

**TEN-YEAR TRENDS IN BULLYING, DISCRIMINATION AND SUICIDALITY
AMONG ADOLESCENTS EXPERIENCING OVERWEIGHT AND OBESITY IN
BRITISH COLUMBIA**

by

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Abstract

Background: Weight-related challenges in young people under twenty four years of age is a global health issue. Young people who are overweight or obese often feel socially devalued, and subsequently experience weight-related victimization. These experiences place young people at a higher risk of suicidal behaviours.

Justification: There is a gap in the scholarly literature examining whether the prevalence of weight-related victimization and suicidality has changed over time while assessing the disparities in these experiences among Canadian young people.

Objective: To examine how weight-related victimization and suicidality have been affected over ten years amongst high-school boys and girls of different weight groups in British Columbia.

Methods: A secondary analysis of data was conducted using the British Columbia Adolescent Health Survey (B.C. AHS) of grades seven and twelve students over three survey cycles.

Weight-related experiences of interest included teasing, social exclusion, physical assault, appearance-related discrimination, and suicidality (ideation, attempt). Disaggregated by weight status and survey cycle, data were analyzed using cross-tab analyses and aged-adjusted logistic regressions for boys and girls.

Results: Weight-related bullying, discrimination, and suicidality were more prevalent among overweight/obese and underweight boys and girls compared to their healthy weight peers with some exceptions and considerations. In terms of change over time between 2003 and 2013, teasing and social exclusion increased among healthy weight boys and girls and teasing increased among underweight girls. Physical assault decreased among healthy weight boys and girls and overweight/obese boys. Appearance-related discrimination decreased among most weight categories except healthy weight girls as they had increasing trends. Suicidal ideation

decreased among boys and girls, except underweight boys. Suicidal attempt decreased only among healthy weight girls. Year-by-weight status interactions indicate that the gap in teasing between overweight/obese and healthy weight girls narrowed in 2013 compared to 2003. The gap in appearance-related discrimination between overweight/obese, underweight, and healthy weight boys narrowed in 2013 compared to 2003. The gap in appearance-related discrimination between overweight/obese and healthy weight girls narrowed in 2013 compared to 2003.

Conclusion: The findings of this study indicate the need for improved nursing research and practices to alleviate weight-related victimization and suicidality amongst youth in British Columbia.

Lay Summary

Research has shown that overweight or obese youth often feel socially devalued and experience various forms of victimization. To assess this phenomenon among Canadian youth, we conducted a study to analyze B.C. Adolescent Health Survey (B.C. AHS) data that was collected every five years from 2003 – 2013. While considering weight status, we found that overweight/obese and underweight youth have reported higher rates of bullying, discrimination, and suicidality. Within this population, girls experienced more teasing, social exclusion, discrimination, and suicidality, whereas boys faced more physical assault. However, while physical assault, discrimination, and suicidality decreased over time, there were no changes in teasing and social exclusion. We also observed an increase in teasing, social exclusion, and discrimination amongst healthy weight youth and in teasing amongst underweight girls. Understanding these relationships will have implications for designing better early-detection procedures and health care services. It also paves the way for future research.

Preface

This thesis is an original, unpublished, independent work by the author, Shams Al-anzi.

This thesis is a secondary analysis of existing anonymous data, and so did not require a new ethics application for the analyses. The original study that the data came from had prior ethical approval from the Behavioural Research Ethics Board of the University of British Columbia.

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Dedication

All praises and thanks to Allah, who guides and supports us through persistence, patience, and faith “For indeed, with hardship [will be] ease. Indeed, with hardship [will be] ease” Quran 94:5-6.

My thesis is dedicated to my father Mr. **Moh’d Fares Khalaf Al-anzi** and my mother **Mrs. Khadijah Isaac Almasri**, the biggest supporter in all my educational pursuits in life. Specifically, my **father** taught me the importance of being creative and acquiring life skills, as well as learning foreign languages such as English since my childhood. My mother nurtured my love for math and health sciences, taught me how to believe in myself, how to think positively to solve problems, and how to always believe in and stay connected to **Allah**. Collectively, they have both taught me the value of lifelong learning and the everlasting bond of love and family.

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Chapter 1: Introduction

1.1 Background

Overweight and obesity in young people under twenty four years of age pose a global challenge (Bentham et al., 2017). In the last four decades, the prevalence of overweight and obese children and youth, aged five to nineteen years, has increased tenfold (Bentham et al., 2017). The World Health Organization (WHO) anticipates that by 2022, the proportion of overweight and obese children and youth will surpass those who are moderately to severely underweight (Bentham et al., 2017). Economically developed countries have witnessed the most significant rise in overweight and obese adults, youth, and children (Bhurosy & Jeewon, 2014; Organisation for Economic Co-operation and Development, 2017). The United States (U.S.) presents the highest increase in rates of overweight and obese youth aged fifteen years and Canada presents the second highest increase. In the Canadian context, overweight and obesity are growing concerns, with more than one in three children and youth meeting the criteria for this classification (Rao et al., 2016). Indeed, between 2004 and 2014, the prevalence of overweight and obese young Canadians aged twelve to seventeen years increased from 32.6% to 36.8% (Rao et al., 2016).

Beyond these numbers, people who are overweight or obese often feel socially devalued (Puhl et al., 2011), and experience bullying and discrimination (Pont et al., 2017). Research highlights that Canadian young people diagnosed as being overweight and obese are at a higher risk of being bullied compared to healthy weight peers (Puhl et al., 2015), and of experiencing discrimination (Hyman et al., 2019; Smith et al., 2019). Experiences of bullying and discrimination place these youth at a higher risk for many acute and chronic mental health challenges, including anxiety, panic disorders, depression, substance use, and suicidality

(Copeland et al., 2013; Crengle et al., 2012; Fisher et al., 2016; Fisher et al., 2012; Herge et al., 2016; Huynh & Fuligni, 2010; Thoma & Huebner, 2013; Tobler et al., 2013). A priority for health researchers, including nurses, is therefore to generate a better understanding of the trends in bullying and discrimination among overweight and obese young people and associated mental health challenges.

1.2 Definitions and Prevalence of Overweight and Obesity

Several measures have been proposed to define overweight and obesity among young people (Cole et al., 2000; Onis et al., 2007, 2012; Wang & Wang, 2002). One strategy is to use body mass index ($BMI = \text{weight/height (kg/m}^2\text{)}$) as a measure for fat accumulation status (Cole et al., 2000). Given that young people's BMI varies significantly by age, sex, and pubertal stage, the BMI cut-off points have been developed based on age and sex.

In addition to the BMI, Cole and colleagues (2000), who have been working on the International Obesity Task Force's (IOTF) reference for overweight and obesity around the world, proposed a series of sex-age-specific BMI cut-off points for children aged two to eighteen years. The IOTF's reference has been recommended for international use since it is based on large data sets from six different countries, including the U.S. and the United Kingdom (Cole et al., 2000). However, a limitation of the IOTF's reference is that it does not reflect data on non-Western populations, and lacks clarity regarding the relationship between BMI cut-off points and health consequences. The need to develop additional tools has therefore been identified as a priority (Wang & Wang, 2002).

Responding to the need for additional measurement guidelines, in 2007 the WHO published a set of growth curves for children and youth aged five to nineteen years that included three indicators: BMI for age; weight for age; and height for age (Onis et al., 2007). In this

document, WHO defined overweight as: “BMI for age greater than one standard deviation above the WHO growth reference median” and obesity as “greater than two standard deviations above the WHO growth reference median” (WHO, 2019, p. 1). To date, the 2007 WHO measures are widely accepted and implemented within Canada and worldwide (Onis et al., 2012).

Efforts to estimate the prevalence of overweight and obesity and respond through intervention have been an important focus of research literature. Within the province of British Columbia (B.C.) and according to data from the B.C. Adolescent Health Survey (B.C. AHS), B.C. has lower rates of obesity compared to other provinces (Smith et al., 2014). However, the 2013 B.C. AHS survey results show an increase in the percentage of overweight and obese young people over previous years. According to participants’ self-reported heights and weights, 15% and 6% of young people have been categorized as overweight and obese, respectively. Generally, the percentage of young people who are overweight or obese increased slightly between 2008 and 2013 (Smith et al., 2014). Because overweight and obese young people are at a higher risk of reporting bullying victimization (Oliveira et al., 2015; Puhl et al., 2015; Puhl et al., 2013; Geel et al., 2014), discrimination victimization (Hyman et al., 2019; Sikorski et al., 2016; Spahlholz et al., 2016), and related mental health challenges (Copeland et al., 2013; Crengle et al., 2012; Fisher et al., 2016; Herge et al., 2016; Huynh & Fuligni, 2010; Hyman et al., 2019; Puhl et al., 2015; Thoma & Huebner, 2013; Tobler et al., 2013). Estimating the prevalence of bullying and discrimination over time is important for responding to young peoples’ mental health needs, including those at risk of challenges due to their weight status.

1.3 Definitions and Prevalence of Bullying

The growing prevalence of overweight and obesity among young people is associated with significant health and social consequences, including bullying. Bullying has been defined as

“intentional, repeated, negative (unpleasant or hurtful) behaviour by one or more persons directed against a person who has difficulty defending himself or herself” (Olweus & Limber, 2010, p. 1). According to this definition, bullying can be carried out by individuals or groups through aggressive behaviours, whether direct or indirect. Direct forms of bullying include physical and verbal aggression, and indirect forms are referred to as relational aggression (Shetgiri, 2013). Juvonen and Graham (2014) further refine these distinctions, explaining that physical bullying is aggression that causes bodily harm, for instance, hitting, punching, kicking, spitting, or breaking other’s belongings. Verbal bullying involves using words to harm others, which includes name-calling, threatening, and teasing. Relational bullying is characterized by harm through interpersonal means, such as rumor mongering, gossip, and exclusion from peer groups.

Recently, cyberbullying has been identified as an additional and prominent medium through which bullying occurs, and this holds relevance in the context of young people (Schneider et al., 2012). Grigg (2010) defines cyberbullying as “intentional harm delivered by the use of electronic means to a person or a group of people irrespective of their age, who perceive(s) such acts as offensive, derogatory, harmful or unwanted.” (p 10). Electronic communication includes the social media, email, and text messaging. Cyberbullying has unique features that greatly influence young people (Juvonen & Graham, 2014). For example, text messages reach rapidly and widely, and some forms of cyberbullying can be conducted anonymously.

Modecki and colleagues (2014) have been interested in exploring the various forms of bullying more fully and compared traditional forms of bullying with cyberbullying through a meta-analysis. Notwithstanding the relevance of cyberbullying to young people’s lives, they

concluded that traditional bullying is twice as common as cyberbullying. In terms of Canadian young people, 58.3% of boys and 67.8% of girls have reported bullying across a variety of forms (Salmon et al., 2018). In B.C., relational bullying is the most commonly reported form by young people at 39%, followed by verbal bullying at 38%, and physical bullying at 8% (Smith et al., 2019). Beyond these numbers, research has investigated the reasons for, and experiences of, various forms of bullying victimization. Physical appearance or body weight, which includes being overweight or obese, is the most common reason given for youth are bullying in the U.S. (Bucchianeri et al., 2013; Gardella et al., 2020; Puhl et al., 2013; Puhl et al., 2015; Waasdorp et al., 2018) and Canada (Hammami et al., 2020; Janssen et al., 2004; Patte et al., 2021; Puhl et al., 2015). For instance, in a meta-analysis representing 13 different countries, including Canada and the U.S. (Geel et al., 2014), researchers suggested that overweight and obese young people are more likely to report bullying victimization than healthy weight peers.

1.4 Definition and Prevalence of Discrimination

Just like bullying, discrimination is a negative consequence of weight-related challenges experienced by young people (Juvonen et al., 2017). Godley (2018) defines discrimination broadly as “negative or unfair treatment of individuals based on their membership in a specific marginalized social group or in multiple marginalized social groups” (p. 3). The Canadian Human Rights Act (1985) prohibits discrimination based on individual characteristics or demographics, such as race, religion, marital status, physical characteristics, or disability (Canadian Human Rights Act, 2019, p. 1-2).

To further clarify the nature of discrimination, Pincus (1996) proposed that it can occur at three levels: individual, institutional, and structural. Individual forms of discrimination involve personal discrimination towards members of a different demographic background, and can

include refusing to hire someone, to rent them an apartment, or to provide them with a service. Institutional discrimination refers to policies of institutions that result in negative consequences for individuals of a particular demographic background, such as the struggles of women to enter educational institutions, and banning people of certain background from entering certain neighborhoods or restaurants. Structural discrimination combines the individual and institutional levels, where individuals who regulate these institutions implement policies that negatively affect individuals of particular demographic backgrounds. As an example, banking systems depend on creditworthiness, which is connected to peoples' total income. Low-income groups may be least likely to get loans or home mortgages because of their lower incomes. On the contrary, high-income groups may be most likely to get loans because of their better income status.

Despite efforts to address and eliminate discrimination, 46% of Canadian young people and adults have reported experiencing discrimination at least once in their life (Hyman et al., 2019). The most commonly reported types are those based on gender, age, race, and physical characteristics such as weight status (Godley, 2018; Hyman et al., 2019). Individuals who are overweight or obese are at a higher risk of experiencing discrimination (Hyman et al., 2019; Sikorski et al., 2016; Spahlholz et al., 2016). In terms of young people in B.C., 32% of boys and 44% of girls (aged twelve to nineteen years) reported in 2018 that they experienced at least one form of discrimination during the preceding 12 months (Smith et al., 2019). The most commonly reported grounds for discrimination were physical appearance and weight status, at 23% and 16%, respectively. While experiences of discrimination place young people at a greater risk of mental health challenges (Pieterse et al., 2012; Priest et al., 2013), weight-related discrimination places them at a higher risk of developing depressive symptoms (Robinson et al., 2017) and of reporting suicidal behaviours (Sutin et al., 2018).

1.5 Bullying and Discrimination: Similarities and Differences

The literature to date often differentiates the concepts of bullying and discrimination. There are, however, important similarities. As forms of aggression and unfair treatment, bullying and discrimination both involve a perceived power imbalance between the perpetrators and their targets. This imbalance contributes to negative physical and mental health consequences among victims. Further, bullying and discrimination share similarities in that they involve the use of physical and verbal aggression (Pedro et al., 2019; Shetgiri, 2013), and social rejection as methods of harm (Oxman-Martinez et al., 2012; Shetgiri, 2013). Additionally, both bullying and discrimination interfere with young peoples' lives, especially those who are overweight and obese (Lee et al., 2018; Sutin et al., 2018; Yen et al., 2014).

Although bullying and discrimination share certain similarities, they also differ in certain ways. For example, bullying may occur even in the absence of marginalization or stigma. To illustrate, youth who are shy, insecure, and sensitive are at a risk of being bullied regardless of their racial or gender identity (Juvonen & Graham, 2014). Further, bullying is categorized as an intentional behaviour (Olweus & Limber, 2010), whereas discrimination may occur both intentionally or unintentionally (Canadian Human Rights Act, 2019). Moreover, bullying is mostly detected at the individual level, while discrimination extends to include not only the individual levels, but also the institutional and structural levels. Discrimination is also seen in the form of policies that result in negative effects for individuals of particular groups or background. Thus, bullying and discrimination are distinct in several ways, and it is necessary to assess both in order to gain a comprehensive understanding of the experiences of young people who are overweight or obese.

1.6 Definition of and Prevalence of Mental Health and Mental Health Challenges

Given the connections discussed in the literature between bullying, discrimination, and the mental health of young people, particularly those who experience overweight or obesity, it is critical to examine these relationships in Canada. Mental health refers to the psychological and emotional condition of well-being. The WHO defines mental health as a state of well-being that allows one to deal with life's difficulties and stressors in a healthy way, without excessive impact on daily life or social relationships (WHO, 2019). Accordingly, young people who are unable to cope effectively with stress or challenging experiences are at higher risk of developing mental health challenges such as anxiety, depression, substance use disorders, and suicidal ideation (Anyan & Hjemdal, 2016; Baams et al., 2015; Mereish et al., 2017).

Mental health challenges are among the leading health concerns facing young people, globally (WHO, 2019). The prevalence of diagnosed mental health challenges has been increasing over time, leading researchers to explore the factors that are associated with various mental health challenges. Experiences of bullying and discrimination are two factors that have been consistently identified in the research literature as impacting young peoples' mental health. Specifically, the experiences of bullying and discrimination are associated with a variety of mental health challenges, including depression, anxiety, panic disorders, substance use disorders, and suicidal ideation and attempt among Canadian youth (Alavi et al., 2017; Beiser & Hou, 2016; Broll et al., 2018; Lambe & Craig, 2017; Stewart-Tufescu et al., 2021; Veale et al., 2017).

For overweight and obese young people, experiences of weight-related bullying and discrimination have both been demonstrated to have negative effects on young's people mental health (Lee et al., 2018; Sutin et al., 2018; Yen et al., 2014). For example, the experience of

bullying has been found to shape the relationship between increased body weight status and several mental health challenges, including social phobia, depression, suicidality, and low self-esteem among Taiwanese young people (Yen et al., 2014). Among overweight and obese young people, only traditional forms of bullying have been found to mediate and exacerbate mental health challenges among American young people (Lee et al., 2018). On the other hand, cyberbullying has been found to indirectly effect on young people's mental health (Lee et al., 2018). In terms of weight-related discrimination, perceived discrimination mediated the relationship between weight status and suicidal behaviours among Chinese young people (Sutin et al., 2018). Specifically, the experience of weight-related discrimination was associated with a two-fold increase in the risk of intentional self-harm and suicidal behaviours. However, none of these studies were conducted in Canada, so it is unclear whether these findings apply in this particular context.

1.7 Significance of Problem

Regardless of the measures used, overweight and obesity issues are a growing health concern globally (Ng et al., 2014). Given the high prevalence of these issues among young people, coupled with the high degree of weight-related bullying and discrimination identified in the literature, the potential harms for this population of young people are substantial.

Furthermore, young people who are overweight and obese are not only at risk of experiencing bullying and discrimination, but also at a risk of serious mental health challenges.

Despite efforts to understand and reduce the magnitude of weight-related bullying and discrimination, more research is needed to determine changes to the prevalence of bullying and discrimination over time and to explore associations between these experiences and mental health challenges (i.e., suicidal behaviours). Trend data are essential for informing efforts to

combat weight-related bullying, discrimination, and suicidality as they provide dynamic, rather than fixed, understandings of the problem. In addition, trend data allow researchers to predict future rates, which can assist policymakers in designing policy interventions and allocating resources (Puhl et al., 2015).

1.8 Justification for The Study

Although the research literature consistently identifies a strong association between bullying and discrimination among those experiencing overweight or obesity, there remain substantial gaps in our knowledge. For example, there are no recurring studies to help document trends in the experiences of bullying, discrimination, and suicidality among young people with overweight and obesity. Additionally, while there are studies examining the association between weight status, bullying, discrimination and mental health challenges, there is a paucity of research into potential changes in these associations over time. Understanding the mental health issues linked with young people and their weight status – and monitoring these over time – is important for developing responsive solutions and informing best practice in assessment, care, and harm-prevention. Many lasting mental health challenges, including anxiety, depression, and suicidality, are associated with exposure to bullying and discrimination among young people, providing a strong rationale for this study, which will contribute to addressing these identified gaps.

1.9 Study Overview

The purpose of this study is to examine the ten-year trends in bullying, discrimination, and suicidality across different weight groups of a provincially representative sample of high school girls and boys while overweight and obese youth are the main groups of interest. This study uses data collected through the B.C. AHS, conducted by the McCreary Centre Society

(M.C.S.), is a community-based organization dedicated to adolescent health research in the province of B.C. The B.C. AHS is an anonymous school-based survey conducted every five years to examine health-related behaviours and outcomes among young people in the province. The survey includes questions about bullying victimization, discrimination victimization, and mental health challenges among students attending grades seven to twelve in B.C. schools. This study looks specifically at the trends in the relationship between self-reported bullying, discrimination, and suicidality among young people of various weight categories in the province in the 2003, 2008 and 2013 survey administrations.

