This quote illustrates how at times participants felt as though they needed to make a deliberate effort in order to ensure that they spend time in nature.

Many participants spoke about their experiences with hiking and walking when drawing a connection between nature and PA. Adolescent girls highlighted that hiking and walking were the main forms of activities they used to connect nature and PA. Kelsey stated that *“Every now and then I just have an urge to go for a hike, or like walk 13 kilometres, and it’s like the most entertaining things to me ever. I love just love like being in nature, and like plants, and animals are so fascinating to me I love them so much.”* Additionally, Silvana said, *“Oh I love hiking in the summertime, that is one of my favorite things is going to like the national parks and going hiking.”* These examples highlight how girls choose to connect with nature and the positive

experiences they have received through connecting nature and PA.

Many participants discussed how they want to engage and explore different aspects of nature, such as plants and wildlife. Tori stated *“Like trying to find animals and such. I’m not grossed out by like bugs or worms and stuff. So some people are like, ‘oh gross why do you dig worms?’ , but I like to explore the different creatures.”* Robyn discussed using gardening to connect to nature, *“I do have like a little garden so that’s like another way that I try and like get into nature... that’s like the first thing I think of when I think of nature, and animals, and plants, and things like that.”* Many of the participants also discussed using sports, such as rowing, soccer, or golfing, to be outside. Two participants stated that their relationship with nature is so positive that they pursued employment in nature through summer camps and ski instructing. Tori suggested she choose a job outside in nature so she could spend more time outdoors, *“Being a ski instructor leads me to spend more time in nature in the winter.”* In addition, Jodie stated that working and connecting with nature allowed her to not only form a stronger connection to nature, but also learn to respect nature.

#### **Theme 4: Exposure to Stereotypes’ Influences Adolescent Girls’ Connection with PA & Nature**

Gendered stereotypes, expectations, challenges, and norms can negatively impact participants’ connection between nature and PA. Participants discussed how stereotypes intersect with gender, leading to gendered expectations, challenges, and norms. Specifically, they spoke about the damaging effect of stereotypes on adolescent girls’ relationship with nature and PA. Finally, participants discussed how stereotypes portray girls negatively and highlighted the sources that reinforce these stereotypes about girls.



### ***Stereotypes and their Influence on Girls Connecting with Nature and PA***

The participants in this study recognized and discussed the existence of common stereotypes, norms, and roles for girls. During the interviews, participants first described general stereotypes they have faced or heard, followed by nature and PA-related stereotypes. Adolescent girls highlighted different stereotypical expectations women and girls face, such as focusing on beauty and perform household chores. For example, Jodie said, *“I would say a lot of people still think the traditional way of men going outside and hunting and providing for the family, and girls staying inside and caring for others over themselves.”* Brigid further comments on the typical stereotype women face today by stating the following:

*When women and girls try and achieve those goals that men have where they are like super strong, and like they are super physically active, and they are super healthy, and stuff, like it’s viewed very negatively and stereotypically. Like women shouldn’t be doing that, like we should be focusing more on like how we look, and how we perform like doing household stuff, and very much 50s housewife ideology, which isn’t fair, and I think can contribute greatly to how girls perceived physical activity, and physical activity in nature, and it isn’t really fair especially since its projected off to like young girls.*

The historical objectification of women is visible here, where women are expected to perform household chores indoors and caring for others over themselves, all while upholding their beauty. These stereotypical ideas about how a woman should look and behave are still felt by most participants in this study.

Stereotypes were discussed further, with participants drawing connections between passive and active behaviour. Participants discussed how girls are expected to stay clean, look pretty, and be non-rowdy, while boys are seen as strong, fast, and aggressive. One participant

said, *“I guess just like being really like soft and gentle, like they can’t get their hands dirty, and stuff...”* While another echoed, *“Definitely like being less rowdy, or less aggressive kind of outside when you play...”* Further, girls highlighted how they are expected to only do things that are not strenuous. Olivia suggested, *“I think that like girls are always seen as only doing things that aren’t super like strenuous, if that makes sense. Like hiking is hard but it’s not considered like a tough sort of sport...”* These quotes outline girls’ experiences with gender stereotypes and how these stereotypes can begin to affect their relationships, specifically with nature and PA.

Regarding nature and PA, girls recognized how they are expected to perform passive rather than active exercises. One girl said, *“You wouldn’t see someone like fishing or like crawling through the mud, it’s always just like they’re sitting on their deck relaxing, like tanning in the sun.”* Similarly, another participant said, *“How boys are like fighting and that type of thing. We could go on the swings, or we can go play hopscotch, or whatever, and the boys would play around. That type of thing.”* While another echoed, *“All the boys in the community growing up they go like fishing, they play outside with like airsoft guns, and they do all that and just like girls we’d always be indoors like painting their nails, or whatever.”* These examples highlight the gender expectations the girls in this study faced regarding connecting nature and PA.

### ***The Negative Portrayal of Adolescent Girls in Nature and PA***

Many of the participants highlighted that the gender norms and stereotypes they face negatively affects their willingness to connect nature and PA. The stereotypes and gender expectations girls discussed during their interviews were seen as barriers that negatively affected their participation. Participants stated that the stereotypes and gender expectations they faced while connecting nature and PA portrayed them in a negative light, which in turn affected their abilities and the way in which they connect nature and PA. Participants discussed their concerns

about being portrayed negatively and criticized when they connected nature and PA. For example, Brigid suggested: *“It’s very hard to like just exist as a girl without being criticized for doing anything.”* Participants further suggested that this criticism may be due to the notion of what is considered socially acceptable. For instance, Haylee suggested: *“Like you never hear of any, you know, girls joining or tagging along, like participating it never seemed acceptable.”* These quotes illustrate how criticism from others can influence girls’ experiences while connecting nature and PA.

Similarly, participants further went on to state that when they try to form a relationship with nature and PA, they get labelled negatively. Participants suggested that when they do participate in nature-PA activities, they feel as though they will be labelled negatively and seen as rule breakers. One of the girls suggested, *“There’s a label that guys give girls when they are like a try harder, or like they are trying too hard, type of thing.”* Similarly, and related to being labelled negatively, Brigid shared the following:

*I feel like in the sense of like physical activity and nature girls are like very much portrayed negatively. Like if a girl goes to the gym regularly or enjoys nature so much, she will be seen as like a try hard and like a pick me girl and like someone that you might not want to be around, just because she’s so focused on that, that she like makes it her entire personality...*

These examples illustrate the contradictions girls face when they participate in PA-nature activities and the complex negotiations they are forced to make.

Many of the participants stated that when they try to form a relationship between nature and PA, they become vulnerable to judgment from peers. One girl discussed the influence of negative judgement by stating, *“I feel like, that a big issue that girls have, thinking that everyone*

*is judging them.*” Whereas, Kalyn suggested, *“It is hard to get over being scared of judgment.”* Robyn agreed and added that a lot of girls are afraid to be bad at specific activities, *“I feel like it was always stereotypes that the girls were going to be bad at it, so a lot of the girls I knew would give up right away so they wouldn’t have to do it, like the girls would say ‘oh it’s for the boys’.”* Overall, participants felt stereotypes can be damaging for girls that want to explore nature or connect nature and PA. Brigid summarized this feeling:

*So I feel like, that is kind of a negative way to look at things too, and that can also be damaging for people who just want to explore that kind of lifestyle and especially young girls when they are wanting to explore things and find who they are, it’s hard to actually do that when you are faced with all these negative stereotypes even for things that are actually super awesome and you should definitely explore cause you’ll probably have a super good time doing them, but it’s kind of nerve wracking sometimes, just like trying new things and then people just talking crap.*

These quotes illustrate girls’ fears of being labelled negatively and judged by their peers. These fears can lead girls to avoid connecting with nature, as they fear their peers may judge them.

