

Navigating the System: Adolescent Women and High School Bathrooms

by

Elissa Allen

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Nursing)
in the University of Michigan
2018

Doctoral Committee:

Associate Professor Lisa Kane Low, Chair
Assistant Professor Sara McClelland
Assistant Professor Michelle Pardee
Associate Professor Ruth Zielinski

Elissa S. Allen

elissall@umich.edu

ORCID iD: 0000-0001-5208-083X

© Elissa S. Allen 2018

Dedication

This dissertation is dedicated to my husband, Josh Allen, without whose unending support this dissertation would never have come to fruition.

Acknowledgements

I would like to thank my committee members, whose guidance and expert knowledge shared throughout the dissertation process ensured its success. I am grateful for the time and consideration you shared with me, and your willingness to answer any question. During times of stress and doubt, I was buoyed up by your belief in me and in the importance of this work.

I would also like to thank the adolescent women who participated in my research, and who gave up their time to share their experiences with me. Their articulate thoughts regarding such a “weird” topic allowed great insight into the experiences of bathroom use in the high school setting. I would not have been able to complete this dissertation without them, and I am eternally grateful to have had the honor of speaking with them.

And to Drew and Quinn, who allowed me to focus on my dissertation work so that I might fulfill my dream. Your understanding is much appreciated, and I owe you about 50 games of hide-and-seek!

Table of Contents

DEDICATION	ii
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF APPENDICES	ix
ABSTRACT	x
CHAPTER	
1. Introduction	1
Statement of the Problem	3
Specific Aims	3
2. Review of the Literature	5
Urinary Incontinence in Women	6
Urinary Incontinence in Adolescents	9
Bladder Health	13
Adolescents and Bathroom Behaviors	19
Summary	22

3. Conceptual Framework	24
Adolescent Psychosocial Development Theory	24
The Lifespan Model for Pelvic Floor Disorders	28
Optimal Bladder Health Model	33
Optimal Bladder Health Model as Theoretical Support	39
4. Methods	40
5. Results	55
Demographics and Background	55
Specific Aim 1: Factors that Influence Bathroom Use	61
Summary of Aim 1	86
Specific Aim 2: Knowledge and Strategies to Delay Voiding	89
Specific Aim 3: Strategies to Withhold Urine and Stool	102
Summary of Aim 2 and Aim 3	105
6. Application of Findings to the Optimal Bladder Health Model	107
Review of the Optimal Bladder Health Model	107
Potential Influential Factors Related to Bladder Health in Adolescent Women	110
Application of Results to Optimal Bladder Health Model	112
Revised Model: Adapted Optimal Bladder Health Model for Adolescent Women	119
Summary of Findings	122
7. Discussion	124
Role of Decision-Making and Prior Education	126
The Role of Stigma in Navigating the System	127

The Role of Policy in Navigating the System	129
The Role of Clean Environment in Navigating the System	130
The Importance of School Bathrooms for Mental Health	131
Navigating the System: Beyond Serving Biologic Need	132
Implications and Future Research	133
Strengths and Limitations	137
Conclusion	139
APPENDICES	141
REFERENCES	164

LIST OF TABLES

TABLE

5.1 Demographics of Enrolled Adolescent Women (N = 30)	57
5.2 EPSI scores	59
5.3 Michigan Incontinence Symptom Index Scores	60
5.4 Major themes from Aim 1 results	63
5.5 Major themes and subthemes from Aim 2	89
6.1 Adapted OBH Model dimensions and identified influential factors	113

LIST OF FIGURES

FIGURE

3.1 The Lifespan Model for Pelvic Floor Disorders	29
3.2 Optimal Bladder Health Model	34
4.1 Aims, Relationship with OBH Model, and Exemplars of Interview Questions	44
5.1 AFIS Subscales by Grade in School	58
5.2 EPSI Industry, Identity, and Intimacy Subscales by Grade in School	59
6.1 Optimal Bladder Health Model	108
6.2 Proposed Theoretical Factors Applied to Optimal Bladder Health Model	112
6.3 Adapted Optimal Bladder Health Model for Adolescent Women	122

LIST OF APPENDICES

APPENDIX

A. Interview Guide	142
B. Recruitment Flyer	144
C. Parental Consent Form	146
D. Assent Form	149
E. Consent Form	152
F. Demographic Questionnaire	155
G. Erikson Psychosocial Stage Inventory	157
H. Adolescent Femininity Ideology Scale	160
I. Michigan Incontinence Symptom Index	162

Abstract

One in three women will experience urinary incontinence in their lifespan, and withholding urine has been shown to increase risk. Adolescents pose significant risk for withholding behaviors due to psychosocial developmental stage and fear of negative peer interaction. Little is known about adolescent women's feelings and experiences with high school bathrooms that might influence use, such as fear of bullying, environmental considerations, and school policies. The purpose of this dissertation research is to explore adolescent women's experiences with high school bathroom use to better understand early lifespan behaviors that may lead to future development of urinary incontinence. To guide this endeavor, the Optimal Bladder Health (OBH) Model was used, as well as variables of psychosocial developmental stage, school policies, privacy, bathroom cleanliness, and peer interaction. This dissertation 1) identified factors that influences school bathroom behaviors in adolescent women, 2) explored knowledge related to bladder health, including voiding frequency, beverage intake, societal attitudes, and experiences with incontinence, and explored strategies adolescent women use to avoid or delay bathroom use, and 3) used these findings to inform the Optimal Bladder Health Model. A constructivist grounded theory approach was used to conduct individual interviews with adolescent women between the ages of 14-18 years and who attend high schools in the Midwest United States. Interviews were audio recorded and verbatim transcripts were made. Grounded theory's constant comparison method of analysis was used to identify emerging

themes, and descriptive statistics were used to describe the sample. One-on-one interviews were conducted with 30 adolescent women from 14 high schools, 11 (79%) of which were public schools. Adolescent women described difficulty in navigating through the many barriers to bathroom use in the high school setting. Themes that emerged were amount of time to use the bathroom, bathroom environment, privacy, school policies, and school bathrooms as a safe space. Bullying was not a factor in bathroom avoidance, but rather bathrooms served as a safe space to receive support from peers. Adolescent women preferred teacher policies supporting autonomy to leave the classroom for bathroom use, as well as clean, private, and well-stocked environments. Knowledge of bladder health was limited due to lack of having received any education, and three types of strategies to avoid or delay bathroom use were employed: physical, mental, and behavioral. Factors added to the Optimal Bladder Health Model included access to toilets at school, safe environment, general bathroom environment, social support, and peer interaction, resulting in the Adapted Optimal Bladder Health Model for Adolescent Women (Adapted OBH Model). This model may be used to guide future research concerning adolescent women and bladder health. Opportunities to improve the school bathroom experience include providing clean, private, and well-supplied bathrooms. Nurses and other health care providers may aid in increasing school bathroom use through providing education about the importance of not withholding urine. In addition to this, restructuring school policies to better support autonomy to use the bathroom with biologic cues may potentially reduce school bathroom avoidance.

CHAPTER 1

Introduction

Pelvic floor disorders have a high prevalence, with an estimate of almost one in four women experiencing some form (Nygaard et al., 2008). Pelvic floor disorders most frequently refer to urinary incontinence, pelvic organ prolapse, and fecal incontinence, but may also include other urinary symptoms. Urinary incontinence (UI) has the highest prevalence in adult women, with rates ranging from 15.7%-53.4% in the United States (US) (Nygaard et al., 2008; Markland, Richter, Fwu, Eggers, & Kusek, 2011). Urinary incontinence has been shown to have significant repercussions on the lives of those affected, including reduced quality of life, sexual health, work productivity, and activity levels (Coyne et al., 2011). The economic burden of urinary incontinence is quite costly as well, with an estimated \$65.9 billion spent annually in the US on incontinence care and lost productivity (Subak, van den Eeden, Thom, Creasman, & Brown, 2007). The risk factors for UI in adult women include parity, obesity, and lifestyle choices such as smoking (Buckley & Lapitan, 2010).

While UI receives considerable attention as an adult health issue, its prevention and incidence crosses the lifespan. There is a paucity of research conducted with younger ages, with a particular lack of literature regarding adolescent women. The Fourth International Continence Society found the rates of 11-13 year olds ranged from 1.1%-12.5% (Buckley & Lapitan, 2010). Other studies in an older adolescent population have varied in prevalence rates of UI. A study in Italy of 1,936 adolescent women aged 15-25 years (mean age of 21 years) found 12.4%

experienced urinary incontinence in some form (Bardino, Di Martino, Ricci, & Parazzini, 2015). Similarly, in Australia, a study of 16-30 year olds (mean age of 22 years) found 12.6% experience some form of urinary incontinence (O'Halloran, Bell, Robinson, & Davis, 2012). The ranges vary considerably among studies due to a lack of standardization in terminology and methodological consistency. The paucity of research at younger ages combined with the methodological differences adds considerable difficulty in understanding UI development.

Research focused on adolescent women is important to understand the precursors to the development of UI. The focus on women is particularly needed, as there is a higher prevalence of UI in females than in males (Buckley & Lapitan, 2010). Research to understand bladder health in adolescent women provides the potential opportunity to address prevention at an earlier life stage than is currently available.

Developmentally, adolescence is a time of role exploration and budding independence. As adolescents “try on” new roles, they are influenced heavily by their peers and parental figures (Erikson, 1968). The vulnerability felt during this time may impact daily decisions such as public bathroom use, including those at school. The majority of adolescent women in the US spend an average of 6.6 hours a day at school (National Center for Education Statistics [NCES], 2017), thus requiring them to navigate the challenges of access to the bathrooms and potential interactions with peers or their social networks. The fear of using the bathroom due to anxiety of being bullied may reduce their likelihood of using school bathrooms (Norling, Stenzelius, Ekman, & Wennick, 2016). Related to this is the potential for lack of privacy or safety. Some adolescents may decide to reduce fluid intake or withhold urine and stool to avoid the potential negative interactions with peers, which an idea supported by Erikson’s psychosocial development theory (Erikson, 1968). These decisions may have lasting consequences, as

withholding stool and urine has been associated with urinary incontinence and urinary tract infections.

Statement of the Problem

Bathroom use behaviors may have implications for bladder health throughout the lifespan (DeLancey, Low, Miller, Patel, & Tumbarello, 2008). The relationship of bathroom behaviors of adolescent women to longer term bladder health across the lifespan are unknown. This is due to a paucity of data available regarding adolescents and bladder health in general, as well as the implications that poor bladder health decisions may make on the development of lower urinary tract symptoms later in life. There are many reasons that adolescent women may exhibit poor bladder health behaviors while in school related to social and environmental factors. Without knowledge regarding adolescent women's bladder health behaviors related to bathroom use, a critical opportunity to provide interventions aimed at reducing lower urinary tract symptoms is missed. To fully understand the feelings and experiences adolescent women have regarding bathroom use, research is needed that explores the lived experience of female adolescents and bladder health concepts related to environment, psychosocial development and behavior, and life stage.

Specific Aims

The rising rates of urinary incontinence and the large gap in the literature with regard to adolescent women highlight the need for further research to understand the factors that relate to female adolescent bathroom use. A qualitative approach to better understand adolescent women's experiences and feelings with regard to bathroom use in the school setting is essential

to identify potential barriers, which may later impact bladder health. These findings will aid in informing future studies aimed at identifying risk factors and protective factors as well as barriers from a larger population, and ultimately aid in informing future urinary incontinence prevention strategies. The use of grounded theory methodology will allow for the investigation of this relatively unknown phenomenon in a way that will highlight the contextual factors involved in an adolescent woman's decision to either use or avoid bathrooms, with particular focus on school bathrooms. Semi-structured interviews will be conducted with adolescent women who attend high school. Neurogenically impaired adolescent women and adolescent women who are pregnant or who have been pregnant will be excluded from the study due to the confounding risk these conditions present for the experience of urinary incontinence.

The primary purpose of this study is to better understand adolescent women's bathroom use behaviors, particularly in the school setting, and explore potential reasons for bathroom delay or avoidance. The following aims are addressed in the following chapters:

In a sample of adolescent women ages 14-18 years attending Midwestern high schools,

- 1) Identify factors that influence adolescent women's decisions to either use or avoid or delay bathrooms at school
- 2) Explore knowledge related to bathroom use, including voiding frequency, beverage intake, societal attitudes, and experiences with incontinence
- 3) Explore strategies adolescent women use to avoid using the bathrooms at school

CHAPTER 2

Review of the Literature

Pelvic floor disorders in women are highly prevalent worldwide. A cross-sectional study of 1,961 women aged 20 years and older in the US found a pelvic floor disorder prevalence rate of 23.7% across all ages (Nygaard et al., 2008). Rates are predicted to increase by at least 45% during the next 30 years, with estimates as high as 26.1% of women having at least one pelvic floor disorder in 2050 (Wu, Hundley, Fulton, & Myers, 2009). The higher prevalence rate combined with a larger population of aging adult women translates to 58.2 million women, or one third of the population, being affected by a pelvic floor disorder. To help combat this, estimates indicate that 11% of American women will have surgery for a pelvic floor disorder at some point in their lifetime (Kenton & Mueller, 2006).

Pelvic floor disorders include urinary incontinence, pelvic organ prolapse, and fecal incontinence. Although there are many subtypes, urinary incontinence is generally defined as involuntary voiding and fecal incontinence is defined as involuntary loss of stool through the rectum (Milsom et al., 2009). Pelvic organ prolapse involves the lowering of the pelvic organs out of their normal placement and into the vagina. The affected organs include the bladder, uterus, and/or small intestine (Swift et al., 2005). Although the three pelvic floor disorders affect millions of women worldwide, the most frequently cited pelvic floor disorder is urinary incontinence, as its prevalence has been found to range between 25-45% of adult women aged 20 years and older worldwide (Buckley & Lapitan, 2010).

Urinary Incontinence in Women

Urinary incontinence, or involuntary voiding, has many subtypes. Definitions of these subtypes according to symptoms are provided by the International Consultation on Incontinence (Milsom et al., 2009). These subtypes include urgency urinary incontinence (UUI), stress urinary incontinence (SUI), mixed urinary incontinence (MUI), nocturnal enuresis (NE), and post-micturition dribble and continuous urinary leakage. A related concept is overactive bladder (OAB), which is characterized by feelings of urgency but without urine leakage. Having clear definitions adds strength to recent prevalence findings, as they are able to be compared more easily.

Urinary incontinence prevalence rates of all types in the US has been found to be around 15.7% in women aged 20 years and older (Nygaard et al., 2008). Urinary incontinence affected women from all races, although white women report the highest percentage of symptoms, although the reasons why these differences may occur are unclear. Prevalence of UI in the US is consistent with findings worldwide. A review of literature from the 2004 3rd International Consultation on Incontinence found that most of the studies from 17 countries had estimates of UI prevalence to be between 5-45% of adult women (Hunskar et al., 2005). The 2008 4th International Consultation on Incontinence further divided UI prevalence into age ranges, and found that women aged 20-39 years had an overall prevalence of 7-37% (Buckley & Lapitan, 2010). This high rate of prevalence is interesting, in that it is occurring in a young, otherwise healthy population.

Negative consequences of urinary incontinence include lowered quality of life, lower self-esteem and sexual esteem, poorer mental health, reduced activity levels, and reduced work productivity (Coyne et al, 2008; Coyne et al., 2009; Rogers, Kammerer-Doak, Villarreal, Coates,

& Qualls, 2001). Women of any age may experience the physical and emotional burden of urinary incontinence. The negative effects tend to increase as severity of urinary incontinence symptoms increase, although even women with occasional symptoms may experience significant emotional burden.

Beyond the physical and emotional burden of urinary incontinence, however, there is also an economic burden. The most significant costs to patients may be the daily care items, such as incontinence pads, products aimed at prevention, and additional laundry. The Reproductive Risks for Incontinence Study at Kaiser study of women found that in 2005, women in the US with stress urinary incontinence spent \$204 per year on routine care and women with urge incontinence spent \$313 per year (Subak et al., 2007). Taking into account the lost productivity of women experiencing UI, the average annual per capita costs of overactive bladder in the US were \$1924, for a total national cost of \$65.9 billion (Subak et al., 2007). These numbers do not take into account the medical costs, such as surgeries or medications aimed at reducing urinary incontinence symptoms.

Treatment seeking behavior in adult women has shown to be lacking, as urinary symptoms related to pelvic floor disorders are frequently disregarded as a normal part of aging, and therefore are often not mentioned to health care providers (Horrocks, Somerset, Stoddart, & Peters, 2004). This creates a barrier to receiving treatment methods, which may include physical therapy, medication, or surgery. Women also frequently find the symptoms embarrassing, and are therefore less likely to speak about them to others and seek help. This attitude of indifference does not necessarily stem from lack of bother from urinary symptoms, but rather stems from the belief that suffering from pelvic floor disorders is a natural consequence of childbirth and aging, and is thus a part of life (Bush, Castellucci, & Phillips, 2001). Self-management techniques such

as purchasing absorbent pads are employed instead of seeking help from a healthcare provider who can monitor symptom reduction strategies. Educating women on what is normal urinary tract function and how to identify symptoms related to pelvic floor disorders have been shown to increase health seeking behavior (O'Connell, Wellman, Baker, & Day, 2006; Tannenbaum, Drali, Holroyd-Leduc, & Richard, 2010).

Prevention of urinary incontinence has found some success in using behavioral modifications, such as pelvic floor muscle training (Diokno, et al., 2004; Morkved & Bo, 2000). The bulk of prevention of UI research has focused on PFMT, with few other alternatives to prevent UI onset. Risk factors for UI include parity, whether cesarean or vaginal delivery, obesity, heavy smoking, and presence of urinary symptoms in childhood (Bower, Yip, & Yeung, 2005; Fitzgerald et al., 2006; Hannestad, Rortveit, Daltveit, & Hunskaar, 2003; Rortveit, Daltveit, Hannestad, & Hunskaar, 2003).

Although the previously mentioned studies found that UI does not only occur in older adults, but rather young adults experience UI as well, the majority of research has neglected to include this population. This may be because older women have more risk factors for urinary incontinence, such as obesity, history of childbirth, and aging pelvic floor structures (Buckley & Lapitan, 2010). The multitude of risk factors in older adult women make it appear as though urinary incontinence is an older woman's health issue. However, the recent prevalence studies that found urinary incontinence in 20-39-year-old women indicate that urinary incontinence is an issue in women of any age (Buckley & Lapitan, 2010). Women of all ages, from childhood to adulthood, may be affected by urinary incontinence, which aids the argument for increasing the focus on prevention in conjunction with prevalence across the lifespan, particularly in younger ages to establish potential opportunities to reduce its negative effects.

Urinary Incontinence in Adolescents

Although some prevalence data and repercussions of UI exist for young adults aged 20-39, women aged 19 years and younger without neuropathic disorders have not been studied in great depth. Prevalence of urinary incontinence in adolescent women in the US, defined by the World Health Organization (2016) to be between the ages of 10-19 years, is not well documented in the literature. Part of the difficulty of obtaining prevalence rates in adolescent age groups may be that there is not always agreement as to what ages constitute an “adolescent.” A few studies included adolescents in their prevalence data, but only those aged 18 years and older. Other studies focused primarily on urinary incontinence in young children state that they included adolescents, but only those up to age 12 years. There is a paucity of data focused primarily on urinary incontinence in adolescents aged 10-19 years in the US.

The global literature available regarding adolescents and prevalence of urinary incontinence include Sweden, Canada, Japan, Australia, and Italy. In an Italian study of 1,936 participants, surveys were collected from adolescents and young adults aged 15-25 years (mean age 21 years) to determine prevalence and determinants of urinary incontinence (Bardino et al., 2015). The sample had an average of 12.4% of urinary incontinence, and the participants under 18 years had an average of 18.2%. This study was conducted online through Facebook, and therefore consisted of self-reported data. A recent study in Australia found that in a population of 16-30-year-old nulligravid women (mean age of 22 years), 12.6% experienced some type of UI (O’Halloran et al., 2012). Similarly, a Swedish study of 653 women aged 18-20 years found that 12% reported UI (Hägglund, Olsson, & Leppert, 1999). Interestingly, a Swedish study reinvestigated 1,721 7-year-old women after ten years to determine if bladder symptoms were still present, resolved, or had worsened (Hellström, Hanson, Hansson, Hjalmas, & Jodal, 1995).

Incontinence in this study was described as urine leakage at least twice a month. Overall there was a decrease in symptoms between 7 years and 17 years of age, with 3.6% of the adolescent women experiencing daytime incontinence at 17 years (down from 6% at 7 years of age). This study is unique in that it offers longitudinal data in adolescent women, as there is a paucity of studies using that methodology. Although decreased somewhat, there was a persistent prevalence of urinary incontinence symptoms in their population at aged 17 years.

A 2001 study of 229 Canadian adolescents aged 15-19 years found that 17% experienced urge incontinence, 15% experienced stress urinary incontinence, and 5% experienced mixed urinary incontinence (Alnaif & Drutz, 2001). Although conducted with a small sample size, this data suggests that prevalence of UI in adolescent women between 15-19 years may be higher than originally thought. All symptoms were reported as occurring less than once a week, and thus characterized as mild. A study in Japan on 2,592 girls aged 10-12 years found that 4% experienced some form of daytime urinary incontinence (Kajiwara, Inoue, Usui, Kurihara, & Usui, 2004). The researchers compared the rates of urinary incontinence in girls with that of boys aged 10-12 years, and found that boys had a decrease in urinary incontinence as they aged, whereas girls stayed at around 4% each year.

The prevalence rates of UI in adolescents vary dramatically between countries, most likely due in part to using different definitions of UI, as well as different ages. The commonalities among the studies are that there is a prevalence of UI in this group, frequently over 10%. Although actual UI prevalence data in this population in the US has not been determined, it can be assumed that adolescent women are experiencing it to some degree, and there are certain associated risk factors that are particularly relevant.

Risk Factors for Urinary Incontinence in Children and Adolescents

Although there is not the depth of research available in children and adolescents that is available in adults, certain risk factors for daytime urinary incontinence in adolescent women have been identified. Relevant risk factors for urinary incontinence in children and adolescents include obesity, being female, constipation, involvement in high-impact sports, and anxiety and other psychological issues (Bo & Sundgot-Borgen, 2010; Buckley & Lapitan, 2010; Nygaard, Thompson, Svengalis, & Albright, 1994).

Obesity has been linked to increased rates of urinary incontinence, both in adults and younger children (Chang, Chiang, Lin, Hsieh, & Yang, 2015). A study of 838 children aged 5-12 years in China found obesity was a significant risk factor for urgency symptoms compared to normal weighted children, while gender and stressful events were not (Chang et al., 2015). This population had a mean age of 8 years, which may have confounded the results, as young age was also found to be a risk factor for urinary incontinence symptoms in this sample. Similarly, a retrospective study of 251 children in the US with elimination disorders found that 51% of those suffering from daytime incontinence were mildly obese, and 31% were severely obese (Erdem, Lin, Kogan, & Feustel, 2006). The age range of the study was 4-18 years (mean age was nine years), and is thus difficult to apply to a slightly older population, such as those commonly found in high schools in the US, between 14-18 years.

Oliver and colleagues took a different approach and prospectively studied 358 patients aged 6-17 years (mean age was 9.71 years) attending a urology clinic for complaints of non-neurogenic urinary tract dysfunction (Oliver, Campigotto, Coplen, Traxel, & Austin, 2013). The sample included, 45% (n= 162) participants who were obese or overweight, and the obese children had significantly higher urinary tract dysfunction symptom scores than normal weight

children ($p = 0.009$). Although the authors provide research into associations between obesity and severity of urinary tract dysfunction symptoms, the cross-sectional design of this study did not allow for analysis as to whether obesity preceded the urinary incontinence symptoms. The association between obesity and urinary symptoms is strengthened by a US study that included 40 obese adolescent girls (aged 12-17 years) and 20 adolescent girls of normal weight, and surveyed their urinary symptoms (Schwartz, Wyman, Thomas, & Schwarzenberg, 2009). Overall, 12.5% ($n=5$) of obese adolescent girls in the sample had urinary incontinence, and had significantly higher urinary incontinence symptoms ($p = .009$) than their normal weight peers. Similar to the study by Oliver et al. (2013), the cross-sectional design did not allow for analysis into whether obesity preceded the incontinence symptoms.

Engaging in high-impact physical activity, such as gymnastics, has been associated with urinary incontinence in adolescent women. A study in Sweden of 144 nulliparous women who participate in varsity athletics, with a mean age of 19.9 years, found that 28% reported experiencing UI during their sport (Nygaard et al., 1994). Sixty-seven percent of gymnasts reported UI during their sport, whereas 0% of golfers reported experiencing UI while golfing.

Behavioral disorders such as attention-deficit/hyperactivity disorder (ADHD) and autism have been found to be related to increases in urinary incontinence symptoms in children and adolescents, as well (von Gontard, Baeyens, van Hoecke, Warzak, & Bachmann, 2011; von Gontard & Equit, 2015). In the United Kingdom, a population study of 8,213 children aged 7-9 years found an increase in parent-reported attention deficit disorders, oppositional defiant disorders, and activity disorders in children with daytime urinary incontinence symptoms (Joinson, Heron, & von Gontard, 2006). This cross-sectional study was unable to determine if the urinary incontinence symptoms were the result of the behavioral disorder or the cause of them,

due to its design. Associations between behavioral disorders and urinary incontinence in adolescents are not available in the literature, but it could be surmised that untreated behavioral disorders would continue to have an association with urinary incontinence symptoms in an older population.

Although there are a few studies that address prevalence and risk factors of UI in adolescent women, the paucity of data available adds difficulty in fully understanding the effect UI may have on this population. The small number of studies available that have addressed UI in adolescent populations have indicated that there is some presence of UI in adolescent women, but even if not experienced during that life point, there is a high likelihood that they may experience UI later in life as an adult woman (Buckley & Lapitan, 2010). Important considerations that may shed light on possible factors that may affect UI development are what is known about bladder health in general, and how toileting behaviors are taught to adolescent women.

Bladder Health

Women in general have shown very little knowledge related to pelvic structures, including the lower urinary tract, as well as what constitutes normal aging for the pelvic floor (Welch, Botelho, & Tennstadt, 2011). There are the components of a “healthy bladder” that are currently being debated (Lukacz et al., 2011), but there are several key topics that should be taught. These key topics include basic pelvic structures, bladder health topics such as how frequently to void, and the relationship between withholding behaviors and increased risk for urinary tract infection and urinary incontinence (Lukacz et al., 2011). Education on these topics should not be only given to adults, but adolescent women as well. Without prior knowledge,

adolescent women are left to navigate their changing bodies and their biologic needs without guidance, which may leave them vulnerable to negative health outcomes related to the pelvic floor. This lack of knowledge was highlighted in a recent study of 168 racially and ethnically diverse female adolescents by Hebert-Beirne and colleagues (2017). Baseline knowledge of female anatomy was lacking, as was knowledge that leaking urine is abnormal. However, the intervention group (n = 103) received education on these topics and was able to express greater knowledge about these topics by the end of six total hours of education related to pelvic health. Although the sample size was small, this study suggests what little knowledge adolescent women have related to pelvic health and some lower urinary tract symptoms and that it may be improved with education.