1.10 Research Questions

The research questions guiding this study are:

- (1)** How do overweight/obese and underweight boys and girls differ from their healthy weight peers in terms of self-reported experiences of bullying (teasing, social exclusion, and physical assault); discrimination (appearance-related discrimination); and suicidality (suicidal ideation, suicidal attempt)?
- (2)** What are the statistical trends in self-reported bullying, discrimination, and suicidality among overweight/obese, underweight, and healthy weight boys and girls during the periods of 2003, 2008 and 2013?
- (3)** Do weight-related differences in self-reported bullying, discrimination, and suicidality between overweight/obese, underweight, and healthy weight boys and girls widen, narrow, or stay the same during the periods of 2003, 2008, and 2013?

1.11 Hypotheses

Given the available scientific evidence, we hypothesize that:

- There will be higher reports of bullying (teasing, social exclusion, and physical assault); discrimination (appearance-related discrimination); and suicidality (suicidal ideation, suicidal attempt) among overweight/obese youth compared to their healthy weight and underweight peers, with overweight/obese girls at a disadvantage compared to their male counterparts.
- Since the trends of overweight and obesity are increasing in B.C., there will be an increasing trend of bullying, discrimination, and suicidality between 2003, 2008, and 2013 among overweight/obese youth compared to their healthy weight and underweight with overweight/obese girls at a disadvantage compared to their male counterparts.
- The gap in self-reported bullying, discrimination, and suicidality is widening among overweight/obese young people compared to their healthy weight peers with overweight/obese girls at a disadvantage compared to their male counterparts.

1.12 Chapter Summary

Overweight and obesity among young people under twenty four years of age are global challenges that increase over time. Canadian young people with weight challenges, i.e., overweight and obesity, are at a higher risk of experiencing bullying and discrimination. These experiences are linked to adverse mental health challenges, with implications for health and social functioning throughout the course of life. The purpose of this study is to examine the ten-year trends (i.e., 2003-2013) in bullying, discrimination, and suicidality across different weight groups of a provincially representative sample of high school girls and boys while overweight and obese youth are the main groups of interest.

Chapter 2: Literature Review

2.1 Introduction

In this chapter, we reviewed the literature on bullying and discrimination among young people and related both concepts to the weight challenges, i.e., overweight and obesity. Each concept is discussed within main sections, which include an overview of prevalence, trends, and associated mental health challenges. we present and discuss relevant evidence on the associations between mental health challenges i.e., suicidality and experiences of overweight and obesity. This thesis is motivated by gaps in the existing scientific literature.

2.1.1 Inclusion / Exclusion Criteria and Identification of Studies

To locate relevant articles on bullying and discrimination among young people, we conducted a literature search of three academic databases: CINAHL, MEDLINE (Ovid), and PsycInfo. The keywords used are presented in Appendix A (see Table A1-A3). After obtaining initial search results, we limited the search to human studies, English language, adolescents, and publication dates between 2005 and 2020. Titles and abstracts for identified studies were screened, and items meeting the inclusion criteria were retained for analysis. The inclusion criteria consisted of: empirical studies that aimed to address the associations between self-reported bullying and mental health challenges; discrimination and mental health challenges; and weight-related bullying and/or discrimination and mental health challenges.

Due to the large number of studies identified, systematic reviews and meta-analyses were prioritized. Further, longitudinal cohort studies were also prioritized since this study aimed to address trends and correlations over time. Commentaries, editorials, literature reviews, letters, and conference abstracts were excluded. Studies that included participants of only one gender, did not examine the concept of bullying, discrimination, or mental health challenges, and those

that did not explore weight-related victimization, bias, teasing, or maltreatment were also excluded.

2.2 Overarching Prevalence of Bullying

While defining and classifying the issues of bullying and discrimination has been the focus of some researchers, others have been interested in detecting their respective prevalence and trends across different societies. The prevalence of bullying has a wide variation depending on the country, age, gender, and form of bullying. The United Nations Educational Scientific and Cultural Organization (UNESCO) published a recent report based on six international surveys on the prevalence of bullying among eleven to fifteen years old youth living in 145 countries (Richardson & Fen Hui, 2018). According to the UNESCO report, the prevalence of bullying differs vastly across reporting countries. The report shows great variation with estimates of bullying occurring “over the last month”, ranging from 7.1% in Tajikistan to 52.1% in Botswana, with estimates of prevalence of bullying in Canada sitting at 37.15%.

While the UNESCO study is helpful in providing global comparisons on the prevalence of bullying, research conduct with a specific focus on the Canadian context provides higher prevalence estimates. For example, Romano and colleagues (2011) estimated that six in ten Canadian young people, aged twelve to nineteen years, have experienced at least one form of bullying in the last 12 months. Specifically, in B.C., 53% of young people have reported at least one form of bullying over the last 12 months (Smith et al., 2019).

2.3 Overarching Prevalence of Discrimination

While estimates of the prevalence of bullying among young people have been examined extensively globally, estimates for discrimination have received limited attention. The existing research has focused on identifying discrimination in relation to specific demographics and

identities such as race, gender, and sexual orientation, with the majority centering on young people's experiences with racial discrimination (Pascoe & Richman, 2009; Schmitt et al., 2014). For instance, 65% of studies evaluate racial-ethnic-related discrimination; 17% of studies present gender-related discrimination; and 6% of studies assess sexual orientation-related discrimination (Pascoe & Richman, 2009). As an example, Bucchianeri and colleagues (2013) assessed the prevalence of different forms of discrimination among American youth. These researchers concluded that around 35% of American youth had reported race-related discrimination, 25% have reported sex-related, and 16% reported socioeconomic status-related discrimination.

While a large proportion of the research on discrimination has focused on the U.S., data on Canada has received far less attention. However, Romano and colleagues (2011) offered some insights and identified that 26% of Canadian youth aged fourteen to fifteen years had reported discrimination (Romano et al., 2011). In B.C., 35% of young people have reported experiencing discrimination on at least one ground in the past year (Smith et al., 2014). The most frequent grounds of discrimination identified in this province were physical appearance; being seen as different; age; gender; income or family income; and disability (Smith et al., 2014).

2.4 Gender and Age Variations in Bullying and Discrimination

In addition to examining the prevalence of bullying and discrimination, researchers have also investigated gender and age variations in these phenomena. For example, research suggested that boys were more likely to experience bullying compared to girls (estimated at average prevalence of 36.1% and 32.1%, respectively) across 126 countries examined (Richardson & Fen Hiu, 2018). Further, while conducting the Health Behaviour in School-Aged Children (HBSC) survey, the WHO also provided additional nuance to the relationship between bullying and gender (Inchley et al., 2016). Specifically, boys were identified as more likely to experience

traditional and cyberbullying at the age of eleven years, and girls were more likely to experience traditional and cyberbullying at the age of thirteen years, demonstrating that both gender and age were associated with the behaviour (Inchley et al., 2016).

Within the Canadian context, data indicate similar trends, with boys being more likely to experience traditional bullying at eleven years of age, while girls being more likely to experience the behaviour at the older ages of thirteen and fifteen (Inchley et al., 2016). Yet other researchers not only have reported conflicting results but also have added that this relationship changes according to the type of bullying (Romano et al., 2011; Salmon et al., 2018; Smith et al., 2019). As an example, bullying (excluding cyberbullying) is common across genders. However, certain forms (i.e., verbal and relational bullying) are much more common among girls, whereas physical bullying is reported in higher rates among boys (Romano et al., 2011). Cyberbullying has been found to be dominant among girls compared to boys at the ages of eleven, thirteen, and fifteen years (Inchley et al., 2016). In B.C., the rates in bullying are largely aligned with estimates from other regions; however, the phenomenon appears to be more highly gendered, with traditional and cyber forms of bullying being dominant among girls between twelve to eighteen years of age (Smith et al., 2014).

While there are gendered differences in the nature and onset of bullying, there appears to be a similar variations in experiences of discrimination. For example, according to the U.S. data, girls are more likely to report sex-related discrimination and boys are more likely to report race and socioeconomic status-related discrimination (Bucchianeri et al., 2013). In Canada, girls are more likely to report discrimination compared to boys (33% and 19%, respectively) (Romano et al., 2011). In B.C., the prevalence of discrimination also appears to be highly gendered (estimated at 44% among girls and 32% among boys, respectively), with physical appearance-

related discrimination being dominant among young people (Smith et al., 2014; Smith et al., 2019).

2.5 Trends in Bullying

While there have been differences in the reporting of prevalence of bullying and discrimination, there has been global evidence suggesting inconsistent changes over time in both cases. There appeared to be a relationship between the occurrence of bullying based on gender and age (Romano et al., 2011). Also, researchers identified that there might be further distinctions to be made by the frequency of bullying victimization (Romano et al., 2011). Generally, there was an overall decrease in the trend of occasional and frequent bullying in most reporting countries (Chester et al., 2015; Molcho et al., 2009)¹. Researchers concluded that between 1997/1998 and 2009/2010, around half of the participating countries had a significant decrease in occasional and frequent bullying experiences with some differences by gender (Chester et al., 2015; Molcho et al., 2009).

While research indicated an overall decrease in global trends of occasional and frequent bullying, Canadian youth were outliers in this regard. Further, trends of bullying experiences were not consistent. For example, between 1993-1994 and 2001-2002, the overall prevalence of occasional bullying increased according to global estimates (estimated at 33.9% and 38.4% among boys; and 26.5% and 37% among girls, respectively) (Molcho et al., 2009). However, between 2001/2002 and 2005/2006, Canadian youth reported decreasing trends of this behaviour (Chester et al., 2015; Molcho et al., 2009). Comparing 2009/2010 data with these

¹ Occasional bullying was defined as being victimized with bullying once or more in the past couple of months, and frequent bullying was defined as being victimized with bullying two or three times in the past couple of months.

previous results, researchers reported increasing trends of occasional bullying (estimated at 36.4% among boys, and 37.9 % among girls, respectively) (Chester et al., 2015). As such, there is inconsistency in the data on trends in occasional bullying among Canadian youth.

Moreover, in terms of frequent bullying, this behaviour was less prevalent among Canadian youth. The trend of frequent bullying was inconsistent, as was the case for occasional forms of bullying. Between 1993/1994 and 2001/2002, the prevalence of frequent bullying increased among Canadian girls while there was a slight decrease among Canadian boys (Chester et al., 2015; Molcho et al., 2009). Following, in 2004/2005, trends of frequent bullying decreased again and increased in 2009/2010 for both genders. Like occasional bullying, the data on frequent bullying among Canadian youth reflects this inconsistent trend.

In B.C., the prevalence of bullying appears to be more consistent, with an upward trajectory over time (Smith et al., 2014; Smith et al., 2019). As an example, in comparing data from the AHS between 2008, 2013, and 2018, verbal bullying was found to be increasing over time (estimated at 33%, 37%, and 38%, respectively). Further, while the overall prevalence of bullying appeared to increase over time in this provincial context, researchers concluded that there were gendered differences in the nature of this bullying, with different forms of bullying consistently more common among girls compared to boys over time.

2.6 Trends in Discrimination

Although trends in bullying have been examined widely, trends in discrimination have not received the same consideration. To date, only a few studies on trends in discrimination among youth have been conducted, and these have largely focused on adolescent populations within the U.S. Because the prevalence of discrimination has been limited by specific grounds, evaluating the trends of discrimination has been also restricted.

Despite the limited data, there are a selection of studies that offer insights into the trends in discrimination. For example, Andreyeva and colleagues (2008) evaluated the trends of different forms of discrimination among the U.S. population. These researchers highlighted increasing trends in various forms of discrimination from 1995/1996 to 2004/2006, except for race-related discrimination, which decreased. As an example, gender-related discrimination increased from 16% to 19% over this period. Age-related discrimination also increased during this time from 10% to 14%. While Andreyeva and colleagues (2008) work identified a decreasing trend in race-related discrimination among the general U.S. population, others have located growing rates of race-related discrimination among some of the U.S. ethnic minorities, including those who identify as Latin American, which increased from 14% in 2004 to 25% in 2012.

In the province of B.C., data from the Adolescent Health Survey also show an increasing trend in discrimination over time. Specifically, between 2008 and 2013, the prevalence of reported discrimination among young people increased from 35% to 39% (Smith et al., 2014). Furthermore, young people indicated physical appearance as the most common perceived ground of discrimination, which increased from 19% to 23% over this same period (Smith et al., 2014; Smith et al., 2019).

2.7 Weight-related Bullying

In addition to the research on bullying in general, there has been significant investigation within the specific context of weight-related bullying experiences. Overall, these contexts have been identified as common issues within young peoples' school environments (Oliveira et al., 2015; Puhl et al., 2013; Puhl et al., 2015; Geel et al., 2014; Waasdorp et al., 2018). Puhl and colleagues (2015) conducted national surveys in four countries, namely, Canada, Iceland,

Australia, and the U.S., all of which have a comparable prevalence of overweight and obesity among children and youth. Study participants identified weight status as the most common reason behind young people's bullying experiences. In a meta-analysis conducted by Geel and colleagues (2014), both overweight and obese young people were at higher risk of reporting bullying victimization. Similarly, recent systematic review data showed that approximately 71% of obese young people had experienced different forms of weight-related victimization, such as bullying (Nutter et al., 2019). In terms of Canadian young people, approximately 85% of children and youth had identified weight-related bullying as a common and serious concern that affects their life experience (Puhl et al., 2015).

2.7.1 The Relationship Between Bullying and Weight Status

A number of recent studies have examined the general risks of weight-related bullying, evaluating this issue within specific contexts such as weight challenges, including underweight, healthy weight, overweight, and obesity. Young people who were perceived as having weight challenges, have described bullying victimization as a common experience within their school environments. As an example, Lian and colleagues (2018) conducted a school-based, cross-sectional study in 39 North American and European countries and evaluated bullying experiences among young people with different weight categories. Researchers found that both overweight/obese and underweight young people were more likely to report bullying victimization (estimated at 14.8 % and 13 %, respectively). In comparison with healthy weight peers, Odar Stough and colleagues (2016) highlighted that overweight and obese young people were more likely to report bullying victimization, which was similar to Puhl and colleagues' (2013) findings (estimated at more than 50 % of the study sample).

Similarly, Puhl and colleagues (2013) estimated that 64% of young people seeking weight-loss treatment reported bullying victimization by their peers because of their body weight. On the contrary, Bacchini and colleagues (2015) concluded that bullying victimization was not directly related to weight status. Healthy weight and overweight young people were significantly less involved in bullying experiences than their obese peers (Bacchini et al., 2015).

While researchers were interested in assessing the personal experience of bullying victimization among overweight and obese young people, others evaluated the same experience by including the observation and reaction of their school peers and parents. Generally, school peers and parents have highlighted weight-related bullying victimization as an ongoing experience that targeted their overweight/obese peers and family members. For instance, more than half of high school students reported observing their overweight and obese peers facing different forms of bullying victimization within their school environment (Puhl et al., 2011). Similarly, parents indicated that overweight and obese young people were more likely to experience bullying victimization than their healthy weight peers (Puhl et al., 2013).

2.7.2 The Relationship Between Different Forms of Bullying and Weight Status

While researchers have previously assessed victimization of weight-related bullying, others explored the same experience with consideration to the type of bullying (i.e., verbal, relational, and physical). Overall, different forms of bullying were quite common among overweight and obese young people (Lee et al., 2018). Specifically, overweight and obese young people were more likely to report relational and verbal bullying, while only obese ones were more likely to report physical bullying (Waasdorp et al., 2018). On the other hand, Wang and colleagues (2010) added another perspective to this observation. They concluded that underweight young people were more likely to experience physical and relational forms of

bullying while young people with higher body weight were more likely to experience verbal form of bullying.

2.7.3 Gendered Nature of the Relationship Between Bullying and Weight Status

In addition to assessing weight-related bullying in general, some researchers have highlighted the gendered nature of these experiences. Generally, overweight and obese girls were more likely to report bullying victimization compared to boys with the same weight status. As an example, Oliveira and colleagues (2015) concluded that girls were more likely to experience weight-related bullying compared to boys in the same age group (estimated at 20.5% and 17% among ninth-grade girls and boys, respectively). Compared to healthy weight status in 41 countries, Koyanagi and colleagues (2020) found that overweight and obese girls were more likely to report bullying victimization than boys of the same weight status. On the other hand, Wang and colleagues (2018) added another perspective to this observation. For instance, obese girls were more likely to report bullying victimization (estimated at 36.2%) than underweight and healthy weight girls (estimated at 33.6% and 34.4%, respectively). Though, underweight boys were more likely to report bullying victimization (estimated at 31.6%) than their healthy weight and obese boys (estimated at 22.5% and 38.3%, respectively).

While the gendered differences of bullying victimization have been discussed, the specific forms of bullying have been explored within the same context. Overall, there has been an inconsistent association between forms of bullying and different weight status among boys and girls. For instance, underweight boys were more likely to report physical bullying, while underweight girls were more likely to report relational bullying. Both overweight boys and obese girls were more likely to report verbal forms of bullying (Wang et al., 2010). Kukaswadia and colleagues (2011) concluded that overweight and obese boys were twice more likely to

experience physical and relational bullying victimization than girls. On the other hand, other researchers have come up with different finds. For example, in meta-analysis conducted by Geel and colleagues (2014), experiences of bullying were not shaped by gender. In other words, both boys and girls were at equal risk of reporting weight-related bullying victimization.

2.8 Weight-related Discrimination

In addition to the research on weight-related bullying victimization, there has been extensive research on weight-related discrimination. Most of the research on weight-related discrimination among young people has been examined through assessing weight-related attitudes, stereotypes, maltreatment, harassment, prejudice, and stigmatization rather than assessing weight-related discrimination directly (Bucchianeri et al., 2013; Forste & Moore, 2012; Mustillo et al., 2013; O'Brien et al., 2016; Stojadinović et al., 2018). Overall, weight status has been identified as one of the most commonly reported grounds of discrimination (Bucchianeri et al., 2013; Godley, 2018; Golaszewski et al., 2018; Hyman et al., 2019). One in three young people at the age of twelve years have reported victimization with weight-related discrimination (Juvonen et al., 2017). Besides, existing literature suggested that this form of discrimination is indeed not only a common experience among overweight and obese young people, but also experienced via different form. For instance, Stojadinović and colleagues (2018) assessed weight-related discrimination experiences among young people seeking weight reduction treatment. Researchers concluded that overweight and obese young people were more likely to experience aggression (estimated at 59%) and prejudice against them (estimated at 45%) within their school environment. Similarly, Juvonen and colleagues (2017) highlighted that young people with heavier weight status reported experiences of disrespect and humiliation by their peers. While weight-related discrimination was examined within school environments, it was

examined within health care and family settings. For instance, overweight and obese young people were more likely to experience weight-related discrimination by healthcare workers and weight-related shaming impressions by their family and friends (Mustillo et al., 2013; Stojadinović et al., 2018).

2.8.1 The Relationship Between Discrimination and Weight Status

Previous research has examined the general experience of weight-related discrimination, and has evaluated this experience in relation to weight status (i.e., underweight, healthy weight, overweight, and obese). Young people with overweight and obese weight status were more likely to report weight-related discrimination compared to their peers with healthy weight status (Bucchianeri et al., 2016; Koyanagi et al., 2020; Stojadinović et al., 2018). Bucchianeri and colleagues (2013) found that overweight/obese young people, aged twelve to sixteen years, were more likely to experience weight-related discrimination compared to their peers with healthy and underweight status. Similarly, Koyanagi and colleagues (2020) concluded that overweight/obese young people were two to three times more likely to report appearance-related victimization. On the other hand, Puhl and colleagues (2013) added another perspective to this association. Researchers concluded that underweight young people might experience weight-related discrimination, similar to their peers with overweight/obese weight status.