Although participants described situations where they were negatively labelled or judged, they also provided insight into times when they rejected or pushback against norms and stereotypes. For instance, many participants in this study found that by connecting nature and PA they challenged the idea of femininity. Kelsey said, *“Me being super competitive and really into sports, like I play a lot of sports so I would prefer to be like in a guy and girl environment just because it is more competitive.”* However, this same participant add, *“Although I like playing sports with the guys, you have to be careful because there’s a label that guys give girls when they are a try hard, or like they are trying too hard, type of thing.”* This quote gives rise to the idea

that although girls are willing to reject certain stereotypes they are still aware of the backlash they may receive. Julia added that although she tries not to think about stereotypes they are always present by stating: *“I try not to think about them [stereotypes]... I just like to think in my mind that no one is going to judge me... however I know all the boys are making fun of me at the gym, but I just pushback, because I am allowed to be here.”* Some participants discussed the negative judgement they receive from their own peers, with one girl stating: *“I’m not grossed out by like bugs or worms and stuff. I posted it on my snap chat story once and people were like what are you doing, that’s weird, you’re so gross... but I like to explore the different creatures so I continue to do it because I like it.”* These examples of participants pushing back and rejecting stereotypes in order to connect with nature and PA illustrates the complex negotiations girls face when deciding to participate in PA-nature activities.

### ***Sources that Reinforce Stereotypes for Girls***

Participants suggested that stereotypes are everywhere within our society and are rooted in many sources, such as traditions, cultural influences, government, and media. Participants further discussed sources that reinforce stereotypes, such as family, friends, peers, and schools. Overall, the girls in this study highlighted that stereotypes are developed from a variety of things and places, and can have an effect on everyone. For instance, Julia said, *“I think stereotypes come from a variety of things”* and Kelsey added, *“There are stereotypes in everything.”*

***The Media.*** One of the topics that adolescent girls discussed frequently, was the influence of media. When participants were asked what they thought influenced stereotypes, almost all participants suggested that stereotypes are portrayed in and enforced by the media. Participants suggested that the media, specifically social media, emphasizes stereotypes and portrays girls negatively. Participants expressed how predominant social media is within their

age group and suggested that social media has the power to influence people's views on life. For example, Haylee said, *"I think it's just a lot of social media, that just completely like changes peoples' views on physical activity or going outside, you know?"* Adolescent girls' further highlight how the media can be damaging and toxic for girls, as it leads girls to believe they should maintain a beautiful and delicate body. Brigid stated the following:

*But then again social media, I feel like any stereotype that would come from there is female based, but it's just a very toxic place for females to be ... there's a lot of just stereotypes created about girls... So there's just like small things that will later become bigger stereotypes, it is like really damaging to see.*

Participants also talked about how the media portrays girls' as delicate and passive, and that they should focus being skinny, but should not work out. Further, many participants indicated that the media leads them to believe that nature and PA is only for boys and that, as a girl, they do not belong in nature. For example, Brigid stated *"... the media makes it seem like if you like PA or nature that it is a negative trait and you should stick to things inside like simple cardio and Pilates and like avoid the outdoors."* The negative stereotype girls receive from the media when they connect nature and PA can have a negative influence on their relationship with nature and PA.

Participants also mentioned how the media can turn the connection they have with nature and PA from a positive to a negative experience. For example, six participants highlighted that when they posted about their connect with nature and PA on social media, they were stereotyped negatively and said to be *"Going into nature just to take a photo"* (Olivia). Participants highlighted that when they do connect nature and PA they get stereotyped as only doing it for the picture. For instance, Haylee said, *"I would say girls and like their physical activity in nature are*

*portrayed negatively, just because of that stereotype that you know you are doing it for the picture, you are doing it for the post, you are doing it for the social media presence, like 'look what I did today', the purpose behind it is to kind of show off.*" Olivia added, *"I think people think that that's why girls go out into nature, like going into nature just to take a photo."* Lastly, Silvana said, *"A lot of my peers are more on the side of like posting it to prove that they went there, to like show-off that type of thing, like 'look at me, I'm really better than you if you haven't been out on this hike', like more negative."* These quotes from participants illustrate how girls get stereotyped for going into nature just for the photo, even if that is not their real motive.

**Family, Friends, & Peers.** Many participants mentioned how family, friends, and peers can influence stereotypes. Participants suggested that many stereotypes are enforced in their homes through family traditions, where their parents learned from their parents, and so on, leading them to be deep-rooted within a family setting. For example, Silvana said, *"I think it's definitely like nurture, like you learn it from your parents and from your peers, like they can influence the way you think, without knowing that they influenced it."* Robyn shared her experiences with gender norms in her family setting, *"I have experienced gender norms in the sense of like 'oh like this is what you're going to have to learn to do', like as a kid, like different things like that. Oh yeah and things like doing laundry, doing dishes, things like that."* Robyn further added, *"my parents are like a little older and they say 'oh the girls come in at this time and get dinner ready and the guys come in later'... my friends are like where did you learn that and I'm like oh my parents taught me that"*. Participants also stated how their guy friends enforce many stereotypes; sometimes, it is subconsciously and other times intentional. For example, Kalyn shared one of her experiences, *"Well just like if we're all just going for a hike as a group, like a friend group of like girls and guys, the guys will kind of be like oh we will get the*

*fire, like you guys just sit pretty, you know?”* These quotes illustrate that family members and peers can influence stereotypes even when they are unintended.

**School.** Participants shared examples of stereotypes being reinforced in school settings. Jodie shared an experience from school, *“As a kid, I think like when I was younger it was a lot different, like I remember hearing teachers that would say to like younger boys like oh you run like a girl, like why are you throwing like a girl, what you doing?”* Further, girls identified that looking back at their teachers in school may have promoted stereotypes without realizing it, such as grouping kids into genders. For example, Tori said, *“I feel like maybe some school policies could be changed too, especially with schools that have gender gym classes. I feel like they should be merged to one so everyone can explore what they like regardless of gender.”* This quote, illustrating a girls’ experience with gendered PE class.

#### **Chapter Four Summary**

Four themes were developed to organize and explore the experiences of ten older adolescent girls. First, girls’ environments can influence their relationship between PA and nature. This theme was further organized into three subheadings centred around resources and location, opportunities, and fear. The second theme focused on connecting nature and PA for wellbeing, specifically focusing on social, emotional, mental, and physical wellbeing. Connecting nature and PA provides adolescent girls with a sense of connection was the third theme, which highlighted connectedness, value, and choices. Exposure to stereotypes was the last theme which highlighted stereotypes adolescent girls face, the influence of these stereotypes, and the sources that reinforce them.



## Chapter 5: Discussion

This study aimed to explore how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes. This study explored the stereotypes and gender norms older adolescent girls in Nova Scotia experience while connecting with nature and PA through the following research objectives: (1) To understand how older adolescent girls perceive their connection with nature; (2) To explore how older adolescent girls' connection with nature relates to PA; (3) To understand how older adolescent girls experience gender-, nature-, and PA-related stereotypes. Through interviews with ten study participants, study objectives were achieved and unpacked into four themes centred around girls' environments, wellbeing, a sense of connection, and the influence of stereotypes.

QD with overtones of feminism was used to address the research objectives by exploring participants experiences and perspectives. Applying a feminist lens allowed me to ask new questions that placed each participant at the center of their experiences, which allowed me to gather information directly from the adolescent girls, while also maintaining a subjective perspective. As women's perspectives have often been silenced employing a feminist lens allowed for close attention to speech, while giving each participants a voice. By employing a subjective perspective, I was able to acknowledge that the perceptions of each adolescent girls' relationship between nature and PA may vary. Reflexive TA with a feminist lens allowed me to code the data with an awareness of gender-based oppression and how girls and women's identities have been marginalized in society.