Although there are a few agreed-upon bladder health topics, such as pelvic structures and the importance of voiding with biologic urge, the lack of clear understanding with other areas of bladder health creates challenges. To complicate the issue, definitions of optimal bladder health vary among cultures, and may be frequently described in terms of absence of disease (Palmer, Athanasopoulos, Lee, Takeda, & Wyndaele, 2012). The International Continence Society created definitions for lower urinary tract dysfunction and urodynamic studies, but did not provide a definition as to the signs and symptoms of optimal bladder health (Abrams et al., 2002). Instead of a definition focused on the characteristics of a healthy bladder, bladder health is frequently described as the absence of infection and incontinence. This emphasis on what is absent diminishes the myriad of factors involved in bladder health, including social factors, physical factors, and personal beliefs (Palmer, 1994). The larger question of what is necessary environmentally, physically, and socially for optimal bladder health in women is not explicitly known, and may vary considerably among different cultures. What has been identified in the

literature regarding these factors that influence bladder health will be described in the next few sections.

Voiding Technique and Toilet Training

Voiding technique is an important component of bladder health. Some techniques, such as hovering over a toilet seat, may obstruct urinary flow rate (Yang et al., 2010) and reduce the bladder's ability to empty completely (Moore, Richmond, Sutherst, Imrie, & Hutton, 1991). Voiding position varies among cultures, as Western cultures tend to void while sitting on a flushable toilet while others may assume a squatting position. A study of 104 hypertensive men and women in India found squatting while toileting increased blood pressure by a statistically significant amount (Chakrabarti, Ganguly, Chatterjee, & Chakravarty, 2002a). Although it did not include a large sample size, this study adds to the growing amount of research that indicates squatting while voiding may increase risk of stroke in Indian men and women (Chakrabarti, Ganguly, Chatterjee, Chakravarty, 2002b). There is conflicting research regarding best voiding posture, but there is evidence that shows that the most important aspect is that women are voiding in a manner that is comfortable to them. A comfortable voiding position aids in relaxing posture pelvic floor muscles and allows the bladder to empty completely (Wennergren, Oberg, & Sandstedt, 1991).

The first lessons of voiding technique are taught when toilet training occurs, when children begin to control their urges to void and stool. Toilet training often begins at a very young age, although this varies among cultures. Western cultures often begin toilet training when the child appears to be “ready”, i.e., the children lead the process and the parents provide support. Waiting too long may be problematic, however, as it has been found to lead to an increase in daytime wetting and enuresis (Blum, Taubman, & Nemeth, 2003). However, toddlers

who start toilet training at younger than 24 months have been found to take a longer period of time to toilet train, as the necessary developmental skills are often not present (Choby & George, 2008). The conflicting research available creates difficulty in determining best practices for when to begin toilet training for optimal bladder health, but it is clear that all cultures engage in some form of toilet training and it is the foundation for bladder health through the lifespan.

Toilet training is a critical time for laying the groundwork for developing feelings related to bladder health. It is during this time that children learn that urinary or stooling accidents are shameful, embarrassing, and should be avoided (Issenman, Filmer, & Gorski, 1999). Shame and embarrassment about voiding and stooling serves as a form of protection, as avoiding touching stool and treating it with disgust prevents disease (Curtis & Biran, 2001). These societal norms become deeply ingrained, as following society's rules for voiding and stooling practices is something that parents teach their children (Norton, 2004). Children learn to associate shame with voiding or stooling accidents during the toilet training process, which then may be carried throughout the lifespan. Toilet training is considered complete once children stop having urinary or stooling accidents and are able to exert good control over voiding, but the importance of using this time to learn proper techniques and behaviors that may reduce UI or other lower urinary tract symptoms later in life is often ignored.

The effect of these negative feelings related to incontinence may be carried through to adulthood. Although UI is highly prevalent and has many repercussions, most women with UI do not seek treatment, which is in part due to the shame and stigma associated with involuntary urine leakage. A study of 2,310 women identified as having incontinence in the US were queried about their help-seeking behaviors (Kinchen et al., 2003). Only 38% of the sample had ever sought treatment for their UI symptoms, and these women were more likely to have severe

symptoms, lack of embarrassment discussing UI with their providers, and lower quality of life. Those who found UI embarrassing or stigmatizing may have been less likely to speak to providers regarding receiving help, but the survey did not seek out that information explicitly. A qualitative study of older adults in the United Kingdom found that reactions to incontinence ranged from resignation to shame and disgust. The shame and embarrassment they felt increased their desire to hide their condition from others, both family and healthcare providers (Horrocks et al., 2004).

Habit Development

An important factor that influences bladder health over the lifespan is the development of toileting habits. Voiding and stooling habits that emerge during toilet training become ingrained and thus the process of how to void or stool may be difficult for individuals to describe. This automaticity in action strengthens over time with repeated action, and contextual or environmental cues may influence habit development (Lally, Wardle, & Gardner, 2011). Ideally, voiding behaviors are engaged within a short time of biologic urge signals to avoid developing infrequent voiding habits (Koff, Wagner, & Jayanthi, 1998). However, habits related to voiding or stooling are influenced by what is perceived as socially appropriate behavior (Norton, 2004). It is this understanding of social appropriateness that makes voiding or stooling in view of others undesirable, or even taboo. Managing what is deemed socially appropriate in terms of bathroom use, as well as considering the shame associated with bathroom activities previously described, creates an understanding that certain times and situations require self-control and delayed voiding or stooling. Toilet training begins the process of both recognizing need to void, while at the same time controlling the urge so that the behavior is enacted at an appropriate time and place (Palmer, 1994).

Engaging in occasional self-control and delaying voiding until a socially appropriate time has not been associated with negative bladder health consequences (Webster, Koefoot, & Sihelnik, S., 1984). Although current literature has supported a general recommendation of voiding every 3-4 hours while awake, there are a combination of biologic factors related to bladder health, a desire for social appropriateness, and duration since last void that influence the timing of voiding. These factors may not be in alignment, thus creating a delay in voiding. If delayed voiding becomes habitual, pathology has been shown to occur through increased risk for the development of over-distended bladder, urinary incontinence, and urinary tract infection (Bendsten, Andersen, & Andersen, 1991). An important component of toilet training involves developing judgment about appropriate times to void and stool (Palmer, 1994). This foundation of developed knowledge related to appropriate times to void and stool may be challenged throughout the life span, as barriers to bathroom use are presented in school and work, thus potentially increasing the likelihood of delayed voiding in these environments (Palmer, Willis-Gray, Zhou, Newman, & Wu, 2017). Over time, if repeated habitually, bladder pathology may develop. (Lundblad & Hellstrom, 2005).

Examples of bladder pathologies that may develop with habitual delayed voiding include urinary tract infection (UTI) and urinary incontinence. Urinary tract infections are often not related to anatomical abnormalities of the urinary tract, but instead have been found to be related to variable bathroom habits. These bathroom habits include stool retention, infrequent voiding, and inadequate fluid intake, and poor genital hygiene (Koff et al., 1998; Mazzola, von Vigier, Marchand, Tonz, & Bianchetti, 2003; Rudaitis, Pundziene, Jievaltas, Uktveris, & Kevelaitis, 2009). The association between toilet habits and UTIs indicate that behavioral changes, such as increased beverage intake, more frequent voiding (i.e. a voiding schedule or habitually voiding in

conjunction with biologic urge), proper hygiene, and decreasing stool retention may lower UTI risk, as well as other lower urinary tract symptoms (Mazzola et al., 2003).

Adolescents and Bathroom Behaviors

Adolescent women's bathroom habits have not been studied extensively, but are important factors related to bladder health. As described previously, delayed voiding may lead to lower urinary tract symptoms. Two studies have focused on adolescents in high school and their use of bathrooms, and reasons why they may choose to avoid using the bathroom. A Swedish qualitative study by Norling et al. (2016) interviewed 21 students aged 16-18 years about their experiences using school bathrooms. The researchers found that these adolescents frequently withheld urine and feces due to unpleasant bathroom environments, dirty toilets and floors, and feelings of concern for safety related to potential bullying. The methods adolescents employed to avoid using the bathroom included frequent movement such as jumping to reduce urge symptoms and reducing fluid intake. Though the researchers sought a grounded theory approach, the interview guide was applied rigidly to each participant so that all questions were answered in some manner by everyone. This method did not allow for the exploration of new ideas that may act as barriers to bathroom use in their sample.

An earlier, similar qualitative study also in Sweden by Lundblad and Hellström (2005) used a semi-structured questionnaire to examine the perceptions of bathrooms in schools from 385 children aged 6-16 years. A quarter of the oldest subset of the sample, aged 13-16 years, reported never using the bathroom to urinate, and 80% reported never using it to defecate. Reported reasons for avoiding school bathrooms included unpleasantness of the bathroom environment, such as dirty toilets, as well as a lack of safety. The sample also reported they

preferred to deal with feeling the discomfort of a full bladder or the urge to defecate than suffer the psychological and social discomfort that is frequently present in the school bathrooms. This study included a robust sample size, but was unable to elucidate the effect of bullying on bathroom avoidance behaviors. The children in the sample reported a lack of physical bullying, yet spoke of a fear of verbal abuse if they released gas or odors with defecating.

A recent quantitative study from Sweden used the International Consultation on Incontinence Questionnaire Female Lower Urinary Tract Symptoms scale, as well as the Toileting Behavior scale, to investigate any correlation between lower urinary tract symptoms and toileting behavior at universities (Sjogren, Malmberg, & Stenzelius, 2017). The sample consisted of 173 18-25-year-old women, and the researchers found that 34.2% had urinary urge symptoms at least sometimes, 35.9% reported experiencing UI, and 17.4% always avoided using public bathrooms. Anxiety related to the cleanliness of public toilets was 87.2%. There was a strong relationship between toileting behavior and lower urinary tract symptoms in this population, and most women delayed voiding to avoid public toilets. This study is informative as it provides a quantitative approach to bathroom behaviors and urinary symptoms, although reasons for public bathroom avoidance were limited due to the nature of the Toileting Behavior questionnaire. In addition to this, the feelings and experiences that this sample may have had with regard to both UI symptoms and public bathroom use were not explored.

Menstruation and Bathroom Behaviors

The few studies available that explored the feelings that adolescent women had with regard to public bathroom use identified many negative feelings, particularly in school environments (Lundblad & Hellstrom, 2005; Norling et al., 2016; Sjogren et al., 2017). The feelings of social discomfort related to public bathroom use that adolescent women experienced

may be increased during menstruation (Fingerson, 2002). Additionally, adolescent women have been found to experience an increase in desire for privacy, which is related to the shame and fear of stigmatization that many women feel with regard to this normal physiologic process that most women experience at some point in their lives (Prendergast, 2000). Menstruation increases feelings of social discomfort and desires for privacy with bathroom use, which may increase a woman's desire to avoid public bathroom use, yet bathroom use becomes more frequent during these times out of necessity to change feminine hygiene products (Fingerson, 2002). The desire to hide menstruation from peers becomes less possible with public bathrooms, yet the need to use them increases. This paradox may be particularly challenging for adolescent women, many of whom must contend with this dilemma for multiple days a month.

Bullying in Adolescence and Bathroom Behaviors

Bullying has been reported as a contributing factor to bathroom avoidance while at school. The definition of bullying is usually “a specific form of aggression, which is intentional, repeated, and involves a disparity of power between victim and perpetrators” (Wang, Iannotti, & Nansel, 2009, p.368). The prevalence of bullying in high schools in the US is alarmingly high. Research using the Health Behavior in School-Aged Children 2005 Survey found that out of 7,182 male and female adolescents in 6th-10th grades, 12.8% were bullied physically, 36.5% were bullied verbally, 41% experienced relational bullying, and 9.8% reported being cyber-bullied (Wang et al., 2009). Both private and public high schools were included in this study, and the researchers also found that lower socioeconomic status increased the risk of being bullied.

Beyond weight, social factors such as bullying appear to be related to an increase in urinary incontinence symptoms (Ching et al., 2015). Researchers in the US compared feelings of victimization scores in a sample of 112 8-11 year olds (mean age of 9 years) being seen at a

pediatric urology clinic with scores from 63 healthy controls (mean age of 9 years) being seen in a pediatric well clinic. The children with complaints of urinary dysfunction being seen at the pediatric urology clinic had significantly higher peer victimization ($p = 0.005$) and self-victimization scores ($p < 0.0001$) than their healthy peers. The significant difference between the two groups indicates a need for further research in this area, and provides support for screening for bullying when children present with urinary incontinence symptoms.

The reasons bullying is so prevalent in high schools in the US are complex, but there are several factors that reduce its likelihood, such as the involvement of school administrators and teachers (Carney & Merrell, 2001). School bathrooms are potential areas in which bullying may occur, as there is seldom adult oversight and a lack of involvement from school administrators and teachers. This may increase the risk of bathroom avoidance and delayed voiding habit development, which may have an overall impact on bladder health. The study by Norling and colleagues (2016) supports the notion that fear of bullying increases bathroom avoidance in adolescents. When considering bathroom behaviors in adolescence, concern for bullying has shown to be an important consideration.

Summary

In summary, there is prevalence data regarding UI and other pelvic floor disorders in adult women, but no clear prevalence data available for adolescent women in the United States. Several international studies have found prevalence rates as high as 18% in adolescent women, but these studies are not consistent methodologically, which adds difficulty in comparing prevalence rates. What research is currently available does indicate that UI is a problem in this population but the extent is not known. There are certain risk factors that are linked to UI in

children and adolescents, such as obesity, anxiety, high-impact sports, and behavioral issues. Bullying has also been linked to UI in adolescents, as well as withholding urine, which is sometimes referred to as delayed voiding.

Prevention of UI is not well-studied. However, prevalence of UI throughout the lifespan, as well as the increasing numbers as women age, indicate that UI prevention should be considered in younger populations. Understanding bladder health behaviors throughout each stage of life is imperative to identifying areas in which to improve bladder health education and prevention strategies. Currently, there is some data on bladder health behaviors, such as toileting behaviors, in young children and adults, but very little focused on adolescent women. This “blank spot” in bladder health research creates difficulty in considering behavioral factors that may be related to UI, and potentially modified as a UI preventative measure later in the lifespan.

Three studies in Sweden have found that public bathroom use, such as school bathrooms, are linked to bathroom avoidance in adolescent women (Lundblad & Hellström, 2005; Norling et al., 2016; Sjogren et al., 2017). Although they are unable to fully explain the challenges that adolescent women face while attempting to use the bathrooms at school, they highlight modifiable factors that influence bathroom use in some situations, thus providing an important foundation for studying influential factors in high school bathrooms in the US.

To fully understand adolescent women’s experiences, feelings, and behaviors related to high school bathroom use in the US, the broader context of the social aspects of bathroom use needs to be taken into account. High school bathroom use does not occur in a bubble, but rather has the potential to be influenced by social and environmental considerations, such as fear of being bullied. These considerations, as well as other potential social factors, will be discussed in the following chapter.

CHAPTER 3

Conceptual Framework

The understudied nature of bladder health in adolescent women has created an opportunity to explore their experiences by considering both the biological and the psychosocial developmental aspects. Focusing on these two major components of the adolescent developmental phase provides an opportunity for greater depth of knowledge with regard to both bathroom habits as well as the key psychosocial considerations that have may have an effect. The purpose of this chapter is to provide an overview of adolescent psychosocial developmental theory applicable to bladder health considerations in this population. Available theoretical models used to guide bladder health research are reviewed, including the Optimal Bladder Health Model, which was used to guide this research.

Adolescent Psychosocial Development Theory

Adolescence is a time of self-discovery as children advance into adulthood (Erikson, 1980). Society and social connections become increasingly important, which may create role confusion for adolescents who desire to act one way but feel compelled to act in another (Erikson, 1968). Appearance to others is often more important to adolescents than their true feelings, and thus they may alter their behaviors to what they believe is more acceptable to peers and society at large (Erikson, 1968). This chapter serves to describe the theoretical connections between adolescent psychosocial development, adolescent behavior, and bladder health through

the lifespan. Adolescence is described as tumultuous, as the desire for self-discovery may be hindered by role confusion. Erikson described eight stages of psychosocial development during the lifespan in his theory of identity (1963, 1968). These stages are based on the “epigenetic principle,” which states that “anything that grows has a ground plan, and that out of this ground plan the parts arise, each part having its time of special ascendancy, until all parts have arisen to form a functioning whole” (Erikson, 1968, p. 92). Personality development is innate, and may “develop according to steps predetermined by the human organism’s readiness to be driven toward, to be aware of, and to interact with a widening radius of significant individuals and institutions” (Erickson, 1968, p. 92). The eight stages of psychosocial development include trust vs. mistrust, autonomy vs. shame and doubt, initiative vs. guilt, industry vs. inferiority, identity vs. identity diffusion, intimacy vs. isolation, generativity vs. self-absorption, and ego integrity vs. despair (Erikson, 1980).

Adolescence is the period of time in which individuals experience the identity vs. identity diffusion crisis. Erikson (1968) asserted that a person’s rate of psychosocial development is not rigid, and may vary between individuals as well as between cultures. The ultimate goal of adolescence is to achieve identity synthesis, which is described as the taking of beliefs and ideals about oneself from childhood and forming a larger, self-determined view of that self. Conversely, identity confusion is described as the lack of consistency in one’s view of self. The development of identity has particular importance when considering bathroom behaviors, as adolescents begin to decide for themselves who they are and what is important to them. These considerations may come into play when considering bladder health, as adolescents decide whether to engage in delayed voiding activities. To an adolescent woman, withholding urine or

stool may be preferable to risking potentially negative peer interactions related to the stigma of bathroom use.

This approach is relevant to the formation of a sense of identity during the adolescent years. Individual motivations and personal styles may be affected by perceived potential consequences or incentives. This has particular relevance to bladder health, as a lack of knowledge related to optimal bladder health, such as drinking enough fluids and using the bathroom when feeling slight urge symptoms, may reduce perceived consequences and therefore lead to a decreased motivation to use the bathroom during school hours.

Erikson's psychosocial developmental theory proposed that as people age, they employ different approaches to achieve resolution to the stages of crises. Young children may be heavily dependent on outside influence, such as a parent, while adolescents may have enough cognitive schema recall accumulated through life events to display greater self-regulation of behavior (Baldwin, 1992; Steinberg, 1989; Erikson, 1968). However, many adolescents are still heavily influenced by their parents or guardians, as well as peers, and may experience internal turmoil if their newfound ability to self-regulate behavior is at odds with the beliefs of their social circle.

Erikson's theory supports the concept of adolescents as autonomous beings who depend heavily on their social supports, both from society as a whole and from individual social connections. Adolescents in high school settings spend much less time with their families than in middle school, and are thus required to make many decisions for themselves (Larson, Richards, Moneta, Holmbeck, & Duckett, 1996). Erikson's theory states that adolescence is a time of self-discovery, and it could be surmised that the daily decisions adolescents make independently may either support healthy habits, or could potentially negatively impact health for decades to come. As adolescents try different roles, their behaviors are affected by what their peers think, and they

may alter their behaviors to either decrease the likelihood of receiving negative feedback.

Adolescents may also increase unwanted behaviors due to perceived peer pressure. Decisions made regarding bodily functions, such as using the school bathroom, may be affected by a desire to blend in, or perhaps to avoid unwanted peer interactions.

In summary, the developmental theory provided by Erikson supports the concept of adolescence as an ideal time in the life span to make either healthy or poor decisions regarding bladder health. Erikson's psychosocial developmental theory states that the process of identity achievement is heavily influenced by the desire for peer approval. In order to reduce the risk of negative peer interactions, adolescents are likely to avoid using environments that may create a negative peer interaction, whether from embarrassing bodily functions or lack of adult oversight that leads to bullying. This bathroom avoidance may lead to urinary incontinence or urinary tract infection, or create a habit of withholding stool and urine that may carry through the lifespan. Fear of being seen in a negative light by a peer is something most adolescents avoid at most costs. This may translate to a negative effect on bladder health, as being seen as someone who uses the bathroom may be an unwanted identity, and therefore creates likelihood that they will engage in bathroom avoidance.

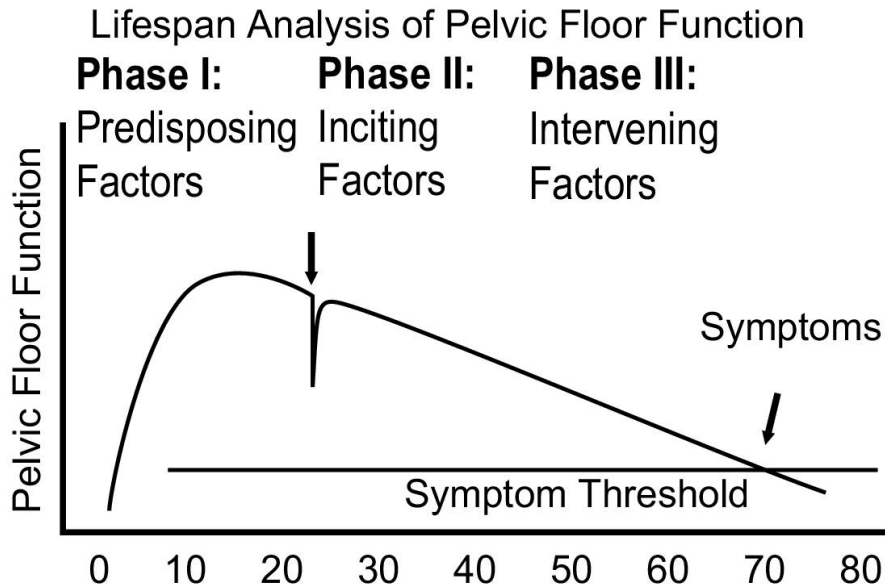
Taking into account the lack of knowledge related to school bathroom behaviors of adolescents and the psychosocial developmental tasks that they are faced with, two theoretical models were considered to inform this study (DeLancey et al., 2008; Miller & Low, 2015). These models are well grounded in theory, with significant support from qualitative and quantitative sources. However, these models are limited by their lack of use in adolescent populations. Models that consider bladder health in the adolescent population were unavailable

in the literature. The two models for consideration are presented below, with the Optimal Bladder Health used as the basis for this study.

The Lifespan Model for Pelvic Floor Disorders

Pelvic floor disorders in women are not usually created in isolation, caused by a single injury or event that would have the same severity for all women experiencing the same injury. Instead, there are a multitude of factors that impact a woman's risk for pelvic floor disorders, including genetics, toileting behaviors, precipitating events such as an injury during childbirth, and connective tissue degradation caused by aging. The Lifespan Model for Pelvic Floor Disorders (DeLancey et al., 2008) is a conceptual model that depicts the timeline of pelvic floor disorders in women over the life span. The Lifespan Model begins with young age where bladder growth in childhood determines urine capacity (or functional reserve). The timeline progresses as women reach adulthood, where often a precipitating event occurs that may incite a pelvic floor disorder, and finally ends with the effects of aging on the pelvic floor structures (Figure 3.1).

Figure 3.1 The Lifespan Model for Pelvic Floor Disorders



The Lifespan Model for Pelvic Floor Disorders by DeLancey et al. (2008) is innovative in that it provides a graphic portrayal of how a pelvic floor disorder might develop due to different genetic, physical, and environmental factors. The Lifespan Model states that the myriad of factors involved in the development of pelvic floor disorders are not necessarily independent of each other, and there may be predisposing factors in a woman’s life that have not been explored in the literature. The Lifespan Model does provide a clear representation of the most frequent times in a woman’s life in which a pelvic floor disorder may develop, which is helpful in creating potential intervention or prevention strategies.

The Lifespan Model also argues for a cumulative effect over time, so that individual behaviors or events which may create an “added” impact over the lifespan, so that it “equals” pelvic floor disorder symptoms. Individual behaviors or events by themselves may not cause a pelvic floor disorder, but in combination with other factors, a pelvic floor disorder develops. This view supports the importance and opportunity for development of early prevention measures to

reduce the potential effects of added events during the lifespan. In applying this model to bladder health considerations early in life, there may be specific events from this time period which may increase or decrease the likelihood of a pelvic floor disorder later in life which can be addressed from a prevention perspective. Application of the concepts of predisposing, inciting and intervening factors provides a more comprehensive approach to considering the impact of early lifestyle and behavioral events on development of negative pelvic floor changes, including development of urinary incontinence, across the lifespan.

The first phase of the Lifespan Model for Pelvic Floor Disorders is called predisposing factors. People tend to develop differently and at different rates, and may be influenced by genetics, physical environment, and nutrition (DeLancey et al., 2008). Childhood is a period of time for rapid growth of bladder and other urinary structures, and lower urinary tract symptoms during this time period are uncommon. Functional reserve is at its maximum at the end of childhood, and begins to decline throughout the rest of the life span. For some women, the rate of decline is greater than others and lower urinary tract symptoms may develop, even in the absence of an inciting factor.

Phase II of the Lifespan Model for Pelvic Floor Disorders is called inciting factors (DeLancey et al., 2008). This stage is characterized by events that may cause injury to the body and may cause the development of a PFD. There are a multitude of possible inciting factors, such as athletic activity or childbirth. Childbirth, particularly forceps-assisted births or births with a long second stage labor, is perhaps the most common inciting event for the development of PFD. Injuries to the pelvic floor may heal over time if they are mild, but for some women they will develop persistent PFD symptoms. Genetics have a role in some women recovering from inciting factors more easily than others. Inciting factors may occur more than once, leading to an increase

in risk for negative outcomes, or they may occur in the context of other predisposing risk factors, thus increasing the risk for negative outcomes for some individuals. On the other hand, other individuals who have a different context of predisposing factors may never experience similar negative outcomes. The potential for bathroom avoidance, or delayed voiding, as an inciting factor may have variable consequences for individual adolescents, depending upon their predisposing risk factors and later intervening factors.

Phase III of the Lifespan Model for Pelvic Floor Disorders is called intervening factors (DeLancey et al., 2008). This phase can be characterized by urinary symptoms that develop during the normal aging process. While some of the inciting factors may not cause symptoms at the actual time they occur, they may create a decreasing resilience against the negative changes over time. This decreased resilience may not be apparent until the aging process creates an intervening risk condition that causes the symptoms to occur. This may not be due to a specific inciting event but to an accumulation of events that leave the individual in a state of decreased capacity as they age, thus explaining the increased onset of PFD symptoms over time.