2.8.2 Gendered Nature of the Relationship Between Discrimination and Weight Status

In addition to providing estimates on the prevalence of weight-related discrimination, some researchers highlighted the gendered nature of this form of victimization. Overall, girls reported a higher prevalence of weight-related discrimination compared to boys. Bucchianeri and colleagues (2016) concluded that girls aged ten to sixteen years reported a higher prevalence of weight-related discrimination than boys (estimated at 25.3% and 19.8%, respectively). Quite the

contrary, Stojadinović and colleagues (2018) concluded that boys aged ten to nineteen years were more likely to experience this form of discrimination compared to girls. Bucchianeri and colleagues (2013) and Bucchianeri and colleagues (2016), moreover, particularized these observations on the association between gender and weight-related discrimination. Researchers concluded that both boys and girls who were perceived as having weight challenges were more likely to report weight-related victimization. For instance, obese and underweight boys reported a higher prevalence of weight-related discrimination than healthy weight peers (Bucchianeri et al., 2013). Overweight, obese, and underweight girls reported a higher prevalence of the same experience than healthy weight girls (Bucchianeri et al., 2013). Similarly, Bucchianeri and colleagues (2016) concluded that overweight and obese boys and girls reported a higher prevalence of weight-related discrimination than healthy weight peers.

2.9 Health Challenges of Bullying and Discrimination

Overweight and obese young people are more likely to report victimization related to bullying and discrimination. Both bullying and discrimination are associated with young people's physical health (Dolezsar et al., 2014; Herge et al., 2016), mental health (Bottino et al., 2015; Golaszewski et al., 2018; Herge et al., 2016; Hysing et al., 2019), lifestyle choices (Bottino et al., 2015; Desalu et al., 2019; Gilbert & Zemore, 2016; Tharp-Taylor et al., 2009), and academic success (Golaszewski et al., 2018; Hysing et al., 2019; Reijntjes et al., 2011). Further, those young people who identify experiences of bullying or discrimination are more likely also to report stress and anxiety (Priest et al., 2013; Reijntjes et al., 2010; Schmitt et al., 2014), depression, and sleep disorders (Bottino et al., 2015; Desalu et al., 2019; Gilbert & Zemore, 2016; Hysing et al., 2019; Lemstra et al., 2012; Priest et al., 2013; Reijntjes et al., 2010; Schmitt et al., 2014; Yip, 2014), substance use (Bottino et al., 2015; Desalu et al., 2019; Gilbert &

Zemore, 2016; Tharp-Taylor et al., 2009), and to consider suicide (Assari et al., 2017; Bottino et al., 2015; Oh et al., 2019).

2.10 Health Challenges of Overweight and Obesity

Apart from evaluating the health challenges associated with bullying and discrimination, there has been an extensive assessment within the context of overweight and obesity. While the experience of both forms of victimization has persisting consequences, living with weight challenges has similar findings. Being overweight or obese has been associated with young people's physical health (Kelly et al., 2008; Wake et al., 2010), mental health (Micali et al., 2015; Roberts & Hao, 2013; Wake et al., 2010), lifestyle choices (Dumith et al., 2010; Micali et al., 2015; Platt et al., 2013; Wake et al., 2010), and cardiometabolic conditions (Reilly & Kelly, 2011; Wake et al., 2010). Further, those young people who were identified as overweight or obese were more likely to report stress and anxiety (Micali et al., 2015; Roberts & Hao, 2013), depression (Drosopoulou et al., 2021; Goldfield et al., 2010; Haynes et al., 2019; Kvaløy et al., 2020; Luppino et al., 2010; Mannan et al., 2016; Micali et al., 2015; Platt et al., 2013; Sutaria et al., 2019; Wang et al., 2019), sleep disorders (Fatima et al., 2015; Suglia et al., 2014), eating disorders (King et al., 2013; Lebow et al., 2015; Micali et al., 2015), substance use (Farhat et al., 2010; Roberts & Hao, 2013), and to consider suicidal behaviour (Anderson et al., 2015; Haynes et al., 2019; Vuuren et al., 2019; Wijnen et al., 2010; Zeller et al., 2013).

2.11 Weight-related Mental Health Challenges: Suicidality

As discussed earlier, living with weight challenges (i.e., overweight, obesity) and experiencing weight-related victimization (i.e., bullying, discrimination) have been associated with major mental health challenges, including suicidal behaviours. Because suicide has been identified as one of the main leading causes of death among young people (Bilsen, 2018;

Quinlan-Davidson et al., 2014; Yu & Chen, 2019), there has been a growing interest in analyzing the risk factors of suicidal behaviours. Weight challenges, including underweight, overweight, and obesity, have been considered as a risk factor for mental health challenges (Drosopoulou et al., 2021; Goldfield et al., 2010; Kvaløy et al., 2020; Mannan et al., 2016; Wang et al., 2019). This, in turn, affects young people's risks of experiencing suicidal ideation (Amiri and Behnezhad, 2018) and suicidal attempt (Daly et al., 2020). Amiri and Behnezhad (2018) conducted a systematic review and meta-analysis to assess the relationship between body weight and suicidal behaviours. Researchers concluded that weight status of overweight and obesity were associated with a higher risk to report suicidal ideation. Similarly, in another systematic review and meta-analysis, Haynes and colleagues (2019) concluded that being overweight increases the likelihood of people experiencing suicidal behaviours. However, when it comes to the relationship between obesity and suicidal attempt a different picture emerged. Researchers concluded that being obese was associated with a decreased likelihood of suicidal attempt (Amiri & Behnezhad, 2018). Besides, obese weight status was less associated with suicidality compared with overweight status (Haynes et al., 2019).

2.11.1 The Relationship Between Weight Status and Suicidality

In addition to assessing the general experience of weight-related suicidality, some researchers assessed weight status differences. Overall, overweight and obese young people are at a greater risk of experiencing suicidal ideation and suicidal attempt than their healthy weight peers (Anderson et al., 2015; Vuuren et al., 2019; Wijnen et al., 2010; Zeller et al., 2013). For example, Vuuren and colleagues (2019) conducted a cross sectional-longitudinal study of young people ages of 13 and 14. They concluded that youth with overweight status were 1.4 times more likely to report suicidal thoughts than their healthy weight peers. The number jumps for those

with more severe weight issues, with young people classified as obese 4.5 times more likely to report suicidal thoughts compared with their healthy weight peers.

Similarly, in a cross-sectional study of students enrolled in grades nine to twelve conducted by Zeller and colleagues (2013), researchers concluded that young people with higher body weight were more likely to experience suicidal behaviours. Obese and extremely obese young people were more likely to report suicidal ideation (estimated at 1.13 and 1.81, respectively) than their healthy weight peers but not suicidal attempt. The assessed risk appears not to be significant for other weight statuses. For example, overweight young people had suicidal risk similar to their healthy weight peers. Eaton and colleagues (2005) highlighted that young people with less weight status, i.e., underweight, were more likely to report suicidal behaviours than their healthy weight peers. Young people with underweight status were 1.4 times more likely to report suicidal ideation and 1.7 times more likely to report suicidal attempt. Similarly, Wijnen and colleagues (2010) concluded that the relationship between suicidal behaviours and weight status was present for underweight, overweight, and obese young people.

While there has been an interest in assessing the issue of weight-related suicidal behaviours among young people, there has also been an interest in evaluating the same issue over time. For instance, Daly and colleagues (2020) assessed the trends in suicidal behaviours among overweight young people. They concluded that suicidal behaviours have increased between 1999/2001 to 2015/2017. Suicidal ideation increased from 5.7% in 1999/2001 to 9.5% in 2015/2017, while suicide plan increased from 4.1% to 7.1%. Suicidal attempt increased from 2.8% to 4.3% over the same period.

2.11.2 Gendered Nature of the Relationship Between Weight Status and Suicidality

In addition to providing estimates on suicidal behaviours among young people with weight challenges, some researchers assessed related gendered differences. Both overweight and obese boys and girls are more likely to report suicidal ideation and suicidal attempt. For instance, Wijnen and colleagues (2010) highlighted those obese boys and girls have reported a higher likelihood of suicidal ideation (estimated at 3.64 for boys and 3.88 for girls, respectively) and suicidal attempt (estimated at 6.74 for boys and 4.08 girls, respectively) compared to their healthy weight peers. Similarly, overweight boys and girls were more likely to report suicidal ideation and suicidal attempt but to a lesser extent. Another perspective was added to this observation when some researchers found that only overweight girls, but not boys, were more likely to report suicidal attempt than their healthy weight peers (Anderson et al., 2015; Lee & Seo, 2013). In terms of other weight statuses, underweight boys were more likely to report suicidal behaviours, while underweight girls were less likely to report the same experience than healthy weight peers (Wijnen et al., 2010). On the contrary, Crow and colleagues (2008) presented different results. While assessing suicidal behaviours among young people studying in grades between seven to twelve, researchers concluded that no association was observed between weight status and suicidal behaviours.

2.12 The Relationship Between Peer Victimization and Suicidality

Concerns about the health challenges of weight-related victimization (i.e., bullying, discrimination) are significant, and suicide is a central challenge in this regard. Young people who experienced any form of bullying and discrimination were more likely to report suicidal behaviours. In a systematic review and meta-analysis conducted by (Moore et al., 2017), the researchers concluded that young people who underwent occasional or frequent bullying were 3

to 4 times more likely to attempt suicide. In addition to research on the general relationship between bullying and suicidality, Geel and colleagues (2014) added nuance by examining the impact of different forms of bullying. Specifically, they assessed the relationship between traditional and cyber forms of bullying and suicide risk among children and youth aged 9 to 21. They highlighted bullying as a significant risk factor for suicide among young people. Both children and youth who experienced any form of bullying were 2 times more likely to experience suicidal ideation and 2.5 times more likely to attempt suicide.

Furthermore, cyberbullying was more strongly associated with suicidal ideation compared with traditional forms of bullying. Children and youth who experienced cyberbullying were 3 times more likely to report suicidal ideation. To conclude, young people who have reported peer victimization were more likely to report suicidal behaviours (Kaminski & Fang, 2009).

2.13 Gaps in Literature and Implications for Research

Young people who are living with weight challenges often experience weight-related victimization, i.e., bullying and discrimination. Research highlights that those experiences place youth at higher risk for many acute and chronic mental health challenges, including suicidality. However, as reviewed earlier, bullying, discrimination, and suicidality have been evaluated among young people with some limitations. This review presents a limited assessment of prevalence and over time trends concerning self-reported weight-related bullying, discrimination, and suicidality among Canadian youth. Examining the trends, differences, and similarities across weight categories, i.e., underweight, healthy weight, and overweight/obese, is imperative to comprehend the incidence and prevalence of associated experiences. Therefore, a priority for

health researchers, including nurses, is to better understand the trends in bullying, discrimination, and suicidality among young people with weight challenges.

2.14 Chapter Summary

Weight-related bullying and discrimination have been identified as prevalent issues in young peoples' lives. There is insufficient evidence to confirm whether bullying and discrimination among overweight and obese young people have increased, declined, or remained the same over time. There is a long history of research examining the relationship between bullying, discrimination, and mental health challenges. However, there is limited evidence examining the relationship between weight-related bullying, discrimination, and suicidality. While previous research has identified these associations, there is limited research documenting trends over time.

Chapter 3: Methods

3.1 Introduction

This chapter describes the theoretical perspectives guiding the work, as well as the chosen methods. The purpose of this study is to clarify the ten year trends (i.e., 2003-2013) in bullying and discrimination across different weight groups of a provincially representative sample of high school girls and boys in B.C. Furthermore, it examines the ten-year trends (i.e., 2003-2013) in suicidality across different weight groups among both genders. In this chapter, we begin by describing the theoretical perspectives that guide this study. We then explicate the research design and procedures, including the study sample, data collection, measurement, and data analysis.

3.2 Theoretical Framework

While there are a variety of theoretical perspectives informing bullying and discrimination, my own approach draws on the minority stress theory (Hatzenbuehler, 2009) to inform an understanding of the relationships between bullying, discrimination, and mental health among young people experiencing overweight and obesity. This theoretical framework provides a guide for understanding the key relationships between the concepts of interest and informs hypotheses that were tested within the context of the current study.

3.2.1 The Minority Stress Theory

While overweight and obese young people are at greater risk to experience weight-related stigma, they are also at greater risk to experience mental health challenges. One theorized model that explains the correlation between weight status, weight-related stigma, and mental health challenges is the minority stress theory, originally described in the 1980's, but further articulated more recently by Hatzenbuehler (2009). While the model gives theoretical explanations for the

increased prevalence of mental health challenges among sexual minorities (Hatzenbuehler, 2009; Hatzenbuehler & Pachankis, 2016), it can serve a similar purpose when considering people who are overweight or obese (Sikorski et al., 2015). This model suggests that added stressors that come with membership in a stigmatized minority group contribute to mental health challenges. For instance, being a member of a stigmatized group, such as those who are overweight or obese, is associated with a constant confrontation with devaluation, which can create chronic stress and worsen physical and mental health (Puhl & Brownell, 2006). The minority stress theory considers two types of stressors, distal and proximal. Distal stressors have been highlighted as the experience of stigmatization or stigma-related behaviours such as bullying and discrimination. Proximal stressors are identified as the consequence of distal stressors, which includes feelings of rejection and sensitivity and developing internalized stigma. The experience of both stressors is consequently associated with reporting mental health challenges such as anxiety, depression, and suicidality (Hatzenbuehler, 2009; Hatzenbuehler & Pachankis, 2016; Puhl & King, 2013; Sikorski et al., 2015; Sikorski et al., 2015).

3.3 Study Design and Procedures

This study is a secondary analysis of data from the B.C. Adolescent Health Survey (B.C. AHS), a 140-item paper-and-pencil survey assessing the health and risk behaviours of young people to inform healthcare planning and health promotion programming for this population. Developed by the M.C.S., the B.C. AHS has been administered in the province every five to six years since 1992 (Saewyc et al., 2009; Saewyc et al., 2014). The B.C. AHS is based on cross-sectional surveys of public-school students in B.C. using a cluster-stratified sampling strategy in each cycle (Saewyc et al., 2009; Saewyc et al., 2014). Public health nurses and nursing students administer the survey to young people in their school classrooms after obtaining informed

consent to ensure participant anonymity. Because of the consistent sampling strategy and data collection procedures throughout the survey years, trend analyses can be used to examine the research questions that guide this study focusing on the ten-year trends (i.e., 2003-2013) in experiences of bullying, discrimination, and suicidality across different weight groups of high school girls and boys in B.C., Canada. The original surveys obtained ethics approval from the University of British Columbia Behavioural Ethics Review Board and the pertinent high-school authorities (Approval number: H17-01307). A detailed description of the larger study methods can be found in Saewyc et al. (2014).

3.4 Inclusion and Exclusion Criteria of Current Study

This secondary analysis includes B.C. AHS data from 2003, 2008, and 2013 (N = 89,735). School districts that did not participate in all three survey cycles (11.1%) and participants with incomplete data i.e., gender (0.1%), BMI (15.8%), teasing (2.9%), social exclusion (3.1%), physical assault (3.8%), appearance-related discrimination (3.1%), suicidal ideation (2.3%), and suicidal attempt (2.3%) were excluded from this secondary analysis. Similarly, earlier data from 1992 and 1998 survey years were excluded because participants' height and weight were not assessed prior to 2003.

3.5 Participants

The sample size for each year of the B.C. AHS administration varied slightly, ranging from 29,315 to 30,588 participants (Saewyc et al., 2009; Saewyc et al., 2014). Response rates ranged between 76.0% and 85.0% by year and school district, with higher rates in more recent survey years (Saewyc et al., 2009; Saewyc et al., 2014). The analyses have been adjusted for nonresponse and varying probability of selection across school districts and health regions by applying a weighting factor for each participant. Accordingly, the results represent weighted

sample distributions representative of student enrolment at the provincial and regional levels. After excluding participants with incomplete data, this secondary analysis yielded a final weighted sample that represented 649,503 young people enrolled in B.C. public schools across those three survey years.

3.6 Measures

In this study, key predictors include gender and BMI (height and weight) divided into weight categories (underweight, healthy weight, overweight/obese). Outcome variables include bullying (teasing, social exclusion, physical assault), discrimination (appearance-related discrimination), and suicidality (suicidal ideation, suicidal attempt). Age is a control variable, given that young people's BMI varies significantly by age (Cole et al., 2000).

3.6.1 Key Predicting Variables: Gender

Gender was measured using a single item that asked respondents to identify their gender. Response options included male (1) and female (2). Although researchers perceive this question as a measure of sex, it could also mean gender to young people who often use gender and sex (i.e., girl/female or boy/male) interchangeably.

3.6.2 Key Predicting Variables: BMI

BMI was measured with two questions that asked participants to report their height and weight. Response options for height were in feet/inches/cm and for weight in kg/lbs. This information was used to compute participants' BMI (weight/height (kg/m²) based on WHO 2007 growth curves for children and youth aged five to nineteen years. The WHO 2007 growth curves highlight overweight as a BMI > 85th percentile and < 95th percentile, and obesity as a BMI ≥ 95th percentile. Participants' BMI was recoded into three categories: underweight < percentile 3 (1), obese/overweight > percentile 85th (2), and healthy weight percentile 3- percentile 85th (3).

3.6.3 Outcome Variables: Bullying Victimization

Bullying victimization was measured using three questions that asked about the frequency by which participants experienced verbal bullying (i.e., teasing you or saying something personal about you that made you feel bad or extremely uncomfortable), relational bullying (i.e., keeping you out of things on purpose, excluding you from group of friends or completely ignoring you) and physical bullying (i.e., physically attacking or assaulting you) instigated by another youth over the last year. A three-point response option ranged from never (0) to two or more times (2) for the 2003 and 2008 surveys, and a four-point response option ranged from never (0) to three or more times (3) for the 2013 survey. Each of the three bullying variables (teasing, social exclusion, and physical assault) were recoded into a binary variable as never (0) versus ever (1).

3.6.4 Outcome Variables: Discrimination Victimization

Discrimination victimization was measured using a single binary question that asked “In the past 12 months, have you been discriminated against or treated unfairly because of your physical appearance/ (how you look)” (no = 0, yes =1).

3.6.5 Outcome Variables: Suicidality

Suicidality was assessed by two questions that asked about last year's suicidal ideation and attempt. Respondents were asked whether they had seriously considered killing themselves (no=0, yes=1); and the frequency of suicidal attempt over the past 12 months with the following response options: never (0), 1 time (1), 2 or 3 times (2), 4 or 5 times (3), and 6 or more times (4). Response options were recoded as never (0) versus ever (1).

3.6.6 Control Variables: Age

Age was measured using a single question that asked respondents to report their age with eight possible response options ranging between twelve years old to nineteen years old. As an example, options include “12 years old or younger” (12) to “19 years old or older” (19).

3.7 Data analysis

Statistical analyses were performed using the Complex Samples module of IBM SPSS Version 27, which adjusts for complex cluster-stratified sampling methods and weighted data. Descriptive sample demographics such as frequencies and proportions were obtained across each survey year disaggregated by gender. To account for variability between the study sample and the population, 95% confidence intervals were obtained for each prevalence estimate in the sample. All analyses were conducted separately for boys and girls. All regression models were adjusted for age.

3.7.1 Research Question 1:

Crosstabs with Rao Scott chi square test (χ^2) in complex samples analyses were conducted to compare percentages of bullying (teasing, social exclusion, physical assault); discrimination (appearance-related discrimination); and suicidality (suicidal ideation, suicidal attempt) between overweight/obese, underweight, and healthy weight boys and girls in each survey cycle.

3.7.2 Research Question 2:

Logistic regression analyses were conducted within each BMI group (overweight/obese, underweight, and healthy weight) to assess whether changes over time were statistically significant for boys and/or girls. The 2003 survey year was used as the reference time period. This means trends in data between 2003 and 2008; and between 2003 and 2013 were examined. In this analysis, odds ratios greater than 1 would indicate an increasing trend in bullying (teasing,

social exclusion, physical assault); discrimination (appearance-related discrimination); and suicidality (suicidal ideation, suicidal attempt) from 2003 onward. On the other hand, odds ratios less than 1 would indicate a decreasing trend in the outcome variables.