The main study findings are as follows; First, participants believed that their environments influenced their relationship between nature and PA. Participants highlighted how specific resources, their location, opportunities available to them, and fear can impact their

relationship between nature and PA. Second, adolescent girls believed that connecting nature and PA enhanced their social, emotional, mental, and physical wellbeing. Third, participants highlighted that connecting nature and PA allowed them to feel a sense of belonging, as they discussed the ways they choose to connect and their desire to connect nature and PA. Last, participants highlighted the effect of stereotypes on their ability to connect nature and PA. Participants mentioned the negative influence of stereotypes and how stereotypes portray them in a negative light. The following discussion investigates girls' perceptions to respond to the research questions.

### **Girls' Environments Can Influence Their Relationship Between Nature and PA**

The first theme, which focused on environmental influences, was centred around the first two research objectives which were adolescent girls' connection with nature and how this connection relates to PA. Findings from this study suggest that living in a rural area positively influenced adolescent girls' connection with nature. Adolescent girls who identified as living in a rural area discussed how they perceived their connection to nature to be positive due to the resources they had in their area, such as access to hiking trails, nature trails, beaches, and wildlife. These findings are consistent with previous research that found when girls had access to parks, trails, and other resources in their neighbourhood, they had an increased level of PA (Babey et al., 2015; Coen et al., 2019; Humbert et al., 2008; Mitra et al., 2020; Oliveira et al., 2020; Schultz et al., 2017).

In alignment with previous research, findings from this study found that fear influenced adolescent girls' connection with nature. Participants in this study highlighted that the safety of their environment or the safety of their neighbourhood played a large role in their ability to connect with nature. Previous research also found that perceptions of safety can influence girls'

time in nature, as being alone outdoors can lead to feelings of fear and vulnerability (Ghimire et al., 2014; Ho et al., 2005; Jiang et al., 2018; Kalms, 2019; Wesely & Gaarder, 2004). Further, participants in this study expressed how wildlife, such as bugs and animals, created a barrier to their connection. Although wildlife has been previously identified to be a constraint that hinders adolescents from visiting nature due to pest-related reasons (Oppliger et al., 2019), the research did not focus on gender. Nevertheless, the results from this study do suggest that wildlife such as, animals and insects were considered barriers to girls' connection to nature.

Among the findings that emerged from this study was adolescent girls' not having enough time to be outside and active due to responsibilities such as school and work. This finding also emerged in a study by Sackett et al. (2016) on perspectives of childhood obesity, in which adolescent girls reported not having enough time in their busy schedules to eat healthy and exercise. Also in line with these results, several studies indicated that girls reported prioritizing homework, chores, babysitting, or other jobs as they age, which led to less time available for PA and exploring natural environments (Coen et al., 2019; Janha et al., 2020; Rothe et al., 2010; Sackett et al., 2018; Tannehill et al., 2015; Walia & Leipert, 2012). Studies focusing on young girls in sport, found that many athletes simply do not have the time to secure a job or focus on school, leading them to make the decision on what they believe is most important, which usually results in a disinterest in sports due to being more attracted to making money and excelling in school (Brenner et al., 2019; Rasulovna, 2021; Strandbu et al., 2019; White & McTeer, 2012). This study's findings add to the literature by illustrating that adolescent girls' extracurricular activities and responsibilities, such as jobs and school can also have an influence on their connection with nature and PA.

## **Connecting Nature and PA Promotes Wellbeing for Girls**

The current study found that adolescent girls' wellbeing can be enhanced while connecting nature and PA. Throughout this theme, participants highlight how their connection with nature relates to overall wellbeing and how wellbeing can be enhanced through connecting nature and PA. Specifically, this study found that connecting nature and PA enhances all aspects of wellbeing, such as social, emotional, mental, and physical. For the purpose of this study the terms health and wellbeing were combined to the term wellbeing, meaning that mental health or mental wellbeing are interchangeable within this study.

During the analysis I used participants' own words to differentiate between social, mental, emotional, and physical wellbeing. This helped me divide the themes into subheadings. For example, if a participant referred to their mental wellbeing or referred to coping mechanisms, I coded this as mental wellbeing, as mental wellbeing refers to coping with stress and managing emotions (Centers for Disease Control and Prevention, 2018; Hasa, 2022). Further, I coded emotional wellbeing when participants highlighted controlling and expressing their emotions through words such as, happiness, calmness, and freedom (Centers for Disease Control and Prevention, 2018; Hasa, 2022). My own interpretation of mental, emotional, social, and physical wellbeing may have influenced my coding and development of subheadings for this theme; however during the coding process the participants perspectives influenced the formation of codes and themes. Lastly, it is important to note that different aspects of wellbeing are intertwined, and that connecting nature and PA reinforces multiple aspects of wellbeing simultaneously.

The current study has found evidence to suggest adolescent girls' social wellbeing through friends and family, provided them with the opportunity to connect nature and PA, a

finding frequently supported by previous research (Edwards et al., 2015; Hayball et al., 2018; Jago et al., 2009; Macdonald-Wallis et al., 2012). Participants highlighted that they spent more time outside when they were with their friends, and that their friends significantly influenced their desire to connect nature and PA. These findings align with previous research that indicates the importance of social support for PA, especially for girls (Allison et al., 2005; Brockman et al., 2011; Laird et al., 2016).

Further, the current study's findings suggest that adolescent girls' emotional health can be enhanced through connecting nature and PA. Previous research has highlighted that nature has a positive influence on emotional wellbeing and that PA can have a positive influence on wellbeing; however, limited research has focused on the benefits of connecting nature and PA for adolescent girls' emotional wellbeing. This study's findings add to the current literature as it specifically looked at the connection between nature and PA on wellbeing. The results from this study suggest that adolescent girls connected nature and PA to increased happiness. These findings are in line with previous results concerning the effects of nature on wellbeing (Keniger et al., 2013; Roberts et al., 2020), as well as results specifically addressing the relationship between nature and happiness (Berman et al., 2008; Capaldi et al., 2014; MacKerron & Mourato, 2013; Mayer et al., 2009; Nisbet & Zelenski, 2011; Pritchard et al., 2020; White et al., 2013; Zhang et al., 2017).

Previous research noted how girls associated nature with feeling peaceful, relaxed, and a sense of serenity and tranquillity (Birch et al., 2020; Chawla et al., 2014; Cheesbrough et al., 2019; Hakoköngäs & Puhakka, 2021; Milligan et al., 2004; R. Morrow et al., 2017; Wiens et al., 2019; Windhorst & Williams, 2015). Likewise, participants in our study also identified positive adjectives towards nature such as, peacefulness, relaxation, and freedom. However, it should be

noted that participants used terms such as peacefulness and solitude to refer to the feelings they receive while connecting nature and PA. Therefore, this research adds further to the literature by highlighting that through connecting nature and PA, adolescent girls were able to experience these positive emotions.

As stated above, there have been numerous studies focusing on the benefits of nature for mental wellbeing (Martin et al., 2020; McMahan & Estes, 2015; Nisbet et al., 2009; Weir, 2020), and towards PA (Christiana et al., 2021; K. Evans & Anderson, 2018). Although the findings from this study align with previous research, it also enhances previous findings as we looked specifically at the benefits of connecting nature and PA for mental wellbeing, while many studies focus on nature and PA separately. In addition, this study was focused on older adolescent girls, which is an under-researched population and is important to investigate as older adolescent girls have the highest rate of mental health issues (Lipari & Hedden, 2014; World Health Organization, 2015a). Further, it has been found that the leading cause of death among girls aged 15–19, which was the population for this study, is suicide (Lipari & Hedden, 2014; World Health Organization, 2015a). For this reason, it is important to further understand how connecting with nature and PA may promote positive mental wellbeing for adolescent girls.