The graphic portrayal of women experiencing PFD over the life span highlights the need for targeting prevention methods at specific time points. For instance, DeLancey and colleagues (2008) recommend providing prevention strategies for women who have a prolonged second stage labor, and thus are at higher risk of a PFD. However, although the authors contend there are myriad factors related to PFD, the application of the model to identifying specific prevention opportunities is complex as most potential risk and protective factors are understudied in the literature. The value of the model is that it provides the theoretical basis for considering additional inciting factors, yet to be identified in the literature.

The Lifespan Model of Pelvic Floor Disorders is strengthened by its inclusiveness of the complex factors that may affect a woman's pelvic floor, and ultimately lead to a pelvic floor disorder. The concept of events or behaviors throughout the lifespan "adding" to "equal" a pelvic floor disorder or the accumulation of risk factors is innovative, and provides support for considering pelvic floor health an issue in early development, such as childhood and adolescence. Limitations, however, include a lack of discussion about the potential factors that may occur during the psychosocial developmental phase that occurs during adolescence.

The Lifespan Model of Pelvic Floor Disorders would benefit from the addition of potential inciting factors that may happen at an earlier age, such as adolescence. The model includes the concept of younger adult women experience various PFDs in addition to older adults, but does not take into account the formative years prior to childbirth but post anatomical development. The model would be strengthened by the inclusion of additional environmental factors as well, such as adolescent bathroom behaviors as an inciting factor of pelvic floor disorder. The psychosocial development of adolescents creates vulnerability in proper bathroom behaviors, as adolescents seek to avoid negative peer interactions. This fear of negative interactions may incite bathroom avoidance, as school bathrooms are frequently places that lack adult oversight, and bullying or teasing about odors or noises made during voiding or stooling may occur (Norling et al., 2016).

The preventative perspective of the Lifespan Model for Pelvic Floor Disorders supports its use in adolescents, as adolescence is a time in which different roles are attempted and autonomous decisions about bathroom habits may be made. As previously described in Chapter 1, bathroom habits may affect development of lower urinary tract symptoms in adolescent women.

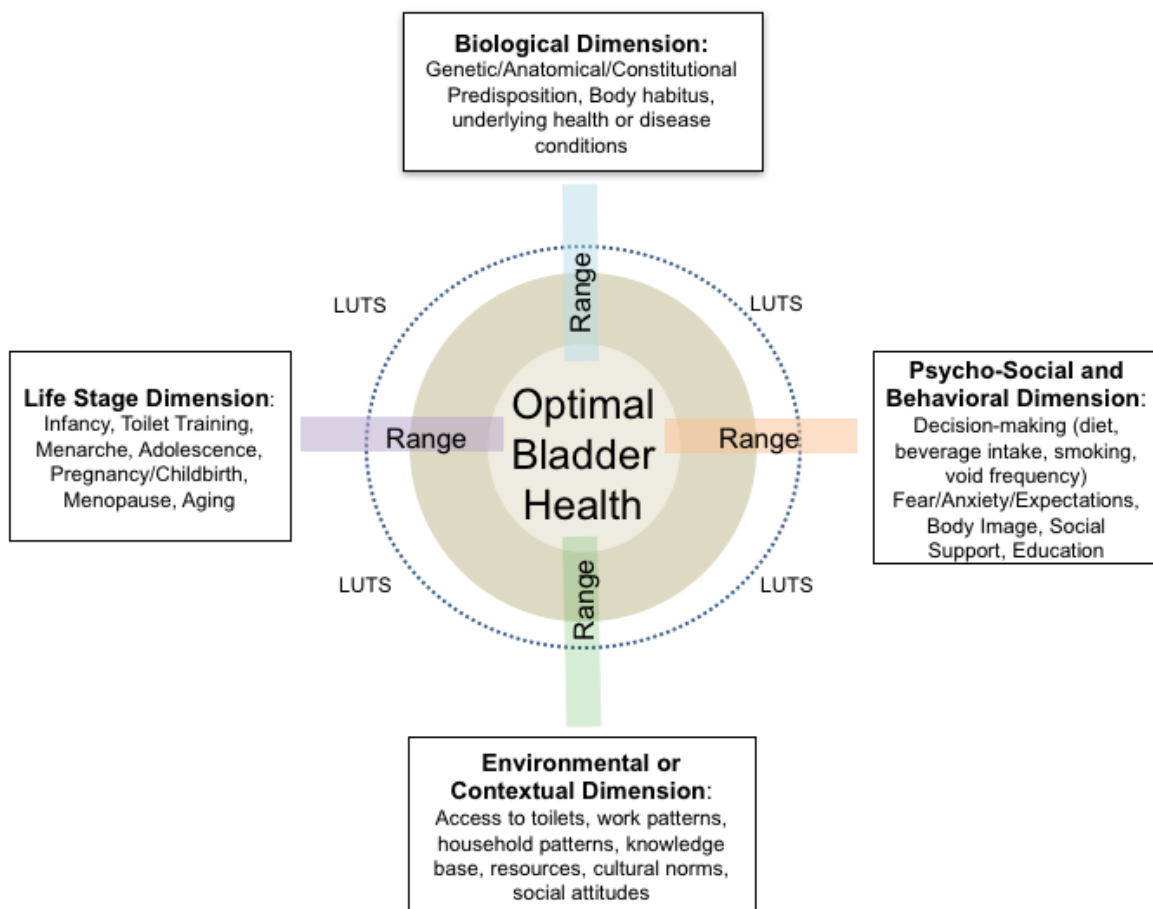
In summary, while the Lifespan Model for Pelvic Floor Disorders is an innovative graphical portrayal of the cumulative nature of pelvic floor disorders there are limitations in its specific application to adolescence. The concepts within the model are useful when considering bladder health as a key focus, as the issues relating to pelvic floor disorders that are highlighted by the Lifespan Model are also issues that relate to bladder health. However, it has several limitations in that it does not include considerations specific to a critical point in the lifespan: adolescence. It is also limited in that it is not specific to bladder health, but rather includes a disease focus with an emphasis on all lower urinary tract symptoms. Concepts within the Lifespan Model for Pelvic Floor Disorders are included in the Optimal Bladder Health Model. The Optimal Bladder Health Model was chosen to inform this study, as it has the basic tenets of the Lifespan Model for Pelvic Floor Disorders, but is specific to bladder health.

Optimal Bladder Health Model

Bladder health is not a well-understood concept in the literature. More often than not, bladder health is described in terms of the absence of disease, rather than identified characteristics that are holistic and comprehensive. Bladder health as it is currently known may best be described as an absence of urinary tract symptoms and infection, an absence of any form of incontinence, a lack of pain in the bladder, and a lack of difficulty urinating. Not only is it difficult currently to determine whether or not someone has optimal bladder health due to a lack of bladder health definition and diagnostic guidelines, it is also difficult to prescribe appropriate measures for patients to take in order to improve bladder health or create healthy habits for a lifetime of optimal bladder health.

The few concepts known related to optimal bladder health have been described in an Optimal Bladder Health Model by Miller and Low (2015) (Figure 3.2). The four main dimensions included within the model are the biological dimension, life stage dimension, psychosocial and behavioral dimension, and an environmental dimension.

Figure 3.2 Optimal Bladder Health Model



Life Stage Dimension

The life stage dimension of the Optimal Bladder Health Model includes the stages of a female woman's life in which she is more likely to experience changes that may result in some

form of suboptimal bladder health. The possible suboptimal bladder health issues may include urinary tract infections, urinary incontinence, bladder pain, urinary urge, or developing habits related to ignoring the body's appropriate voiding signals. Life stage dimensions include infancy, toilet training, menarche, adolescence, pregnancy/childbirth, menopause, and aging.

Infancy is a life stage in which optimal bladder health as it is known is dependent upon others. Diaper changing and wiping methods may impact bladder health, as introducing bacteria from stool into the urethral opening may result in urinary tract infections. Toilet training is also a time of dependency on others to maintain bladder health, but this period of time is also marked by budding independence (Palmer, 1994). Toilet training is also the first time that a person may control their bodily functions, and may use this ability to withhold urine and stool as a form of control over caregivers and their desires. Erik Erikson (1968) describes toddlerhood as a time of autonomy versus shame and doubt, and toilet training provides a perfect avenue in which to practice new independence, as well as exhibit behaviors that may end in suboptimal bladder health. Withholding urine may result in urinary tract infections, and withholding stool may result in constipation, which has been found to relate to both urinary tract infections and urinary incontinence.

Menarche is a life stage in which young women may begin to feel shame or embarrassment about their bodies, and fear stigmatization (Lee, 2008). As described in Chapter 1, fear of stigmatization related to the menstrual cycle is not unwarranted, as research has found that both men and women attributed less competence and likeability to a woman who dropped a wrapped tampon in front of them (Roberts, Goldenberg, Power, & Pyszczynski, 2002). The shame that adolescent women feel with regard to menstruation may lead to a desire to conceal

any indicators of its occurring, and thus may cause adolescent women to hide the reason for increased bathroom use during this time, i.e. to change a feminine hygiene product.

The role adolescence plays in bladder health is relatively unknown. It can be surmised that adolescence is a time in which the balance of optimal bladder health may be tipped toward suboptimal, due to the myriad issues an adolescent has to contend with daily. Adolescence is fraught with insecurities about peer relationships, and inner struggle may result from the ultimate quest to find oneself (Erikson, 1980). As peer relationships begin to take on a more important role in an adolescent's life, they may begin to distance themselves from parents or caregivers. The ability to think for oneself and the independence of being in school without parental oversight may be a new experience for many adolescents, as they are able to decide which toileting behaviors are important to them. Lessons about toileting that have been taught throughout an adolescent's life may be ignored, such as listening to body signals to determine when to go to the bathroom (Palmer, 2012). The body is able to "override" feelings of urge, and adolescents are able to create techniques that allow them to withhold urine, such as keeping the body in constant motion. Adolescents may begin to use their newfound independence to decide to withhold urine and stool, so that they are not exposed to negative peer interactions (such as bullying) or undesirable bathroom environments (dirty bathrooms, lack of toilet paper or soap, or a lack of privacy) (Norling et al., 2016).

Psychosocial and Behavioral Dimension

The psycho-social and behavioral dimension of the Optimal Bladder Health Model consists of decision-making, fears or anxiety regarding bladder health, body image, social support, and education. Similar to life stage, this dimension relates to the biological dimension, life stage dimension, and environmental dimension. The behavioral aspects of optimal bladder

health are present in every life stage, but the ability to make decisions for oneself increases as the woman ages.

The decisions that are made that affect bladder health include what to eat, how many fluids to drink, and daily voiding frequency. Dietary decisions affect bladder health in that obesity has been linked to urinary incontinence symptoms, as well as poor diet and consumption of carbonated beverages (Dallosso, McGrother, Matthews, & Donaldson, 2003). Voiding frequency has been found to average around every three to four hours each day (Lukacz, Whitcomb, Lawrence, Nager, & Luber, 2009).

Behavioral decisions relate to bladder health in every life stage with the exception of infancy, as infants are unable to control their voiding and stooling. The life stage in which these decisions and behaviors become the most at risk might arguably be during adolescence, which is the juncture of independent decision making with control over bodily functions. The newness of this decision-making power and the likelihood of adolescents to “try on” new roles mean that this is a prime time for adolescents to experiment in behaviors that might result in suboptimal bladder health. Older adults may choose behaviors that negatively affect bladder health, but adolescence is a time of exploration in which the ability to engage in these behaviors is new, and therefore more likely to be tested.

The psychosocial dimension of the Optimal Bladder Health model includes fears and anxieties related to bladder health, as well as body image, social supports, and education. These factors have important implications on bladder health, as their positive or negative influences affect bathroom habits or behaviors. The implication of menstruation and shame may be found in this dimension as well, as it relates to bodily fluids and thus bladder health behaviors. The model reflects these factors as it allows the identification the biological factor, e.g. menstruation, and

then consider the potential psychosocial aspects of that experience. Menstruation, as a stigmatized event, causes varied behavioral responses to cover it up so not to risk being exposed.

Environmental or Contextual Dimension

Access to toilets, safety related to bathroom use, cultural norms regarding toileting, and social attitudes about bladder health are included in the environmental dimension of the Optimal Bladder Health Model. Although what fully comprises optimal bladder health is unknown at this time, a basic requirement for voiding is access to bathroom facilities. Without access to toilets, women are unable to void or stool when cued by the body, and thus are at risk for consequences related to withholding stool and urine. The lack of access to toilets may occur at any point along the life span, but may be particularly relevant during adolescence. In adolescence, toilet use may be affected by classroom rules (i.e., a teacher not allowing bathroom breaks during class time), or fear of negative interactions in the bathroom from peers. The bathroom environment may be seen as unsafe, as there is often lack of oversight from teachers or other trusted adults, and thus creates a place in which violence can occur.

A key characteristic of the Optimal Bladder Health Model is that it indicates that women have the ability to increase or decrease their bladder health during the different life stages. Changes in behaviors in prior life stages may increase the likelihood for optimal bladder health in later stages. Proper toileting technique for women, such as wiping from urethra to anus, and listening to body cues for when to void are taught in toddlerhood are examples of learned behaviors that can be potentially protective of a healthy bladder (Wang & Palmer, 2010). In contrast, not being taught these behaviors or experiencing challenges in carrying them out due to environmental contexts can potentially result in increased risk for suboptimal bladder health. Carrying these behaviors forward throughout the life stages may result in a reduction of certain

lower urinary tract symptoms later on in life. This is currently difficult to ascertain, as there is no measure available for optimal bladder health but instead measures to determine absence of disease.

Optimal Bladder Health Model as Theoretical Support

The Lifespan Model for Pelvic Floor Disorders and the Optimal Bladder Health Model both highlight important concepts related to bladder health. The Lifespan Model for Pelvic Floor Disorders is broad in nature, and although it provides an overview of pelvic floor disorder development, it is not specific to bladder health. The Optimal Bladder Health model, however, is specific to the interplay that the four dimensions of bladder health have with each other, and served as a conceptual framework for this project.

CHAPTER 4

Methods

The review of literature on bathroom behaviors of children and adolescents highlighted several environmental, behavioral, and psychosocial issues that surround bathroom use while in school, including lack of privacy and the potential for bullying. However, there is a paucity of literature available describing these issues in adolescents, particularly those in the US. The increasingly large number of adult women affected by pelvic floor disorders, in particular urinary incontinence, indicates it is critical that related factors be explored at all ages throughout the lifespan (Delancey et al., 2008). Although a large gap in what is known about bladder health exists for all ages, there is particularly little available research with regard to adolescence.

This study is a beginning step in identifying factors that influence bladder health in adolescent women, with a focus on the factors related to an adolescent woman's use of bathrooms while in school. The goal of qualitative research is to understand the human experience or perspective, not to find an objective truth based on scientific findings. This goal of moving beyond the positivist perspective found in quantitative work and into a qualitative approach allows for context to be deciphered more clearly, and for the exploration of personal experiences.

“Quantitative researchers tend to see the world in terms of variables; they view explanation as a demonstration that there is a statistical relationship between different variables. Process theory, in contrast, tends to see the world in terms of people, situations, events, and the processes that connect these; explanation is based on an analysis of how some situations and events influence others” (Maxwell, 2012, p.29)

To this end, the specific aims as previously outlined for this study are:

- 1) Identify factors that influence adolescent women's decisions to either use or avoid bathrooms at school
- 2) Explore knowledge related to bathroom use, including voiding frequency, beverage intake, societal attitudes, and experiences with incontinence
- 3) Explore strategies adolescent women use to avoid using the bathrooms at school.

A qualitative approach was appropriate for understanding how adolescent women experience the issues surrounding voiding behaviors while in school and in the bathrooms, themselves. The voiding behaviors and bathroom use of adolescent women have not been thoroughly addressed in the literature in the U.S., and therefore our understanding of these issues is limited. Using a qualitative approach will aid in discovering the myriad experiences and beliefs of school bathroom use, and will ultimately serve to sensitize practitioners and researchers as to the issues and the contexts surrounding the issues that should be addressed both in the clinic and in future research studies. Gaining depth into the reasons adolescent women either use or do not use the bathrooms at school will provide clearer understanding of educational needs, as well as provide the groundwork for possible changes in how bladder health is approached in this population, or in the school bathrooms themselves.

The qualitative approach to explore the study aims is grounded theory. Grounded theory was developed by Glaser and Strauss (1967) as a way to use inductive approaches to generate theory through applying different methods and levels of analysis. The inductive approach relies on allowing the data themselves to create emerging codes to generate new ideas. Analysis for

grounded theory occurs simultaneously with data collection, so that findings from one may inform the other, and vice versa.

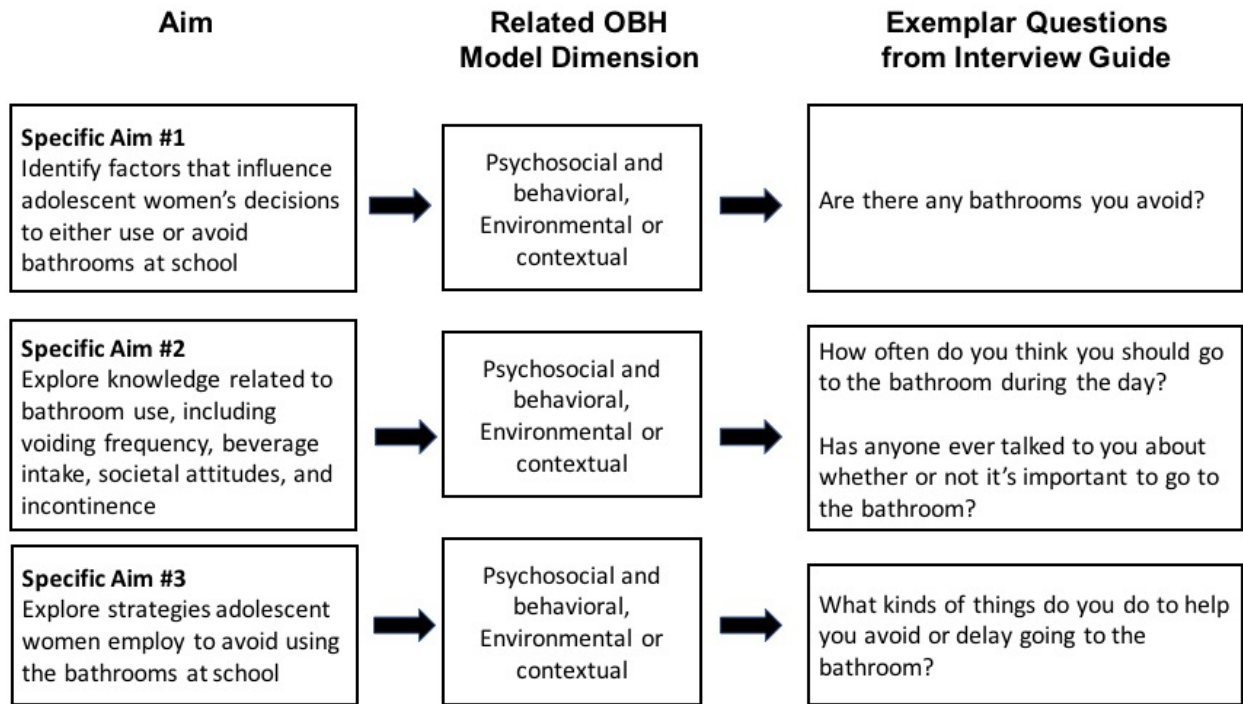
Grounded theory as Glaser and Strauss (1967) described has a premise of objectivity, but new views have focused on the innate subjectivity that resides in the methods. Constructivist grounded theory, in contrast, views information provided by an individual and interpreted by a researcher as co-created by the two (Charmaz, 2014). Charmaz states “we can view grounded theories as products of emergent processes that occur through interactions, both witnessed and lived” (2014, p.320). Constructivist grounded theory places the participants as the primary source from which theory is developed with the idea that it is co-constructed with the researcher (Charmaz, 2014). The researcher seeks understanding of the situation as well as the participant’s involvement in the situation, which involves continually analyzing the data to find connections and ultimately, derive theories.

Classic grounded theory does not recommend literature reviews prior to beginning work, so that the concepts may better emerge from the collected data rather than preconceived notions (Glaser and Strauss, 1967). However, constructivist grounded theory suggests that reviewing literature prior to beginning data collection does not necessarily hinder analysis (Charmaz, 2014). The knowledge that is generated through doing data collection may aid in increasing the researcher’s reflexivity about understandings and decision-making process garnered from the data. A literature review was done prior to the start of this proposed study, in part to inform the interview guide that is included later in this chapter. Caution was used to ensure that this knowledge did not affect data analysis, so that the concepts that arise from the adolescent women’s experiences are inductive in nature.

Grounded theory as described by Charmaz (2014) has five steps: 1) data collection that is simultaneous with analysis 2) Action and process analysis is preferred over thematic analysis, 3) constant comparison methods of analysis are used, 4) new concepts should be inductively created, that is, come directly from the data, 5) systematic analysis should achieve a level of abstraction. Charmaz (2014) states that these five steps are enough to be considered grounded theory, although others argue that actual theory construction is the ultimate goal (Glaser and Strauss, 1967).

Similar to the review of literature, the Optimal Bladder Health Model was used to inform the interview guide that will be followed to collect data from participants (Miller & Low, 2015). The Optimal Bladder Health Model highlights some key areas for exploration, such as the environmental and contextual dimension and the psychosocial and behavioral dimension. The theoretical underpinnings of the model aided in developing the interview guide, but was not rigidly adhered to during the interviews. Rather, the interview guide acted as the entree point of data collection, but the emerging themes were determined by the individual participants and their experiences and beliefs (Figure 4.1) with the full interview guide provided in Appendix A.

Figure 4.1 Aims, Relationship with OBH Model, and Exemplars of Interview Questions



In continuing with grounded theory methodology, the constant comparison method by Glaser and Strauss (1967) was used for analysis. This method allows for the researcher to remain close to the data shared by the participant, and the resulting themes emerge from the data itself. This inductive approach to analysis will also be paired with reflexivity so that the researcher’s potential views and beliefs will have limited effect on the emerging themes. This analytic technique will be described more thoroughly in the following section.

Sample and Setting

Purposeful sampling was used to recruit adolescent women aged 14-18 years who attended high school in the Midwestern United States. Although the WHO defines adolescence as occurring between 10-19 years, high school students in the US are typically between the ages of 14-18 years of age. In order to focus on the developmental phases that have the greatest

impact on this period of high school, the age range was limited to those typically found in high school. This experience may differ considerably from a more controlled environment, such as elementary or middle school. As a first step in exploring adolescent women's experiences, feelings, and decisions with regard to high school bathrooms, this age range was chosen as the most appropriate. Recruitment occurred between January and June of 2017. This allowed for adolescent women to describe their experience and feelings with regard to bathrooms while the school year was still in session.

Inclusion criteria were that the adolescents identified as female, were between 14-18 years in age at time of recruitment, attended high school, and were English-speaking. Inclusion criteria was broad in order to recruit adolescent women from a variety of backgrounds who attend high schools. Including only adolescents who identify as female and attend high school excludes the experience of the home-schooled student, which might have added significant variability to the findings with regard to bathroom environment.

Exclusion criteria included a history of neurogenic bladder or history of pregnancy. Adolescent women with neurogenic bladder were excluded to reduce the influence of stressors related to disease process, and history of pregnancy was excluded to reduce the influence of potential urinary issues related specifically to pregnancy and/or childbirth which is a relatively limited experience of adolescents generally.

Adolescent women were recruited from the Midwest US. There were several high schools in this area, from small private high schools to public schools with over 1,500 students. Charter schools were also present in this area, which are funded similarly to a public school but are not subjected to the same regulations. Charter schools represent a school that is somewhat similar to a private school, but funded is dependent on factors similar to a public school.

Participants were recruited from these three types of schools, with the understanding that the different school settings would affect bathroom environment and policies, which would have a significant effect on adolescent women's feelings and experiences with regard to bathroom use at school. Recruiting participants from only one general vicinity may reduce the generalizability of the study results, but it will remain consistent with grounded theory methods. Creswell (2014) describes a strategy of purposeful sampling called homogenous sampling, which is involving individuals with similar characteristics. Narrowing the inclusion criteria to adolescent women aged 14-18 years who attend area high schools followed this method of homogenous sampling. The age range of 14-18 years was chosen as this is the age range most frequently found in high school students. Younger adolescents are likely to attend middle school or junior high school, and therefore would have added significant variability to the desired homogenous sampling method. The goal of this study was not generalizability, but rather to achieve depth in concepts related to adolescent girls' school bathroom use.

To aid in recruiting participants, flyers were placed around the community in places where adolescents attend, such as churches, community buildings, and organizations with a large adolescent population (Appendix B). Community stakeholders who organize events for adolescents, such as coaches for sports teams, were contacted via phone or face to face conversation to recruit potential participants. Additionally, adolescent women who participated in the study were each asked to reach out to friends who might be interested in being participants as well, so that recruitment "snowballed" and recruitment targets were met.

Recommendations as to how many semi-structured interviews are necessary for grounded theory are not explicitly stated, due to the nature of theory development. Rather than defined sample size numbers, the goal of grounded research is to achieve data saturation, in which no

new information is provided. For this project, estimations of the necessary number of interviews to reach data saturation were between 20-30 participants, with the understanding that the participant number could potentially increase if new ideas continue to emerge from the participant interviews.

The sites for conducting the semi-structured interviews varied between participant homes and coffee shops. The coffee shop environment was conducive to in-depth discussions, as the interviews were conducted at private tables and the noise levels were moderate. Participant homes were also conducive to in-depth discussions, as there was an assurance of privacy from being overheard by peers. The participants were able to choose for themselves where they would like to meet, as the salient characteristic of the space for conducting the interviews was that the participant feels comfortable in the setting. The date and time of day that the interviews occurred were also determined by participant preference.

The interviews ranged in length of time from 30 minutes to one hour, to avoid fatigue from both the interviewer and the interviewee. The question guide was limited to allow for flexibility in discussion topics within the hour time frame. The researcher kept the research aims in mind throughout the interview process, but also allowed for the exploration of new topics and ideas that emerged during the interview if related to those aims.

Adolescent women participating in the study were given a \$30 MasterCard gift card for their participation in the study. This incentive was given to the participants at the time of the interview, and participants were instructed that if at any time they would like to end the interview, they would still receive the \$30 gift card. This maintained assurance that recruited participants did not feel undue pressure to continue with the interview if uncomfortable with any aspect, but rather could stop the interview without any penalty.

Ethical Considerations

This proposed study was subjected to a review by the Institutional Review Board (IRB) at the University of Michigan. The IRB reviewed the study proposal, data collection instruments, and participant materials including requests for participation and informed consent. Approval was granted by the University of Michigan (HUM00121631).