3.7.3 Research Question 3:

This research question was examined following the recommendations of Homma and colleagues (2016) using logistic regression analyses that include BMI, survey year, and a BMI-by-survey year interaction term (e.g., overweight/obese x 2008 survey, overweight/obese x 2013 survey). The healthy weight group and the 2003 survey cycle were set as the reference group and reference year. In these analyses, a statistically significant interaction odds ratio would indicate that the disparity in bullying (teasing, social exclusion, physical assault), discrimination (appearance-related discrimination), and suicidality (suicidal ideation, suicidal attempt) between healthy weight participants and the other two bodyweight groups had significantly widened or narrowed over time. The interpretation of the main effects odds ratios (OR), and interaction terms odds ratios are shown in Table 3.1.

Table 3.1 Interpretation of Odds Ratio for Gap Analysis

Original AORs for weight groups	AORs for interaction terms (Weight by year)	Disparity between weight categories is:
In year 2008 or 2013 > 1	> 1	Widening
	< 1	Narrowing
In year 2008 or 2013 < 1	> 1	Narrowing
	< 1	Widening
Vs. year 2003 (reference)		

Note. Main effect AORs for weight between a specified year and referent year > 1, interaction ORs > 1 = Gap widening. Interaction ORs < 1 = Gap narrowing. Main effect ORs for weight between a specified year and referent year < 1, and Interaction ORs > 1 = Gap narrowing. Interaction ORs < 1 = Gap widening. AORs: age-adjusted odds ratio from logistic regression models that examined outcome variable within 2003, 2008, and 2013 survey years.

3.8 Chapter summary

This chapter has described the underlying theoretical perspective of the minority stress theory (Hatzenbuehler, 2009) to illuminate the relationships between bullying, discrimination, and suicidality among young people experiencing overweight and obesity. The study design, procedure, and sampling were described (Saewyc et al., 2009; Saewyc et al., 2014). Selected measures were detailed while describing the strategies of data analysis. Although limitations exist in a secondary data approach, the research study holds much strength in generalizability, including its large sample size and relevance to Canadian research, policy development, and nursing practice.

Chapter 4: Results

4.1 Overview

As described in chapter one, the proposed research questions were:

1. How do overweight/obese and underweight boys and girls differ from their healthy weight peers in terms of self-reported experiences of bullying (teasing, social exclusion, physical assault); discrimination (appearance-related discrimination); and suicidality (suicidal ideation, suicidal attempt)?
2. How do the statistical trends in self-reported bullying, discrimination, and suicidality change for overweight/obese, underweight, and healthy weight boys and girls during the periods of 2003, 2008 and 2013?
3. Do weight-related differences in self-reported bullying, discrimination, and suicidality between overweight/obese, underweight, and healthy weight boys and girls widen, narrow, or stay the same during the periods of 2003, 2008, and 2013?

4.2 Sample Demographics

Sample demographics disaggregated by gender and over time are shown in Table 4.1. Overall, slightly over half of the young people included in the study were girls (50.5%), who made up just over half of the sample in each survey year. More than half of the participating boys and girls were twelve to fifteen years old and never spoke any language other than English at home in each survey year. Over three-quarters of boys and girls were born in Canada and had been living in the country for six years or more at the time of the study. More than two-thirds of boys and three-quarters of girls fit a healthy weight status, followed by approximately one-quarter of boys and one-tenth of girls who were overweight/obese throughout all survey years.

Table 4.1 Prevalence Estimates of Sample Demographics by Gender and Over Time

	Boys			Girls		
	2003	2008	2013	2003	2008	2013
Weighted n	138,072	98,044	84,784	138,814	103,137	86,650
Age						
12 -15 years	57.0%	57.8%	57.4%	59.6%	57.4%	57.9%
16 - 19 years	43.0%	42.2%	42.8%	40.5%	42.5%	42.2%
Born in Canada						
Yes	77.9%	82.9%	81.6%	81.0%	82.7%	81.9%
No	22.1%	17.1%	18.4%	19.0%	17.3%	18.1%
Living in Canada						
< 2 years	3.6%	3.3%	4.4%	2.6%	3.3%	5.0%
2 - 5 years	7.0%	5.0%	6.4%	5.9%	5.7%	6.0%
≥ 6 years	89.3%	91.7%	89.2%	91.5%	91.0%	88.9%
Language Besides English						
Never	56.9%	57.6%	54.1%	55.9%	52.7%	52.8%
Sometime	25.0%	26.2%	28.0%	28.4%	29.9%	28.7%
Often	18.1%	16.1%	17.9%	15.7%	17.3%	18.5%
BMI Category						
Underweight	2.5%	3.6%	4.3%	3.4%	3.4%	3.5%
Healthy weight	72.8%	73.7%	70.9%	85.2%	85.2%	81.0%
Overweight/Obese	24.7%	22.8%	24.8%	11.5%	11.5%	15.5%

Note: Boys' mean age is 15 years (*SE*:0.03) in 2003, 15 years (*SE*:0.02) in 2008, and 15 years (*SE*: 0.02) in 2013. Girls' mean age is 14.9 years (*SE*:0.03) in 2003, 15 years (*SE*:0.02) in 2008, and 14.9 years (*SE*: 0.02) in 2013.

4.3 Research Question 1

4.3.1 Teasing

The prevalence of teasing among boys and girls of different weight categories for the three survey periods is reported in Table 4.2. Overall, we found a statistically significant difference in the prevalence of teasing among boys of different weight categories in 2008 but not in 2003 and 2013. In 2003 and 2013, boys in the underweight and overweight/obese categories reported a higher prevalence of teasing in the past year compared to their peers in the healthy weight category. In 2008, 33.6% of underweight boys experienced teasing in the past year compared to 30.2% of overweight/obese and 27.2% of healthy weight peers, respectively.

Among girls, the prevalence of teasing was statistically different across various weight groups in the three survey periods. In 2003, while 37.1% of underweight and 37.9% of healthy weight girls reported having been teased in the past year, 51.3% of overweight/obese girls reported the same experience. In 2008, 45.2% of overweight/obese girls reported teasing experiences over the past year, while lower proportions of underweight and healthy weight girls, respectively, reported this experience. In 2013, 47.8% of overweight/obese girls reported teasing experiences over the past year, while 46.8% of underweight and 43.5% of healthy weight girls reported the same experience. It is important to note that in 2003, the prevalence of teasing was significantly higher among overweight/obese girls compared to both their underweight and healthy weight peers. In 2008 and 2013, however, the prevalence was significantly higher among overweight/obese girls compared to only their healthy weight peers but non-significant compared to underweight girls.

In addition, we compared the prevalence of teasing between boys and girls with different weight categories (See Figure 4.1). Overall, we found that healthy weight and overweight/obese

girls reported a significantly higher prevalence of teasing experiences than boys of similar weight categories across the three survey years. For instance, in 2003, 51.3% of overweight/obese and 37.9% of healthy weight girls reported teasing experiences over the past year compared to 31.2% of overweight/obese and 28.3% of healthy weight boys. A similar pattern was found across 2008 and 2013, where teasing was more prevalent among girls of overweight/obese and healthy weight categories compared to boys of similar weight categories. On the contrary, underweight girls reported a higher prevalence of teasing experiences than underweight boys in 2013, but not in 2003 and 2008. In 2013, 46.8% of underweight girls reported teasing experience compared to 33.1% of underweight boys.

4.3.2 Social Exclusion

The prevalence of social exclusion among boys and girls of different weight categories for the three survey periods is reported in Table 4.2. Overall, we found no significance differences in the prevalence of social exclusion among boys of different weight categories in 2003, 2008, and 2013. Around 25% of boys in each weight group reported social exclusion in every survey year. On the other hand, the prevalence of social exclusion among girls was statistically different across different weight categories in 2003, 2008, and 2013. In 2003, while 38.7% of underweight and 37.4% of healthy weight girls reported being socially excluded in the past year, 45.3% of overweight/obese girls reported the same experience. In 2008, 44.0% of overweight/obese girls reported social exclusion experiences over the past year, while lower proportions of underweight and healthy weight girls, respectively, reported this experience. In 2013, 47.4% of overweight/obese girls reported social exclusion experiences over the past year, while 44.6% of underweight and 42.6% of healthy weight girls reported the same experience. It is important to note that the prevalence was significantly higher among overweight/obese girls

compared to only their healthy weight peers but non-significant compared to underweight girls across the three survey years.

In addition, we compared the prevalence of social exclusion between boys and girls with different weight categories (See Figure 4.2). Overall, we found that healthy weight and overweight/obese girls reported a significantly higher prevalence of social exclusion experiences than boys of similar weight categories across the three survey years. For instance, in 2003, 45.3% of overweight/obese and 37.4% of healthy weight girls reported social exclusion experiences over the past year compared to 25.9% of overweight/obese and 23.9% of healthy weight boys. A similar pattern was found across 2008 and 2013, where social exclusion was more prevalent among girls of overweight/obese and healthy weight categories compared to boys of similar weight categories. On the contrary, underweight girls reported a higher prevalence of social exclusion experiences than underweight boys in 2003 and 2013, but not in 2008. As an example, 38.7% in 2003 and 44.6% in 2013 of underweight girls reported social exclusion experience compared to 23.1% and 24.2% of underweight boys, respectively.

4.3.3 Physical Assault

The prevalence of physical assault among boys and girls of different weight categories for the three survey periods is reported in Table 4.2. Overall, we found a statistically significant difference in the prevalence of physical assault between boys of different weight categories in 2008 but not in 2003 and 2013. In 2003 and 2013, boys in the overweight/obese category reported a higher prevalence of physical assault in the past year compared to their peers in the underweight and healthy weight category. In 2008, 13.5% of overweight/obese boys experienced physical assault in the past year compared to 12.6% of underweight and 11.2% of healthy weight peers, respectively.

Among girls, the prevalence of physical assault was statistically different in 2008 and 2013 but not in 2003. In 2003, girls in the overweight/obese category reported a higher prevalence of physical assault than their peers in the underweight and healthy weight category. In 2008, while 5.0% of underweight and healthy weight girls reported having been physically assaulted in the past year, 8.0% of overweight/obese girls reported the same experience. In 2013, however, 6.6% of overweight/obese girls reported physical assault experiences over the past year, while 6.7% of underweight and 5.0% of healthy weight girls reported the same experience. It is important to note that in 2008, the prevalence was significantly higher among overweight/obese girls compared to only their healthy weight peers but non-significant compared to underweight girls.

Moreover, we compared the prevalence of Physical assault between boys and girls with different weight categories (See Figure 4.3). Overall, we found healthy weight and overweight/obese boys reported a significantly higher prevalence of physical assault experiences compared to girls of similar weight categories across the three survey years. For instance, in 2003, 14.5% of overweight/obese and 12.9% of healthy weight boys reported physical assault experiences over the past year compared to 7.9% of overweight/obese and 6.1% of healthy weight girls. A similar pattern was found across 2008 and 2013, where the physical assault was more prevalent among boys of overweight/obese and healthy weight categories compared to girls of similar weight categories. On the contrary, underweight boys reported a higher prevalence of physical assault experiences than underweight girls in 2003 and 2008, but not in 2013. As an example, 13.3% in 2003 and 12.6% in 2008 of underweight boys reported physical assault experience compared to 4.6% and 5.0% of underweight girls, respectively.

4.3.4 Appearance-related Discrimination

The prevalence of appearance-related discrimination among boys and girls of different weight categories for the three survey periods is reported in Table 4.2. Overall, we found a statistically significant difference in the prevalence of appearance-related discrimination between boys across different weight groups in 2003, 2008, and 2013. In 2003, while 14.8% of healthy weight boys reported exposure to appearance-related discrimination in the past year, 28.8% of underweight and 27.0% of overweight/obese girls reported the same experience. In 2008, however, 23.7% of overweight/obese girls reported the same experience compared to 22.5% of underweight and 13.2% of healthy weight groups, respectively. In 2013, 19.1% of overweight/obese boys reported appearance-related discrimination over the past year, while lower proportions of underweight and healthy weight boys, respectively, reported this experience. It is important to note that the prevalence was significantly higher among overweight/obese boys compared to only their healthy weight peers but non-significant compared to underweight boys across the three survey years.

Among girls, the prevalence of appearance-related discrimination was statistically different across different weight groups in 2003, 2008, and 2013. In all three years, a greater proportion of overweight/obese girls reported experiences of appearance-related discrimination compared to their peers in other weight groups. In 2003, 44.1% of overweight/obese girls reported the experience of appearance-related discrimination over the past year, while 18.4% of underweight and 18.7% of healthy weight reported the same experience. Similarly, in 2008, 37.8% of overweight/obese girls reported appearance-related discrimination experiences over the past year, while lower proportions of underweight and healthy weight girls, respectively, reported this experience. In 2013, 37.5% of overweight/obese girls reported appearance-related

discrimination over the past year, while 21.5% of underweight and 21.3% of healthy weight girls reported the same experience. It is important to note that the prevalence was significantly higher among overweight/obese girls compared to their healthy weight and underweight peers across the three survey years.

In addition, we compared the prevalence of appearance-related discrimination between boys and girls with different weight categories (See Figure 4.4). Overall, we found healthy weight and overweight/obese girls reported a significantly higher prevalence of appearance-related discrimination experiences compared to boys of similar weight categories across the three survey years. For instance, in 2003, 44.1% of overweight/obese and 18.7% of healthy weight girls reported appearance-related discrimination experiences over the past year compared to 27.0% of overweight/obese and 14.8% of healthy weight boys. A similar pattern was found across 2008 and 2013 when appearance-related discrimination was more prevalent among girls of overweight/obese and healthy weight categories than boys of similar weight categories. On the contrary, the underweight category did not present any significant prevalence across the three survey years.

Table 4.2 Prevalence of Bullying and Discrimination Experiences for Boys and Girls

	Boys			Girls		
	2003 % (95% CI)	2008 % (95% CI)	2013 % (95% CI)	2003 % (95% CI)	2008 % (95% CI)	2013 % (95% CI)
Teasing						
Underweight	31.9% (24.6, 40.2)	33.6% (28.0, 39.7)	33.1% (28.5, 38.1)	37.1% (31.1, 43.6)	39.6% (33.8, 45.6)	46.8% (41.0, 52.8)
Healthy weight	28.3% (27.1, 29.6)	27.2% (26.0, 28.5)	31.6% (30.4, 32.8)	37.9% (36.7, 39.1)	35.9% (34.8, 37.1)	43.5% (42.3, 44.7)
Overweight/Obese	31.2% (28.8, 33.7)	30.2% (28.2, 32.4)	33.8% (31.7, 36.0)	51.3% (47.8, 54.8)	45.2% (42.0, 48.3)	47.8% (45.2, 50.4)
Adj. <i>F</i>	2.41	4.99**	1.78	28.18***	15.02***	4.57**
<i>df</i>	1.93	1.99	1.99	1.95	1.99	1.99
Social Exclusion						
Underweight	23.1% (17.4, 30.1)	27.9% (22.6, 34.0)	24.2% (19.9, 29.0)	38.7% (32.3, 45.6)	38.7% (33.0, 44.8)	44.6% (38.9, 50.5)
Healthy weight	23.9% (22.6, 25.3)	24.5% (23.3, 25.7)	26.5% (25.3, 27.7)	37.4% (36.1, 38.7)	36.6% (35.4, 37.8)	42.6% (41.4, 43.8)
Overweight/Obese	25.9% (23.6, 28.3)	25.5% (23.6, 27.5)	27.6% (25.7, 29.5)	45.3% (41.8, 48.9)	44.0% (40.9, 47.1)	47.4% (44.8, 50.0)
Adj. <i>F</i>	1.21	1.07	1.01	8.85***	9.48***	5.63**
<i>df</i>	1.97	1.98	1.99	1.90	1.99	1.98
Physical Assault						
Underweight	13.3% (9.0, 19.1)	12.6% (9.2, 17.1)	9.2% (6.7, 12.7)	4.6% (2.6, 8.0)	5.0% (2.9, 8.4)	6.7% (4.2, 10.5)
Healthy weight	12.9% (12.0, 13.9)	11.2% (10.4, 12.1)	9.3% (8.6, 10.1)	6.1% (5.5, 6.7)	5.0% (4.6, 5.6)	5.0% (4.5, 5.6)
Overweight/Obese	14.5% (12.7, 16.5)	13.5% (12.0, 15.2)	10.2% (9.0, 11.6)	7.9% (6.1, 10.3)	8.0% (6.5, 9.8)	6.6% (5.4, 8.1)
Adj. <i>F</i>	1.48	3.44*	0.70	2.37	6.96***	3.28*
<i>df</i>	1.98	1.99	1.99	1.90	1.98	1.96

Cont.

^a Discrimination						
Underweight	28.8% (22.1, 36.6)	22.5% (17.9, 28)	16.8% (13.2, 21.1)	18.4% (14.2, 23.5)	14.2% (10.6, 18.8)	21.5% (17.1, 26.6)
Healthy weight	14.8% (13.8, 15.8)	13.2% (12.3, 14.2)	12.7% (11.9, 13.6)	18.7% (17.8, 19.6)	16.0% (15.1, 16.9)	21.3% (20.3, 22.5)
Overweight/Obese	27.0% (24.7, 29.3)	23.7% (21.7, 25.8)	19.1% (17.5, 20.8)	44.1% (40.4, 47.7)	37.8% (34.7, 41.0)	37.5% (35.0, 40.0)
Adj. <i>F</i>	60.85***	59.89***	25.51***	141.24***	131.22***	81.47***
<i>df</i>	1.96	1.99	1.99	1.98	1.99	2.00

Note: 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). Adj. *F*: Adjusted *F* is a statistical test calculated using IBM SPSS Complex Samples and is a variant of the Rao-Scott Chi-squared statistic. *df*: Degrees of freedom.

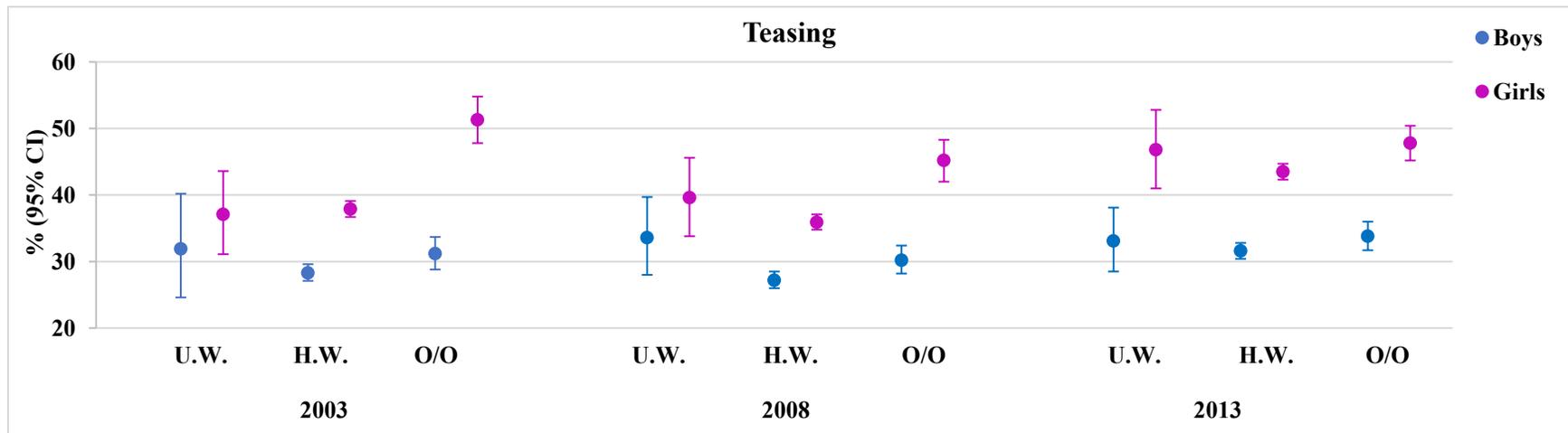


Figure 4.1 Prevalence of Teasing Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese.