It is well known that both nature and PA provide many benefits for physical wellbeing (De la Fuente et al., 2021; Jimenez et al., 2021; Johnstone et al., 2022; Maher et al., 2021; Remme et al., 2021; Twohig-Bennett & Jones, 2018). For instance, studies suggest that both nature and PA can lower blood pressure, heart rate, muscle tension, and cortisol levels, as well as increase parasympathetic nervous system activity (Capaldi et al., 2014; Park et al., 2010; Twohig-Bennett & Jones, 2018). Positive benefits towards physical wellbeing were also spoken about as participants highlighted that PA and time spent in nature can help decrease health

issues.

### **Connecting Nature and PA Provides Adolescent Girls with a Sense of Connection**

As previous research has highlighted, engaging with nature or spending time in natural environments is associated with various mental health benefits (Martin et al., 2020; McMahan & Estes, 2015; Nisbet et al., 2009; Weir, 2020). Findings from this study suggest that connecting with nature provided adolescent girls with a deeper connection to the world. These findings align with previous research that suggests engaging with nature can facilitate a sense of connectedness, also known as nature connectedness (Martin et al., 2020; Nisbet et al., 2009; Tauber, 2012). The term nature connectedness is a psychological construct that measures subjective sense of relationships with the natural world (Capaldi et al., 2014; Martin et al., 2020; Nisbet et al., 2009). Past research considers nature connectedness to mediate the relationships between nature contact and positive outcomes, such as an overall increasing in wellbeing (Liu et al., 2022; Mayer et al., 2009; Mayer & Frantz, 2004; Olivos et al., 2011).

When referring to nature connectedness, previous research suggests that this connection is much more than just being in nature or exposed to nature, as anyone can go for a hike outside without truly connecting with nature (Liu et al., 2022; Nisbet et al., 2019; M. Richardson et al., 2022). Participants in this study suggested they were able to feel a sense of connectedness to the natural world through performing PA outdoors. For example, participants described their connectedness to nature through activities such as, hiking, walking, and biking. As described above, adolescent girls in this study felt as though having a relationship with nature and PA provided them with the opportunity to experience a sense of connectedness with nature, and therefore adds to the growing body of literature on nature connectedness.

One of my key findings is the importance of outdoor environments for girls' PA, in

contrast to work that has suggested girls are more active in indoor environments (Dunton et al., 2007; Klinker et al., 2014; Pawlowski et al., 2014; Ries et al., 2008). Based on the experiences of girls in our study, we found that adolescent girls in this study genuinely enjoy being outdoors in nature and that they choose to connect nature and PA. Importantly, time spent outdoors can be a major contributor to overall PA (Ferreira et al., 2007; Gray et al., 2015). Not only did the girls in our research articulate a clear preference for outdoor PA, but they also suggested PA in nature is more engaging. This finding is in line with Coen et al (2019), who found that outdoor spaces allowed for more variety and unstructured opportunities for PA (Coen et al., 2019). Evidence suggests that when adolescents are in nature they are more likely to engage in PA, especially when engaged in a preferred activity (Barfield et al., 2021; Fromel et al., 2017; Gray et al., 2015; Mnich et al., 2019).

### **Exposure to Stereotypes Influences Adolescent Girls' Connection with PA & Nature**

Participants demonstrated an awareness of stereotypes and gender norms in their everyday life. The adolescent girls within this study discussed examples of stereotypes and gender norms they have experienced or witnessed. Adolescent girls spoke about the housewife stereotype, where women were expected to focus on performing household chores and upkeeping their physical appearance. These findings are in line with previous research, suggesting that in the past, western culture expected girls to wear dresses, cook and clean, raise children, maintain a beautiful and delicate body, and remain passive, moral, and pure (Bound Alberti, 2021; Griffin, 1998; Koenig, 2018; Pearce, 2017; Rathus et al., 2013; Whittington, 2006; Zimmerman, 2011). Not only did the girls in this research believe that these expectations persist in western society, but they also suggested these expectations were found to impede their opportunities to connect nature and PA. For example, participants discussed how they are



expected to stay clean, look pretty, be non-rowdy, and only participate in nonstrenuous activities. Participants highlighted that when they looked back, they wished they were presented with the opportunity to play outside more often than staying inside and paint their nails. This finding is in line with Colley and Krutka (2021), who found that girls look back with frustration that they were forced to wear dresses instead of pants, or that they were not invited to fishing or hiking outings, for example, with their grandfather. This research adds to the literature by illustrating that as girls age, they can take initiative and participate in activities that suit their interest, such as going out in nature and PA.

The results from this study are also in line with previous evidence showing how girls are taking the initiative and resisting stereotypes and gender norms. For example, girls who are between the age of older adolescent and young adult feel as though they do not need to conform to traditional gender roles or behaviors anymore (Eagly et al., 2020; Liu et al., 2022; Mulvey & Killen, 2015). Further, evidence shows that young girls who spend time with women who follow non-traditional roles reported rejecting traditional attitudes as they got older, as exposure to counter stereotypical role models has been found to reduce gender stereotyping (Napp & Breda, 2022).

Resistance and pushback against norms and stereotypes can be seen as controversial, as some research has found that adolescents are against deviating from the social norms centred around femininity and submissive behaviours (Haines et al., 2016; Mulvey & Killen, 2015; Rosselli. et al., 2020), while other research has found that deviating from the stereotypical norm such as, being active is acceptable (Bevan et al., 2021; Eagly et al., 2020; Edell, 2013; Killen et al., 2013; Liu et al., 2022). However, it is important to note that many studies found age-related differences regarding the distinction between conformity to stereotypes and resistance (Bevan et

al., 2021; Edell, 2013; Killen et al., 2013; Mulvey & Killen, 2015). The novel findings of this study support the idea that gender norms and stereotypes are beginning to be challenged and rejected by adolescent girls. These findings are consistent with previous work highlighting that over the past few decades girls and women have begun to tackle, limit, and resist stereotypical norms (Plumwood, 2019; Spencer et al., 2021; Wilde, 2007). For example, Spencer et al. (2021) found that girls take pride in challenging norms such as, being active, playing outside, and not worrying about their physical appearance. Findings from this study can help strengthen previous research highlighting adolescent girls' push towards challenging and rejecting stereotypical norms.

The controversy between conformity and resistance to stereotypes can be linked to the current decrease in PA (Gentile et al., 2018; Metcalfe, 2018; Walker, 2022). A growing body of research that focuses on PA has found that when negative stereotypes about women persist there is likely a reduction of PA (Gentile et al., 2018). The social construction of masculinity is strongly associated with traditional and stereotypical masculine characteristics, such as aggression, dominance, toughness, and confidence (Conroy, 2013; Gentile et al., 2018; Metcalfe, 2018; Walker, 2022). Conversely, femininity includes traditional and stereotypical feminine characteristics, such as sensitivity, purity, and innocence leading to expectations of attractiveness, physical thinness, and an aversion to PA. These socially constructed ideas of masculinity and femininity continue to be a challenge for adolescent girls to overcome, as participants in this study identified being negatively evaluated or stereotyped when challenging the idea of femininity. For instance, many participants in this study found that by connecting nature and PA they challenged the idea of femininity, which resulted in them feeling vulnerable to negative evaluation from their peers and others. The findings from this study are in agreement

with past literature; however, this study also adds to the growing body of literature on negative stereotypes that influence girls' performance in PA by adding nature as a component.