A written informed consent document was provided to the parents of the participants in order for them to participate in the proposed study for adolescents aged 14-17 years (Appendix C). In addition to informed consent by the parents, informed assent was obtained from participants aged 14-17 years (Appendix D). For the 18-year-old participants, they were able to legally provide their own consent (Appendix E). Informed consent and assent provided the purpose of the research study, the risks and benefits of participating in the study, and contact information for the primary investigator and the University of Michigan IRB. Prior to signing consent, parents and potential participants were asked about any questions they might have, and an effort to answer any questions was made by the researcher.

Confidentiality of the participants was maintained through de-identifying all participant information, including transcripts from the interviews. Participant information was coded using a three-digit number that was not linked to identifying information. The informed consents that will contain the participants' names were kept in a locked cabinet that is separate from the other research documents. Transcripts from the interviews were made as quickly as possible in order to delete the voice signature from the audio files. All analysis was conducted using the de-identified transcripts.

Data Collection Instruments

Participants were asked to fill out a demographics questionnaire that queried age, grade in school, and socioeconomic status (Appendix F). The demographics questionnaire also gathered information related to high school setting, including whether or not the school is private or public. Participants verbally shared the names of their high schools, which were then used to determine percentages of minority population and socioeconomic statuses of the schools.

Psychosocial developmental stage has important implications on adolescent behavior. Erikson's theory on adolescent psychosocial development states that older adolescence is a time in which the crises of industry, identity, and intimacy are attempted to be resolved. To gain a sense of where the adolescent women in this study are with regard to psychosocial development, the industry, identity, and intimacy subscales from the Erikson's Psychosocial Stage Inventory (EPSI) were used (Rosenthal, Gurney, & Moore, 1981). The subscales consist of 12 Likert-style questions each, for a total of 36 questions (Appendix F). Possible scores for each subscale range between 12-60. Total possible scores range between 36-180. Although standardization of the EPSI is not reported in the literature, higher scores for each subscale indicate higher resolution of that psychosocial crisis. Evidence for adequate construct validity for the EPSI was provided through comparison of scores between ages, with the understanding that according to Erikson's theory, older participants would have higher adjustment scores, indicating better resolution of the psychosocial crises.

Adolescent women are forced to navigate the expectations related to performing the feminine role in society. Gender expectations related to gender norms in the US frequently influence behavior. Having conceived notions of what it means to be feminine may differ amongst adolescent women, and any internalization of femininity ideology may provide some

insight into the development of certain bathroom behaviors. To examine this ideology and better understand adolescent women's observations of how they feel they are expected to perform the feminine role, a revised version of the Adolescent Femininity Ideology Scale was used (Tolman, Impett, Tracy, & Michael, 2006; Tolman & Porche, 2000). This instrument is constructed from two theoretically supported constructs: inauthentic self in relationships and objectified relationship with one's body (Appendix G). There is a total of 17 Likert-style questions for the two subscales. The scores from this scale are not standardized, but an increase in scores indicate increased inauthenticity in relationships and increased objectified relationship with one's body. The revised AFIS has demonstrated adequate internal consistency ($\alpha = .71$ for ISR and $\alpha = .77$ for ORB) and temporal stability in a heterogeneous adolescent population, as well as good construct validity (Tolman & Porche, 2000).

To determine if the adolescent women were experiencing any lower urinary tract symptoms and the degree of bother, the Michigan Incontinence Symptom Index (M-ISI) was used (Suskind et al., 2014). This index assesses urinary incontinence symptom severity and consists of 10 Likert-style questions (Appendix H). Three questions reflect stress urinary incontinence, three questions reflect urinary urge, and two reflect necessary pad usage. There are an additional two questions that reflect amount of bother. Although not validated in adolescent women, bladder volumes and urinary symptoms have not shown to differ between adolescent women and adult women. Therefore, the M-ISI offers a method of standardization for urinary incontinence in adolescent women.

The questions used in the semi-structured interviews were open-ended to allow for maximum participant participation (Appendix A). The development of the questions was guided by the Optimal Bladder Health Model and the research aims identified prior to the study design

(Figure 4.1). The goal of the interview guide was to understand the environmental, psychosocial, and behavioral factors that influence bathroom use in the high school setting, and to determine any factors related to school bathroom use that may lead to lower urinary tract symptoms later on in life through the accumulation of risk. As the interviews were conducted, the interview guide was altered by the addition or removal of questions based on the information provided by the participants. This method of altering the interview guide is supported by grounded theory, as it ensures that as interviews are conducted and ideas emerge, new ideas are taken into account in future questioning so that deeper understanding of the experiences and feelings of adolescent women may occur (Charmaz, 2003).

A digital recorder was used to record the interviews, and consent for audio recording was gained for all participants. Participants had the option to decline audio recording, in which case the recorder would have been turned off and the researcher would have relied solely on field notes. Field notes were written immediately during and after each interview, so that nonverbal communication and things of note were recorded. The researcher who conducted the interview transcribed a random sampling of the interviews verbatim with as small of a delay as possible in order to remain close to the data. A transcription service endorsed by the University of Michigan was also contracted to finish the remainder of transcripts. These transcripts were reviewed by another researcher to validate accuracy of the transcript to the audio recording. After congruency was established and errors corrected, the audio recordings were deleted to maintain confidentiality of the participant. In addition to deletion of the audio recording after validating accuracy, the transcripts and audio recordings were de-identified and re-coded with a three-digit number for identification purposes.

Data Collection Procedures

Flyers were placed in public places that adolescent women frequented (Appendix A). The flyer detailed an overview of the study and the researcher's contact information. A total of 22 flyers were placed in public areas between January and June of 2017. During this same time period, key stakeholders who had access to adolescent female populations were contacted and were provided flyers for distribution via email or for physical placement in centers and sites where adolescents may access them. Adolescent women or their parents who were interested in the study either emailed or texted the researcher, who began the process of determining eligibility. Out of 41 potential participants who were determined to be eligible, 30 (73%) agreed to participate. No reasons were provided as to why adolescent women did not choose to participate, as they stopped communicating with the researcher altogether, although it generally happened after being informed that parental consent was necessary for adolescent women between ages of 14-17 years. Potential participants were contacted once more to determine interest in participating if a response had not been returned within the space of one week. During the recruitment period, 14 participants were re-contacted, with three participants responding to the second email.

Reflexivity

Reflexivity was maintained through constant memoing by the researcher, during both the data collection period and analysis. Memoing is the process of writing down, or creating memos, of the researcher's thoughts and feelings related to the interviewing and analytic process. The researcher used critical reflection techniques to identify potential biases, such as positionality, that may influence the research. Through memoing, the researcher was able to better identify positionality, and consider the affect that positionality may have on the interviews themselves, as

well as the analysis. Positionality has the potential to influence the results, and bias the analytic process. Through remaining cognizant of the primary investigator's positionality and view of the world, the results were constantly analyzed to ensure that the influence was minimized.

Decisions made during the research study were tracked through the memos, and explanations were provided. These memos also served as an audit trail.

Data Analysis

Following a standard grounded theory approach, the constant comparative method was used during data collection. With this method, data is analyzed simultaneously with data collection. There basic steps involved with constant comparison are: 1) identify basic codes, 2) use open coding to name indicators, 3) Compare new codes to those passages already coded and search for inconsistencies or consistencies, 4) identify categories through the consistencies found in the previous step, 5) Continue until no new codes are identified, 6) identify salient categories that are considered main categories (Glaser & Strauss, 1967). The consistencies of the data that are identified in the constant comparison steps serve to both create hypotheses and then reject hypotheses if they are unsupported by differing information. This constant motion allows for flexible analysis, and is conducive to the perspective necessary for thematic identification.

The computer program AtlasTI was used to aid in the analysis of the interviews. The first step in the analysis process was open coding, in which the transcripts were coded line by line with descriptors of what the quotes best represent or how they were defined. These codes were compared to previously coded passages to ensure either congruence or alternative cases.

Decisions made during this time were written in the form of memos, in order to clearly identify the researcher's thought process during analysis. The next step in the analytic process was grouping the codes into categories. These broader categories were then compared and analyzed

for patterns so that they are then grouped into broader categories, or themes. These themes were then compared to the modified Optimal Bladder Health Model to determine congruency with the concepts present in it.

Data collected from the surveys were entered into REDCap Database Environment, which was secure and HIPAA compliant (Michigan Institute for Clinical and Health Research, 2017). Descriptive statistics were provided for demographic data. Descriptive statistics were performed using SPSS Version 24.

CHAPTER 5

Results

Demographics and Background

The adolescent women who participated in this study engaged in single one-on-one interviews with the study researcher. This one-on-one interview varied in length from 28 minutes to 63 minutes. These interviews took place in coffee shops, bakeries, and the adolescent women's homes. The interview guide was used during the interviews but which questions and the flow of questions varied between each interview in order to allow for open, unstructured interviewing. In this manner participants were allowed to bring new ideas and topics up for discussion. Although there was some variation in interview content, the information gathered related to school bathroom environment, factors that influence bathroom use in the school setting, bladder health knowledge and beliefs, and strategies adolescent women may use to avoid the bathroom while at school. Adolescent women who participated in this study ended each interview by filling out a few questionnaires related to their demographics, their psychosocial developmental stage, their femininity, and incontinence symptoms as described in the methods chapter.

Demographic Overview

Thirty adolescent women were interviewed for the study. As shown in Table 5.1, their ages ranged from 14-18 years, with an average of 16.10 years. Almost two thirds of the participants identified as white, one fifth identified as black or African American, one tenth

identified as Asian, one participant identified as biracial, and one participant preferred to not answer. The racial makeup of the participants closely resembled the makeup of the US of America, with slightly more black and Asian participants than found in the general population (13.3% and 5.7%, respectively) (United States Census Bureau, 2017) and is consistent with the counties the participants represented in southern Michigan.

The majority of the participants were cisgender. One participant (0.03%) out of the total 30 self-reported as transgender non-binary, and was included in the study due to stated frequent use of female restrooms at school. As previously described in Chapter 4 Methods, this allowed for a homogenous view of high school women's bathrooms, and provided the potential for increased depth in discussion.

Participant socioeconomic status information was reported by 20 participants. It was determined that additional socioeconomic status information beyond that of the schools would be valuable to describing the population, but that determination was made after the first 10 interviews. As reported in Table 5.1, out of 20 participants who responded to the socioeconomic questions, fifty percent of the participants described their families as either rather or very well-off. Another 40% described their families as fairly well-off, and 10% described their families as not particularly well-off. When asked if there was enough money to get necessities, 80% of the participants reported feeling that way all of the time or most of the time, and the remaining participants felt there was enough money to get what they needed sometimes.

The number of participants in each grade level was fairly evenly distributed, with 26.7% 9th, 11th, and 12th graders each, and slightly fewer 10th graders (20.0%). The slight skew to the higher grades did not affect the breadth of experiences, as 11th and 12th graders were able to speak to their experiences in 9th and 10th grade as well as their current year in school.

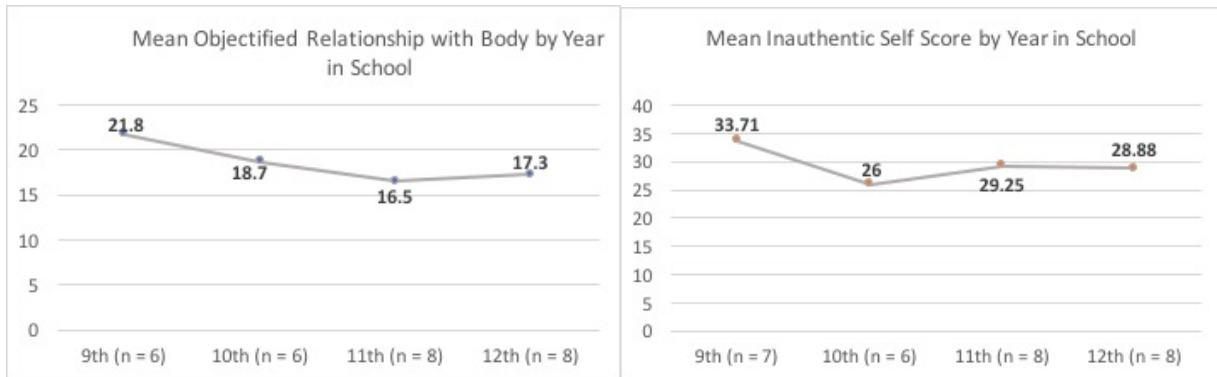
Table 5.1 Demographics of Enrolled Adolescent Women (N = 30)

Age (years)		
Mean	16.1	
Range	14-18 years	
	N	%
Race		
White	19	64
Black	6	20
Asian	3	10
Other	1	3
Missing	1	3
Grade in High School		
9 th	8	26.3
10 th	6	20
11 th	8	26.3
12 th	8	26.3
How Well Off?		
	20	
Not particularly	2	10
Fairly	8	40
Rather	2	10
Very	8	40
Feel there is enough money for necessities		
	20	
All of the time	9	45
Most of the time	7	35
Sometimes	4	20
Not usually	0	0
Never	0	0

Scores from the Adolescent Femininity Ideology Scale (AFIS) Inauthentic Self in Relationships Subscale did not indicate any high degree of inauthenticity in the participant population with a mean of 29.55 (SD 8.01, possible scores between 9-54). These scores trended lower as the year in school increased, indicating that older participants in higher grades had lower degrees of inauthenticity in their relationships (Figure 5.1). Scores from the AFIS'

Objectified Relationship with Body Subscale were lower, with a mean of 18.3 (SD 6.48, possible range between 8-48). These scores trended lower as years in school increased, indicating that self-objectifying decreased as participants aged.

Figure 5.1 AFIS Subscales by Grade in School

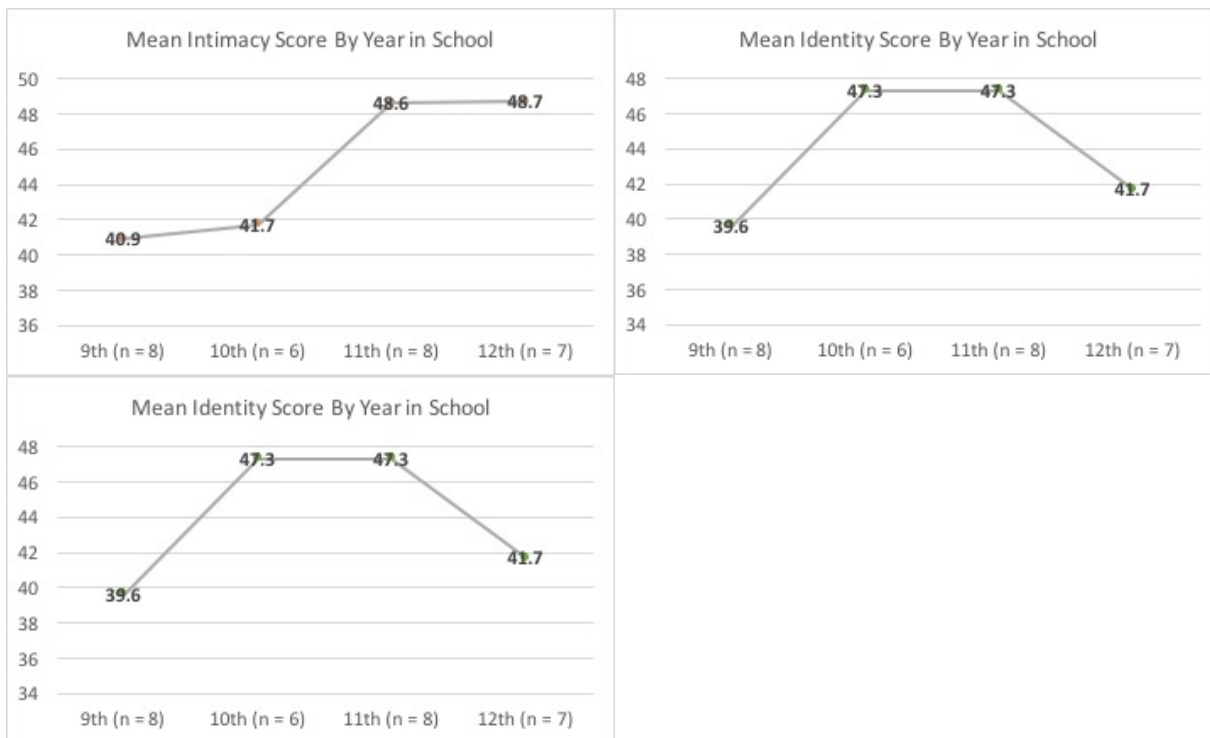


Psychosocial development scores using the EPSI were high, with an average of 137 (SD 18.38) for the total of the three subscales. As shown in Table 5.2, when parsed out separately, adolescent women had similar scores on each of the Industry, Identity, and Intimacy subscales. When viewed over time, the Industry subscale increased somewhat as participants aged (Figure 5.2). Similarly, adolescent women’s intimacy increased as the participants aged, but at a sharper increase and then stayed relatively similar between 11th and 12th grade. The Identity subscale, however, showed an increase in feelings of identity until 12th grade, when there was a decline in scores.

Table 5.2 EPSI scores

	N	Minimum	Maximum	Mean	Std. Deviation
EPSI Industry	29	32.00	58.00	48.45	5.99
EPSI Identity	29	22.00	59.00	43.83	9.2
EPSI Intimacy	29	24.00	56.00	45.07	7.24
Valid N	29				

Figure 5.2 EPSI Industry, Identity, and Intimacy Subscales by Grade in School



As presented in Table 5.3, the Michigan Incontinence Symptom Index (M-ISI) scores were low. The severity scores, which had a possible range from 0-32, averaged 4.53. Bother scores were similarly low, with an average of 1.07 out of a possible range between 0-8. Of the three subdomains, urinary urge was slightly more prevalent with a mean of 1.93 (possible range

0-12). Although prevalence rates of urinary incontinence in adolescent women are not well established in the US, the low rate of stress urinary incontinence, urge incontinence, and pad use is consistent with prevalence rates found in other countries (Bardino et al., 2015; O’Halloran et al., 2012).

Table 5.3 Michigan Incontinence Symptom Index Scores

	N	Minimum	Maximum	Mean	Std. Deviation
Symptom Severity	30	.00	12.00	4.53	3.38
Bother	30	.00	5.00	1.07	1.26
Stress UI	30	.00	10.00	1.77	2.10
Urge UI	30	.00	6.00	1.93	1.46
Pad Use	30	.00	6.00	0.83	1.58

In summary, this population’s psychosocial development, femininity ideology, and urinary incontinence symptoms were consistent with what would be expected in this age group, 14-18 years. Developmentally, there was coherence as to what would be expected as a sample. Variations between grades appear appropriate, as increasing age increases psychosocial development and decreases inauthenticity in relationships and body objectivity (Erikson, 1968; Tolman et al., 2000). In terms of aging, the trends of psychosocial developmental stages follow the predicted increase over time, with the exception of identity, which was slightly lower in 12th grade participants. Although the number of participants by grade is too low to draw conclusions with absolute certainty, it is possible that adolescent women in 12th grade may be experiencing lower identity due to the uncertainty of the future, due to their pending graduation from high school. The overall congruency with expected psychosocial development, femininity ideology, and incontinence symptoms indicates that this population serves as an adequate representation of

adolescent women's experiences, feelings, and behaviors in a general population with similar race and socioeconomic characteristics.

Participants attended a total of 14 high schools from 11 different school districts. The majority of the schools were public, with one participant attending a private high school. Three participants attended charter schools, which offered an interesting perspective as even though they are technically public schools, they operate under an individual contract that details school management and organization. This allows for greater diversity in school management than traditional public schools within a district, as the charter exempts the schools from certain rules and regulations (National Center for Education Statistics, 2017). There was a wide variance in minority populations from the 14 schools, with a range from 10-99% (average 40%). The average of economically disadvantaged students in the schools had a wide range as well, from 5-79% (average 28%).

Specific Aim 1: Factors that Influence Bathroom Use

“I guess I have had...experiences in bathrooms, like, bad or good or...in between...”

The first aim of the study was to identify factors that influence adolescent women's decisions to either use or avoid bathrooms at school. To meet this aim and identify factors that influence bathroom use in the high school settings, participants were asked various questions related to factors that might make it easier to go to the bathroom, as well as factors that might impede bathroom use while at school. There was an assumption that both types of factors would be present in the daily experience of the adolescent women in high school, and that different school environments would play a role in the factors. Based on the Adapted Optimal Bladder Health for Adolescent Women conceptual framework, the interview guide served not only to

explore factors that relate to bathroom use while at school, but also to also characterize the bathroom environments.

Almost all adolescent women in this study stated that bathroom use is a topic they had not previously given much thought. Using the bathroom was something they did every day, yet it was done without much forethought and thus the participants required some time to recall specific factors that influence bathroom use. At times, new details would emerge later in the conversation, thus creating a need for flexibility in discussion over the course of the interview. However, other participants discussed how even though they had not really put forth much thought regarding the bathrooms at school before, they thought it was an important topic to discuss. A 17-year-old 12th grader shared her thoughts about discussing school bathrooms.

Um, I guess I was interested to see kind of where you were going with it because, um, you just said, like, in general, the—like, you're asking about experiences in bathrooms. And not that—I mean, once—I guess once I read what you were, like, trying to figure out, I was like, I guess I have had experience—experiences in bathrooms, like, bad or good or whatever, uh, in between, um, but never—I've never, like, actually thought about it. – 17-year-old 12th grader

Although not something participants had thought about at length, they were able to provide details related to factors that help them access the bathrooms at school or cause them to avoid them. As shown in Table 5.4, five major themes emerged, including 1) amount of time to use the bathroom, 2) bathroom environment, 3) privacy, 4) policies, and 5) desire for a safe space.

Bathroom use was frequently described as a necessary, unpleasant activity. There were many factors involved in identifying which bathroom is used, but not necessarily inhibiting actual bathroom use. The themes described from factors that influence bathroom use are limited to those that affect the actual use of the bathroom in the school setting and either increase use or

cause the adolescent women to engage in withholding urine or stool behaviors. Several other themes were identified that did not necessarily impede or aid in bathroom use, but were factors related to bathroom access.

Table 5.4 Major themes from Aim 1 results

Major Theme	Subthemes
Amount of Time to Use the Bathroom	
Bathroom Environment	Cleanliness
Privacy	Crowded bathroom Empty bathroom Menstruation
School Policies	Autonomy Bathroom passes Incentives Closed or locked bathrooms
Bathroom as a Safe Space	Bathroom use as a break Positive messages

Amount of Time to Use the Bathroom: “Timing is Everything”

Perhaps one of the most frequently cited influences on bathroom use or avoidance was the amount of time the participants had to use the bathrooms while at school. Three options existed for adolescent women’s bathroom use during the school day: during class, during passing time, and during lunch. Passing time was a term used to describe the amount of time allowed to get from one class to the next. Adolescent women’s preferences for which of the three times to choose varied, in part due to the different amounts of time for each choice.

Passing time amounts varied between four to eight minutes, although a longer time period usually meant the school was large and required additional time to navigate the hallways to reach the next class. The time between classes was described as usually not long enough to include

bathroom use without risking being late for the next class. This resulted in many participants withholding urine or stool until a more convenient time, in which they do not have to rush during bathroom use. A 14-year-old 9th grader shared her experience of bathroom avoidance during passing time.

And I usually had to walk, like, all the way across the school to get to my other class, so there pretty much isn't really any time to go to the bathroom during passing time. I don't think I actually ever went to the bathroom during passing time, like even in middle school, because there's just, like, no time. – 14-year-old 9th grader

However, participants with classes near each other described a greater ability to use the bathroom during passing time. As an example, one 16-year-old 10th grader described the experience of going to the bathroom during passing time at her school.

It's pretty much to go on the way to class. Cause all my classes are relatively close to each other. And I don't have to sit and stay in my class for like the extra five minutes I have of passing time when I can be doing something else. – 16-year-old 10th grader

Others perceived bathroom use during class time as an opportunity to feel more relaxed due to increased time to use the bathroom. Going to the bathroom during class was the preferred time when the desire was to experience a higher degree of privacy and relaxed atmosphere rather than the hustle and bustle that is frequently found during passing time between classes.

Opportunities for peer interaction when using the bathroom during class was described as minimal, with only an occasional other student in the bathroom. However, bathroom use during class was controlled by teacher policies, which will be described later in this chapter. A 17-year-old 12th grader shared her reasons for preferring bathroom use during class time.

If I go in the passing time, usually I feel pretty rushed, but when I go during class or whenever I have time, it's okay. I feel like I usually have time to sit and, like, make sure I'm all done, all empty... - 17-year-old 12th grader

A frequently described time to use the bathroom at school was during lunch. Lunchtime was the biggest break in the school day for adolescent women, and therefore represented a long period of time and opportunity for potential bathroom use without teacher control. Bathroom use during lunch time was desirable in part due to a more relaxed bathroom experience. Even with other peers present in the bathroom, the length of time for the lunch break meant participants did not have to worry about rushing to class. A 16-year-old 10th grader shared her reasons for choosing lunch time to use the bathroom and notes who teachers also influence this choice.

I have like a half hour and like, if I finish eating I can just like walk out of the lunch room any time I want and it doesn't waste class time for me, doesn't waste other people's time if they have to go too during classes, just more easier on my teachers if you guys go during lunch especially if you ask "can I go to the bathroom" like right after lunch. Like, they'll be like, "No, you just had lunch, you could have gone then. You can wait." – 16-year-old 10th grader

Duration of time available to use the bathroom then strongly influenced adolescent decision on when to access the bathroom. The challenge that some participants had to face was the choice between holding their urine due to a perceived lack of time to use the bathroom, or take the time to void and risk being late to class or missing something important in class. The choices that adolescent women with regard to this dilemma varied amongst participants, but the burden of making the decision and dealing with potential consequences was shared by all.

Bathroom Environment: “It’s kind of nasty”

Despite not having consciously considered school bathroom use and the factors that influence it, participants indicated there were certain characteristics that they preferred. One of the key factors in their decision to use the bathroom facilities or not was cleanliness of the environment, in which bathrooms characterized as nicer were preferred over bathrooms considered particularly dirty. The definitions of “dirty” bathrooms differed amongst participants,

but the overall effect of an unclean environment was clear: adolescent women were more likely to avoid using them. One participant shared her feelings with regard to avoiding certain bathrooms due to issues related to cleanliness.

Uh, so, um, the ones on the main floor, the second floor where we have like our cafeteria and everything, that, those ones are usually kept pretty clean. Cuz not a lot of classes are down there, so those ones are pretty nice. And so I like using those ones as much as I can. Um, and then up on the third level, um, they're not the best, not super clean, but I like realized that the ones on the left side people I don't feel like going to the bathroom in that one that much. And so that one's cleaner, and it's not as bad, and it's not as busy, and everything like that, so yeah. And then all the other ones they have like trash on the floor or certain stuff and it's kind of nasty and it's like, "Oh okay that's kinda gross," so yeah. So I don't like to use those ones. – 15-year-old 9th grader

Issues of cleanliness generally included dirty floors and sinks; toilets with urine, blood, or stool in them; sinks with debris, paper towel, or items in them; and writing on the walls.