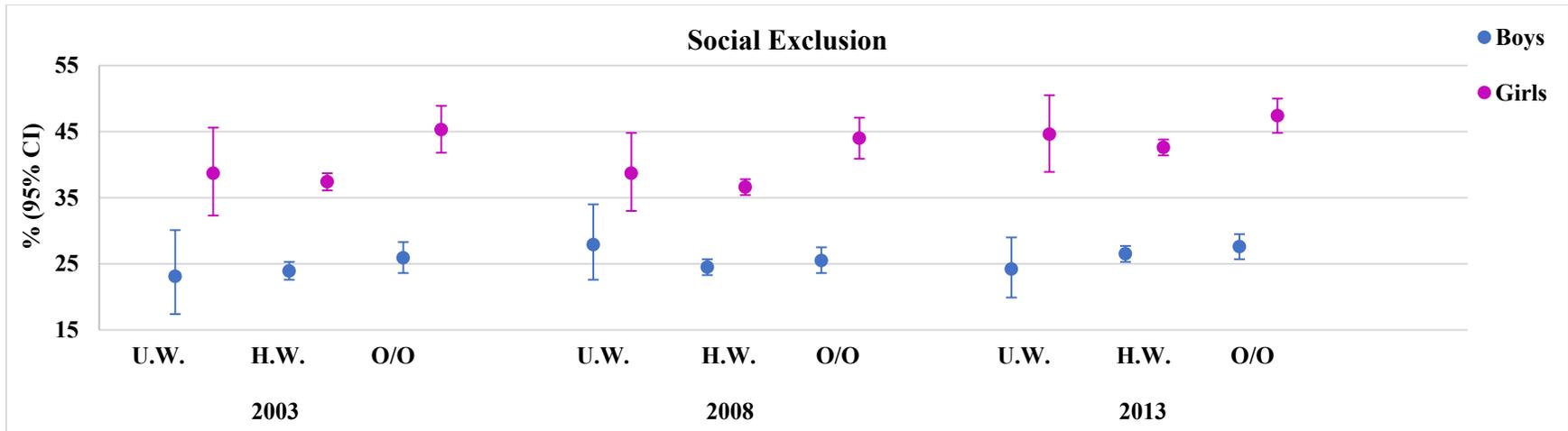


Figure 4.2 Prevalence of Social Exclusion Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese.

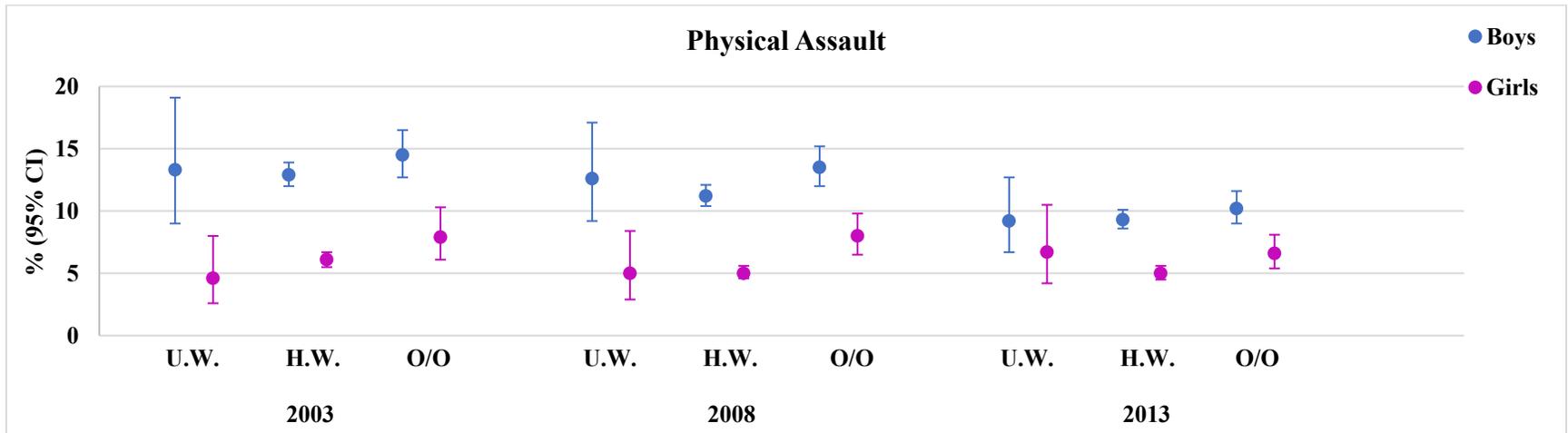


Figure 4.3 Prevalence of Physical Assault Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese.

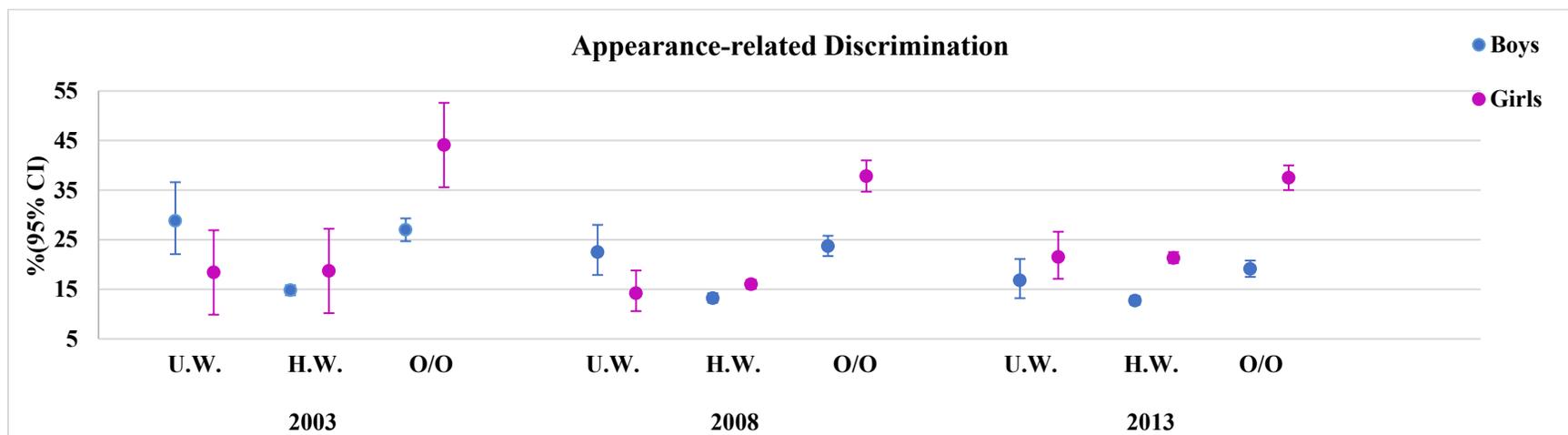


Figure 4.4 Prevalence of Appearance-related Discrimination Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese

4.3.5 Suicidal Ideation

The prevalence of suicidal ideation among boys and girls of different weight categories for the three survey periods is reported in Table 4.3. Overall, we found a statistically significant difference in the prevalence of suicidal ideation between boys of different weight categories in 2008 but not in 2003 and 2013. In 2008, 10.5% of overweight/obese boys reported exposure to suicidal ideation in the past year compared to 9.9% of underweight 8.0% of healthy weight peers, respectively. It is important to note that the prevalence was significantly higher among overweight/obese boys compared to only their healthy weight peers but non-significant compared to underweight boys in the survey year of 2008.

Among girls, the prevalence of suicidal ideation was statistically different across different weight groups in 2003, 2008, and 2013. In all three years, a greater proportion of overweight/obese girls reported experiences of suicidal ideation compared to their peers in other weight groups. More specifically, in 2003, 28.2% of overweight/obese girls reported exposure to suicidal ideation over the past year, while 19.0% of underweight and 20.1% of healthy weight reported the same experience. Similarly, in 2008, 20.8% of overweight/obese girls reported suicidal ideation experiences over the past year, while lower proportions of underweight and healthy weight girls, respectively, reported this experience. In 2013, 23.5% of overweight/obese girls reported suicidal ideation over the past year, while 10.9% of underweight and 15.2% of healthy weight girls reported the same experience. It is important to note that in 2003, the prevalence was significantly higher among overweight/obese girls compared to only their healthy weight peers but non-significant compared to underweight girls. In 2008 and 2013,

however, the prevalence was significantly higher among overweight/obese girls compared to both their underweight and healthy weight peers.

In addition, we compared the prevalence of suicidal ideation between boys and girls with different weight categories (See Figure 4.5). Overall, we found healthy weight and overweight/obese girls reported a significantly higher prevalence of suicidal ideation experiences compared to boys of similar weight categories across the three survey years. For instance, in 2003, 28.2% of overweight/obese and 20.1% of healthy weight girls reported suicidal ideation experiences over the past year compared to 11.0% of overweight/obese and 10.1% of healthy weight boys. A similar pattern was found across 2008 and 2013, where suicidal ideation was more prevalent among girls of overweight/obese and healthy weight categories compared to boys of similar weight categories.

4.3.6 Suicidal Attempt

The prevalence of suicidal attempt among boys and girls of different weight categories for the three survey periods is reported in Table 4.3. Overall, we found a statistically significant difference in the prevalence of suicide attempt between boys across different weight groups in 2008 and 2013 but not in 2003. In 2003, a slightly higher number of underweight and overweight/obese boys reported suicidal attempt in the past year compared to their peers in the healthy weight group. In 2008, 6.2% of underweight boys reported suicidal attempt over the past year, while 4.2% of overweight/obese and 2.7% of healthy weight peers reported the same experience. On the contrary, in 2013, 4.5% of overweight/obese boys reported suicidal attempt experiences over the past year, while lower proportions of underweight and healthy weight boys, respectively, reported this experience. It is important to note that in 2008, the prevalence was significantly higher among underweight boys compared to only their healthy weight peers, but

non-significant compared to overweight/obese boys. In 2013, however, the prevalence was significantly higher among overweight/obese boys compared to only their healthy weight peers but non-significant compared to underweight boys.

Among girls, the prevalence of suicidal attempt was statistically different across different weight groups in 2003, 2008, and 2013. In all three years, a greater proportion of overweight/obese girls reported suicidal attempt compared to their peers in other weight groups. More specifically, in 2003, 13.7% of overweight/obese girls reported suicidal attempt compared to 11.3% of underweight and 9.2% of healthy weight peers. In 2008, 10.7% of overweight/obese girls reported suicidal attempt experiences over the past year, while lower proportions of underweight and healthy weight girls, respectively, reported this experience. In 2013, 12.8% of overweight/obese girls reported suicidal attempt experiences over the past year, while 8.1% of underweight and 7.9% of healthy weight girls reported the same experience. It is important to note that in 2008, the prevalence of suicidal attempt was significantly higher among overweight/obese girls compared to both their underweight and healthy weight peers. In 2003 and 2013, however, the prevalence was significantly higher among overweight/obese girls compared to only their healthy weight peers but non-significant compared to underweight girls.

Moreover, we compared the prevalence of suicidal attempt between boys and girls with different weight categories (See Figure 4.6). Overall, we found that healthy weight and overweight/obese girls reported a significantly higher prevalence of suicidal attempt experiences than boys of similar weight categories across the three survey years. For instance, in 2003, 13.7% of overweight/obese and 9.2% of healthy weight girls reported suicidal attempt experiences over the past year compared to 3.7% of overweight/obese and 3.2% of healthy weight boys. A similar pattern was found across 2008 and 2013, where the suicidal attempt was

more prevalent among girls of overweight/obese and healthy weight categories compared to boys of similar weight categories.

Table 4.3 Prevalence of Suicidal Ideation and Suicidal Attempt for Boys and Girls

	Boys			Girls		
	2003 % (95% CI)	2008 % (95% CI)	2013 % (95% CI)	2003 % (95% CI)	2008 % (95% CI)	2013 % (95% CI)
Suicidal Ideation						
Underweight	10.1% (6.2, 16.2)	9.9% (7.0, 13.8)	8.1% (5.7, 11.4)	19.0% (13.0, 26.8)	12.3% (8.7, 17.2)	10.9% (7.6, 15.3)
Healthy weight	10.1% (9.2, 11.2)	8.0% (7.4, 8.7)	7.4% (6.7, 8.1)	20.1% (19.1, 21.1)	13.2% (12.3, 14.1)	15.2% (14.4, 16.2)
Overweight/Obese	11.0% (9.7, 12.4)	10.5% (9.2, 12.0)	8.2% (7.1, 9.6)	28.2% (25.4, 31.3)	20.8% (18.5, 23.3)	23.5% (21.3, 25.9)
Adj. <i>F</i>	0.44	5.99**	0.83	11.58***	19.49***	28.99***
<i>df</i>	1.97	1.99	1.99	1.76	1.95	1.98
Suicidal Attempt						
Underweight	3.7% (1.3, 10.0)	6.2% (3.8, 10.0)	4.0% (2.4, 6.5)	11.3% (6.5, 19.0)	5.2% (3.2, 8.4)	8.1% (5.5, 11.8)
Healthy weight	3.2% (2.7, 3.8)	2.7% (2.3, 3.1)	3.2% (2.7, 3.7)	9.2% (8.5, 10.1)	6.2% (5.6, 6.8)	7.9% (7.2, 8.6)
Overweight/Obese	3.7% (2.9, 4.6)	4.2% (3.4, 5.1)	4.5% (3.7, 5.6)	13.7% (11.5, 16.2)	10.7% (9.0, 12.5)	12.8% (11.1, 14.7)
Adj. <i>F</i>	0.31	8.88***	4.27*	5.33**	16.17***	17.26***
<i>df</i>	1.86	1.95	1.99	1.70	1.99	2.00

Note: 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). Adj. *F*: Adjusted *F* is a statistical test calculated using IBM SPSS Complex Samples and is a variant of the Rao-Scott Chi-squared statistic. *df*: Degrees of freedom.

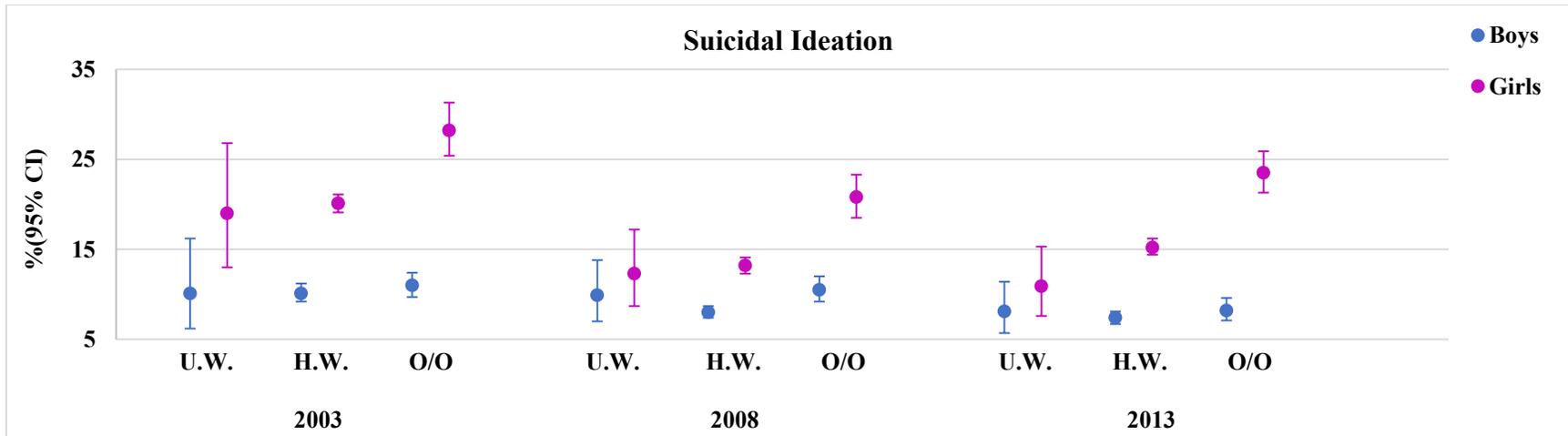


Figure 4.5 Prevalence of Suicidal Ideation Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese.

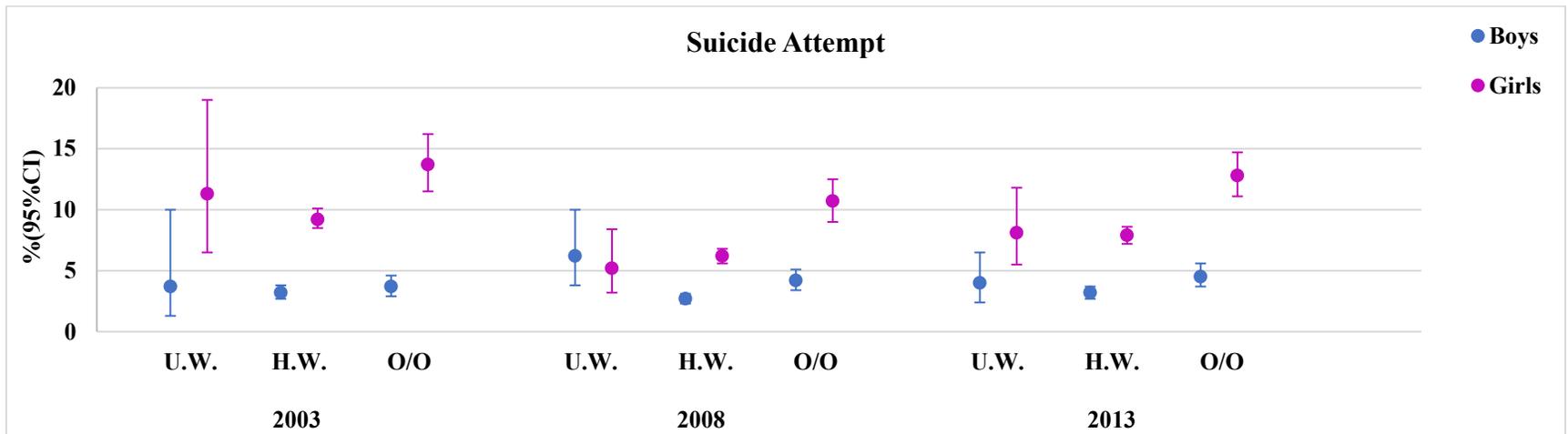


Figure 4.6 Prevalence of Suicidal Attempt Experiences for Boys and Girls.

Note: 95% CI = 95% confidence intervals. U.W.= Underweight. H.W.=Healthy Weight. O/O= Overweight/Obese.

4.4 Research Question 2

4.4.1 Teasing

The age adjusted-odds ratios for trends over time of teasing experiences among boys and girls are reported in Table 4.4. We found no statistically significant changes in teasing experiences among boys of different weight categories between 2003 and 2008. Similarly, no statistically significant changes were observed in teasing experiences of underweight and overweight/obese boys between 2003 and 2013. On the contrary, healthy weight boys were 17% more likely to experience teasing in 2013 compared to 2003 (See Figure 4.7).

While boys revealed a minor change in teasing experiences over time, girls presented a different pattern of findings. Between 2003 and 2013, healthy weight girls demonstrated a statistically significant non-consistent trend. While they were 7% less likely to report teasing experiences in 2008, healthy weight girls were 26% more likely to report the same experience in 2013 compared to 2003. Similarly, we found a statistically significant increasing trend among underweight girls between 2003 and 2013 but no change between 2003 and 2008. In 2013, underweight girls were 49% more likely to report teasing experiences compared to 2003. Among overweight/obese girls, we found a statistically significant change between 2003 and 2008 but not between 2003 and 2013. In 2008, overweight/obese girls were 22% less likely to report teasing experiences compared to 2003 (See Figure 4.7).

4.4.2 Social Exclusion

The age adjusted-odds ratios for trends over time of social exclusion among boys and girls are reported in Table 4.4. We found no statistically significant changes in social exclusion experiences among boys of different weight categories between 2003 and 2008. Similarly, no statistically significant trends were found in social exclusion experiences of underweight and

overweight/obese boys between 2003 and 2013. In contrast, healthy weight boys were 14% more likely to experience social exclusion in 2013 compared to 2003 (See Figure 4.8).