Based on the experiences of girls in this study, it was found that when girls do challenge the socially constructed idea of femininity, they can become vulnerable to negative evaluation and stereotypical views from their peers. This finding is congruent with literature that indicates when girls do not adhere to gender-specific stereotypes and engage in stereotypical masculine behaviour, such as rough and tumble play, they can become vulnerable to negative evaluation, such as name-calling and teasing (Gentile et al., 2018; Khan, 2021; McNiel et al., 2012; Schmalz & Kerstetter, 2006). As discussed, like previous research, participants in this study felt that when they focus on connecting nature and PA, they become vulnerable to negative evaluation and stereotypical views from their peers.

An important finding to note is that the behaviours adolescent girls refer to in previous sections regarding the benefits of connecting nature and PA, runs counter to the stereotypes they described in this section. For instance, the theme connecting nature and PA to wellbeing, and the theme connecting nature and PA to a sense of connectedness, highlights the positive benefits adolescent girls can receive and that they enjoy connecting nature and PA. Throughout this research, participants discussed how they genuinely enjoy being in nature and that they choose to connect nature and PA. Participants highlighted the positive benefits of this connection toward their wellbeing, such as opportunity to connect with friends, family, or their community, and discussed the different ways in which they chose to connect with nature and PA. One reason for this inconsistency could be due to the fact that girls who volunteered for this study identified enjoy nature. Although adolescent girls in this study highlighted gender stereotypes they have faced and witnessed regarding nature and PA, they situated themselves as being aware of these

stereotypes and the influences they may have on their decision making. For example, participants in this study highlighted that connecting nature and PA could result in them being negatively evaluated and stereotypical views from their peers; however, they did not suggest that this negativity fully stopped them from connecting with nature and PA. Instead, they emphasized that they were aware of this negative evaluation, that they have received it, and how it influenced their future activities. These results are well in line with recent evidence showing that stereotypical gender roles can lead girls to feel as though they must gracefully walk the line between being conscientious of others and feminine, yet confident, assertive, and aware (Napp & Breda, 2022; Olsson & Martiny, 2018; Plumwood, 2019).

Participants in the current study discussed how stereotypes are deeply intertwined within our society and are rooted from many different sources, such as family traditions, cultural influences, policy, and media. Likewise, previous research has found that gender stereotypes are complex and originate from local culture and traditions (Hentschel et al., 2019; Institute of Physics, 2018; Koenig & Eagly, 2014). Based on the experiences of girls in our study, we found that adolescent girls in this study discussed the influence of old traditions and cultural influences through examples within a family setting. For example, participants suggested that stereotypes were enforced in their homes through family traditions, which they then connected back to old cultural and family beliefs, where their parents learned from their parents, and so on, leading them to be deep-rooted in a family setting. These results replicated previous research on the influences of stereotypes (Institute of Physics, 2018; Koenig, 2018; Our Watch, 2018), showing that family, friends, communities, the media, and other forms of popular culture all communicate messages, whether explicitly or subtly, enforcing gender norms.

Another finding of the current research study was the influence of the media on

stereotypes. The media has often been studied in terms of the role that it plays in creating, promoting, and sustaining stereotypes, as the media has a large influence on many people (Rosenthal & Overstreet, 2016; L. M. Ward & Grower, 2020). We live in a society where modern media exposes youth to distorted depictions of gender norms and stereotypes, and youth consume these media for a large portion of their days. Participants in this study believed that the media enforces stereotypes concerning body image such as those related to slenderness and beauty. In addition, participants felt adolescent girls were susceptible to stereotypes as they spend much of their free time browsing media and that it influences their age group. As participants in this study were older adolescent girls, it is not surprising that they believed the media was a main contributor to stereotypes they witness many adolescents spend a significant amount of time using media, more specifically, social media (Coyne et al., 2020). The finding that the media is seen as a major contributor to stereotypes is aligned with past literature that found that the media aids in creating and reinforcing stereotypes (Ross, 2019; The Australian Human Rights Commission, 2019; L. M. Ward & Grower, 2020). Participants viewed their connection to society through their connection with the media and suggested that social media has the power to completely change people's views and lives, therefore highlighting the power of the media.

### **Study Strengths and Limitations**

Several strengths have been identified in this research study, as this study was able to explore the experiences and beliefs of ten participants with respect to gender, nature, and PA. As the topic of nature and PA is understudied, especially among older adolescent girls, this research provided space for an underrepresented group to share their perspectives. This study provides data on older adolescent girls' complex relationship between nature, and fills a gap in the

literature on older adolescent girls' ability to form a connection between nature and PA.

As the purpose of this study was to explore how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes, a gendered lens, specifically feminist QD and feminist reflexive TA was utilized. Feminist QD and reflexive TA allowed me to gain access to the meanings that adolescent girls attribute to their connection between nature and PA. More specifically, a feminist lens allowed me to gather information directly from the adolescent girls while employing a subjective outlook and recognizing that the perceptions of their relationship between nature and PA may vary. Additionally, I was able to gain access to the meanings that adolescent girls attribute to their own connections. Although only one theme specifically explores adolescent girls' experiences with stereotypes and gender norms, many aspects of the first three themes did in fact connect to gender norms and stereotypes. For example, the first three themes had underlying aspects of gender norms and stereotypes; however, participants did not explicitly identify them as such.

My identity as a young woman and my personal feelings towards nature and PA may have impacted my interpretation of results. However, my position as an insider may have been beneficial as I could relate to participants and different situations they have experienced. Additionally, as I am aware of my position as a young woman with a positive relationship towards nature and PA, I was able to be mindful of and discuss my position throughout the analysis. Additionally, my age and gender may have allowed participants to perceive me as an insider, as I am a young woman myself, which may have helped mitigate the power dynamics often present between interviewer and interviewees.

Throughout this research I discovered that although I felt like an insider at times I also felt like an outsider. In the beginning I believed that my identity as a young woman would allow

me to be perceived as an insider and in many ways it did, however, there were times where I felt my age and word choice left me feeling like an outsider. During recruitment, many platforms I tried to use to reach potential participants fell flat. I realized that many adolescent girls do not use the same platforms younger adults like myself would use such as, Facebook. In the end, I ended up recruiting my participants through their parents, as their parents saw my recruitment posters and shared the information with their kids. In addition, during the interviews I found myself starting to change the language I originally had in my questions to better fit the slang and terminology I heard other participants use. By building rapport with each participant at the beginning of each interview I was able to identify different language they used, which in the end allowed me to generate codes and develop themes that captured their experiences.

It is important to highlight that this study was likely to attract girls and young women who enjoy nature and PA. For this reason, it should be noted that the perspective of those who choose not to engage in PA or nature may not be represented. Additionally, there is potential that the results may be overwhelmingly from the perspective and point of view of the white lens. Although recruitment posters were sent out to minority populations, most participants did not state their ethnicity during the interviews, and only 8 out of 10 participants completed the demographic survey. Of those that completed the survey, the majority self-identified as White-Canadian, with only two participants self-identifying as Chinese-Canadian and Syrian. This may have contributed to the results of the study being overwhelmingly from the perspective and point of view of the white lens, especially since myself as a white researcher did the analysis and writing. Lastly, no participants mentioned having Two Spirit or nonbinary gender identity, which could potentially exclude the experiences of those that are further marginalized.

The COVID-19 pandemic may have limited this study. For example, in-person posters

were not utilized at the time of recruitment due to public health restrictions, leading to differences in who was able to access the recruitment materials as the poster was available on online platforms only. Further, interviews were conducted online, meaning participants needed the time, space, internet, and privacy to participate. To mitigate this limitation, all interviews were planned around participants schedules and participants were given the option to conduct the interviews via phone to limit the need for internet. At the start of each interview, participants were also informed that respecting their privacy was a vital part of the study and that they were under no obligation to respond to any questions with which they did not feel comfortable.