Participants expressed understanding that some level of debris was to be expected in the bathrooms due to the many students that use them. However, bathrooms deemed particularly dirty, with unclean sinks and dirty toilet paper on counters and floors, were frequently avoided.

A 16-year-old 9th grader described her experiences with a dirty bathroom at her school.

Um, there are some that are, I would say, pretty clean. Um, and then there are some that are just kind of nasty. Like um, like they'll just have stuff in the drains or they'll have toilet paper everywhere. Or, they just have like, there's one bathroom that's just like, it's just nasty. It's like the sinks are like dirty and stuff, and it's just like, "ugh." Try to avoid that one. – 16-year-old 9th grade

Updated bathrooms were described as positive factors that influenced the environment and thus had an effect on bathroom use. Aesthetics were important as participants described being more likely to use nicer bathrooms, which includes updated appliances and overall appearance. Freshly painted walls, stalls without negative writing on them, working toilets, and enough lighting to see well were all identified as positive aspects of the bathroom environment that had an effect on whether or not participants thought the bathrooms at their school were

“nice.” Nice bathrooms were described as making it easier to go to the bathroom when necessary, but did not necessarily make participants dwell in them any longer than necessary. The signs of frequent use by many students were still present, represented in part by visible trash. A 17-year-old 12th grader described appreciating the updated bathrooms in her school, but still expecting to see dirty elements that overall made her trip to the bathroom one of necessity and not enjoyment.

They're nice. Like they look nice and they are nice cuz our school's pretty new. But like in—you just, like, walk in expecting there to be, like, toilet paper, stuff laying on the ground. And, like, not all the bathrooms always work either, the stalls. You just kind of hafta go in and, like, check and see. But it's nice. It's a nice environment. Like it's a lot nicer than other schools. Like there's not, like, paint ripping off, and there's not, like, scratches on the stalls. Like—but, like, it's still a bathroom. I mean, it's not really, like, for enjoyment. It's just to use the bathroom... -17-year-old 12th grader from a school with high average socioeconomic status

Ability to use a preferred bathroom perceived to be cleaner was not always easy to accomplish. Lack of time to use the bathroom influenced the participants' ability to access their preferred bathrooms if they are not in close proximity to classes. As previously discussed, the amount of passing time for participants to leave one class and attend the next ranged from four to eight minutes, and therefore they frequently used bathrooms nearest their classrooms even if they were not as clean as others that were further away. Similarly, bathroom use during class time was not always easy to accommodate, with the adolescent women in this study describing feeling reluctant to leave class and miss something important. A 17-year-old 12th grader shared her reasons for choosing to use bathrooms that are not as clean due to their proximity:

Well—[sigh]—I guess cuz I'm there the most. They're the most accessible. I mean really that's it... I mean if I had—like, if I was closer to one of the nicer ones, I'd probably wanna use those more, but... I mean, like, when I can—like, during musicals and stuff, when those ones are open, I usually try to use those more cuz they're just nicer...

Another participant, a 17-year-old 12th grader, described the conditions under which she takes time to go to a more desirable bathroom. She had discovered a single-stall bathroom that was clean and private, and she preferred using it when possible. There were other bathrooms with closer proximity than this preferred bathroom, and she did not find the single-stall bathroom to be convenient to use when her time was constrained, like passing between classes. However, she would occasionally take the opportunity to have a break from class and walk the additional distance to the preferred bathroom.

So it's more of an inconvenience to go up there, but if I ever, like, have time and, like, I'm like, "Oh, I don't really wanna go back to class right now," I'll just—I'll go to that bathroom. It's kind of a timewaster sometimes if I'm, like, if one of my teachers is giving a long lecture and I'm like, "Well, I need to use the bathroom. Might as well go to the one that's far away." [*Laughter*]... Um, I mean, if, like, I'm in a class that I'm enjoying, I'm not gonna take my sweet time going to a—a nicer bathroom. It's just, like, easier to go and come back really quickly. But, like, if I know I have time and, like, it's, then it's worth it to go and, like, feel a little cleaner about it, I think. – 17-year-old 12th grader

Overall, the status of the bathroom environment was a significant factor for adolescent women's bathroom use. Participants identified which bathrooms were the nicest and most desirable to use, but proximity and fear of missing something in class both combined to affect their ability to use these bathrooms. Adolescent women often described prioritizing their classes and teacher policies over their own bathroom preferences, and they were much less likely engage in bathroom use if the closest one was perceived to be dirty.

Privacy: Empty bathroom verses “hiding in the noise”

Overall, privacy emerged as an important consideration when determining whether to avoid or use the bathroom, appropriate times to use the bathroom, and which bathrooms to use. Privacy as described by participants came in two forms: large bathrooms with many stalls and steady use by other students, and emptier bathrooms with few or no other people. A large

bathroom with many stalls and frequent activity meant that adolescent women would be less likely to be heard going to the bathroom, as the additional noise served as a way to cover any noises an adolescent woman might make. This was described by a 14-year-old 9th grader as an aspect of busy bathrooms that she appreciated, because it meant that she would not be as noticeable to others.

...There's more noise so therefore you can, like, hide in the noise and stuff. And there's more people not paying attention to you. – 14-year-old 9th grader

The appreciation for bathrooms filled with activity, or ability to “hide in the noise,” was echoed by other participants. Several adolescent women described their experiences with a busy bathroom during passing time that provided a form of privacy for voiding.

When there's a lotta people in the bathroom, that means that there's a lotta people in the hall, so, like...you can hear, like, the whole hall in the bathroom, so you can barely even hear yourself think while you're in the bathroom when everyone else is in the halls, so it's easier to go to the bathroom then. – 17-year-old 11th grader

I always feel much safer in a private bathroom, and I feel like I can like take my time and like very private, and I like think going to the bathroom is a private thing and like while we have so many, we need bathrooms that are stalled multiple bays so that everyone can go into the bathroom, but um I think all of my friends and when have talked about it all prefer going to either a bathroom that has many many many stalls or singular. – 14-year-old 9th grader

The two forms of bathroom privacy were not equal, in that participants did not always equate an empty bathroom with a busy one with many stalls. Instead, there was a hierarchy of bathroom privacy, in which empty bathrooms were the most preferred for all activities, followed by large, busy bathrooms for typical bathroom use.

Crowded bathrooms. Smaller bathrooms that were used by many students at once did not present the same level of privacy as the larger bathrooms with many stalls, as they were seen as tight spaces where long lines for toilets could develop. Privacy was hard to find in crowded

smaller bathrooms. Adolescent women described being very aware that peers were using the toilet on either side of the stall walls, as well as knowing a line of people who were watching the stalls for an opportunity to use the toilet. This feeling of lack of privacy and being watched by peers undermined any feeling of privacy the stalls might otherwise provide. Crowded bathroom conditions and a lack of privacy frequently caused a desire to avoid the bathrooms. A 14-year-old 9th grader described her desire to avoid bathrooms when they are crowded.

There's just a lot of people in there and it's a long wait and I like to be in my classes on time or a little bit early so I'll, or sometimes I just won't go to the bathroom if there are a lot of people in there because not only is it like busy but there's also not a lot of privacy. – 14-year-old 9th grader

Bathroom use during times of increased activity often meant waiting in line for toilets, sinks, and hand dryers. These lines increased the risk for touching peers as participants are forced into close space as they navigate the small bathrooms. Bathrooms during passing time were frequently times of increased activity, and thus represented a time of day that bathroom avoidance would occur. One 15-year-old 10th grader described her experiences attempting to use the bathroom during a hectic passing time, and thus her preference to avoid bathroom use during this time.

I never go to the bathroom during um, passing time. I find that way too stressful. Everyone's knocking me over and touching me and grabbing me and being all like, creeperish, so I just try and get to my classes like as fast and unnoticeable as I can. Sometimes I'll leave a few minutes early so I can get there without the whole mess. – 15-year-old 10th grader

Empty bathrooms. Adolescent women frequently described empty bathrooms as preferable to bathrooms with many people using them. Empty bathrooms were particularly important during certain activities requiring an increased feeling of privacy, such as changing a feminine hygiene product or stooling. These activities were avoided altogether if privacy in the

form of an empty bathroom could not be found. The reasons behind this avoidance stemmed from menstruation and stooling being intensely private experiences where the ultimate goal is for others to remain unaware of adolescent women's activities to avoid being stigmatized.

I think that people are often really uncomfortable using the bathroom. Especially young women away from their house. Like I know that's totally a stigma, that it's like I can't use the bathroom, especially for number two, away from my house. Um, and I'm not really sure why it is. I don't think I'm super picky, but also I do like my privacy. So I'm definitely more comfortable with going at home. – 18-year-old 12th grader

Yes, and usually, because—especially on my period—I know that during class time, not as many people will be in there as, like, passing time, a lot of people go. So I just go during class, so hopefully, not that many people will be in there. -15-year-old 9th grader

Stooling at school was described by many participants as something they required privacy to do while at school. Withholding behaviors were commonly discussed among adolescent women, and their experiences with stooling ranged from never doing it at school unless absolutely necessary to doing it if the environment was perceived to be private enough. Several adolescent women who stooled at school stated that they did so because they viewed withholding is a negative health behavior. For those who avoided bathroom use unless absolutely necessary, lack of privacy and fear of being overheard by other people served as deterrents to stooling while at school. A 17-year-old 12th grader described her experiences with avoiding stooling at school.

I really try not to just cause like, I don't- like the sound. Like that's like probably the number one thing, is like especially if you're like, and like if I'm in a bathroom and there's someone next to me, then it's just like, gotta like to pull the toilet paper out, gotta make noise and then like you hear the other person and it's just not, yeah I think it's like the splashing which is the worst, which I try to avoid, so... I try to not go to...poop at school... - 17-year-old 12th grader

Menstruation. Menstruation is an important factor that increased the desire for privacy during bathroom use for adolescent women, in that the process of changing a feminine hygiene

product is preferable to do with the greatest privacy. Menstruation was described as an experience that dramatically increased the number of bathroom visits per school day. Participants described this increase in bathroom use as occurring every month for about a week, and that menstruation represented a major contributing factor to the decrease of any usual bathroom avoidance in which an adolescent woman might normally engage. A 17-year-old 12th grader described her experiences during menstruation, which was the only time that she used the bathroom with any regularity. This represented a significant deviation from her usual feelings of bathroom avoidance.

I think that's like probably the only time that I like regularly go to the bathroom, is like when I'm on my period, because I actually have a reason to go, versus like just going if I like really need to go. – 17-year-old 12th grader

The risk of bleeding through underwear and pants was a motivating factor for adolescent women to increase bathroom use. Although seen as an intensely private activity, engaging in feminine hygiene product replacement was seen as a necessary activity to avoid a more embarrassing accident in which blood could be seen on clothing. This sentiment was described by a 14-year-old 9th grader, who regularly avoided using the bathroom to void while at school when not on her menstrual cycle. She discussed regularly withholding urine and stool until she returned home in the afternoons. However, during her menstrual cycle she planned out her day at school specifically with the intent to use the bathrooms in order to change her feminine hygiene product.

I do, and I, like, set a time aside so that I know I won't either forget or—'cause that would be, like, the worst thing ever is to have, like, an accident on your period in school. And that's happened to my friends before. Like, she was, like, "Oh, shoot." She was, like, "Can I—can I have your coat?" And she just tied it around her waist for the whole rest of the day. And I was just, like, oh, it's horrible. But I definitely set time—I go at lunch and then during fourth hour, just so I can, like, always be on top of it. – 14-year-old 9th grader

This quote describes the fear of stigma that was frequently a motivating factor for bathroom use during menstruation. Stigma, commonly associated with menstruation in Western culture, might occur during bathroom use if peers are able to overhear noises associated with feminine hygiene product replacement (Roberts et al., 2004). To reduce this fear, adolescent women sought to use the bathroom when it was more likely to be empty, in effort to increase privacy and reduce the likelihood that negative associations would be attached to their character, either permanently or temporarily.

School Policies: “Autonomy is possible, as long as you have a pass”

Policies varied in how they affected student access to the bathroom during the school day, but there were a few policies described by participants that increased or supported bathroom use. Policies, whether school or teacher initiated, frequently served to limit the ability of an adolescent woman to use the bathroom in an unencumbered manner, or served to limit the number of times bathrooms could be used without penalty.

Autonomy. Participants in this study desired autonomy with regard to bathroom use, in that all students should be granted the ability to determine for themselves when to go to the bathroom. The decision to use the bathroom was something that they put effort into, and tried to identify times to leave for bathroom breaks that would limit the amount of important information they might miss. Bathroom use was not something that many took lightly, as missing class was undesirable due to the fear of missing important information. Therefore, when an adolescent woman decided she needed to use the bathroom, it was usually because the urge to void was present.

Sometimes if it's an emergency, I'll-I'll leave class, if it's that bad. But I normally try and wait. Because everything in class is important to me. – 17-year-old 11th grader

Participants described having the urge to void but not being able to go to the bathroom due to teacher and school policies. These policies included not being able to go during a period of time at the beginning of class and a period of time at the end of class, due to the assumption that adolescent women had the opportunity to go the bathroom during passing time or will be able to go during the next passing time. This meant that adolescent women had to be cognizant of the timing of bathroom use to ensure that they were not breaking a rule. Intensity of biologic urge to void did not override fear of getting into trouble for requesting bathroom use during the unapproved times.

Not surprisingly, participants did not appreciate being told when to use the bathroom. A biological urge to use the bathroom represented a need that should be addressed without delay. The idea that adolescent women should be able to predict their future need for bathroom use was dismissed by participants as ridiculous, as biologic urges do not necessarily occur with any regularity. A 17-year-old 11th grader spoke of her annoyance with teacher policies regarding bathroom use, and the undue burden that placed on her for not being more prescient.

Some teachers will say, like, “Oh, you should have gone during passing.” Or, “You should’ve gone during lunch.” Or, like, I don’t know. Is—it’s just the whole process of it is really annoying to me, especially, um, with, like, I get that we’re in high school, and, like, we’re still young and stuff, but, like, to go from, like, having to ask to go pee, and then just, like, like, being thrown out in the world, I feel like it’s-it’s just really annoying as a high schooler to, like, one year, you’re asking to go to the bathroom, and the next year you’re living on your own. – 17-year-old 11th grader

At times, remembering the policies that different teachers had for bathroom use presented challenges. Confusion occurred as participants had to remember the specific ways teachers liked to be asked to use the bathroom and if there were any particular times in which bathroom use

was limited. Navigating the bathroom policies of all teachers and the school is not always an easy feat, as described by a 17-year-old 11th grader.

Um, I think the only thing, not really, the only thing would be like confusion between teachers, cause you never know which, since we have five classes in a day, like each teacher has a different rule for how they would like you to leave the classroom- whether you can just go, or you have to ask them, or just sign out, and you just lose it. - 17-year old 11th grader

Knowing that certain teachers do not support bathroom use due to their desire that students stay in class may cause anxiety for adolescent students. If the urge to void or stool is strong, or there is a need to change a feminine hygiene product, participants described feeling anxious and uncomfortable if they had an unsupportive teacher. A 17-year-old 11th grader described her experiences about requiring a visit to the bathroom but feeling as though she was not free to ask her teacher due to classroom policies.

... it used to be really stressful and stuff. And especially if, like, we have an emergency in class um, and teacher won't let you go, that is, like, my worst nightmare...like, if you're bleeding, like, through your tampon or whatever...if you've used all of your bathroom passes, for example, you can't ask the teacher to go. It's like you sit there with so much anxiety because you know you can't go to the bathroom...It's just really stressful. And sometimes, like, I won't be able to go all day, which is so unhealthy...on your period or not, that's so unhealthy to not go for seven hours. - 17-year-old 11th grader

Teacher policies designed to allow autonomy in classrooms were appreciated by adolescent women. Several participants described two types of classroom policies they abided by: those in which they had to seek permission, which served as a barrier, and those that they felt free to get up and go to the bathroom when necessary, which allowed increased bathroom use and by extension may reduce anxiety and stress for the participants. Seeking permission included having to raise a hand to ask to use the bathroom or approach the teacher's desk to ask directly or have him or her fill out a bathroom pass. Seeking permission was described as an undesirable social

behavior because it served to signal to peers that the adolescent woman was engaging in bathroom use, as well as being a disruption to the class.

Interviewee: Well, some teachers are, like willingly let you go to the bathroom whenever you want, you can like walk out, but some teachers make you uh, write in a sign-out sheet which um, kind of makes me want to do it less. Um, so if it's just like, you're free to go any time, um, I'll usually just like go or if I have to like sign out or something, or it's in the middle of lecture, I'll wait until passing time...it's kind of awkward to go into the front, the front of the class and like write your name and then walk out. It's just like, an extra step that a lot of students don't want to take.

Interviewer: Does it bother you at all to have people looking at you while you go up to go to the bathroom?

Interviewee: Yeah, but mostly just like disturbing, like making everyone like not focus on the lesson, is kind of annoying to me. And I feel like it annoys other people. – 16-year-old 11th grader

Policies that supported adolescent women's autonomy were appreciated and well-liked.

Classes with teachers who had an “open door” policy with regard to bathroom use were identified as supportive in terms of bathroom use, and adolescent women tended to use the bathroom more frequently in classes where they did not have to stand up in front of their peers and make a request to the teacher.

Bathroom passes. Taking a pass to the bathroom was a common policy in many of the adolescent women's schools. Passes were seen as a way for hall monitors and other teachers to identify a student's permission to go to the bathroom. Bathroom passes frequently came in two forms: a written pass that the teacher fills out for each student who leaves the class headed for the bathroom, and a physical pass such as a sign or other object that adolescent women have to take with them. Bathroom passes often required some acknowledgement from the teacher that the adolescent woman has permission to leave the class. This might be a small signal from the adolescent woman and a head nod from the teacher, or the adolescent woman might be required to go up to the teacher's desk to make a request. Participants described this process of receiving a

bathroom pass as cumbersome and a deterrent to bathroom use, as it hindered autonomy and served as a notice to peers that the adolescent woman is going to the bathroom.

I've had teachers before say, like, you have to...sign a book, write the time, and then when you came back, write the time. So everyone was, like, "What if I have to be in there longer?" or, like, anything. I just don't want anyone to see how long I was in the bathroom, 'cause that's just kinda weird. So no one would go then, either. Yeah, 'cause it was only—it's, like, embarrassing to have to...write how long they were in the bathroom for and how many times...and it was almost like an invasion of privacy. Like, if you had to be in the bathroom for a longer time, it was always, like, super rushed, knowing that, like, either someone else in the class was waiting for you to get back so they could go, or just having to write it down, how long you were there. – 15-year-old 9th grader

Policies involving bathroom passes also include a limit on the number of bathroom passes granted each semester. Teachers would determine a set number of bathroom passes to grant each student in their classes during the semester. The students would then be allowed to use the passes at their discretion, unless all of the passes are used during the semester, after which students were denied any more trips to the bathroom. Adolescent women described the aim of this policy to have students only go to the bathroom when it was urgent, and reduce any unnecessary disruptions to the class. Participants felt this policy results in them deciding to avoid bathroom use, as they were reluctant to use a pass when they might have a more urgent need for bathroom use at a later date.

But one of my teachers...he specifically says, like, "If you guys have to go to the bathroom, you have to go to the bathroom." Like, just go...I'm not gonna ask you why...which is good, and I think that's great, but then some of my other teachers are, like, "If you have to go, you can wait," or, "You only get three bathroom passes the whole tri." So usually, people wanna...save them, so we never go. – 15-year-old 9th grader

Physical bathroom passes were factors that increased bathroom avoidance, due to their perceived dirtiness and potential for embarrassment. Adolescent women described having to carry physical bathroom passes, whether a sign or another object, to the bathroom and then back

to the classroom. The assumption was that the pass was rarely cleaned, thus carrying the bathroom pass required handling a dirty object, which was undesirable. These bathroom pass objects also caused embarrassment, whether due to size or another physical attribute. One participant highlighted the sense of embarrassment she felt with one teacher's policy that anyone going to the bathroom must carry a large trophy with them, thus causing her to avoid using the bathroom during that class.

It was this...huge trophy that you had to carry. I don't even imagine what you'd do with it. Like where do you put it in the stall? There's no room in the stall for it. And my friends are like, "Oh, yeah, you're in that math class. Sometimes I see people walking around with a huge trophy going to the bathroom." ... That made me not wanna use the bathroom cuz I did not want to carry a huge trophy with me to the bathroom. - 14-year-old 9th grader

Another adolescent woman described a bathroom pass for one of her classes that was a sign with a message written in large letters, which although she found it funny, she also thought the point of the message was unnecessary.

I've had other teachers who just like don't want to let you go because they like, want you to be in class the whole time... a lot of the math teachers in this one hallway have made signs like as bathroom passes that say like "I'm missing out on an educational opportunity to go to the bathroom' or something, which is like funny but also just like, chill out, you're not really missing that much like if you're going to the bathroom... - 17-year-old 12th grader

School policies served to reinforce the negative assumptions about students' motivations for bathroom use. Instead of respecting the students' autonomy to decide for themselves whether or not to use the bathroom, policies were placed to prioritize keeping them in class. The negative attention that is placed on students who have to use the bathroom, such as carrying passes aimed at causing embarrassment to the holder, serves to encourage students to ignore their biologic urges to void for the sake of being present in the classroom and not risking negative responses from peers. The bathroom avoidance caused by school policies has elements of age-related

psychosocial appropriateness due to garnering unwanted attention, but add an additional element of embarrassment and difficulty aimed at enticing adolescent women to withhold urine or stool.

Incentives. Incentives were another element of bathroom passes that influenced bathroom use in adolescent women in that they served to increase bathroom avoidance. Incentives were a part of individual teacher's policies with regard to bathroom use, and not a reflection of the school's general policies. Participants described some teachers giving out several passes for the semester at the beginning of the term. Each student would receive a set number of passes, depending on whatever number the teacher determined appropriate for the term. Each student in the class was able to use the bathroom passes at their discretion with no penalty. However, if at the end of the term a student had passes remaining, then the teacher would give the student bonus points or another award. This policy reduced bathroom use during these classes, particularly if the class was a difficult one. One adolescent woman described her desire to receive the bonus points for a class she determined to be difficult.

Yeah, it's three extra credit points, but I know, like, chem's, like, a really, really hard class, so most people want it...It's more like—it's not bad if you go, like, it won't hurt you, but it will help you if you don't. — 16-year-old 10th grader

Incentives to reduce bathroom use served to cause bathroom avoidance, as most adolescent women desired the bonus points or other reward. Withholding urine or stool was seen as an easy way to earn extra credit, which might make a difference in grades for a difficult class.

Policies regarding closed or locked bathrooms. Closed or locked bathrooms were described by several participants, with the understanding that these bathrooms were unavailable to keep them looking nice for guests during sports games or other functions. The schools varied in this policy to lock certain bathrooms, but several participants described their frustration with being unable to use certain bathrooms throughout the school day. This frustration was rooted in

the understanding that these bathrooms were frequently nicely decorated, clean, and well-stocked with supplies. This intersection between school policy and desirable bathroom environment was particularly vexing for students, because they had identified a preferable bathroom within the school environment, yet were not allowed to use it regularly.

There's another one that's in the lobby of the auditorium that's often, like, closed off cuz there's, like, gates that close off the lobby of the auditorium. And that's, like, one of the nicest bathrooms, which is funny, but—so, yeah, those two are probably the biggest ones as well, um, but I use those the least. - 17-year-old 12th grader

There's one that's new and it's by like the concession stand and they like just put it in and it's like nice but that one's not always open so we have to go to the nasty one... – 17-year-old 12th grader

School and teacher policies frequently serve as factors to increase bathroom avoidance in adolescent women. There were no policies discussed that served to make bathroom use easier, with the exception of a few teachers described as allowing students full autonomy to decide for themselves when to leave the classroom to void or stool. Requiring students to raise their hands or approach the teacher's desk for permission to use the bathroom, requiring use of a large and cumbersome bathroom pass, and providing incentives to avoid bathroom use were aimed at encouraging adolescent women to ignore their biologic urges to void or stool. Policies aimed at keeping students out of certain bathrooms by closing or locking them served to influence which bathrooms were chosen by adolescent women. These unavailable bathrooms were frequently identified as some of the nicest in the schools.

“Not the best to go into” vs. Bathroom as a Safe Space

Bullying was not an issue that many participants experienced, but those who did felt it affected the way they viewed school bathrooms. The few episodes of bullying shared by participants included both physical bullying and verbal “confrontations.” These instances of

violence created unpleasant feelings about school bathrooms for those who witnessed them. One participant described hearing about a female friend who had been hit while in the bathroom, as well as having seen verbal confrontations in the bathroom, which influenced her feelings toward bathroom use in the school setting and desire to avoid going into them.

I have definitely had people I have not wanted to see who have come up and said unkind things to me. One of my friends she was slapped in the bathroom or um, sometimes people, I, only one of my friends has done this, she was having a really bad day so she went to sit in the bathroom and then some girl yelled at her while she was in there which was the girl she was trying to avoid...So, sometimes the bathrooms can be a little not the best to go into, yeah. - 15-year-old 10th grader

Bullying was seen occasionally in other places in the school, such as by lockers, but the bathrooms overall were described as offering a feeling of safety from physical violence. When asked specifically about bullying, many participants stated they had never seen bullying in the bathroom and were unaware of bullying happening to anyone else in the bathroom setting, but they were sure it had happened at their school. Participants more frequently described overhearing negative comments about themselves or someone they know, which was the case for one 14-year-old 9th grader who described concerning verbal comments in the bathrooms at her school.

It's not usually it's not bullying towards you. I mean like I've had times where I'm like in the bathroom and there's girls talking about someone that I know. And then they're making fun of them and stuff like that. That's usually the extent of what happens most of the time it's like awkward and it's like, "I know that person. That's my friend" ... But I've haven't had the experience of like actual bullying. My friends haven't really told me about it. I mean I bet it totally happens. I'm pretty sure it does. – 14-year-old 9th grader

Large schools with many students made it easier to bear hearing negative comments about others, due to decreasing the likelihood that one would overhear anything about someone the participant might know or consider a friend. A 14-year-old 9th grader described frequently

overhearing negative comments made about other students. These “judgments,” as she referred to them, were commonly overheard while using the restroom.

Most of the time I don't know these people, so I'm just, like, "Eh, I don't care." – 14-year-old 9th grader

Although there were some instances of bullying both witnessed and experienced, adolescent women generally expressed feeling safe while using the bathrooms at school. In general, adolescent women in the study described an overall feeling of safety when using the bathrooms at school. The majority of adolescent women in this study denied hearing any verbal confrontations or physical bullying, which aided their feelings of safety.