The experiences of girls were similar to boys. We found no statistically significant changes in social exclusion experiences among girls from different weight groups between 2003 and 2008. Similarly, between 2003 and 2013, underweight and overweight/obese girls did not demonstrate a statistically significant trend in their experiences of social exclusion. However, we found a statistically significant increasing trend among healthy weight girls between 2003 and 2013. They were 24% more likely to report experiences of social exclusion in 2013 compared to 2003 (See Figure 4.8).

4.4.3 Physical Assault

The age adjusted-odds ratios for trends over time of physical assault experiences among boys and girls are reported in Table 4.4. Among boys, we found no statistically significant trends in physical assault experiences among underweight boys between 2003 and 2013. However, during the same time period, healthy weight boys demonstrated a statistically significant decreasing trend. Compared to 2003, they were 15% less likely in 2008 and 31% less likely in 2013 to report experiencing physical assault. Finally, among overweight/obese boys, we found a statistically significant trend between 2003 and 2013 but not between 2003 and 2008. In 2013, overweight/obese boys were 34% less likely to have experienced physical assault compared to 2003 (See Figure 4.9).

Girls demonstrated similar patterns of findings. We found no statistically significant trends in physical assault experiences of underweight and overweight/obese girls between 2003 and 2013. In contrast, healthy weight girls demonstrated a statistically significant decreasing trend during this time period. They were 16% less likely to report experiencing physical assault

in 2008 and 18% less likely to report the same experience in 2013 compared to 2003 (See Figure 4.9).

4.4.4 Appearance-related Discrimination

The age adjusted-odds ratios for trends over time of appearance-related discrimination experiences among boys and girls are reported in Table 4.4. Among boys of different weight categories, we found statistically significant decreasing trends in appearance-related discrimination experiences between 2003 and 2013. During this period, healthy weight boys demonstrated a statistically significant decreasing trend. Compared to 2003, they were 12% less likely in 2008 and 16% less likely in 2013 to report experiencing appearance-related discrimination. Similarly, overweight/obese boys were 15% less likely in 2008 and 37% less likely in 2013 to report experiencing appearance-related discrimination. Finally, among underweight boys, we found a statistically significant trend between 2003 and 2013 but not between 2003 and 2008. In 2013, underweight boys were 51% less likely to have experienced appearance-related discrimination compared to 2003 (See Figure 4.10).

On the other hand, the experiences of girls reveal a different pattern of trends. As an example, healthy weight girls were 16% less likely to experience appearance-related discrimination in 2008 compared with 2003 but 18% more likely to report the same experience in 2013 compared with 2003. Further, overweight/obese girls were 23% less likely to experience appearance-related discrimination in 2008 compared with 2003 and 24% less likely to report the same experience in 2013 compared with 2003. In contrast, underweight girls did not present significant changes in the likelihood of appearance-related discrimination over time (See Figure 4.10).

Table 4.4 Logistic Regression Analysis of Trends in Bullying and Discrimination Experiences for Boys and Girls

	Boys		Girls	
	2003-2008 Trend AOR (95% CI)	2003-2013 Trend AOR (95% CI)	2003-2008 Trend AOR (95% CI)	2003-2013 Trend AOR (95% CI)
Teasing				
Underweight	1.06 (0.72, 1.57)	1.04 (0.71, 1.51)	1.12 (0.797, 1.578)	1.49 (1.06, 2.10) *
Healthy weight	0.95 (0.87, 1.03)	1.17 (1.07, 1.27) ***	0.93 (0.866, 0.999) *	1.26 (1.18, 1.35) ***
Overweight/Obese	0.96 (0.83, 1.12)	1.12 (0.97, 1.30)	0.78 (0.651, 0.944) **	0.87 (0.73, 1.03)
Social Exclusion				
Underweight	1.25 (0.85, 1.84)	1.03 (0.70, 1.51)	1.01 (0.70, 1.45)	1.27 (0.90, 1.81)
Healthy weight	1.03 (0.93, 1.13)	1.14 (1.04, 1.26) **	0.98 (0.91, 1.05)	1.24 (1.15, 1.34) ***
Overweight/Obese	0.98 (0.84, 1.15)	1.08 (0.93, 1.27)	0.95 (0.79, 1.15)	1.09 (0.91, 1.29)
Physical Assault				
Underweight	0.90 (0.53, 1.52)	0.63 (0.37, 1.09)	1.10 (0.52, 2.30)	1.47 (0.71, 3.04)
Healthy weight	0.85 (0.76, 0.96) **	0.69 (0.61, 0.78) ***	0.84 (0.72, 0.98) *	0.82 (0.70, 0.95) **
Overweight/Obese	0.93 (0.75, 1.14)	0.66 (0.53, 0.81) ***	1.01 (0.71, 1.45)	0.82 (0.58, 1.16)
^a Discrimination				
Underweight	0.71 (0.46, 1.09)	0.49 (0.32, 0.76) ***	0.75 (0.49, 1.13)	1.21 (0.81, 1.81)
Healthy weight	0.88 (0.78, 0.98) *	0.84 (0.75, 0.93) **	0.84 (0.77, 0.92) ***	1.18 (1.08, 1.29) ***
Overweight/Obese	0.85 (0.72, 0.99) *	0.63 (0.54, 0.74) ***	0.77 (0.63, 0.94) *	0.76 (0.63, 0.91) **

Note: AOR = age-adjusted odds ratio; 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). ^a

Discrimination: Appearance-related. Reference year: 2003.

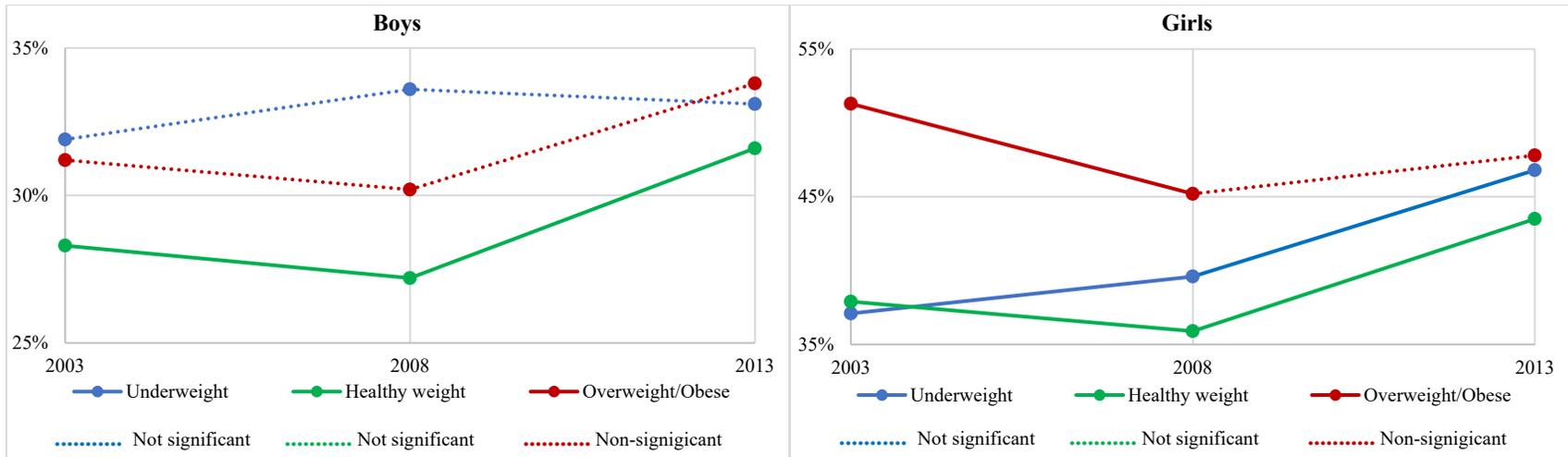


Figure 4.7 Trends in Teasing Experiences for Boys and Girls

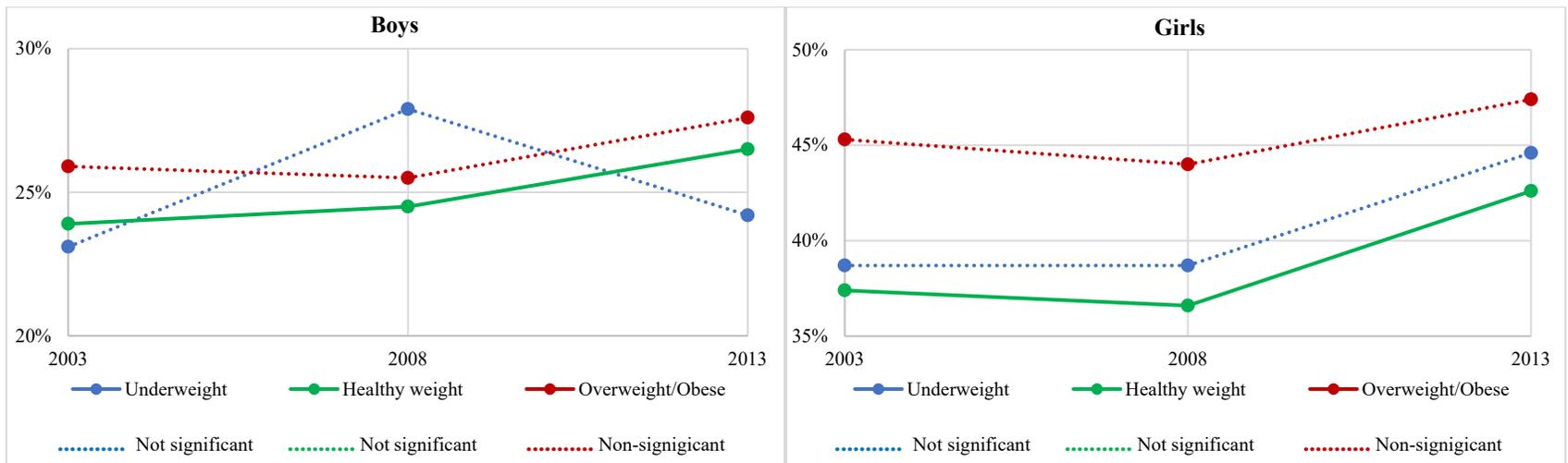


Figure 4.8 Trends in Social Exclusion Experiences for Boys and Girls

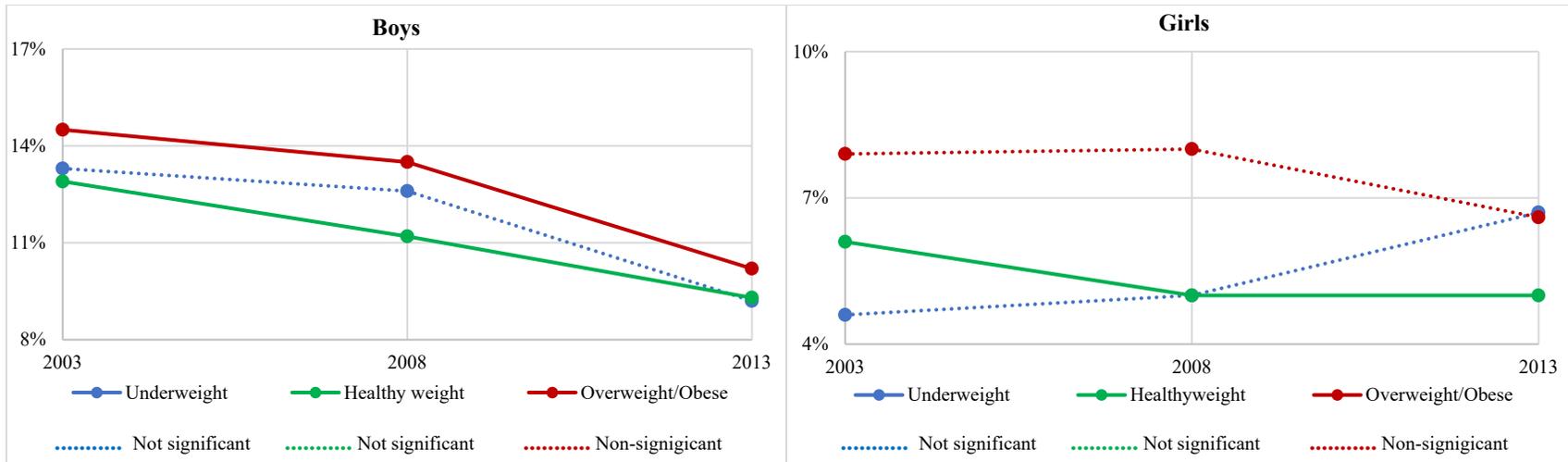


Figure 4.9 Trends in Physical Assault Experiences for Boys and Girls

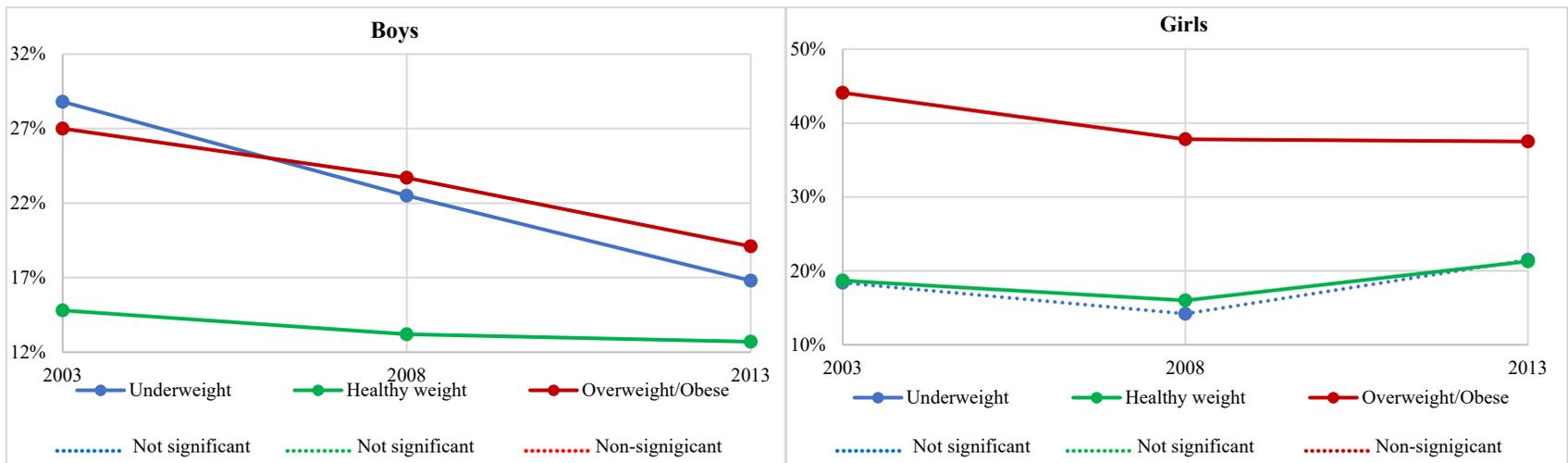


Figure 4.10 Trends in Appearance-related Discrimination Experiences for Boys and Girls

4.4.5 Suicidal Ideation

The age adjusted-odds ratios for trends over time of suicidal ideation among boys and girls are reported in Table 4.5. Among boys, we found no statistically significant trends in suicidal ideation of underweight boys between 2003 and 2013. However, during the same time period, healthy weight boys demonstrated a statistically significant decreasing trend. Compared to 2003, they were 23% less likely in 2008 and 27% less likely in 2013 to report suicidal ideation. Finally, among overweight/obese boys, we found a statistically significant decreasing trend between 2003 and 2013 but not between 2003 and 2008. In 2013, overweight/obese boys were 27% less likely to report suicidal ideation compared to 2003 (See Figure 4.11).

Girls demonstrated a similar pattern of findings. We found statistically significant decreasing trends in suicidal ideation experiences among girls of different weight categories between 2003 and 2013. During the same time period, healthy weight girls demonstrated a statistically significant decreasing trend. Compared to 2003, they were 40% less likely in 2008 and 28% less likely in 2013 to report experiencing suicidal ideation. Similarly, overweight/obese girls were 33% less likely in 2008 and 22% less likely in 2013 to report experiencing suicidal ideation. Finally, among underweight girls, we found a statistically significant trend between 2003 and 2013 but not between 2003 and 2008. In 2013, underweight girls were 48% less likely to have experienced suicidal ideation compared to 2003 (See Figure 4.11).

4.4.6 Suicidal Attempt

The age adjusted-odds ratios for trends over time of suicidal attempt experiences among boys and girls are reported in Table 4.5. Among boys of different weight categories, we found no statistically significant trends in reported suicidal attempt between 2003 and 2013. (See Figure 4.12).

While boys did not reveal any change in suicidal attempt experiences over time, girls did. Among girls of different weight categories, we found a statistically significant change in suicidal attempt experiences between 2003 and 2008, and healthy weight girls demonstrated a statistically significant declining trend between 2003 and 2013. Compared to 2003, healthy weight girls were 35% less likely in 2008 and 16% less likely in 2013 to report experiencing suicidal attempt. Among overweight/obese and underweight girls, we found a statistically significant change between 2003 and 2008 but not between 2003 and 2013. In 2008, overweight/obese girls were 25% less likely to report suicidal attempt experiences compared to 2003. Similarly, in 2008, underweight girls were 57% times less likely to report the same experience compared to 2003 but not in 2013 compared with 2003 (See Figure 4.12).