### **Significance & Implications**

This study will contribute to the limited literature on older adolescent girls and highlight adolescent girls' complex relationships with nature and PA. This study examined adolescent girls' relationship between nature and PA through a health promotion lens. By using a health promotion lens, this research was able to further the knowledge on health, PA, and nature among adolescent girls and support relevant action and policy. Although an individual study may not change policy or the way we deliver information, it can help pave the way for future research on this area and add to the growing knowledge base. Population health promotion and public health professionals today must collaborate with those who attempt to shift all aspects of society towards health, wellbeing, and gender equality (United Nations, 2016). With the recognized importance of good health and wellbeing, the health promotion discipline is perfectly situated to advocate for women and girls' equal rights within health and wellbeing. Health promotion should continue working to reduce health disparities and address the social determinants of health while considering nature and PA's implications.



Additionally, there are possible implications for the researcher and study participants. As the researcher, I was able to further my knowledge of adolescent girls' connection between nature and PA and obtain a master's degree. Completing this research and listening to adolescent girls' experiences with nature and PA allowed me to deepen my knowledge on QD and reflexive analysis. Additionally, this study allowed me to expand my knowledge on adolescent girls and develop a better understanding of the relationship between nature and PA. By allowing adolescent girls to express their feelings about their relationship with nature and PA, it is possible that participants gained a sense of empowerment. By participating in this study, adolescent girls were able to use their experiences to highlight specific stereotypes they face regarding nature and PA.

### ***Adolescent Girls' Suggestions***

In this study, older adolescent girls provided several suggestions concerning changes that could be made to enhance their connection between nature and PA. Participants also gave suggestions on whom they thought the results should be shared with. First, many participants noted that increased awareness would lead to increased promotion. For example, participants stated that they wish there were more posts on social media about girls engaging in nature, being active, getting dirty, and playing with bugs. Participants also suggested that increased promotion and awareness would allow girls the power to use their voices in a positive way. Many participants wished that nature and PA were discussed more in general, as an increase in conversation could make adolescent girls feel more comfortable. Participants felt that if more people talked about nature and PA, it would make them feel more comfortable engaging in nature and PA.

Participants highlighted the need for increased community promotion. Participants

suggested that if they were made aware of more options within their communities, such as walking trails or organized events, they would be more open to attending as there would be other people there. Further, some participants mentioned how PA was promoted in their community through sports, but unorganized nature and PA events were not promoted. This led participants to suggest the need for increased awareness. One participant mentioned that they go to a university that has health programs, but they felt as though these societies did not advertise or promote events they were having around campus. Lastly, a few participants highlighted the importance of making PE classes within school gender friendly so everyone can have a chance to explore the things they like regardless of how they identify.

Participants also gave suggestions on whom they thought the results should be shared with. All participants highlight that the results should be shared with younger girls in the hopes to lead them on a better path into their high school and university years. Participants discussed how the results from this study might allow younger girls to feel more confident to go outside, to explore, or be active. One participant suggested that the results be shared with adolescent teen boys. This participant further stated that if boys could see how girls perceive the world and PA-nature stereotypes, it could benefit our future. Lastly, a few participants highlighted that they felt the results from this study should be shared with people of a higher power. For example, they suggested that institutions that directly affect children, such as different sectors of the school boards and administrators, so they are more aware of how girls view PA and help to create an environment that's more comfortable for PA wise. Additionally, participants highlighted the importance of support systems, such as psychologists and doctors, as this information on nature and PA could be helpful for them as PA is a huge part of general health.

## **Future Research**

Future research should further explore the concept of adolescent girls in relation to nature and PA. To further the knowledge on older adolescent girls' challenges regarding their relationship between nature and PA, future research should consider other intersecting identities, such as race, LGBTQ+ status, (dis) ability, income, education, employment type, and more. By incorporating other intersecting identities, we can draw attention to specific aspects that may be impeding their ability to form a relationship between nature and PA. By further investigating adolescent girls' perspectives and considering other intersecting identities, there is potential to create a deeper awareness towards the stereotypes or gender norms these identities may face, providing opportunity to deepen the scope within the health promotion field.

Additionally, as gender and gender expression are fluid and individual concepts, future research should look deeper into gender identity. All participants in this study self-identified as a girl; however, it would be beneficial for future research to dive deeper into gender identity and ask each participant to identify themselves in their own words. Further, this study was only conducted in Nova Scotia, which may have resulted in the study being overwhelmingly from one perspective. Future research should explore the experiences of young women and girls across the globe, as participants experiences may be different from country to country.

## **Knowledge Translation**

An important part of research is to ensure that study results be disseminated to those who may benefit or may be able to act in ways that may benefit from the findings (Canadian Institutes of Health Research, 2012). First, the dissemination includes the defence of the thesis. Following the completion of the study, I will produce a community report of the study findings and disseminate it to study participants as a respectful way to thank them for their time. Study

participants are welcome to share the document with whomever they wish, which could include other young women who may relate to or see themselves in the study findings. Finally, I intend to publish the results of the study in a health promotion journal. By publishing and presenting study findings in spaces where the academic community is likely to reach them, I will be furthering my research knowledge on the topic of nature, adolescent girls, and PA. This method of knowledge translation ensures study results will be shared with those who may benefit or find this research useful.

## **Conclusion**

The current literature revealed a gap, wherein older adolescent girls and their relationship with nature and PA had yet to be fully studied. Older adolescent girls are usually excluded from literature as they are in-between the ages of children and adults. Although PA is a heavily researched area, the connection between nature and PA, especially in older adolescent girls, presented a gap in the literature. This study presents a unique contribution to the literature by exploring how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes.

Participants of this study allowed for an in-depth analysis of the ways in which older adolescent girls perceive their relationship with nature and PA. Feminist QD guided by reflexive TA with a feminist lens allowed me to explore participant perspectives and experiences carefully. Additionally, the two allowed me to analyze adolescent girls' experiences to respond to the research question and objectives. According to the findings of this study, participants' relationships between nature and PA is influenced by their environments, their wellbeing, their sense of connection, and stereotypes. Participants who identified as living in a rural area highlighted their connection to nature to be positive due to the resources they had in their area,

such as access to hiking trails. Additionally, participants in this study expressed how wildlife, such as bugs and animals, created a barrier to their connection. Although participants highlighted some negative barriers from connecting nature and PA, for the most part, they perceived their overall connection to be positive. Participants highlight how their connection with nature relates to overall wellbeing and how their social, emotional, mental, and physical wellbeing can be enhanced through connecting nature and PA. Findings from this study suggest that connecting with nature provided adolescent girls with an overall sense of connection to themselves and their surroundings. Based on the experiences of girls in this study, it was found that they genuinely enjoy being outdoors in nature and that they choose to connect nature and PA. Lastly, participants demonstrated an awareness of stereotypes and gender norms in their everyday life. The adolescent girls within this study discussed examples of stereotypes and gender norms they have experienced or witnessed regarding nature and PA.

Although the purpose of this study was to understand how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes, participants did not directly connect all their experiences to the stereotypes they have been exposed too. Instead, many of the participants experiences had underlying aspects of gender norms and stereotypes. Furthermore, some of the stereotypes and gender norms described by adolescent girls in this study actually run counter to some of their positive perspectives described throughout the other themes. Participants highlighted that connecting nature and PA could result in them being negatively evaluated and stereotypical views from their peers; however, they did not suggest that this negativity fully stopped them from connecting with nature and PA. Instead, participants emphasized that they were aware of this negative evaluation, that they have received it, and how it influenced their future activities.

Participants then shared several suggestions concerning changes that could be made to enhance their connection between nature and PA. For example, participants highlighted the need for increased community promotion and stated if they were aware of more options within their communities, such as walking trails or organized events, they would be more open to attending as there would be other people there. Finally, participants discussed their desires to share results with other girls and women. Participants discussed how the results from this study might allow younger girls to feel more confident to go outside, to explore, or be active.