I haven't witnessed anybody ever getting bullied before. I guess I'm fortunate because I know that that has happened, and I'm sure it happens in my school, but, um, yeah. I've never had any of that or felt, like, unsafe in our bathrooms and that kind of stuff. – 17-year-old 12th grader

Overall, school bathrooms were seen as safe spaces without fear of violence or verbal confrontation. Those who felt that school bathrooms did not pose a risk for bullying did not necessarily speak of feeling safe as a motivating factor to use the bathrooms more frequently, but instead as something that did not serve as a barrier to its use.

Bathroom use as a break. Bathroom use as described by adolescent women went beyond voiding, stooling, or taking care of menstrual needs. Participants described using the bathroom periodically as a break from class, particularly if the class was in some way seen as boring or easy. This was a motivation that moved beyond biologic urge to void or stool and instead was driven by need for a moment of quiet, away from the stimulation of class and peers. This might translate to going to the bathroom specifically as a break from class, but also might mean an adolescent woman will choose to take a longer time using the bathroom if the biologic

urge is present. Two participants shared their experiences with choosing to use the bathroom to take a break.

Sometimes it's just kinda like I've been doing Spanish for so long that I need to get out. It's not always that I actually need to use the restroom, sometimes I'll just want to be out of the classroom for a few minutes. – 15-year-old 9th grader

I have a few teachers that are heavy lecturers, and that gets a bit old, and I, um, every day at school I drink a 32-ounce, like, water bottle, so I—I always, like, have to go to the bathroom anyway, but sometimes I, like, take my sweet time and, like, take a little stroll and go to the bathroom and just wash my hands really nicely and get it in everywhere and blow-dry them 'til they're completely dry. And I'll go back to class. – 16-year old 11th grader

Bathroom use as a break was particularly important during times of emotional duress.

Many adolescent women described other female students crying in the bathrooms, or times when they themselves cried in the bathrooms. Bathrooms during times of emotional duress, whether that be from peer interaction, stress related to classes or grades, or other reasons, served as a place of privacy. One adolescent woman described bathrooms as a place where students could find privacy and comfort.

I feel like it's a spot of comfort. It's not really comfort. It's just a spot to go. Like cuz you're either crying in the classroom, you're crying in the hallway or you're crying in a bathroom. And I feel like out of all those people choose the bathroom because it's more secluded in a way. Like you can—I guess you can lock it. Normally when the girls are crying in the bathroom they have a friend with them, but you can lock yourself in a stall. It's pretty easy to just cry and not let anybody know who you are... - 17-year-old 12th grader

Other participants also discussed bathrooms as a place of comfort, or at least a place where students knew they could go to express themselves. School bathrooms were described as a place in which participants could take a few minutes to express sadness or anxiety, and then compose themselves and return back to the classroom environment.

Uh, you can go in there and find—I've been crying in the bathrooms, just from stress, like oh, my gosh, I have this exam. Then I had these three tests, and then I'm like ah-ah. So right after one class, I'll just go and cry, and I'm like okay, I'm better now... I just was like ah-ah, and then I'd wipe my face off, splash it with water. Then I'm good to go. And you see that with a lot of students. It's- it's different for everybody, how they handle their stress. Some people go in there and just breathe. Some people go in there because we have a lot of kids with anger issues there. People go in there to cool off. It's different for everybody, but people just go in there for a little break and then they go back. – 17-year-old 11th grader

As described by the 17-year-old 11th grader above, using the bathroom as a place of refuge at times went beyond actual biological use of the bathroom, and instead of using the toilets to void or stool, the sinks and mirrors may be used to regroup. The physical space of the bathroom provided a form of privacy, in that it was away from the classroom environment, which allowed for the exploration of thoughts and feelings.

School bathrooms then serve as a place for privacy to express emotions, but also provided places where adolescent women could support one another. This was described as an important aspect of bathrooms at school, in that there are few places for adolescent women to go where they feel as though they have privacy and receive support. Female students crying in the school bathrooms were not uncommon, and participants described either providing support, receiving support, or witnessing support during these times. One 16-year-old 11th grader shared her experiences of supporting another student in the bathroom who was experiencing emotional duress, even though she was not a friend.

Like, if anything, when people—when girls go in the bathroom and are, like, crying, like, other girls'll be like, "Oh, my God, are you okay?" Like even me. Like this girl that I do not like, she came in the bathroom. She was crying. I was like, "Oh, are you all right?" And I gave her a hug and then I felt bad for her, but, like, I don't know. I think that girls have more time to, like, bond in the bathroom than anything. I've—I've never experienced any, like, harassment. -16-year-old 11th grader

Positive messages. This bathroom as a safe or supportive environment was also displayed via anonymous notes left in the school bathrooms. When specifically asked about graffiti with negative writing about students, several adolescent women shared that their schools were fairly good about removing or covering up negative writing on the stalls or walls. Instead of seeing negative messages, participants reported a new trend emerge in the school bathrooms, in which peers wrote anonymous messages of support to one another. Schools were more likely to leave these messages up, and adolescent women reported that they enjoyed seeing them. It was seen as a way to reinforce the supportive environment of the school through allowing adolescent women to engage in positive messaging. Several participants described the lack of negative writing in the bathrooms at their schools, and how seeing the positive messages made them feel.

They take down like the bad ones but usually there's like inspirational sayings like "You're beautiful" "You're amazing" on the walls, but um, I don't think I've ever seen like mean ones before. I think I have, but I think they take those down, but I think they leave the inspirational ones like done in pencil up for everyone to like see and stuff. – 16-year-old 11th grader

Um, yeah, so they even have stickers that say like "You're beautiful" that are in like the bathroom like under handles and stuff. But people write things like "Don't let anyone tell you that you're not perfect because you are perfect in your own way." And "You're beautiful and keep going, you're strong" like "hold on" and yeah. So. Good things like that, or people will have notes like "I'm not doing well" and someone will write back to it, like "Keep going" and so it's, it's pretty cool, like our community that we have in our bathrooms. – 17-year-old 12th grader

Biologic urges do not represent the only motivations for bathroom use in the school setting. Rather, bathrooms at school can be perceived as safe places where adolescent women may receive support, provide support, and have their spirits lifted by positive messaging. There are few places in schools where adolescent women are able to find a safe space to explore thoughts and feelings, thus highlighting the importance for access to bathrooms for mental health reasons in addition to relieving biologic urges.

Summary of Aim 1

Many adolescent women in this study had not previously considered the importance of using bathrooms throughout the school day. Frequently, they described being surprised that bathroom use was something worth talking about, let alone important enough to explore in a research study. However, they simultaneously acknowledged that they were aware that the bathrooms in their schools required a change, as they were generally described as gross, ill-stocked, and unpleasant to use. This paradox is not surprising, as voiding and stooling is something innate in the vast majority of humans (Norton, 2004), whereas bathroom environments vary greatly in terms of aesthetics and cleanliness level, and may be more noticeable.

Although they had not previously considered the importance of school bathroom use as it related to bladder health, participants were able to describe influential factors that caused bathroom avoidance or delay. The importance of bathroom environment as a theme that influenced bathroom avoidance was abundantly clear. The overall feeling that school bathrooms were gross and undesirable meant for some adolescent women, avoiding using them for the entire school day was the preferred option. In addition to environment, having enough time to use the bathroom was a factor that influenced bathroom use, in that passing time was not usually long enough to both use the bathroom and make it to participant's next class without being tardy. Privacy was described as an influential factor, in that most adolescent women desired it, yet found it unattainable. Although crowded bathrooms offered some form of privacy, private, single-stall bathrooms were described as ideal. This was particularly important during menstruation, as adolescent women attempted to avoid the stigma associated with it. School policies were identified as an important influential factor that caused many participants to avoid

or delay bathroom use during the school day. These policies were particularly difficult to manage, as they differed from school to school and teacher to teacher. Keeping all of the many rules and processes related to bathroom use straight was considered a challenge for many participants.

Bullying was not identified as a major theme that impeded bathroom use in this sample, but rather participants in this study generally felt safe using the bathrooms at school. This was an unexpected finding, as bullying has been identified as commonplace in high schools in the US, with bathrooms being a fairly common environment for bullying to occur due to the lack of adult supervision (Wang et al., 2009). Although a few participants reported hearing about and experiencing verbal confrontations in the bathroom, most adolescent women described school bathrooms as safe.

Safety in the bathrooms did not cause adolescent women to avoid or delay using the bathroom, but rather had the opposite effect. Several participants with differing school demographics described extending the use of school bathrooms beyond relieving biological need and instead using it as a safe place to take a break. This was described as a particularly important use, as there were not many places students could go at school where they could get away from the classroom and take a break. Related to the feelings of safety were the supportive messages that many participants reported being present in the school bathrooms. Positive messages that students left for others to read were a bright spot in an otherwise mostly unpleasant environment, and were described as something that helped adolescent women feel uplifted.

Although not specifically mentioned, the fact that bathrooms are female-only may be an important consideration as to why adolescent women feel that bathrooms are a safe space to take a break. Participants in this study felt supported by their female peers in the school bathrooms,

and even stated that they themselves were supportive to peers who were upset while in the bathroom environment. “Female” in this context does not necessarily imply that transgender students using the same bathroom would alter the supportive environment, as this was not discussed by the participants in this study. Rather, adolescent women described being sure that upset peers were most likely crying over boys, thus the absence of students who identify as boys in the bathroom environment may be considered a positive.

Although there are many contextual and environmental factors that affect bathroom use for adolescent women, several major themes were identified in this study as particularly influential. Not having time to use the bathroom, unpleasant bathroom environment, lack of privacy, and school policies were identified as impediments to school bathroom use. These themes caused adolescent women to avoid or delay voiding and stooling, which has potential negative effects on bladder health. In addition to these, several themes were identified that did not impede bathroom use, but rather affected the experience. Bathroom use as a break for mental health purposes affected bathroom use in a positive way, in that it increased bathroom use, although not always necessarily to relieve a biological need such as voiding or stooling. Bathrooms in high schools were identified as a safe space in which adolescent women could take a break, which was important to many participants. Similarly, positive messaging in the bathrooms was identified as making the bathroom experiencing better overall.

In summary, the factors influencing use or non-use of the bathroom environment in response to biological cues were complex and intersected both social and biological aspects consistent with adolescent development. The use of the adapted optimal bladder health model, which broaden the consideration of dimensions that may affect bladder health, resulted in new

insights about the levels of social interaction that are required for adolescent women to exercise their desire to relieve themselves in response to biological urges.

Specific Aim 2: Knowledge and Strategies to Delay Voiding

The second aim of this research study was to explore knowledge related to voiding, fluid intake, and societal attitudes. To meet this aim, adolescent women who attend high school were asked questions related to voiding practices, beliefs about the importance of voiding, and from whom they have received messages related to urinary health. To gain a sense of their feelings about incontinence, whether through personal experiences or those of a friend or family member, adolescent women were asked about any experiences of incontinence. They were then asked about their feelings towards incontinence episodes, whether they were unintended leaking of urine or stool. As shown in Table 5.5, five themes emerged from the data.

Table 5.5 Major themes and subthemes from Aim 2

Major Theme	Subtheme
Lack of Urinary Health messages	Fluid intake Frequency of urination
Urinary Health Beliefs Affecting Behaviors	Assumptions about societal beliefs
Strategies to Improve Bathroom Experience	
Experiences with Incontinence	

Major Theme I: Lack of Urinary Health Messages

Generally, urinary health topics were not something adolescent women had specific recollections discussing, either with an adult, a teacher, or friends. When asked about urinary health messages in school, adolescent women reported that discussions related to bladder health were not frequently addressed in any classes. When asked if anyone had ever discussed

bathroom use or the importance of listening to bodily cues that indicate it is time to void or stool, few adolescent women reported having these types of discussions. However, when the questions were broadened to include any discussion of fluid consumption, adolescent women were more likely to have heard health messages related to increasing water consumption to improve overall body health.

Um, I'm constantly tired. Like I have lots of fatigue. Cuz I have um, um, Hashimoto thyroiditis, and one of the things that it can do is fatigue and, you know, all that extra stuff. Um, and so my mom always wants me to drink water. And then I finally decided I would. And then I felt a lot better. Not a lot, but it was a noticeable difference. And it's just good for you. And it's a better life choice. – 17-year-old 11th grader

Participants who had received urinary health information, reported receiving the majority of their information from mothers. This information included avoiding withholding urine, due to the negative effect it may have on the bladder. One adolescent woman described an anecdote in which a person she and her mother knew had had urinary tract infections due to withholding urine. One participant described her mother as encouraging her to use the bathroom during the school day and avoid withholding behaviors to avoid any potential urinary tract infections.

...My mom has told me is that someone we know um, she always, like she refused to use the school bathrooms, she graduated maybe a couple of years ago, and she had like bladder problems because of it. So, I mean I'm not scared of getting bladder problems or something, but I just don't really think it's worth it to hold it if I have to go, it's, not fun to have to go to the bathroom and not go. -17-year-old 11th grader

Although there was a general lack of information available with regard to urinary health, a couple of participants reported having received some indirect education related to urinary health from health care professionals and teachers. Whereas the adolescent woman described in the quote earlier mentioned her mother discussed the importance of voiding frequency during the school day, health professionals and teachers were described as focusing on increasing fluid intake. These indirect messages highlighted the importance of drinking water throughout the day

for general health, and were shared with an emphasis on avoiding dehydration. One adolescent woman shared her experiences with a physician instructing her to drink water throughout the day, which she stated she listened to more carefully, as it came from a health care professional rather than her mother.

Usually—well, I was really sick in, like, January. And when I was at the doctor, they just said, like, drink water. Like, it's so important. Like, even when you're not sick, just drink water... I think that's when I really realized, like, when I should drink water. I was, like, a doctor told me, but if my mom was just, like, "Oh, drink more water," I'd be, like, "Okay," and then probably not do it just 'cause I would think, like, she doesn't know what she's talking about. But when it's anyone but my mom, I usually listen, which is horrible, but it's true. - 15-year-old 9th grader

These health messages to increase water consumption during the day lacked specific information in terms of amount of intake to achieve this idea of "improved health." Many participants described their understanding that they need to consume large amounts of fluids to achieve optimal health. Whether or not this information was shared by a health professional and since forgotten or was never shared in the first place, adolescent women in this study were left to figure out an appropriate amount to drink during the day on their own. Many adolescent women carried water bottles with them during the school day, which frequently had markings on them to indicate how many ounces were in each bottle. One 17-year-old 12th grader shared her beliefs as to how much water should be consumed on a daily basis, which was around 100 fluid ounces a day.

Aren't you supposed to, I think—I thought you were supposed to drink, like, 4 or 5, like, a 24-ounces or something like that. – 17-year-old 12th grader

Not knowing how much water they "should" drink during the day meant that adolescent woman sought other indicators of proper hydration. Several participants described being told health messages that emphasized color of urine as an important indicator of urinary health.

Adolescent women in this study generally believed that a light urine color during voiding was preferable to a darker hue, as clearer or light-yellow urine indicated a more desirable level of hydration. This belief that urine color is an indicator of hydration was frequently described as something taught, either by a parent, teacher, or health care professional. One adolescent woman described being young when she first heard that the color of urine is a health factor, and she internalized the concept that lighter urine is desirable, and thus should increase her water intake.

I heard this lady say to another student. She was like, "What color is your pee?" And they were like, "Yellow." And she's like, "Nope. You want it to be clear." I was like, "Huh." I—I think that, like, always stuck with me, and I'm like, "I should—my pee should be clear. Water will do that. Water'll help me keep my pee clear." And I think that just, like, was, like, a little stamp on my fifth-grade mind that stuck with me... – 17-year-old 11th grader

Although some participants had received health information related to urinary health, the majority had never received any education related to those topics. The messages that most participants received with regard to increasing water consumption were frequently lacking any connection to its effect on bladder health. The instruction to drink more water provided by health care professionals and teachers was instead described as a method of improving general wellness and was not linked to voiding practices. An increase in fluid intake also increases the number of voids per day, and listening to bodily cues that the bladder is full is important to reduce lower urinary tract symptoms. Some adolescent women were able to identify the connection between increasing water consumption and thus urinating more frequently, but were left to navigate whether or not to engage in withholding behaviors by themselves. In general, adolescent women did not think about bladder health as an indicator of health, and were not concerned with how ignoring bodily cues to void or stool might affect their risk factors for lower urinary tract symptoms.

Frequency of urination. Adolescent women reported a lack of knowledge related to a “healthy” number of voids to engage in per day. When asked how many times a day to use the bathroom to void or stool is a “healthy” amount, participants’ responses varied widely, from a couple of times a day to upwards to 15. There was no clear consensus as to how many voids per day constitute a “healthy” amount. One adolescent woman shared her belief that bathroom use is dependent upon fluid consumption, and only going twice a day is not necessarily unhealthy.

Um, I think definitely depends on how many like, how much fluids you're drinking, so like if you're not drinking that many, you should be drinking more but like I don't think it's like a super big deal if you're only going like a couple of times... - 17-year-old 12th grader

On the other end of the spectrum, other participants reported that upwards of 10-15 visits to the bathroom a day is a healthy amount.

I had actually thought about this before, but I don't know the real answer. Like, I really have no clue. Um, I'm gonna be so off. I'm gonna judge it by how many times I go. Um, I'm gonna say 10 to 15. – 17-year-old 11th grader

Participants described a general lack of knowledge about a “healthy” frequency of voiding or stooling during the day. When asked whether or not they had ever considered going to the bathroom periodically throughout the day a sign of health, generally participants stated that was not something they had ever considered. Many participants described their choice, or guess, of a “healthy” number as based on their own frequency of bathroom use, rather than prior knowledge. A common response of “I don't know” or “I'm not sure” with regard to number of times bathrooms should be used in a day was heard from almost all adolescent women. The uncertainty in number of voids per day highlights the lack of consideration that bathroom behaviors were given, and that adolescent women were not monitoring their own bathroom use.

Major Theme II: Urinary Health Beliefs Affecting Behaviors

Adolescent women described receiving education to drink more water throughout the day, and were asked if that education resulted in personal behavior change. Many participants reported changing their behaviors with regard to fluid consumption and described consciously drinking more water throughout the school day. Believing that increased fluid intake would improve the color of urine, thus indicating increased urinary health, meant that adolescent women were likely to engage in behavior change to increase fluid consumption. These measures included carrying around water bottles throughout the day, and refilling as necessary to ensure there was constant access to water. Another measure was to make an effort to drink from water fountains present in the high schools.

Adolescent women described an ongoing effort to drink more water throughout the day, whether at school or at home, and felt their efforts to engage in behavior change were supported by the schools they attended. Access to water was not described as an issue, as all adolescent women were allowed to carry water bottles with them while in school, including in the classrooms. Schools also frequently supplied water-filling stations, in which students are able to fill their water bottles with filtered water. Water-filling stations were described as a “nice” feature in the schools that had them, and adolescent women appreciated having access to cold, filtered water as necessary.

Some participants who had received urinary health messages related to not engaging in withholding urine and stool behaviors reported to be less likely to engage in those behaviors. Several participants in this group who had described hearing messages from mothers or health professionals related to withholding urine as potentially increasing the risk for a urinary tract infection or another lower urinary tract symptom.

Um, and so obviously that causes me to go to the bathroom a lot. But, um, I've learned through my mom because she was a nurse, and also my freshmen year health class, um, that if you hold your pee for a really long time, that you'll get UTIs. My mom, when she used to be a floor nurse, she would get UTIs all the time cuz she couldn't go to the bathroom very often. Um, so I feel like during school especially I have to remind myself, like, "Oh, you should probably go to the bathroom." – 17-year-old 11th grader

Assumptions about societal beliefs. A major factor that affected adolescent women were their beliefs about how society views bathroom use and behaviors. The beliefs or judgments that participants assumed their peers entertained about them affected their bathroom use, through either reducing the number of times the bathroom is used during the school day, or increasing the desire to rush the toileting process.

Participants described desiring privacy when choosing times to use the bathroom and which bathroom to use. When asked about this desire for privacy, the adolescent women in this study discussed wanting to avoid having noise-emitting bodily functions overheard, as well as avoid having peers notice any undesirable smells emitted during the voiding or stooling process. This desire stems from a fear of being judged, or thought poorly about by a peer. This social pressure to avoid the repercussions of voiding and stooling were a factor in participants' decisions to either carefully choose their bathroom environments or avoid them altogether. This desire to avoid being judged for stooling was voiced by a 16-year-old 11th grader, who described what she believes people might be thinking of her.

Kind of like the same thing I wouldn't want someone to think, like "Ew, that's gross, why would you do that at school." Um, so I'm kind of like thinking about the way I feel, how I wouldn't want people to feel about me. So I'm kinda just like, pushing myself into not wanting to do it more. – 16-year-old 11th grader

The adolescent woman described a process of trying to “push” herself into withholding stool while at school, in order to avoid any undesirable thoughts or judgments from others.

Whether or not peers would think negatively about her stooling at school was not known for

certain, but her projection of her own thoughts and feelings onto her peers created reason to avoid the activity altogether.

Adolescent women considered bathroom use during the school day as occasionally necessary, as withholding urine was described as generally uncomfortable for long periods of time. Although willing to use bathroom facilities, participants in general did not enjoy the process, and the concern for peer judgment frequently caused them to use the bathroom as quickly as possible. Bathrooms in school were places to spend the shortest amount of time as possible, not only because of a less-than-desirable environment but also because bathroom use created vulnerability to judgement from peers. This fear of negative peer interaction may be particularly heightened for adolescents, given their developmental phase and increased desire for peer approval (Erikson, 1968). Adolescent women in this study described this developmentally appropriate fear when stating they wanted to use the bathroom as quickly as possible to avoid bringing unwanted attention to themselves. There was a concern that peers waiting in line for a turn to use the toilet would be assessing the amount of time it takes for a woman to use the bathroom, and would be deemed to “take too long.” Others were concerned that the process of leaving class to use the bathroom was something of note, and other classmates might be judging the amount of time an adolescent woman is gone. There was an underlying concern about the amount of time adolescent women used the bathroom, and it created a feeling of urgency that affected their ability to relax during the voiding process. One 15-year-old 9th grader shared her concerns about people in class waiting for the bathroom pass, and paying attention to the length of time she is gone.

Yeah, definitely, because they only let one person out at a time so—which is smart, I guess. They can't—can't, like, let the whole class out, but I always feel like someone's waiting for me to get back so they could go, so then that person is specifically, like, keeping track of how long, if—so I don't wanna keep anyone waiting, and I don't want them to think that I'm just, like, in there for forever. So I definitely do feel rushed. – 15-year-old 9th grader

The participant's description of how she felt rushed because she might otherwise inconvenience other peers was echoed by other participants. Adolescent women in this study did not speak to what caused these fears or why being gone for a length of time considered “too long” was a bad thing, other than it caused others to wait, which was seen as negative consequence.

Although not explicitly stated by participants, another potential reason to use bathrooms quickly may be related to developmental stage and fear of peer disapproval. The privacy afforded by stalls also caused an inability to be transparent about what adolescent women are doing in the bathroom: namely, whether they are voiding or stooling. As reported in the previous chapter, some adolescent women described avoiding stooling at school as much as possible and more so than voiding. There may be an element of fear that “taking too long” would indicate that the adolescent woman was stooling versus the more socially-approved voiding, which may lead to feeling judged. Although participants in this study were unable to fully verbalize the root of concern for why they did not want to be perceived as taking a long time in the bathroom, the frequently-described desire to avoid stooling while in school may be an important factor to consider.

Major Theme III: Strategies to Improve Bathroom Experience

Adolescent women in this study expressed knowledge of strategies aimed at improving the overall bathroom experience while at school. Choosing the timing of bathroom use, usually

either during class or during passing time, was frequently described as a strategy aimed to increase privacy in school bathrooms and was described previously in Aim I. Beyond this, however, there were several strategies that adolescent women described to make the process of using the bathroom easier.

Going to the bathroom with a friend, or multiple friends, was described as a frequently used method of improving the bathroom experience. Many bathrooms in the schools were described as having broken locks or doors that would not shut completely. If the bathrooms are empty, this situation did not normally create an issue, as those stalls with non-working doors or door locks can be avoided altogether. However, during busy times of bathroom use, participants frequently felt pressured to use whichever stall was available, even if the door was non-working. Participants described two strategies to deal with this situation. Having a friend attend the bathroom with them was a way to ensure that the door could remain closed, as there was a friend to hold the door during the voiding process. Another method to improve the experience by keeping the stall door shut was to use one's own foot, hand, or backpack to press against the door during voiding. Either of these two strategies worked moderately well to keep the door shut and therefore ensure privacy during voiding or stooling, but created significant alteration in the voiding posture. When asked if she uses stalls with broken doors or locks, an 18-year-old 12th grader described her experiences.

Yes. Yeah, yeah. Which is a little uncomfortable, yeah. Or you like—some people put their backpack up against it to close it, but I usually don't bring my backpacks into the um, bathroom. So sometimes I have to like stick my foot out to like—while I'm going to the bathroom to keep it close, which is like annoying. But yeah.

I'll use it, yeah. But then, you know, it's-it's like annoying cuz like if you like stand up to pull up your pants, the door will like swing a little open, so you have to quickly shut it because you don't want people to see in, and it's just like—it's—yeah, it's obnoxious to use that. – 18-year-old 12th grader

Participants also used strategies to improve the perceived cleanliness of the bathroom. Many participants described either wiping down the toilet seat prior to sitting on it or placing toilet paper on the seat to act as a barrier between skin and toilet seat. This was described as a way to increase relaxation while minimizing contact with a “dirty” surface. The toilet seat did not have to have visible dirt to be considered “dirty,” but the knowledge that the toilet seat was present in a public bathroom caused a desire to somehow clean the toilet seat prior to sitting down.

Other participants used a similar strategy to avoid the “dirty” or “disgusting” toilet seat by not making physical contact with it at all. Instead, some adolescent women in this study chose to use a squatting position to hover above the toilet while voiding. One 16-year-old 11th grader shared her experiences trying to hover over the toilet due to not liking to sit on the toilet seat, and how that did not work for her due to her inability to hold a squatting position long enough to void.

Honestly, I would prefer not to, but I’m a bigger person, and squatting just isn’t really an option for me...I’m like, “Ugh, this isn’t happening,” and I just—I sit, but, like, if I was, like, a smaller person with more will to squat, I probably would cuz—I don’t know. It’s—it’s disgusting. Bathrooms are disgusting. But what are you gonna do? – 16-year-old 11th grader

Squatting during voiding has been shown through other research to affect ability to empty the bladder completely (Moore et al., 1991), but adolescent women did not describe any feelings of fullness or other bladder issue after voiding in this manner.