Table 4.5 Logistic Regression Analysis of Trends in Suicidal Ideation and Suicidal Attempt for Boys and Girls

	Boys		Girls	
	2003-2008 Trend AOR (95% CI)	2003-2013 Trend AOR (95% CI)	2003-2008 Trend AOR (95% CI)	2003-2013 Trend AOR (95% CI)
Suicidal Ideation				
Underweight	0.99 (0.51, 1.91)	0.79 (0.40, 1.56)	0.59 (0.34, 1.05)	0.52 (0.29, 0.94) *
Healthy weight	0.77 (0.67, 0.90) ***	0.71 (0.61, 0.83) ***	0.60 (0.54, 0.66) ***	0.72 (0.65, 0.79) ***
Overweight/Obese	0.95 (0.78, 1.17)	0.73 (0.59, 0.90) **	0.67 (0.55, 0.81) ***	0.78 (0.65, 0.94) **
Suicidal Attempt				
Underweight	1.72 (0.53, 5.60)	1.08 (0.33, 3.55)	0.43 (0.20, 0.93) *	0.69 (0.33, 1.44)
Healthy weight	0.84 (0.67, 1.06)	0.99 (0.79, 1.24)	0.65 (0.56, 0.75) ***	0.84 (0.74, 0.96) **
Overweight/Obese	1.15 (0.82, 1.60)	1.25 (0.90, 1.73)	0.75 (0.58, 0.99) *	0.93 (0.72, 1.19)

Note: AOR = age-adjusted odds ratio; 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). *Reference year: 2003.*

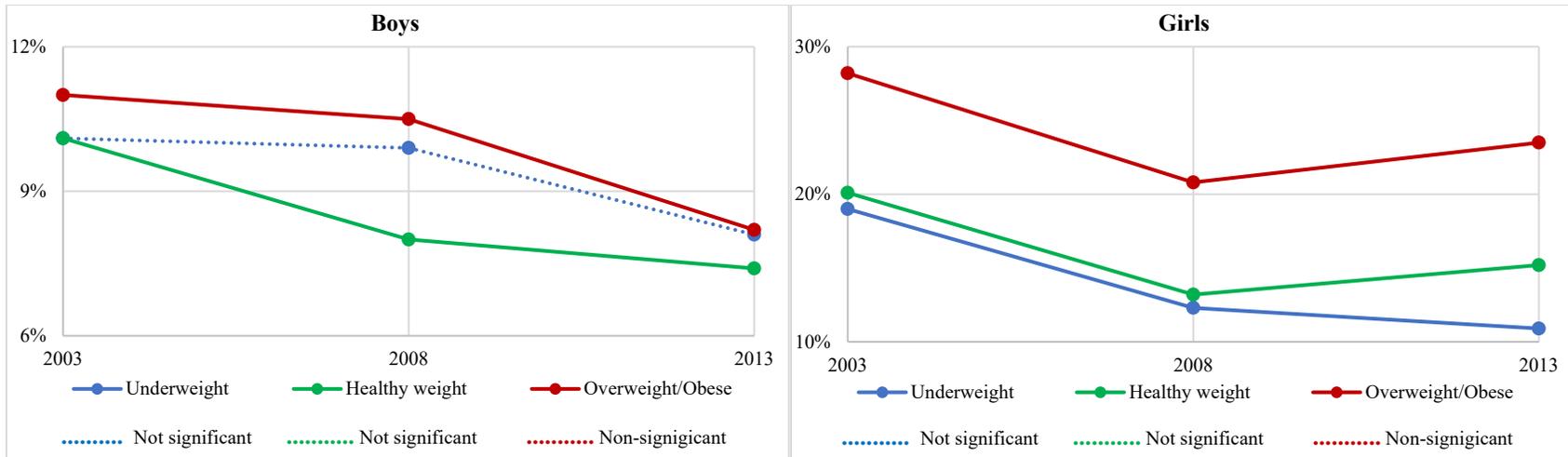


Figure 4.11 Trends in Suicidal Ideation Experiences for Boys and Girls

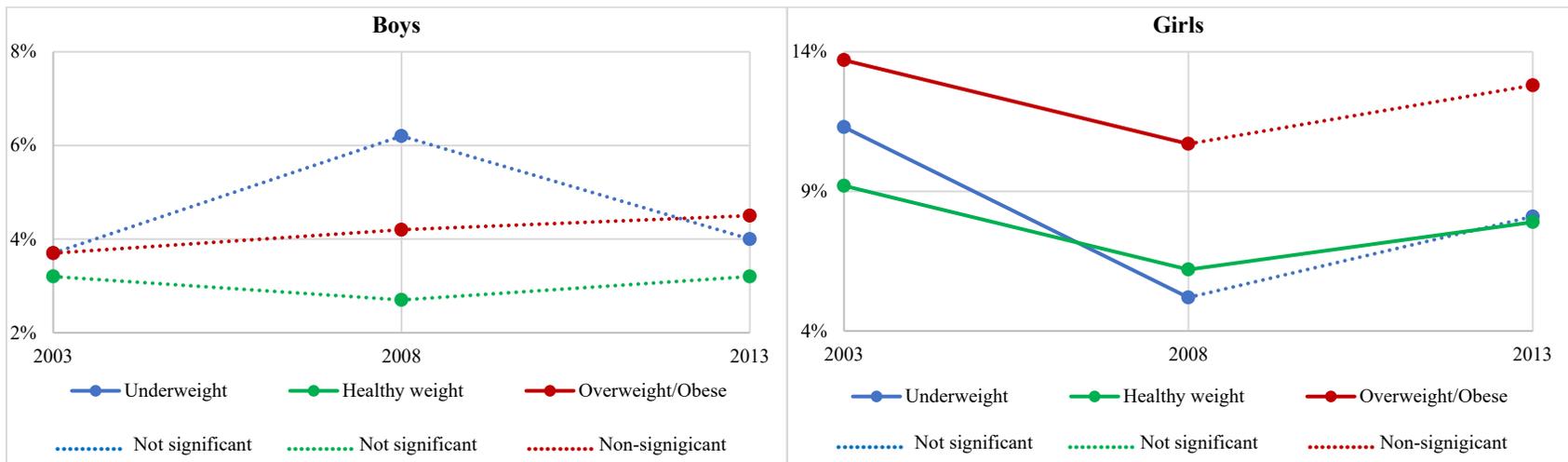


Figure 4.12 Trends in Suicidal Attempt Experiences for Boys and Girls

4.5 Research Question 3

4.5.1 Trends in Disparities of Teasing Experiences Across Weight Groups

Gap analyses of teasing experiences for boys and girls of different weight categories across the survey years are presented in Table 4.6. Among overweight/obese boys, we found no statistically significant gap-change in their experiences of teasing between 2003 and 2013. In other words, the gap in teasing experiences of overweight/obese boys, compared to their healthy weight peers, remained stable in 2013 compared to 2003. Since we found no disparity in teasing experiences between underweight and healthy weight boys (i.e., no gap), the interactions were not applicable.

Among girls, those in the underweight category demonstrated no disparity in teasing experiences between 2003 and 2013, so again, the interactions were not applicable. However, we found a statistically significant gap-change in overweight/obese girls' experiences of teasing, compared to their healthy weight peers, in 2013 but not in 2008. More specifically, while the gap between overweight/obese girls and healthy weight girls remained stable between 2003 and 2008, it narrowed between 2003 and 2013. The narrowing gap between overweight/obese and healthy weight categories may be due to a steeper increase in the prevalence of teasing experiences among healthy weight girls than overweight/obese girls.

4.5.2 Trends in Disparities of Social Exclusion Across Weight Groups

Gap analyses of social exclusion experiences for boys and girls of different weight categories across the survey years are presented in Table 4.6. We found no disparity in social exclusion experiences among boys of different weight categories between 2003 and 2013, so no gap analyses are possible. This was also the case for underweight girls. However, the gap in

social exclusion experiences of overweight/obese girls, compared to their healthy weight peers, remained stable in 2013 compared to 2003.

Table 4.6 Year by Weight Category Interactions Effects on Experiences of Teasing and Social Exclusion for Boys and Girls

	Boys AOR (95% CI)	Girls AOR (95% CI)
Teasing		
Underweight (ref healthy weight)	1.19 (0.83, 1.70)	0.93 (0.71, 1.21)
Overweight/Obese (ref healthy weight)	1.14 (1.01, 1.29) *	1.72 (1.50, 1.99) ***
2008 (ref 2003)	0.95 (0.87, 1.03)	0.93 (0.87, 0.99) *
2013 (ref 2003)	1.10 (1.07, 1.27) ***	1.26 (1.18, 1.35) ***
Interactions:		
Underweight by 2008	N/A	N/A
Underweight by 2013	N/A	N/A
Overweight/Obese by 2008	1.01 (0.86, 1.20)	0.84 (0.69, 1.03)
Overweight/Obese by 2013	0.96 (0.82, 1.14)	0.68 (0.57, 0.82) ***
Social Exclusion		
Underweight (ref healthy weight)	0.96 (0.67, 1.36)	1.02 (0.76, 1.37)
Overweight/Obese (ref healthy weight)	1.10 (0.96, 1.27)	1.39 (1.20, 1.60) ***
2008 (ref 2003)	1.03 (0.93, 1.13)	0.98 (0.91, 1.05)
2013 (ref 2003)	1.14 (1.04, 1.26) **	1.24 (1.15, 1.34) ***
Interactions:		
Underweight by 2008	N/A	N/A
Underweight by 2013	N/A	N/A
Overweight/Obese by 2008	N/A	0.97 (0.80, 1.19)
Overweight/Obese by 2013	N/A	0.87 (0.73, 1.05)
Healthy weight by 2003		Ref

Note: AOR = age-adjusted odds ratio; 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). Reference group: Healthy weight. Reference year: 2003. N/A=not applicable.

4.5.3 Trends in Disparities of Physical Assault Across Weight Groups

Gap analyses of physical assault experiences for boys and girls of different weight categories across the survey years were not possible, because among boys and girls of different weight categories, we found no disparity in physical assault experiences between 2003 and 2013 (see Table 4.7).

4.5.4 Trends in Disparities of Appearance-related Discrimination Across Weight Groups

Gap analyses of appearance-related discrimination experiences for boys and girls of different weight categories across the survey years are presented in Table 4.7. Among boys of different weight categories, we found a statistically significant gap-change in the experience of appearance-related discrimination between 2003 and 2013, but not in 2008. More specifically, for underweight boys, the gap-change remained stable in 2008 but narrowed in 2013. Likewise, for overweight/obese boys, the gap-change remained stable in 2008 but narrowed in 2013. The narrowing gap between overweight/obese and underweight compared to healthy weight categories may be due to steeper declines in the prevalence of appearance-related discrimination among overweight/obese and underweight than healthy weight boys.

While boys revealed narrowing gap-change in appearance-related discrimination over time, girls presented slightly different patterns. Among girls, those in the underweight category demonstrated no disparity in appearance-related discrimination experiences between 2003 and 2013, so the gap-change analysis was not applicable. On the other hand, we found a statistically significant gap-change in overweight/obese girls' experiences of appearance-related discrimination, compared to their healthy weight peers, in 2013 but not in 2008. More specifically, while the gap-change between overweight/obese girls and healthy weight girls remained stable between 2003 and 2008, it narrowed between 2003 and 2013. The narrowing

gap between overweight/obese and healthy weight categories may be due to the decline in the prevalence of appearance-related discrimination among overweight/obese girls, which was concurrent with the increase in the prevalence of the same experience among healthy weight girls.

Table 4.7 Year by Weight Category Interactions Effects on Experiences of Physical Assault and Appearance-related Discrimination for Boys and Girls

	Boys	Girls
	AOR (95% CI)	AOR (95% CI)
Physical Assault		
Underweight (ref healthy weight)	1.03 (0.67, 1.59)	0.70 (0.38, 1.30)
Overweight/Obese (ref healthy weight)	1.13 (0.98, 1.31)	1.32 (0.97, 1.81)
2008 (ref 2003)	0.85 (0.76, 0.96) **	0.84 (0.72, 0.98) *
2013 (ref 2003)	0.69 (0.61, 0.78) ***	0.82 (0.70, 0.95) **
Interactions:		
Underweight by 2008	N/A	N/A
Underweight by 2013	N/A	N/A
Overweight/Obese by 2008	N/A	N/A
Overweight/Obese by 2013	N/A	N/A
Appearance-related Discrimination		
Underweight (ref healthy weight)	2.33 (1.62, 3.36) ***	0.91 (0.67, 1.26)
Overweight/Obese (ref healthy weight)	2.11 (1.84, 2.43) ***	3.46 (2.96, 4.04) ***
2008 (ref 2003)	0.88 (0.78, 0.98) *	0.84 (0.77, 0.92) ***
2013 (ref 2003)	0.83 (0.75, 0.93) **	1.18 (1.08, 1.29) ***
Interactions:		
Underweight by 2008	0.81 (0.51, 1.30)	N/A
Underweight by 2013	0.60 (0.37, 0.95) *	N/A
Overweight/Obese by 2008	0.96 (0.80, 1.17)	0.92 (0.74, 1.14)
Overweight/Obese by 2013	0.76 (0.63, 0.92) **	0.64 (0.52, 0.78) ***
Healthy weight by 2003		Ref

Note: AOR = age-adjusted odds ratio; 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). Reference group: Healthy weight. Reference year: 2003. N/A=not applicable.

4.5.5 Trends in Disparities of Suicidal Ideation Across Weight Groups

Gap analyses of suicidal ideation for boys and girls of different weight categories across the survey years are presented in Table 4.8. Among boys of different weight categories, we found no disparity in suicidal ideation experiences between 2003 and 2013, so gap change analysis was not applicable. This was also the case for underweight girls. However, the gap in suicidal ideation experiences of overweight/obese girls, compared to their healthy weight peers, remained stable in 2008 and 2013 compared to 2003.

4.5.6 Trends in Disparities of Suicidal Attempt Across Weight Groups

Gap analyses of suicidal attempt experiences for boys and girls of different weight categories across the survey years are presented in Table 4.8. Among boys of different weight categories, we found no disparity in suicidal attempt experiences between 2003 and 2013, so gap change analysis was not applicable. This was also the case for underweight girls. However, the gap in suicidal attempt experiences of overweight/obese girls, compared to their healthy weight peers, remained stable in 2008 and in 2013 compared to 2003.

Table 4.8 Year by Weight Category Interactions Effects on Experiences of Suicidal Ideation and Suicidal Attempt for Boys and Girls

	Boys	Girls
	AOR (95% CI)	AOR (95% CI)
Suicidal Ideation		
Underweight (ref healthy weight)	1.00 (0.58, 1.72)	0.93 (0.61, 1.44)
Overweight/Obese (ref healthy weight)	1.10 (0.92, 1.31)	1.56 (1.35, 1.82) ***
2008 (ref 2003)	0.77 (0.67, 0.89) ***	0.60 (1.55, 1.66) ***
2013 (ref 2003)	0.71 (0.61, 0.82) ***	0.72 (0.65, 0.79) ***
Interactions:		
Underweight by 2008	N/A	N/A
Underweight by 2013	N/A	N/A
Overweight/Obese by 2008	N/A	1.11 (0.89, 1.38)
Overweight/Obese by 2013	N/A	1.09 (0.89, 1.34)
Suicidal Attempt		
Underweight (ref healthy weight)	1.17 (0.41, 3.35)	1.23 (0.67, 2.26)
Overweight/Obese (ref healthy weight)	1.15 (0.85, 1.55)	1.55 (1.26, 1.92) ***
2008 (ref 2003)	0.84 (0.67, 1.05)	0.65 (0.56, 0.75) ***
2013 (ref 2003)	0.99 (0.79, 1.24)	0.84 (0.74, 0.96) **
Interactions:		
Underweight by 2008	N/A	N/A
Underweight by 2013	N/A	N/A
Overweight/Obese by 2008	N/A	1.17 (0.87, 1.57)
Overweight/Obese by 2013	N/A	1.01 (0.83, 1.45)
Healthy weight by 2003	Ref	

Note: AOR = age-adjusted odds ratio; 95% CI = 95% confidence intervals. * $p < .05$, two-tailed. ** $p < .01$, two tailed. *** $p < .001$ (two tailed). *Reference group: Healthy weight. Reference year: 2003.* N/A=not applicable.

4.6 Chapter Summary

This chapter presented data on the prevalence of various forms of bullying, appearance-related discrimination, and suicidality among boys and girls with different weight categories in 2003, 2008, and 2013. Underweight boys presented decreasing trends in appearance-related discrimination. Overweight/obese boys presented decreasing trends in physical assault and appearance-related discrimination. Healthy weight boys presented increasing trends in teasing and social exclusion and decreasing trends in physical assault and appearance-related discrimination. Compared to healthy weight boys, the gap analysis of appearance-related discrimination experiences among underweight and overweight/obese boys remained stable in 2008 but narrowed in 2013. Underweight girls presented increasing trends in teasing experiences. Overweight/obese girls presented decreasing trends in teasing and decreasing trends in physical assault experiences. Healthy weight girls presented increasing trends in teasing, social exclusion, and appearance-related discrimination, in addition to a decreasing trend in physical assault. Compared to healthy weight girls of the same age, the gap in teasing and appearance-related discrimination experiences among overweight/obese girls remained stable in 2008 but narrowed in 2013, while the gap in social exclusion remained stable in 2013 compared to 2003. In terms of suicidal behaviours, overweight/obese and healthy weight boys showed decreasing trends in suicidal ideation, but not in suicidal attempt. Girls in all three weight categories showed decreasing trends in suicidal ideation between 2003 and 2008, but only healthy weight girls showed decreasing trend in suicidal attempt between 2003 and 2013. Compared to healthy weight girls of the same age, the gap in suicidal ideation and suicidal attempt experiences of overweight/obese girls remained stable in 2008 and 2013 compared to 2003.

Chapter 5: Discussion

5.1 Experiences of Bullying and Appearance-related Discrimination

The findings of this study show that higher reports of bullying and appearance-related discrimination among overweight/obese and underweight young people than their healthy weight peers, with girls more likely to report this experience than boys. These findings are consistent with previous research, which indicates that young people with overweight/obesity are more likely to report various forms of bullying (Ames & Leadbeater, 2017; Hammami et al., 2020; Kukaswadia et al., 2011; Lian et al., 2018; Odar Stough et al., 2016; Puhl et al., 2013; Rebecca M. Puhl, Luedicke, et al., 2013; Wang et al., 2018) compared to their healthy weight peers. Further, our findings are consistent with previous research, which indicates that young people with overweight/obesity were more likely to report weight-related discrimination (Bucchianeri et al., 2016; Forste & Moore, 2012; Juvonen et al., 2017; Koyanagi et al., 2020; Nutter et al., 2019; Puhl et al., 2015; Stojadinović et al., 2018) compared to healthy weight peers. Our findings are also consistent with research that suggests that overweight/obese girls were significantly more likely than boys to report all forms of bullying and appearance-related discrimination (Ames & Leadbeater, 2017; Bucchianeri et al., 2013, 2016; de Oliveira et al., 2015; Diedrichs & Puhl, 2016; Koyanagi et al., 2020; Waasdorp et al., 2018).

All results considered, weight status may explain the higher report of bullying and appearance-related discrimination among overweight/obese boys and girls. For instance, overweight/obese young people exhibit different body characteristics, which may trigger negative views and stereotypes by their peers. Overweight/obese young people may be viewed as lazy, not smart, not cool, not popular, less attractive, or disadvantaged (Pont et al., 2017). As a result, overweight/obese boys and girls may experience different forms of victimization due to

these negative views and stereotypes, which may lower their self-esteem (Tsaousis, 2016) and body satisfaction (Goldfield et al., 2010) and this, in turn, will make them an easy target to be victimized.

While being exposed to such experiences within the school environment, young people may start to accept and believe in these negative views and behave in a way that prompts victimization (Cook et al., 2010; Waasdorp et al., 2018). As an example, accepting the comments of not being smart may make overweight/obese young people study less and care less about school or be nervous in the school environment, which may trigger more experiences of victimization by their peers. Accepting and believing in these negative views and stereotypes may weaken their self-esteem (Pollastri et al., 2010), which also may make them appear as an easy and vulnerable target.

Additionally, appearance-related norms may explain the gendered variations in our results. For instance, overweight/obese boys may be viewed with physical strength and power, which are valued among boys to a greater degree than among girls (Golan, 2015). Additionally, these views may have affected the norms in school environments where the taller and bigger body figures among boys and smaller and slimmer figures among girls are often considered the ideal body compositions. And this is possibly supported by the fact that boys try to gain weight while girls try to lose weight (Smith, et al., 2014). If this is the case, perhaps girls with any body size that does not fit these norms may be a target for peer victimization. Also, since girls are more likely than boys to report body dissatisfaction (Goldfield et al., 2010), they may become an easy target to be victimized compared to boys.

Appearance-related norms may also help to explain why underweight boys reported a higher prevalence of appearance-related discrimination than their healthy weight peers. Being

underweight may challenge boys' appearance-related norms, which make underweight boys an easy and vulnerable target. Further research is necessary to assess these appearance-norms, which may help understand why and how it evolves and tailor weight-related bullying and discrimination programs according to these norms.

Regarding the prevalent form of victimization, our results may be related to the fact that young people possibly be victimized because of a factor they value the most. For instance, since boys may value physical dominance over their peers, they may be involved in physical assault to gain respect or protect themselves from other forms of victimization (Golan, 2015). On the contrary, girls may value appearance, relations, and friendship, making them more vulnerable to experience verbal, relational, and appearance-related victimization for any reason such as weight status (Golan, 2015; Goldfield et al., 2010). Besides, being exposed to any form of victimization may lower young peoples' self-esteem, which possibly makes them appear as an easy and vulnerable target. However, further research is necessary to understand why these gendered variations exist.

While there is an agreement on the association between weight status and different forms of victimization, limited anti-bullying interventions address weight-related issues (Earnshaw et al., 2018). Accordingly, these findings have implications both for future research and for clinical practice. Understanding this relationship between weight status, bullying, and appearance-related discrimination among Canadian young people may promote the efficacy of anti-bullying and discrimination programs. As an example, including resources that support overweight/obese young people to deal with their weight challenges may enhance their self-esteem, body image, social skills, and coping skills. And this, in turn, may enhance the success of anti-bullying and

anti-discrimination programs within the school environment. However, further research is necessary to assess the impact on the efficacy of these more nuanced interventions.

Additionally, multidisciplinary health teams, including community health and public health nurses, may consider periodically assessing overweight/obese young people's experiences of weight-related victimization. And this will enhance the early detection and management of their weight-related victimization. Besides, exploring overweight/obese young people's experiences may help understand how to prevent and deal with these forms of victimization within school environments. Thus, anti-bullying and anti-discrimination programs may be tailored to fit the different settings, different forms of victimization, and young people's different experiences, which may enhance the effectiveness of these programs.