### **Summary**

In summary, this research provided an opportunity to better understand how older adolescent girls' relationship between nature and PA is influenced by gender norms and stereotypes. By participating in this study adolescent girls were able to express their perspectives regarding their relationship with nature and PA. Additionally, this work provided a safe space for participants to highlight specific stereotypes they face regarding nature and PA. Although this study may not change policy or the way we deliver information, it adds to the growing body of knowledge and may act as a template for future research on this area. Health promotion should continue working to understand the influence of stereotypes and should consider nature and PA implications when addressing health disparities and social determinants of health.

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## Appendix A

### Recruitment Poster

# Calling All Older Adolescent Girls & Young Women

## WHAT IS YOUR CONNECTION BETWEEN NATURE & PHYSICAL ACTIVITY?



The research study "Understanding Older Adolescent Girl's Perceptions of the Relationship Between Nature & Physical Activity" is looking for older adolescent girls/young women to share their experiences and perspectives with nature and physical activity, either in a one-on-one or group interview (your choice) for approximately one hour

To participate you should identify as a girl/women between the ages of 16-19, live in Nova Scotia, and have experiences, connections, or a relationship with nature & physical activity

If you are interested in participating or have any questions about this study, please contact Cynthia MacDonald at [cy800227@dal.ca](mailto:cy800227@dal.ca)



## **Appendix B**

### **Recruitment Email**

Dear \_\_\_\_\_

My name is Cynthia MacDonald, and I am a Masters of Arts in Health Promotion student at Dalhousie University (under the supervision of Dr. Becky Spencer). I am emailing you today to see if you may be able to help me recruit participants for my study on older adolescent girls' perceptions of the relationship between nature and physical activity. I am interested in understanding the perspectives of adolescents girls in Nova Scotia regarding nature and physical activity, and how their relationship between these topics is influenced by gender norms and stereotypes. I am seeking to recruit older adolescents who identify as a girl/young woman between the ages of 16-19, who currently live in Nova Scotia and have perceptions, experiences, connections, or a relationship with nature and physical activity.

Attached to this email is a study recruitment poster. It is my hope that you will share the poster on your social media account and/or distribute it to your email list or to anyone you think might be interested. Should you have any questions or concerns about the study, or want more information, please do not hesitate to reach out by responding to this email, or you can contact my supervisor at [becky.spencer@dal.ca](mailto:becky.spencer@dal.ca).

Sincerely,

Cynthia MacDonald

## Appendix C

### Semi-structured interview questions

1. What does physical activity mean to you?
2. Can you tell me a bit about your physical activity?
  - What do you do for physical activity?
    - Further probes: with peers, with others, alone
  - How do you talk about physical activity with other people? Can you give me some examples?
    - Further probes: with peers, with others, alone
3. Can you tell me how physical activity affects your health and wellbeing?
  - How does physical activity impact your personal physical, emotional, or mental health?
  - How does physical activity impact your social life?
  - How does physical activity impact your connection with your community?
4. Can you tell me about your experience (in general) with nature or being outside?
  - How do you like to engage with nature?
  - How do you feel about being outside or in nature?
  - How does spending time in nature influence your sense of belonging or connection with nature?
  - How have these experiences shifted over the last few years, from childhood to adolescence?
5. Can you tell me about your experience with physical activity with nature or being outside?
6. How do you feel girls are talked about or portrayed relating to physical activity and nature?
  - Probes: at school, in the media, among your friend groups
7. Can you tell me about how you and/or your peers, friends, family perceive your/their connection between nature and physical activity?
  - Feel free to tell me about some experiences. They can be positive and/or negative
8. Can you tell me about any stereotypes you, and/or your peers/friends experience while connecting with nature and physical activity?
  - These stereotypes can be either positive and/or negative

9. Have you or your peers/friends experienced gender norms or stereotypes regarding nature and physical activity? Where do you think stereotypes and gender norms come from?
  - Probes: Environments, institutions, media, industry, social influence, policy, culture, etc.
10. How does identifying as a girl or woman impact how you experience physical activity and nature?
11. What would help you feel good about engaging with nature and physical activity?
12. Who might this research most benefit? Who would you want the results of this study to be shared with?

## Appendix D

### Demographics Survey

This is a follow up survey to the semi-structured interview which has already been completed. You have originally gave your verbal consent to participant in the interview, which is shown above. The additional survey also requires your consent.

#### Additional Consent for the Demographic Survey

I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction.

**Yes No**

I understand that I have been asked to take part in an additional survey

**Yes No**

I understand that my name and identity will not be attached to the additional survey group

**Yes No**

I agree to take part in this additional section of the study. My participation is voluntary, and I understand that I am free to withdraw from the study at any time and/or free to not complete this additional part of the study

**Yes No**

1. I have taken part in Cynthia MacDonald's study regarding adolescent girls' connection between nature and physical activity. I agree to complete this demographic survey, understanding that the results will not be connected to my individual responses or identity, and will be used to describe the participant group only.
  - a. Yes
  - b. No
2. Please identify your age at the time of your interview.
  - a. Response: \_\_\_\_\_

3. As gender and gender-expression are fluid and individual concepts, we have left an open space to identify your gender. Some examples of gender include, but are not limited to: woman, trans\*, and non-binary
  - a. Response: \_\_\_\_\_
4. Cultural identity is your self-defined sense of belonging to a group, which could include (but is not limited to) race, ethnicity, nationality, or religion. Please list or describe the ethno-racial-cultural group(s) with whom you identify. Examples include: Mi'kmaq, Italian, African Nova Scotian, Lebanese, Inuit, Acadian, Jewish, English, Canadian, Chinese- Canadian, Colombian, German, etc.
  - a. Response: \_\_\_\_\_
5. Do you identify as a person with a disability?
  - a. Yes
  - b. No

Thank you for taking the time to complete this additional survey!

## Appendix E

### Consent Form

**Project title:** Understanding Older Adolescent Girl's Perceptions of the Relationship Between Nature and Physical Activity

**Researcher:** Cynthia MacDonald, MA in Health Promotion Candidate, Dalhousie University, cy800227@dal.ca, (902)-318-4997

**Supervisor:** Dr. Rebecca Spencer (Becky.spencer@dal.ca)

#### Introduction

We invite you to take part in a study being conducted by Cynthia MacDonald, a Masters of Arts in Health Promotion student at Dalhousie University. Choosing whether or not to take part in the study is entirely your choice. There will be no negative impact if you decide not to take part. The information below tells you what is involved in the study, what you will be asked to do, and about any benefit or risk you might experience. You should discuss any questions you have about this study with Cynthia MacDonald. Please ask as many questions as you like and contact her at any time.

#### Study purpose and outline

Older adolescent girls may perceive their relationship with nature and physical activity to be unique, and spending time connecting with nature may be important for health and wellbeing. However, there has been little identified research to date that focuses specifically on older adolescent girls and their relationship between physical activity and nature. Physical activity is any bodily movement produced by skeletal muscles that require energy expenditure, such as activities like walking, cycling, or sports (World Health Organization, 2018). Where girls' connections with both nature and physical activity can be complex due to the influence of stereotypes and gender norms, the study seeks to explore how older adolescent girls' relationship between nature and physical activity is influenced by gender norms and stereotypes.

#### Who can take part in this study

You may take part in this research study if you reside in Nova Scotia, and if you are between the ages of 16 and 19. Additionally, you should identify as a girl, woman, non-binary femme, or Two-Spirited, and be interested in engaging in the data collection plans described below. You do not have to have had a direct connection with nature or physical activity. We are looking for recruit six to 10 participants. All participants will need to have an internet capable device to run Microsoft teams.