Major Theme IV: Experiences with Incontinence

Adolescent women had experiences with urinary incontinence, either personal or through a friend or family member. Participants expressed knowledge that older women, such as mothers, frequently experience urinary incontinence and that it may be related to child birth. One

adolescent woman described her mother's exclamations that she had not had urinary incontinence prior to giving birth to her and her baby brother. There was a sense of normalcy about women and urinary incontinence. The majority of participants knew of a friend or family member who had shared at least one episode of urinary incontinence. The normalization of urinary incontinence was not limited to the experiences of older adults, but also included other adolescents of a similar age. Friends who have experienced urinary incontinence were particularly frequent, and participants were well-aware that particular friends had experienced urinary incontinence in the past, most frequently in conjunction with laughing during a humorous conversation.

It's happened to people I know, but it's never happened to me. I know like when people get pregnant I've heard, like, stories where, like, my teacher's like I sneezed once and I peed. And I was like, oh. And I have friends that, like, laugh so hard they cry. Like they're like "I just slightly peed." I'm like, okay, like great to know. But it's never happened to me. – 17-year-old 12th grader

Yeah, I hear a lot of girls actually say like "Oh my gosh, I just peed on myself a little." Like I think it's yeah, it's a pretty common thing. – 17-year-old 11th grader

Many adolescent women had some form of personal experience with urinary incontinence. Although most described these events as infrequent, any personal experience was memorable. Most often the result of laughing at a humorous conversation or through physical activity (such as running), episodes of urinary incontinence were described as generally surprising, yet not concerning. Although they happened without warning and were not welcome, participants described these experiences as something that happens frequently to women in general and nothing to be too concerned about, thus normalizing incontinence as lifetime experience to be tolerated. Viewing urinary incontinence symptoms as unremarkable highlights the normalization that urinary incontinence has achieved with adolescent women.

The normalization of urinary incontinence symptoms was tempered by the notion that although they happen, they should not happen often or that would constitute a problem. Personal stories of incontinence were relayed with an emphasis on the fact that “it only happened once or twice,” which belied any lack of concern about urinary incontinence previously displayed by the participants. This emphasis on infrequency highlighted that although episodes of urinary incontinence happened personally, they were not particularly shameful as long as they did not happen with regularity.

Um, I mean it has happened to me, it's not like it happens a lot or something, like, I don't really like think about it or anything but I mean it's happened [laughs]. – 17-year-old 11th grader

When asked how episodes of incontinence made adolescent women feel, either from personal experiences or moments shared with a friend, participants described generally finding these experiences humorous. Particularly when with good friends, experiences of incontinence were shared to elicit laughs or to seek help in addressing the situation, either by sharing advice as to what to do or provide a sweatshirt to tie around a waist and help hide any physical evidence. A 16-year-old 11th grader shared her feelings about her personal experiences with incontinence, as well as a time a friend experienced fecal incontinence.

My volleyball team, like, we're pretty, like, close and, like, close friends. So, like, I'll be like, "Guys, I just peed." And they'll be like, "That's really dumb. Like, go—go to the bathroom." But, like, it's never, like, me being embarrassed and, like, quiet and shut out and not wanting to play anymore. It's never affected me like that...I think it's—it's more like, "Oh, my God. Why do you always pee?" And then you tell your teammates, and they're like, "Why do you—why?" It's like, "Why did you do that?" And you're like, "I know." Like my, um, my, uh, one of my teammates, the other day during practice, we were all, like, laughing about something, and she was like, "Oh, my God. I just—I just shit my pants." And we're like, "You did not." And she's like, "I did. I don't know what to do." And we're like—we—"I don't know." [Laughter] And we're like—and then we continued to laugh about that cuz we're like, "What—" Our—and we have a male coach that we don't like, so we're like, "We can't tell him." [Laughter] Like, "What? Go—go to

the bathroom." We're like, "I don't know how to fix this." So it's more of, like, a—a funny situation than it was, like, embarrassing for her. And I get that maybe in a different environment it woulda been a different outcome, but it was pretty, like, normal. Everyone was just like, "You're really dumb. Go to the bathroom." Like, "You're ridiculous." – 16-year-old 11th grader

Adolescent women frequently described a lack of embarrassment with regard to experiencing incontinence, as long as friends were present. Presence of other peers who were not identified as friends, on the other hand, was seen as something that could make incontinence episodes more embarrassing.

Right, it was just because I was with my friends thought, because of the environment I was in it was, it wasn't a huge deal to me, but if it was in a different situation obviously it wouldn't be the same. – 17-year-old 11th grader

Specific Aim 3: Strategies to Withhold Urine and Stool

Almost all adolescent women in the study described periodically avoiding school bathrooms and thus withholding stool and urine during the school day. Reasons for avoiding bathrooms were varied and described earlier in Aim I, but there were times in which adolescent women withheld stool or urine for long periods of time. Ignoring the urges to void or stool to avoid bathroom use required some effort from adolescent women. The strategies employed by adolescent women to withhold urine and stool were divided into three main categories: physical, mental, and behavioral.

Physical Strategies

Physical strategies that adolescent women used to withhold urine and stool generally revolved around maintaining certain postures and leg movements. Crossing legs was frequently described as a tactic to take the mind off of the urge to void, as well as keeping a tall, rigid spine while sitting in class. Sitting tall while pressing legs together was described by participants as

particularly helpful when trying to reduce the urge to urinate. Another strategy employed involved getting up and walking around, which was reportedly a successful technique to avoid bathroom use during the school day. Physical strategies not only reduced the urge to urinate through creating something else to focus on, but they also provided external support to stop urine from leaking out of the bladder.

I mean I cross my legs most of the time. And that usually stops it so. – 15-year-old 9th grader

Um, usually, like, moving around helps. So, like, walking from class to class—this is what I fi—like, when I’m walking around, I never have to go, but once I’m sitting in class is when I notice it, and then it’s too late to do it at—like, to get up and leave ‘cause you don’t wanna leave during class. And then walking around again, it goes away. So I never find a time ‘cause I always think, oh, that’s gone. So I just never do. – 15-year-old 9th grader

Mental Strategies

Similarly, mental strategies employed to reduce urges to void or stool were found to be particularly helpful in reducing urinary urges. The mental strategies described by participants involved concentrating on other things other than the urge to void, such as class work or activities. Several adolescent women in the study described being able to “push past” the urge to void through blocking thoughts related to bathroom use and ignoring it altogether. Talking and walking with friends was another useful method of keeping the mind off of the urge to void or stool, and served to aid in reducing these sensations. Focusing on external stimuli instead of the urge to void allowed many adolescent women I the study to ignore their biologic urges to use the restroom, and at times even forget the urge to void altogether.

Um, kinda just try to focus on different things, just focus more on like school and friends and stuff, and try not to like think about it and just kinda push past it until I get home. – 16-year-old 11th grader

Behavioral Strategies

Behavioral strategies involve avoiding drinking beverages during the school day. Reducing beverage intake during the morning prior to school and during the school day was equated to fewer urges to urinate. Participants used their knowledge of beverage intake and its effect on voiding to manipulate their urges to void. If they do not feel the urge to void, then they will not have to address using less-than-ideal bathrooms in the school setting.

...there are sometimes where I don't know whether or not I should just book it to class or book it to the bathroom and then to class, because it's hard to judge sometimes. Especially when I'm coming from the first floor to the third floor, which is—I do that a lot of the day. Um, so then I'm really rushed, and I have a heavy backpack and it's just kind of like adds an extra stressor. It kinda prevents me to drink water sometimes. It's like you don't really want to get the feeling that you have to go, because then you're gonna have to go at the wrong time, right? - 17-year-old 11th grader

Although any of the strategies described by participants might be effective in reducing urinary urges and thus result in avoiding bathroom use during the school day, many adolescent women in this study chose to employ multiple strategies at the same time. The combination of strategies differed, but frequently a physical strategy was combined with mentally trying to keep their minds off of the urges to void. If using multiple strategies was unsuccessful in keeping urges to void or stool at bay, then that was an indicator that the participant should use the bathroom or risk having an accident.

Just not think about it as much. Um, cross my legs. [Chuckles] And—I don't know. I mean I guess if you just focus—don't focus on it, it can kind of lose it. And, plus—it's weird. Like, after a while, you just, like, stop kind of having—you kind of forget about it. So, yeah. - 17-year-old 12th grader

I don't know, either bounce my leg up and down, uh, try to focus on my work that I need to do or somethin', but that's really it. If I can't do that, then, I mean, I gotta go right then and there. -15-year-old 10th grader

Summary of Aim 2 and Aim 3

To better understand the bladder health knowledge that adolescent women have, as well as the effect this knowledge has on behaviors, adolescent women were asked to describe any bladder health messages they had received, whether at home, at school, or from a health professional and to identify behaviors they may use as a result of the information.

Many adolescent women had never received any education related to bladder health. They had an overall understanding of the importance of drinking water and staying hydrated throughout the day, but this did not translate to understanding that moderate hydration has an effect on the bladder. The lack of knowledge relates to the previously described lack of thought that many of the adolescent women in this study had toward bladder health and the importance of using the bathroom. The information was also missing from general health classes and was not a regular part of public health messaging in the main stream venues that adolescents might be exposed to generally. The few who had received messages about the importance of not withholding stool or urine were less likely to engage in those behaviors while at school.

The beliefs that adolescent women in this study had about their peers' views on toileting behaviors had an effect on bathroom use. Participants who believed that they were being judged in some manner by peers in the bathroom spoke of rushing through the toileting process. Whether taking too long in the bathroom was an indicator of stooing or they were afraid of seeming inconsiderate or potentially both was unclear. The root of this fear of taking "too long" in a stall was not explained fully by participants, but there was a sense that relaxing in the bathroom during a busy time would incite negative peer judgment. This fear is developmentally appropriate, and not necessarily based on any prior history with bullying or experiencing negative verbal comments.

Whether or not adolescent women had prior knowledge about bladder health, almost all had some strategies they employed to delay voiding when at school. These strategies varied between physical, mental, and behavioral, but they all had an effect on reducing the urge to void and enable them to delay visiting the bathroom. The few adolescent women who had received bladder health messages to not delay voiding may make an effort to not engage in withholding behaviors, but still had periods of time during school where they could not void when they first felt a biologic urge. Understanding the importance of not withholding urine or stool did not take away the systemic barriers to bathroom use such as teacher policies, fear of missing something in class, or fear of being late. No matter the knowledge base retained by these adolescent women, strategies to delay voiding or stooling were used in abundance to navigate the experience of urges and or in response to the social context in which use of the bathroom occurs during the school day.

CHAPTER 6

Application of Findings to the Optimal Bladder Health Model

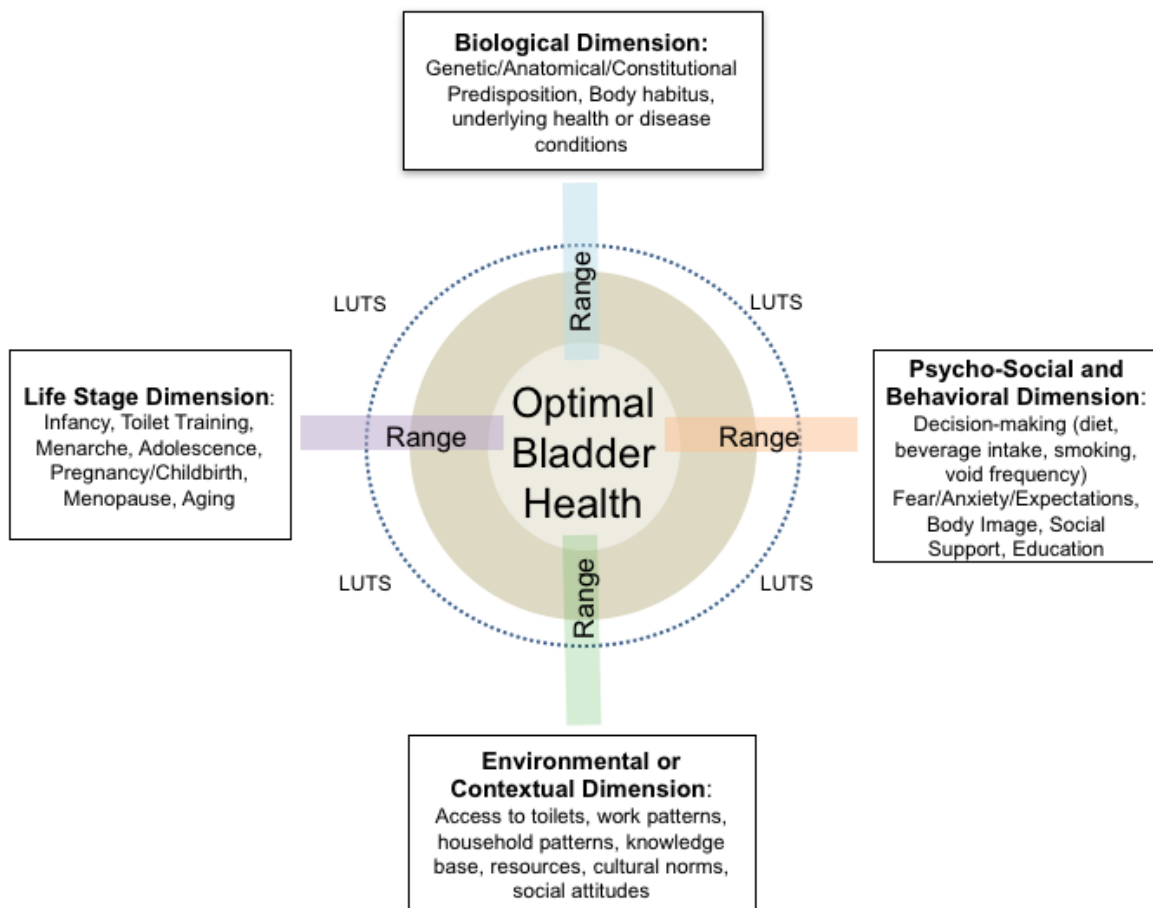
There are few bladder health models to guide research, and those currently available focus on the adult population and do not take into account special considerations that are present during adolescence. Currently, there is a gap in knowledge with regard to what factors might influence adolescent women's decisions to either use or avoid bathrooms at school. Using a grounded theory approach, findings from this study identified several themes that influence school bathroom use for adolescent women. These themes include amount of time to use the bathroom, the bathroom environment itself, amount of privacy, school policies, bathrooms as a safe space, limited knowledge related to bladder health practices, urinary health beliefs and their effect on certain bathroom behaviors, use of strategies to improve bathroom experiences, and use of physical, mental, and behavioral strategies to avoid bathroom use. The purpose of this chapter is to review the Optimal Bladder Health Model (Miller & Low, 2015), and use the findings of this study to adapt the model so that it may be used in guiding work on bladder health in adolescent women.

Review of the Optimal Bladder Health Model

The Optimal Bladder Health Model (Figure 6.1) as previously reviewed in Chapter 3, identified four dimensions that are significant to bladder health: life stage, biological,

psychosocial, and environmental or contextual. Each of these dimensions work together during the lifespan and culminate into either lower urinary tract symptoms or, ideally, optimal bladder health. The influence of these dimensions differs among individuals, and the biologic components that one individual has, combined with behavioral decisions made throughout the lifespan, determine whether or not optimal bladder health is achieved. Although the model encompasses factors that influence bladder health across many life stages, it is not adapted to any life stage specifically other than adulthood.

Figure 6.1 Optimal Bladder Health Model



As noted in Chapter 3, there are major factors that influence bladder health throughout the lifespan. The Optimal Bladder Health Model divides these factors into four dimensions. The Biological dimension includes genetic predispositions to placement in the bladder health range. Weaker bladder muscles or other anatomical anomalies may place a woman a greater risk of lower urinary tract symptoms, as well as any underlying health or disease conditions. This dimension represents factors that are not easily modifiable, although some aspects may be altered through surgery or use of medications.

The Life Stage dimension includes factors that are related to a person's point in the lifespan. These factors represent key moments in a person's life in which bladder health changes may occur, such as toilet training, experiencing menarche, becoming pregnant or experiencing childbirth, menopause, and general aging. The Life Stage dimension does not include adolescence as a potential point in the life span in which important decisions regarding bladder health habits may be made.

The Psychosocial and Behavioral dimension includes factors related to decision-making. Factors of particular interest include diet, beverage intake, smoking status, and voiding frequency. These represent decisions that are made that have been found to influence bladder health. Body image, social support, and education are also included in this dimension.

The final dimension, Environmental and Contextual dimension, includes factors with respect to an individual's access to bathrooms, and what patterns women might have in terms of bathroom use throughout the day. Cultural norms and social norms are also highlighted as factors related to bladder health.

Potential Influential Factors Related to Bladder Health in Adolescent Women

The Optimal Bladder Health Model did not originally include adolescence as an important life stage dimension, and therefore did not incorporate the key developmental factors that influence bathroom use in this population. Key factors from Erik Erikson's psychosocial development theory were applied to the relevant dimensions in the Optimal Bladder Health Model: peer interaction, school bathroom environment, and feelings of safety.

As discussed in Chapter 3, Erik Erikson identified several key psychosocial developmental crises during adolescence, including industry, identity, and intimacy (Erikson, 1968). The successful resolution of these crises influences personality development, as well as trust in others and self-identity. These crises are not resolved in isolation, but rather the process of determining sense of self is heavily influenced by peer involvement and the desire for acceptance within the peer group. This may lead to feelings of conflict, as there may be incongruence between what adolescents have been taught by parents and other trusted adults and doing what they believe will receive peer approval. These feelings of confliction may translate into school bathroom avoidance for adolescent women, whether that be due to their belief that they are being judged for voiding or stooling, or fear of having to leave peer presence and "missing out" on an important peer interaction. Because of its important and strong influence on behavior, peer interaction was identified as an important factor when considering bladder health in adolescent women.

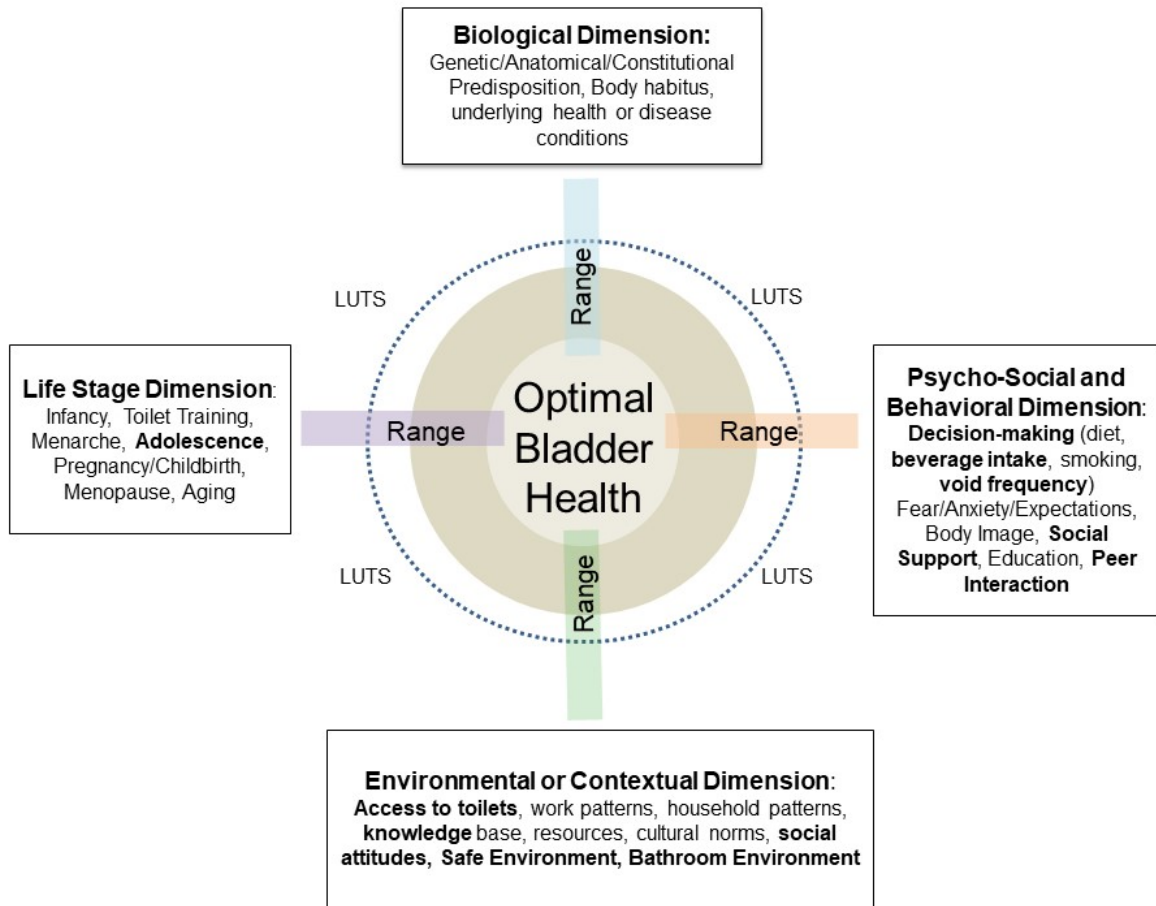
Adolescent developmental theory also states that environment is an important factor to consider with school bathroom use. The potential for negative peer interactions, such as bullying or teasing, are of concern due to the lack of adult supervision in school bathrooms. Studies have found that adolescent students may avoid using the bathrooms at school due to their overall

condition, whether that be under-functioning facilities and/or uncleanliness, as well as fear of negative peer interaction (Norling et al., 2016). Bathroom avoidance due to unpleasant environment may have a large effect on bathroom use during the day, as adolescent women in the US spend an average of 6.6 hours per day at school (NCES, 2017). Thus, a majority of the day might be spent with limited access to bathrooms other than those provided in the school setting. If adolescent women find the restricted environment unappealing, that may affect their willingness to void or stool in response to biologic urge.

Previous knowledge of bladder health practices, such as water intake and avoiding withholding urine or stool were identified as potential factors that may influence school bathroom use. As adolescent women are in school for a large part of the day and are thus exposed to health information through established health curriculum, this knowledge may affect bathroom behaviors. Adolescent women exposed to bladder health information provided by parents or health professionals may have a similar effect.

The proposed theoretical factors are shown in Figure 6.2. In order to identify if these additional theoretical factors were congruent with adolescent women's experiences, data from the one-on-one interviews was applied to the Optimal Bladder Health Model. Both support for the theoretical factors as well as data-supported changes will be described in the following sections of this chapter.

Figure 6.2 Proposed Theoretical Factors Applied to Optimal Bladder Health Model



Application of Results to Optimal Bladder Health Model

Data from this study provided detailed insight into the factors that affect adolescent women’s decisions to either use or avoid bathrooms at school. With regard to the psycho-social and behavioral dimension, decision-making, peer interaction, and social support were all identified as influential factors. Influential factors within the environmental and contextual dimension were access to toilets, privacy, safe space, social attitudes, and bathroom environment (Table 6.1).

Table 6.1 Adapted OBH Model dimensions and identified influential factors

Dimension	Potential Influential Factors Identified in Prior Chapters
Psychosocial and Behavioral	Decision-making (beverage intake, void frequency) and prior education, peer interaction, and social support
Environmental and Contextual	Access to toilets (school policies, closed or locked bathrooms, lack of time to use the bathroom), privacy, safety (bullying), social attitudes, and bathroom environment

Decision-making and Education

Elements of decision-making were identified as important factors for adolescent women with regard to bladder health behaviors. Adolescent women in this study described themselves as not only capable of making decisions related to bathroom behaviors, but that they intentionally sought autonomy in determining bathroom use or beverage intake, and appreciated when autonomy was supported by teacher or school policy. Decisions to enact behaviors related to beverage intake and voiding frequency were influenced by their understanding of information they had been given previously about optimal bladder health behaviors. Although few adolescent women reported receiving bladder health messages from any source, nor considering bladder health as something important, those who did receive messages related to bladder health reported better bladder health behaviors. These behaviors included increased fluid consumption during the school day and not withholding stool or urine due to their negative effect on the lower urinary tract.

My friends are really obsessed with the color of their pee, so they talk about it like all the time. As soon as they go to the bathroom then they'll all like text each other and be like...if it's like a light-yellow like "oh, you're hydrating, like so good" so um, only that's the only thing we really talk about in the bathrooms. That's what we've been told by our like health teachers that like if you drink more water then it'll be less yellow and if you don't drink water then it would be a yellowy orange. – 15-year-old 10th grader

Decision-making and education were supported as factors in the Psychosocial and Behavioral dimension that are important considerations to optimal bladder health in adolescent women. Although the range of adolescent women's experiences varied greatly, the overarching ideas of increasing fluid intake and not withholding urine or stool for "too long" were consistently reported. The decisions that adolescent women ultimately made with regard to bathroom use and fluid intake affected their bladder health with immediate consequences, such as bladder discomfort when withholding urine, and may potentially have lower urinary tract consequences later in the lifespan as well.

Peer Interaction and Social Support

Adolescent women in this study did identify peer interaction as an important influence on bladder health behaviors, and it is supported as a factor in the psycho-social and behavioral dimension. Whether avoiding the bathroom because of fear of judgement, or avoiding stooling during the school day because of fear of doing something noticeable by peers like make noise or smells, the bathroom process was heavily influenced by the fear of having stigma attributed to them. The participants in this study identified peer interaction as a major contributing factor to avoiding or delaying bathroom use.

Receiving social support to use the bathroom was an important factor that influenced bathroom use described by the participants. Participants reported at times preferring to use the bathroom when in the company of friends, which was a strategy to improve the bathroom experience. Social support not only made the adolescent women feel safe when using the bathrooms at school, but a friend could potentially hold a broken stall door that would otherwise hinder privacy during bathroom use.

I guess it makes me more comfortable. You know, if I'm out of toilet paper I know that they can get me some, or like if I need them to hold the door closed, they can do that. Yeah, have someone to talk to along the way. Yeah, I guess it makes me more comfortable. – 18-year-old 12th grader

Using strategies such as these to improve the bathroom experience meant that adolescent women were less likely to avoid bathrooms while at school, which had a positive effect on bladder health practices. On the other hand, adolescent women who did not experience social support for bathroom use described feeling judged or stigmatized and were likely to rush when using the bathroom at school, and thus engaged in negative bladder health practices.

The importance of peer interaction and social support in bladder health as described by the participants in this study support their inclusion in the Psychosocial and Behavioral Dimension of the Optimal Bladder Health Model. Peer interaction and social support at times supported bathroom use while in school, but for some participants, fear of being stigmatized by peers increased their desire to avoid or delay voiding and stooling at school.

Access to Toilets

Access to toilets was identified as an important additional factor when considering bladder health in adolescent women, and was an important factor with regard to the Environmental and Contextual dimension of the Optimal Bladder Health Model. School policies, lack of time to use the bathrooms, and closed or locked bathrooms were identified as limitations to toilet accessibility in the school setting. When these limitations were in place, adolescent women had to strategize their next course of action, which was frequently to delay voiding until fewer limitations were in place, or avoid using the bathroom while in the school environment altogether.