5.2 Trends in Experiences of Bullying and Appearance-related Discrimination

This study also demonstrates that teasing and social exclusion remained prevalent, although did not change over time, among overweight/obese young people. Our estimates are inconsistent with recent time-trends in traditional (verbal, social, physical) victimization reports in 37 European and North American countries between 2002-2014 (Cosma et al., 2020). According to researchers, Canadian boys reported declining trends in traditional bullying, and girls did not report any change in trends. However, the comparison between our findings and Cosma and colleagues (2017) is limited. We have analyzed specific forms of bullying, such as teasing and social exclusion, rather than analyzing all forms under the title of traditional bullying.

In contrast, our findings regarding other forms of victimization are consistent to some extent with Cosma and colleagues (2017). For instance, we found that appearance-related discrimination among overweight/obese boys declined over time, which is consistent with

Cosma and colleagues (2017). However, we found that appearance-related discrimination declined over time among overweight/obese girls, but Cosma and colleagues (2017) did not report any change in trends among girls.

The form of victimization may explain the persistent trends in teasing and social exclusion, and declining trends in physical assault and appearance-related discrimination among overweight/obese boys and girls. For instance, teasing and social exclusion are often hidden and indirect compared to physical assault, which is more obvious and direct (Juvonen & Graham, 2014; Shetgiri, 2013). As a result, teasing and social exclusion may be less noticed by schoolteachers or staff, and less likely to be stopped or discouraged. Physical assault may be more easily noticed and more likely to be stopped.

Additionally, the declining trends in the prevalence of physical assault and appearance-related discrimination among overweight/obese boys and girls may potentially indicate that young people have developed certain skills that have helped them deal with these forms of victimization (Evans et al., 2017; Marshall et al., 2015). For instance, young people may become more aware of this phenomenon and have developed some better conflict resolution, coping strategies, and help to seek, which need to be further evaluated in the future.

As another suggestion and while considering the increase in overweight and obesity among British Columbian young people (Smith, 2014), it may be unsurprising to identify a decrease in trends of weight-related discrimination over time. For instance, overweight/obese young people may have become more of the norm, leading to decreased weight-related-discrimination experiences. On the other hand, girls with underweight status reported an increase in incidents of teasing between 2003 and 2013. Perhaps, being underweight may become more uncommon, triggering this form of victimization. Accordingly, it may be worth assessing the

societal norms concerning underweight young people and how they influence weight-related bullying trends. Besides, it may be worth exploring how social norms have influenced the increasing trends in teasing among underweight girls while influencing the decreasing trends in appearance-related discrimination among underweight boys. Since social norms are evolving, it may also be worth exploring and comparing the post-2013 trends in victimization among underweight and overweight/obese young people.

For healthy weight status, our findings indicate that teasing and social exclusion remained prevalent, increasing over time, among healthy weight boys and girls. Our findings also indicate that physical assault and appearance-related discrimination among healthy weight boys declined over time. Besides, physical assault among healthy weight girls decreased while appearance-related discrimination increased between 2003-2013. Given the nature of our data and analysis, we cannot make clear attributions of causality for the increase nor decline in these victimization experiences. Accordingly, it may be worth assessing the possible causes concerning healthy weight young people and how they influence trends in bullying and appearance-related discrimination. However, the form of victimization may also explain these results. As discussed earlier, teasing and social exclusion are hard to notice and control, while physical assault is easier to notice and prohibit. Besides, it is possible that bullying and appearance-related discrimination have moved from face-to-face interactions to online interactions such as cyberbullying.

5.3 Disparities in Experiences of Bullying and Appearance-related Discrimination

Our findings indicate that disparity in teasing persists between overweight/obese and healthy weight boys while narrows between overweight/obese and healthy weight girls due to the steeper increase in teasing among healthy weight girls. The disparity in social exclusion does not

exist between overweight/obese and healthy weight boys and persists between overweight/obese and healthy weight girls. However, disparities in physical assault among boys and girls of different weight categories do not exist. The reasons for persistent and changing disparities are not clear. Some possible explanations include implementing B.C. anti-bullying programs, such as Promoting Relationships and Eliminating Violence Network (PREVNet) (Craig & Pepler, 2000, 2007), which may have enhanced awareness about recognition and reduction of bullying within schools. Another possibility is that programs and policies in B.C. educational settings, such as Safe, Caring, and Orderly Schools, may have helped eliminate the disparities in physical assault among boys and girls and social exclusion among boys. However, these implemented efforts may not have been effective in eliminating disparities in teasing between overweight/obese and healthy weight boys and girls and social exclusion between overweight/obese and healthy weight girls. As another possible reason, these disparities may be related to other existing conditions, such as gender identity, mental health, disability, race, and social class besides weight status (Oliveira et al., 2015; Smith, 2014). In other words, these existing disparities need to be further evaluated while considering the other contributing factors besides weight status.

The findings of this study also show that disparities in appearance-level discrimination persist in 2008 and narrow in 2013 between overweight/obese, underweight, and healthy weight boys. Disparities in the same experience do not exist between underweight and healthy weight girls but persist in 2008 then narrow in 2013 between overweight/obese and healthy weight girls. The reasons for such improvement in disparities are not clear. However, some possible suggestions may contribute to our findings. For instance, this may be a product of school policies aim to enhance awareness of diversity, eliminate discrimination, and prevent aggression within

school environments (British Columbia. Ministry of Education, 2008). However, school policies may not have been effective in eliminating these disparities.

However, there was no disparity between underweight and healthy weight girls. Accordingly, healthy weight and underweight girls may face almost similar experiences of appearance-related discrimination. Regarding disparities between overweight/obese and healthy weight girls, the findings suggest that school policies may not have been effective in eliminating disparities between these two weight categories, which need to be evaluated in future research.

5.4 Experiences of Suicidality Among Boys and girls

Our findings suggest higher reports of suicidal behaviours (i.e., suicidal ideation and suicidal attempt) among overweight/obese young people than their healthy weight peers, with girls more likely to report this experience than boys. Findings also suggest higher reports of suicidal attempts among underweight boys compared to their healthy weight peers. These findings are consistent with previous research, which indicates that young people with overweight/obesity were more likely to report suicidal ideation (Amiri & Behnezhad, 2018; Haynes et al., 2019) and suicidal attempt (Daly et al., 2020; Wijnen et al., 2010) compared to their healthy weight peers. Also, our results are consistent with those of other researchers that suggest that young people with underweight status were more likely to report suicidal behaviour than their healthy weight peers (Eaton et al., 2005; Wijnen et al., 2010). Our findings are consistent with other Canadian research suggesting that overweight/obese girls were significantly more likely than boys to report suicidal ideation and suicidal attempt (Findlay, 2017; Georgiades et al., 2019).

Considering our findings and reflecting on the minority stress theory guiding this research, weight status may explain the higher report of suicidal behaviours among

overweight/obese young people, girls in general, and underweight boys as disadvantaged groups. For instance, minority stress theory highlights that young people with weight challenges are at a greater risk to experience weight-related stigma, and they are also at a greater risk to experience mental health challenges, including suicidal behaviours (Hatzenbuehler, 2009; Hatzenbuehler & Pachankis, 2016; Sikorski et al., 2015). This explanation is consistent with meta-analyses conducted by (Moore et al., 2017; Schmitt et al., 2014; Ttofi et al., 2011). These researchers conclude that young people who experience any form of bullying or discrimination were more likely to report anxiety and depression, which may increase their risk of reporting suicidal behaviours (Ford et al., 2017; Waasdorp et al., 2018; Williams et al., 2017). Minority stress may explain our findings regarding girls and suicidal behaviours. As overweight/obese girls reported a higher prevalence of victimization experiences due to weight stigma, they presented higher reports of suicidal behaviours than boys. Minority stress may also explain the higher reports of suicidal attempts among underweight boys, as they experience the weight stigma of not being part of the boys' appearance norms which may place them at risk for suicidal attempts. The risk of suicidal attempt among underweight boys may be doubled, compared to healthy weight peers, in part due to their experience of appearance-related discrimination, which needs to be evaluated in future research.

5.5 Trends in Experiences of Suicidality Among Boys and girls

Our findings demonstrate that suicidal ideation remained prevalent, although declining, experience among overweight/obese boys and girls and underweight girls. Besides, suicidal attempt remained a prevalent experience, although did not change over time, among overweight/obese boys and girls compared to their healthy weight peers. Suicidal ideation also remained a prevalent but decreasing experience among healthy weight boys and girls. Suicidal

attempt remained prevalent, although did not change over time, among healthy weight boys, and declined among healthy weight girls. Our estimates are inconsistent with a recent time-trend in suicidality among Canadian young people between 2011-2016 (Wiens et al., 2020). According to researchers, Canadian young people reported relatively stable trends in suicidality. However, the comparison between our findings and Wiens and colleagues (2020) is limited since we are evaluating ten years trends in suicidality according to young peoples' weight status.

Since we highlighted weight status as a form of stigma, we considered other forms of stigma to deepen our literature comparison. For instance, we compared our findings to another recent time-trend in suicidality among Canadian sexual minorities (Peter et al., 2017). Our results are inconsistent with Peter and colleagues (2017). While our findings show that overweight/obese young people reported decreasing trend in suicidal behaviours, Peter and colleagues (2017) reported increasing trends in the same experiences among sexual minorities. Accordingly, the effect of weight-related stigma on suicidal behaviours may differ from the effects of sexual identity-related stigma, which needs to be evaluated in future research. On the other hand, our results regarding healthy weight young people are consistent with heterosexual young people who reported decreasing trends in suicidal behaviour (Peter et al., 2017).

Based on our results, the decrease in suicidal ideation among underweight girls and overweight/obese boys and girls may potentially reflect that young people have developed certain skills to reduce their potential risk of mental health challenges which in turn will reduce their risk of suicidal behaviour (Khan et al., 2016; Mirkovic et al., 2015; Tang et al., 2015). For instance, young people may become more aware of mental health challenges among young people with weight challenges and may have developed some better coping strategies that need to be further evaluated in the future. The decline may also potentially reflect that young people

are seeking help to deal with their mental health challenges or with their experience of weight-related victimization. If this is the case, perhaps the resources they may be receiving are possibly effective in decreasing suicidal ideation over time which needs to be further evaluated in future research. However, our proposed suggestion cannot explain the unchanged trends in suicidal attempts among underweight and overweight/obese young people. Further efforts and research are needed to understand the reasons behind our observations.

5.6 Disparities in Experiences of Suicidality Among Boys and girls

Our findings indicate that disparity in suicidal ideation and attempt persists between overweight/obese and healthy weight girls, while it does not exist among boys. The reasons for such existing and non-existing disparities are not clear. However, some possible suggestions may contribute to our findings. The implemented suicide prevention programs in B.C. (Jennifer White, 2016) may effectively eliminate the disparities between boys with different weight categories and suicidal behaviours. However, it may not have been effective in eliminating the disparity in suicidal behaviours between overweight/obese and healthy weight girls. Further research is needed, particularly studies that include multiple indicators of suicidal behaviours and young people with different weight statuses. The reasons for existing disparities need to be further evaluated.

5.7 Strengths and Limitations

A key strength of our study is that we have used data from a large, provincially representative sample of young people. Previous studies did not directly test the relationship of weight status to different forms of bullying (i.e., teasing, social exclusion, physical assault); appearance-related discrimination; and suicidal behaviours (suicidal ideation, suicidal attempt). Our study is perhaps the first within North America to provide data on whether weight disparities

in both forms of victimization and suicide have changed in recent years. Understanding the association between weight status and different forms of victimization and suicidality among Canadian young people would help provide vulnerable groups with tailored interventions that lessen these experiences.

The limitations of this study include that the young people's weight status was calculated based on self-reported height and weight, which may have led to some biased subjective responses. For instance, weight possibly being underreported, and height possibly being overestimated. However, past research showed a reasonable similarity between self-reported and measured height and weight (Allison et al., 2020); therefore, we decided to continue using self-reported data in our study.

As with most secondary data trend analyses, our study was limited to the variables available. For instance, our data included victimization of bullying and appearance-related discrimination, but did not include bullies and other witness-peer experiences. The data also did not include other forms of bullying, such as cyberbullying, which worths exploring in future studies. Cyberbullying has been identified as a prominent medium through which bullying occurs, and this holds relevance in the context of young people. Via electronic communication (i.e., social media, email, and text messaging), young people may receive harmful or unwanted comments which reach rapidly, widely, and anonymously. As a result, young people may be at risk of experiencing mental health challenges like other forms of victimization. Besides, our data did not include other mental health challenges (i.e., depression, anxiety) and coping mechanisms (i.e., self-harm), which are also worth exploring in future studies.

Moreover, the survey asked only a single question on self-reported teasing, social exclusion, physical assault, and appearance-related discrimination, which may have led to some

subjective responses that result in either over or underestimation. Possibly, young people may have had different perceptions of what counts as bullying or discrimination. Young people may also have normalized the experiences of teasing, social exclusion, and physical assault within their schools, which may affect reporting. Also, self-reported victimization represents students' personal experiences about being victimized which may be influenced by self-protection. Including other reporting sources, for instance, peers, parents, and teachers, may provide valuable information about these forms of victimization that might be hidden from adults (Košir et al., 2020).

We also cannot attribute causality using our observations. For instance, weight status may explain the greater risks of young people experiencing bullying, appearance-related discrimination, and suicidality. However, we did not include other contributing factors such as gender identity, ethnocultural background, social class, and ongoing mental or physical illness, which are worth exploring in future studies. Besides, this knowledge of other contributing factors would be helpful when planning interventions and allocating resources to prevent such forms of victimization.

Importantly, it was not possible to identify the year and school districts in which bullying, discrimination, and suicide prevention programs were implemented within British Columbia. Hence, we were unable to determine the effects of these programs on prevalence and trends over time, especially among young people with weight challenges. Finally, results are for a single province and may not represent prevalence and trends in bullying, appearance-related discrimination, and suicidality within other regions in Canada. Work on a nationally representative sample could provide us with more generalizable findings.

5.8 Implications for Practice

This research has significant implications for health care providers and nurses. For instance, it is essential that school counsellors, social workers, nurse practitioners, mental health nurses, community health nurses, and public health nurses, who may work with young people, to be aware of the association between weight status, bullying, appearance-related discrimination, and suicidal behaviours presented within this study. Our study may enhance the health and school-life experience among young people with weight challenges. As an example, school counselors may enhance the monitoring of the non-direct forms of bullying such as teasing and social exclusion, especially among young people with weight challenges. Social workers may involve parents and teachers to enhance reporting of victimization and reaching resources. Nurse practitioners may provide a periodic screening for victimization and suicidality among young people with weight challenges, enhancing reporting and nursing care. Also, nurse practitioners may provide nursing interventions that enhance self-esteem, coping, and resiliency among young people with weight challenges, which may decline their risk to experience victimization. Mental health nurses may screen for victimization among young people referred to a mental health clinic, enhancing early detection and effectiveness of provided nursing care. Also, mental health nurses may develop suicide prevention programs tailored to overweight/obese young peoples' health needs. Community health nurses may develop school-based anti-bullying and discrimination programs which are tailored to address weight-related and other stigma-related victimization. Public health nurses may assess the appearance-related norms among young people and enhance peers, teachers, parents, and community members' awareness of weight-related victimization and suicidality.

5.9 Directions for Future Research

Further research is required to enhance our understanding of the association between weight status, bullying, appearance-related discrimination, and suicidal behaviours, further research is required. For instance, qualitative research methods are beneficial in exploring the beliefs of young people, peers, parents, and schoolteachers about these concepts and how they can be most accurately evaluated at the population level. Besides, these insights may enhance the effectiveness of anti-bullying, anti-discrimination, and suicidal prevention programs.

Including other weight-related physical and mental health challenges may also enhance our understanding of the health needs among young people living with weight challenges. For instance, an assessment of substance use, eating disorders, and other mental health challenges may enhance the success of future suicide prevention programs, especially among young people with weight challenges. Furthermore, an assessment of risk and protective factors among overweight/obese young people who reported experiences of victimization and suicidal behaviours, may also inform the effectiveness of these programs.

Future research should also investigate how media or social media has influenced young peoples' experiences and perceptions about weight status, bullying, and appearance-related discrimination. Evaluating whether media played in promoting or mitigating bullying and appearance-related discrimination may also enhance the effectiveness of anti-bullying, anti-discrimination, and suicidal prevention programs.

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Appendix A

Table A.1 Literature Review keywords using CINAHL

CINAHL/ Search Terms
(MH "Bullying+") OR "Bullying" OR (MH "Cyberbullying") cyberbully* or bully*
(MH "Discrimination+") OR "Discrimination" OR (MH "Sexism") OR (MH "Racism") OR (MH "Ageism") PREJUDIce* or reject* or discriminat*
(MH "Obesity+") OR (MH "Pediatric Obesity") OR "overweight or obesity" obese* or high BMI or fat or unhealthy weight
(MH "Young Adult") OR (MH "Adolescence+") OR "youth or adolescents or young people or teen or young adults" ADOLESCEN* or youth* or teen*
(MH "Suicide, Attempted") OR (MH "Suicidal Ideation") OR (MH "Suicide+") OR (MH "Suicide Risk (Saba CCC)") OR "Suicide Attempted or Suicide or Suicidal Ideation" Suicid*
(MH "Depression+") OR "depression or depressive disorder or depressive symptoms or major depressive disorder" depression* or depress*
(MH "Generalized Anxiety Disorder") OR (MH "Social Anxiety Disorders") OR (MH "Anxiety Disorders+") OR (MH "Anxiety+") Anxie*

Table A.2 Litreture Review keywords using Ovid MEDLINE

Ovid MEDLINE / Search Terms
aggression/ or bullying/ (cyberbully* or bully*).ti,ab.
prejudice/ or attitudes/ or stereotype/ or maltreatment/ or harassment/ or stigma/ or "rejection (psychology)" (PREJUDIce* or reject*).ti,ab.
overweight/ or obesity/ or obesity, metabolically benign/ or obesity, morbid/ or pediatric obesity/ (obese or obisity or overweight).ti,ab.
PSYCHOLOGY, ADOLESCENT/ or ADOLESCENT BEHAVIOUR/ or ADOLESCENT/ (ADOLESCEN* or youth* or "young adult*" or teen*).ti,ab.
Suicide, Attempted/ or Suicide/ or Suicidal Ideation/ SUICID*.ti,ab.
depression.mp. or Depression/ (depression* or depress*).ti,ab.
Anxiety/ or Anxiety.mp. or Anxiety Disorders/ Anxie*.ti,ab.

Table A.3 Litreture Review keywords using PsycINFO

PsycINFO / Search Terms

DE "Bullying" OR DE "Relational Aggression" OR DE "Cyberbullying" OR DE "Physical Abuse" OR DE

"School Violence" OR DE "Teasing"

cyberbully* or bully*

DE "Social Discrimination" OR DE "Discrimination" OR DE "Race and Ethnic Discrimination" OR DE

"Racism" OR DE "Stereotyped Attitudes" OR DE "Stigma" OR DE " attitudes " OR DE "stereotype" OR DE "

maltreatment " OR DE " harassment " OR DE " prejudice "

PREJUDIce* or reject* or discriminat*

DE "Suicide" OR DE "Attempted Suicide" OR DE "Suicidal Ideation" OR DE "Self-Injurious Behaviour" OR

DE "Suicidology"

suicid*

DE "Major Depression" OR DE "Depression (Emotion)"

depress* or depression or depressive or depressed or mood disorder

DE "Anxiety Disorders" OR DE "Generalized Anxiety Disorder" OR DE "Anxiety"

Anxiet*

DE "Obesity (Attitudes Toward)" OR DE "Obesity" OR DE "Body Mass Index" OR DE "Overweight"

obese or unhealthy weight or high bmi or pediatric obesity

DE "Adolescent Psychopathology" OR DE "Adolescent Psychology"

adolescent* or youth* or teen* or young adult*