#### What you will be asked to do

If you decided to take part in this study, you will be asked to take part in either a group interview or a one-on-one interview, whichever you prefer. Group interviews will only be offered to participants who have a significant other or friends willing to participate with them. The one-on-one or group interviews, will take place on Microsoft teams and will take approximately 1 hour. The maximum amount of time you could spend participating in this study is two hours, as actual participation could approximately be one hour, but recruitment, scheduling, and reviewing the



informed consent document may take extra time. During your one-on-one or group interview, you will be asked to share your experiences with nature and physical activity. All interviews will be recorded with a handheld audio-recorder and recorded through GarageBand, and later transcribed verbatim (typed out). GarageBand is a form of digital audio workstations for macOS, that allows users to create music and record audio and will be used to record the entire group or one-on-one interview as a backup to the handheld audio-recorder.

### **Possible benefits, risks, and discomforts**

Participating in this study might not benefit you directly, but we may learn things from your experiences that could help benefit other adolescent girls. The risks associated with this study are minimal but may include the possibility of emotional or psychological distress. Talking about nature and PA may be therapeutic for participants but given the negative experiences some adolescent girls may have experienced, it could also evoke strong emotions. You can choose to skip any question in your one-on-one or group interview and are free to stop participating at any time. As a honorarium for participating in this study and providing your time, you will receive a compensation of a 15 dollar e-transfer that will be sent to the email you provided during the verbal consent.

### **How you will be protected**

Your participation in this research will be known only to Cynthia MacDonald. The information that you provide to her will be kept confidential through the use of pseudonym. If you choose to take part in a group interview, your identity will be known to the other participant in the group. However, group interviews will only be offered to participants who have a significant other or friend who is willing to take part in the study, therefore participants in group interviews will be familiar with each other and confidentiality should not be an issue. All your identifying information such as your name and contact information will be securely stored separately from your research information. We will use pseudonym (not your name) in our written and computer records. During the study, all electronic records will be kept secure in an encrypted file on the researcher's password-protected computer. Direct quotes will be used in study findings but will not be associated with any individual name. No information about your participation in this research will be disclosed to anyone unless compelled to do so by law, such as in the unlikely event that child abuse is suspected and the researchers are required to contact authorities.

### **If you decide to stop participating**

You are free to stop participating and leave the study at any time without any ramifications. To stop participating in the study you can inform the researcher at any point during the interview that you do not wish to continue. If you decide to stop participating during the study, you can decide whether you want any of the information that you have provided up to that point to be removed or if you will allow us to use that information. If at the end of a one-on-one interview you decide that you would not like any of the information that you have provided to be used, you can inform the research that you wish to revoke all information given. If you participate in a group interview your data may not be able to be removed if you decide to stop participating due to complications in removing individual voices from a group. However, group interview participants can request that specific anecdotes or stories that they told can be removed for up to one week following the interview. If you participated in a one-on-one interview, you can request

that your data be removed from the study for up to one week after your interview. You can make data removal requests by emailing the researcher at [cy800227@dal.ca](mailto:cy800227@dal.ca).

### **How to obtain results**

The lead researcher, Cynthia MacDonald, can provide you with a short summary of the study findings when it is finished, as well as updates on future publications or presentations including study findings. You can request to obtain this summary and updates by verbally providing your email address during the verbal consent process.

### **Questions**

The researchers are happy to talk with you about any questions or concerns you may have about your participation in this study. Please contact Cynthia MacDonald at 902-318-4997, [cy800227@dal.ca](mailto:cy800227@dal.ca) or her supervisor Dr. Rebecca Spencer at [Becky.spencer@dal.ca](mailto:Becky.spencer@dal.ca) at any time with questions, comments, or concerns about the research study. If you have any ethical concerns about your participation in this research, you may also contact Research Ethics, Dalhousie University at (902)-494-1462, [ethics@dal.ca](mailto:ethics@dal.ca).

## Appendix F

### Verbal Consent Script

My name is [RA or lead researcher name) and I [describe role at Dalhousie University]. I am part of a study that is conducting research on older adolescent girls' relationship between physical activity and nature.

This study seeks to understand older adolescent girls' perspectives regarding how their relationship between physical activity and nature is influenced by gender norms and stereotypes. You have been asked to take part in a one-on-one or group interview, lasting approximately 60 minutes. You will be compensated for your time by receiving a \$15 honorarium.

Every effort will be made to keep your data confidential. One-on-one and group interviews will be audio recorded, and all recordings will be deleted once they are transcribed. Transcripts will be saved on a password protected hard drive, and only the research team will have access to the data. Although your individual quotes may be used in study results, they will not be attached to your real name, and any identifying information in them will be removed (i.e. your workplace, neighborhood, etc.). If you are participating in a group interview, there is always risk that other participants might share your data with non-participants. It is asked that all participants respect the privacy of others in their group and do not discuss group details with anyone outside of the study and, if data is collected virtually, refrain from any type of recording at all times.

Should you feel discomfort during the interview you are welcome to skip any question. Further, you can stop participating in the study at any point without consequence. If you have chosen to participate in a one-on-one interview, you may ask to have your data removed from the study up to a week after your participation by emailing the lead researcher. Data removal is more difficult in group interviews, but should you wish to remove a particular story or anecdote from your data, this can be done by emailing myself up to a week after the group interview.

If you have any questions or concerns about your participation in this study or the study as a whole, please feel free to ask me now or contact myself, my supervisors, or the Dalhousie Research Ethics board.

#### **To be read aloud and checked off by the researcher:**

I have read the explanation about this study. I have been given the opportunity to discuss it and my questions have been answered to my satisfaction.

**Yes    No**

I understand that I have been asked to take part in either a one-on-one interview or a group interview, depending on which is most comfortable to me.

**Yes    No**

I understand that group and one-on-one interviews will be audio recorded, and direct quotes of things I say may be used in presentations and/or publication, but will be attributed to a pseudonym and will not contain identifying information such as my school, neighborhood, etc.

**Yes    No**

I agree to take part in this study. My participation is voluntary, and I understand that I am free to withdraw from the study at any time, but that my individual voice cannot be removed from audio-recorded group discussions.

**Yes    No**

**Provision of Results**

Would you like to receive a copy of a summary of this study's results? **Yes    No**

Would you like to be updated (via email) regarding publications, events, or presentations associated with this study? **Yes    No**

If you said **Yes** to either of the above questions, please spell out your name and email for me.

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

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

## Appendix G

### Resources

#### **For immediate/emergency assistance:**

Mental Health Crisis Line, available 24 hours, seven days a week: 1-888-429-8167 (toll-free)

Kids Help Phone, available 24 hours, seven days a week: 1-800-668-6868 (toll-free)

\*Or call **911** or go to your closest emergency department.

#### **For ongoing assistance:**

##### **[Eating Disorders Nova Scotia](#)**

A community-based organization that offers peer support for individuals with eating disorders and their families, friends and partners.

##### **Healthy Minds Navigator**

Provides a variety of peer-based services to people living with mental illness and their families, including assistance with navigating the mental health system.

902-404-3504

##### **Self-Help Connection**

A resource for information and tools for self-help.

##### **Avalon Sexual Assault Centre**

Avalon Sexual Assault Centre provides services for those affected by sexualized violence, with primary emphasis on support, education, counseling and leadership/advocacy services for women.

902-422-4240

##### **Sexual Assault Services Association (SASA)**

The Antigonish Women's Resource Centre and SASA provides services to individual women and adolescent girls that include crisis and ongoing problem-solving support, information, advocacy, accompaniment and referral.

902-863-6221

##### **IWK**

Mental health and addictions service for children and youth under the age of 19 and women of all ages

902-464-4110 or toll free 1-855-922-1122

#### **Further recourses:**

##### **Nova Scotia Resource Map**