Privacy

Privacy was a major theme that influenced school bathroom use and thus was worthy of inclusion in the Environmental or Contextual dimension of the Optimal Bladder Health Model. Adolescent women were less likely to use bathrooms that were busy and afforded less privacy, particularly during their menstrual cycle or if they needed to stool. Instead, privacy was sought after, and adolescent women reported being cognizant of times when more privacy would be afforded and thus waiting to use the bathroom until one of those times. Bathroom use during class time, single stall bathrooms, and less frequently-used bathrooms were strategies that were used to increase the likelihood of privacy.

Safe Environment

Safe environment was identified as a major factor that influenced bladder health behaviors in adolescent women, and thus is included in the Environmental and Contextual dimension of the Optimal Bladder Health Model. In this study, adolescent women described overall feeling safe in the bathrooms at school, which increased their willingness to use the bathrooms during the school day. Although there were a couple of instances of participants hearing about verbal abuse in the bathrooms with peers, personal experiences of bullying in the bathrooms were not reported. The premise of safe environment as a factor was related to bullying as a potential issue for many adolescent women, but adolescent women in this study reported both very few instances of bullying and no fear in relation to harm in school bathrooms from peers. Instead, bathrooms at school were seen as safe spaces in which students were able to take a break from peers and classroom anxieties. When adolescent women in this study felt they might need to cry during the school, the bathroom was a place to go in which they knew they could have a moment to console themselves and regain composure.

I know people go in there and cry, but it's never because they're getting bullied. It just some people just go in there to cry. – 17-year-old 11th grader

It's almost like that's the only place they can necessarily go to let it out, kinda thing, maybe cuz it's- it is a place where you can be by yourself for a second or with a friend. You don't wanna be crying in class. – 17-year-old 11th grader

The feelings of safety related to school bathrooms allowed adolescent women to use the bathrooms in a manner that went beyond biological use for voiding or stooling, by also using it as a place of refuge from the classroom or other peers. The data thus supports the inclusion of safe environment in the Optimal Bladder Health Model's Environmental or Contextual dimension.

Social Attitudes

Concern about social attitudes was a major theme that adolescent women reported affecting their bladder health behaviors, and was thus identified as consistent with the Environmental or Contextual dimension of the Optimal Bladder Health Model. Adolescent women in this study described awareness of social attitudes about bathroom use, and felt as though bathroom use in general was seen as a negative, but necessary, behavior. This awareness of social attitudes made participants feel hesitant to draw attention to themselves in order to seek permission for bathroom use, such as standing up in front of the class to receive a pass from the teacher. This fear of being stigmatized for having bathroom use attributed to them heavily influenced their desire to withhold urine and stool during the school day.

But also, mostly because I don't wanna like call attention to the fact that I'm using the bathroom. You know, I don't want people to be like oh, like she's gone for a long time, you know what I mean? – 18-year-old 12th grader

Interviewee: I always feel like someone's waiting for me to get back so they could go, so then that person is specifically, like, keeping track of how long, if—so I don't wanna keep anyone waiting, and I don't want them to think that I'm just, like, in there for forever. So I definitely do feel rushed.

Interviewer: What do you think it is about being in there for a long time that you wanna avoid?

Interviewee: I think it's just people, like, might question what you're doing or, like, what's wrong or just why it's taking so long. So I think it's—it's mostly, like, other people being, like, judgmental. – 15-year-old 9th grader

Social attitudes made it difficult to make sounds or noise that are typically made during the process of voiding or stooling, as participants perceived others as stigmatizing them for disturbing the environment. Perceived social attitudes affected both the use of bathrooms at school as well as behaviors during the voiding and stooling process, and thus is a major factor to consider with regard to the environmental dimension of adolescent women's bathroom use.

Bathroom Environment

Consistent with the Environmental and Contextual dimension, the major theme of bathroom environment was identified as affecting adolescent women's attitudes and willingness to spend time in the bathrooms at school. Cleanliness of the bathroom environment and working facilities (toilets and stalls) were identified by participants as integral to their willingness to use the bathroom. Participants described bathroom avoidance due to dirty or unkempt bathroom environments at school, and preferred to withhold urine or stool until they were able to use a cleaner bathroom, or until an opportunity arose to leave the school campus altogether. Similarly, bathroom environments in which the facilities were not in working order, such as having broken toilets, sinks, and stall doors caused adolescent women to avoid using that particular bathroom.

The major influence that bathroom environment had on decision-making related to bladder health practices supports its inclusion in the Optimal Bladder Health Model.

Revised Model: Adapted Optimal Bladder Health Model for Adolescent Women

Based on the findings from this study, an adapted version of the Optimal Bladder Health Model was created to highlight the specific bladder health considerations of adolescent women. The “Adapted Optimal Bladder Health Model for Adolescent Women” (Adapted OBH Model) moves beyond the adult-centric view of the Optimal Bladder Health Model and provides the perspective of the adolescent woman (Figure 6.3). The factors that are included in the entirety of the Optimal Bladder Health Model may still be applicable to women during their adolescence, and are thus included in the final model in addition to the themes identified in the results of this study. The aim was not to eliminate factors related to optimal bladder health, but rather inform the model with the findings that emerged from the feelings, experiences, and behaviors of adolescent women themselves.

The factors explored in this study provides information and context to the unique bladder health issues that adolescent women face, with particular regard to the school setting. This model allows for deeper understanding of adolescent considerations, as it is dually informed by the state of the science and then advanced by the application of the current study findings to the model.

The Adapted OBH Model maintains the same theoretical underpinnings of the Optimal Bladder Health Model by Miller and Low (2015). The dimensions of the adapted model have ranges, due to the flexibility individuals have with regard to environment, behaviors, and biology. The ranges in these dimensions have a cumulative effect, and may “add up” to achieving optimal bladder health or, on the other end of the spectrum, lower urinary tract symptoms.

The adaptations to the original model include the important factors that are relevant to adolescent women within the environmental and psychosocial/behavioral dimensions. As described throughout this chapter, decision-making, peer interaction and social support were explored using a qualitative approach in a population of adolescent women. These factors were all identified as important influential factors to bladder health, and thus were either added to the final model, or in the case of decision-making, remained from the original Optimal Bladder Health Model.

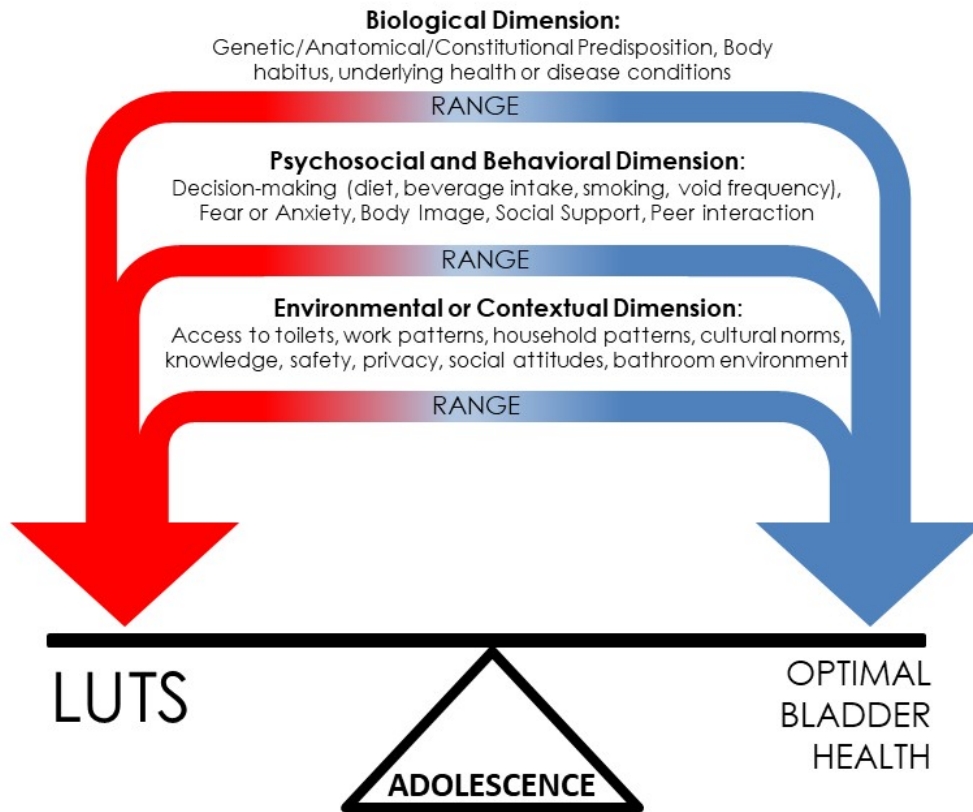
Bathroom environment was an altogether new factor added to the environment or contextual dimension, and was found to be particularly important to adolescent women when making bladder health decisions. As described previously, a bathroom deemed dirty, not well-stocked, and with broken fixtures caused a desire to avoid that particular environment. Conversely, bathrooms that were identified as nice or clean and well-stocked were less likely to be avoided due to environment.

Beyond the addition of influential factors related to optimal bladder health, Accumulative Risk Theory was applied to the model (Ben-Shlomo & Kuh, 2002). The Accumulative Risk Theory is an important component of bladder health in adolescent women, as they are in the early stages of the lifespan. The risk of pelvic floor disorder development, such as UI or UTI, may be lower in adolescents than in an older population, but adolescent women are creating habits that they will carry into the future. It is imperative that these behaviors and habit formation that begin in adolescence are identified for their potential to influence bladder health later in life. Accumulation of Risk categorizes factors into those that may act independently, those that act in conjunction with other factors, those that accumulate, or those that act as the final factor, or “trigger,” that elicits an effect (Ben-Shlomo & Kuh, 2002). Applying the

Accumulative Risk Theory to the Optimal Bladder Health Model provides the perspective that the habits formed during adolescence may cluster with other either predisposing factors or may add into a growing list of risk factors that may ultimately result in a woman developing a pelvic floor disorder at any point later in the lifespan.

An additional component of the Adapted OBH Model is adolescence as the fulcrum, in which decisions and behaviors related to bladder health may make the difference between optimal bladder health or lower urinary tract symptoms. Adolescence as the fulcrum supports that point in the lifespan as critical to the development of various habits that continued over time may influence bladder health later in life. It is imperative that adolescence is clearly identified as an important stage in which interventions may decrease the risk of lower urinary tract symptoms later in life. The Adapted OBH Model makes that distinction through its placement of adolescence as a pivotal point in the life span.

Figure 6.3 Adapted Optimal Bladder Health Model for Adolescent Women



Summary of Findings

The Adapted Optimal Bladder Health Model for Adolescent Women provides a clearer view of the influential factors important to bladder health in adolescent women. The major themes of decision-making, peer interaction, and social support were found to influence school bathroom use and thus deserve inclusion in the psychosocial and behavioral dimension. Access to toilets, privacy, safe space, social attitudes, and bathroom environment were identified as factors that influence school bathroom use of adolescent women, and thus are included in the

environmental and contextual dimension. These identified major factors provide a deeper understanding of adolescent bladder health.

The Adapted Optimal Bladder Health Model for Adolescent Women is a useful model that provides an opportunity to explore the factors that influence bladder health in adolescent women and gain understanding of the concerns adolescent women have with regard to bathroom use in the school setting. The Optimal Bladder Health Model failed to include the psychosocial element of peer interaction, as well as the general condition of the bathroom environment. The importance of the bathroom environment, as well as the psycho-social considerations, are integrated into the Adapted Optimal Bladder Health model for Adolescent Women, thus creating a comprehensive model supported by the feelings and experiences of adolescent women themselves.

CHAPTER 7

Discussion

The purpose of this study was to explore adolescent women's high school bathroom use to better understand early lifespan behaviors that may lead to future development of urinary incontinence. Many factors that increase risk for urinary incontinence in women, including childbirth, beverage intake, and withholding urine and stool have been previously identified in the scientific literature. The high prevalence of urinary incontinence in adult women highlights the need for better understanding of bladder health behaviors throughout the lifespan. Prior to this study, little was known about adolescent women's bladder health behaviors, particularly with regard to bathroom use during the school day as a potential precursor to future bladder health behaviors. The Optimal Bladder Health Model, which uses a lifespan perspective and includes psychosocial developmental considerations as well as environmental constraints related to attending school, was used to guide this study. The aim of this study was to explore adolescent women's high school bathroom use to better understand early lifespan behaviors that may lead to future development of urinary incontinence.

To better understand the feelings, experiences, and behaviors related to high school bathroom use, adolescent women were asked open-ended questions with the intent of exploring any bathroom-related topics they brought up. The question guide was not treated rigidly, so that the conversation was able to flow in a manner determined by each individual participant.

The open-ended structure of the interview guide used in the participant interviews was designed to increase the ability for new ideas to be conveyed to the researcher. Exploration of these ideas was the main focus of the interviews, so that the feelings, experiences, and behaviors of adolescent women could reach additional depth. This was a critical component to the qualitative interview process, as it allowed for variation in topics that would not be possible with a more rigid interview guide.

In order to delve deeply into their experiences, a homogenous sample of adolescent women was purposively recruited. The ages of the participants were consistent with those of high school attendance, and limited to only those students who actually attend high school. A homogenous population allowed for exploration of varied experiences within a similar context.

Adolescent women in this study identified major themes related to their feelings, experiences, and decisions with regard to school bathroom use or avoidance. These themes expose the many considerations that adolescent women navigate when using the bathroom at school. The process of using the bathroom was fraught with potential challenge, such as lack of privacy, dirty bathroom environments, not enough time to use the bathroom, fear of missing something in class while using the bathroom, and keeping in mind all of the individual teacher policies for bathroom use. Stigma associated with use of the bathroom and the potential for negative peer perceptions of specific behaviors was also voiced. Navigating the school system required adolescent women to stay cognizant of timing, location and changing teacher policy, and environmental considerations at all times. Participants described navigating this process generally in a successful manner when necessary, as many of the participants stated they used school bathrooms at least once a week. However, school bathroom use occurring periodically should not be seen as an indicator that the process was easy or convenient, but only that they

were able to navigate through the many factors, both using facilitators and also moving past barriers that impede bathroom use in the school setting.

Role of Decision-Making and Prior Education

Navigation of this complex system required adolescent women to active engaged in a process of decision-making and prioritization. The intersection of this process of decision making was a salient factor that influenced bathroom use in adolescent women. Themes related to decision-making that emerged in this study included managing beverage intake and frequency of voiding. As a general practice, participants described using the bathrooms at school as infrequently as possible, although for many that still translated to daily bathroom use due to decisions related to beverage intake in addition to responding to the biological aspects of menstruation.

Adolescent women in this study described having access to water throughout the school day and thus drinking more, including while in class. Water-filling stations for water bottles were in several of the schools and participants reported using them to fill the water bottles they carried with them each day. Water-filling stations were reportedly available at a wide range of schools in this geographic region. The emphasis on water availability in high schools can be linked to national nutrition policy in the United States that requires schools provide potable water to students upon request throughout the school day (United States Department of Agriculture, 2017). However, adolescent women also reported having limitations on their decision-making capabilities related to using the bathroom, secondary to policies and other barriers that were discussed previously, e.g. limited time, lack of privacy, and fear of peer disapproval. This finding is consistent with findings from a recent national survey that identified 81% of 4,188 teachers in

the United States allowed free access to water but placed restrictions on bathroom use (Ko, Chuang, Champeau, Allen, and Copp, 2016). Thus, the linkage between promoting easy access to water to encourage fluid intake and resulting bathroom use for voiding was not well-articulated, leading adolescent women in this study to navigate these as two distinct, independent events when in fact they were not. Adolescent women were then left to navigate potentially challenging bathroom use policies to void.

Adolescent women who received bladder health messages related to drinking more water and not withholding urine and stool stated they attempted to follow those directions. Although not provided in a uniform manner, those who had received education related to bladder health messages, such as drinking adequately throughout the day and not engaging in withholding behaviors, appeared to have a positive effect on their overall bladder health behaviors. This was shown through a frequently heard commitment to “drink more” throughout the school day. This was not unexpected, as previous studies have found that education has increased certain health behaviors and knowledge in adolescent women (Hebert-Beirne et al., 2017). Although no studies were found that implemented a bladder health-specific curriculum, a small study of 168 adolescent women found a statistically significant increase in knowledge of pelvic health information in women who had received a pelvic health curriculum when compared with a control group who did not (Hebert-Beirne et al., 2017). The increase in knowledge included anatomic structures and that unexpected urine loss was abnormal.

The Role of Stigma in Navigating the System

Fear of stigma had a large role in adolescent women’s bathroom behaviors while at school. Peer interaction was an integral factor to determining whether or not adolescent women

delayed voiding or avoided school bathrooms altogether. Adolescent women in this study described fearing being “judged” in some way for the noises or smells emitted during bathroom use, or even due to being gone “too long.” These fears were not unwarranted, as prior research has found that stigma has been associated with excretion in certain disease states, such as inflammatory bowel disease and irritable bowel syndrome (Taft, Keefer, Artz, Bratten, & Jones, 2011). Humans are biologically hardwired to avoid stool, which evolved as a precautionary measure to reduce illness (Curtis & Biran, 2001). Unfortunately, the stigma against excretion does not stop with touching urine or stool, but has evolved to consider behaviors, sounds, and smells associated with the elimination process stigmatizing (Nussbaum, 2004).

Fear of stigma related to bathroom use was an influencing factor in that it increased the desire for privacy. Many participants stated they would do everything they could to avoid stooling while at school when possible. Similarly, there was a desire to avoid being overheard with feminine hygiene products, as adolescent women did not want their peers to know they were menstruating. Adolescent women strategized about how to increase the likelihood that a private environment would be present in the school bathroom. One strategy of reducing the feelings of being stigmatized for bathroom use was to use a single-stall bathroom. Preferred by many participants, single-stall bathrooms were viewed as providing maximum privacy possible in a school setting.

This desire for single-stall bathroom use while in school has similar elements to the concurrent national conversation surrounding transgender students and bathroom use. A study aimed at understanding transgender students’ feelings toward school bathrooms by Porta and colleagues (2017) found that transgender students prefer single-stall, gender-neutral bathrooms to gender binary multi-stall bathrooms. These single-stall bathrooms were preferred to be

unspecific to gender, as that in itself can be stigmatizing for a transgender student. Instead, the LGBTQ adolescents desired single-stall, private bathrooms that any student in the school could use, no matter gender. This sentiment is similar to the expressed desire for single-stall bathrooms by the adolescent women in this study, due to privacy concerns.

The Role of Policy in Navigating the System

Adolescent women in this study identified classroom or teacher policies as significant barriers to bathroom use while in school. There were two types of policies described: school-wide and teacher-specific. Both types of policies were heavily aimed at keeping students in the classroom, versus allowing them to respond to biological cues to void or stool and access the bathroom accordingly. Schoolwide policies included not being able to use the bathroom for a certain amount of time after the bell rings to begin class and before the next bell rings to dismiss class. Teacher policies included specific rules for asking for a bathroom pass, different types of bathroom passes (some with the intent to embarrass the holder with a saying or an unnecessarily large size), and incentives to encourage students to not use the bathroom during class such as offering extra credit rewards for not using the bathroom. Although adolescent women stated that there was “no penalty” for using a bathroom pass in a class with an incentive policy, the loss of extra credit points is, in fact, a penalty.

Despite limited literature that assesses teacher or student-reported policies with regard to bathroom use, a recent study assessed teacher perspectives on bathroom use in elementary school students in the United States. This study found that 88% of 4,188 elementary school teachers encouraged their students to ignore biological urges to void or stool and instead engage in withholding behaviors (Ko et al., 2016). The results of this cross-sectional survey found only

24% of surveyed teachers had optimal bladder health policies, in which students were allowed to follow biologic urges to void or stool without consequences from the teacher. These findings are similar to those in this study, in which adolescent women described policy barriers to bathroom use without many opportunities to have autonomy in accessing the bathroom.

The findings from this study add important student-based perspectives on policies and their effect on bathroom use while in school with potentially longer-term implications for negative bladder health changes. Adolescent women in this study expressed difficulty in navigating the many sets of policies in place, as each teacher may have an entirely different approach. The participants in this study were conscious of teachers who allowed more autonomy with bathroom use, and expressed their frustration that more teachers did not adopt similar policies. In summary, access and autonomy in adolescent's ability to use the bathroom was a critical area of opportunity for future exploration that balances the biological needs of the person with the challenges of classroom management with adolescents.

The Role of Clean Environment in Navigating the System

Adolescent women voiced their preferences for clean bathrooms that were well-attended to by custodial staff. Adolescent women in this study reported the bathrooms at their schools frequently have paper towel on the floor, paper towel or other debris in the sinks, and toilets filled with toilet paper, urine, and/or stool. This environment made adolescent women dislike using the bathrooms, as spending time in the dirty environment made them feel unclean. Participants understood the importance of custodial services to maintain the cleanliness of the bathroom, and they were very aware of whether or not custodial staff were present in the schools during the school day. Clean bathrooms were important factors that influenced adolescent

women's desire to use the bathroom and willingness to engage in withholding behaviors if the only option available is too "gross."

These findings supported prior researchers whose studies found that dirty school bathroom environments can be a deterrent to bathroom use in adolescents. Norling and colleagues (2016) found that adolescent boys and girls did not like dirty bathrooms and stated this was a reason to avoid using the bathrooms at school. Building upon these previous findings, data from this study provided descriptions of adolescent women's desired bathroom traits. These included adequate lighting, absence of paper towels and toilet paper on the floor, clean sinks, working toilets and stall doors, and unpeeling paint. Large mirrors that allowed for adolescent women to fix hair and makeup without blocking the sinks were also desirable.

The Importance of School Bathrooms for Mental Health

An unexpected finding for this analysis was that bullying was not identified as an issue for most adolescent women participants. Although national surveys have found high rates of bullying in schools (Wang et al., 2009), participants in this study described bathrooms as a space they could go to for a mental health break, a place to receive support from peers, or a place to have a private moment to cry. Navigating the system in this context moves beyond attempting to manage biological urges to void or stool, to using the school bathroom as a method of navigating the stressors present in the school environment. Classroom pressures and difficulties with peers were reasons why an adolescent woman might feel upset, and instead of staying in class to cry, they preferred to escape to the bathroom where they could have a moment of quiet.

The finding of using the bathroom as a safe space is an extension of prior research focused on bullying as a school experience stressor. The connection between psychosocial

school environment and bullying behaviors have been shown to be related, and that bullying behaviors are a negative predictor for psychosocial school environment in middle schools in the United States (Meyer-Adams & Conner, 2008). This study, however, provides new information that adolescent women in high schools also use bathrooms as a tool to support mental health.

The concept of school bathrooms as a supportive environment was further explained by adolescent women in this study who described enjoying and being uplifted by positive messages in the bathroom. This was an unexpected finding, as overall the bathroom environments were described as being undesirable. However, those students who had positive messages, either written directly on the walls, through a sticker on a mirror, or on a sticky note somewhere in the bathroom, found them uplifting and a positive aspect of an otherwise uninspiring environment.

Navigating the System: Beyond Serving Biologic Need

The salient themes identified in this study highlighted both the importance of school bathrooms, as well as the difficulties in using them for bodily functions. For adolescent women in this study, navigating the system was not limited to the process of accessing a toilet in conjunction with biologic need. Navigating the system was described as a complicated process, in which decisions related to stooling, voiding urine, and caring for menstrual needs were influenced by environmental and psychosocial factors. After a biologic urge was identified, adolescent women had to determine if it was an appropriate time to void; if the policies present during that class were tolerant of bathroom use; if the bathrooms were empty enough to grant a modicum of privacy for bathroom use; if the closest bathroom was historically clean enough or if there was time to reach a “better,” or cleaner, bathroom; and what specific bathroom activities

needed to occur. The complexities in accessing school bathrooms served to inhibit bathroom use during the school day.

The difficulties adolescent women experienced with regard to bathroom use highlight the need for emphasis on reducing barriers to bathroom use to aid in forming healthy bladder habits. The experiences shared through the stories they told identified intersections of biologic need and barriers that they face while in the school environment. The difficulty they described in accessing school bathrooms was so great that any consideration given to policies related to bathrooms in high schools must support a variety of biologic needs, as well as appreciate the potential for shame and stigma associated with typical bathroom behaviors. If these intersections are not considered, any policies placed related to bathroom use in high schools may well add additional burden to the stigma and shame already present and add further challenges to the navigation of the system.

More education related to bathroom use aimed at key stakeholders in the high school environment, such as teachers, administrators, and students themselves, may aid in reducing shame and stigma. In addition to this, policies aimed at reducing the publicity of bathroom use may be particularly effective. A reduction in policies related to public declaration of intent, such as no longer requiring students to raise a hand to request permission to use the bathroom, may serve to reduce fear of stigma from peers.

Implications and Future Research

For each of these overarching themes that are necessary to address to successfully navigate the system, there are opportunities to reduce barriers for adolescent women's use of the bathroom to support bladder health and development of healthy habits to prevent LUTS. There is

evidence provided in this study that adolescent women's decision making regarding bathroom use while at school could improve if more education related to knowledge about bladder health was provided. There are many deficits in knowledge related to healthy bladder habits, due to a prior focus on bladder health as an absence of disease. However, prior studies have identified an average of about 5-6 voids a day as a normal amount, or about every three to four hours (Lukacz et al., 2009). Although the majority of research regarding bladder health has been done in adults, there remains applicability to adolescent women as adult bladder size is reached by age 13 years (Kaefer et al., 1997). Having an idea of the frequency of normal voiding patterns in adolescent women underscores the importance of the recommendation to use the bathroom at least once during the school day, if not more often. Prior investigators have noted that withholding urine and stool has been linked to increased risk of urinary tract infection and other urinary symptoms (Rudaitis et al., 2009). Although long term consequences of withholding are not known due to lack of longitudinal data related to bladder health, there is evidence to suggest that behaviors enacted throughout the lifespan, including adolescence, may have a negative effect on bladder health later in life. Consistent with the model used for this investigation, there is also the cumulative effects across the lifespan that may result in disease or specifically LUTS. Thus, engaging in risk behaviors in early adolescence by resisting the need to navigate the school system to gain access to the bathroom and instead engaging in bathroom avoidance or delay may have a more significant effect than other behaviors used intermittently or initiated later in life.

The role of education about bladder health is an opportunity to focus prevention efforts. Whether provided in the health curriculum already present in the school or through flyers placed on the back of stall doors, there are abundant opportunities to educate adolescent women about optimal bladder health practices such as the importance of voiding with biologic urge. In

addition to focusing on the school environment to provide education, nurses and other healthcare providers should prioritize conversations with adolescent women related to bladder health during well-checks.

Addressing bathroom use policy at schoolwide, teachers-specific, statewide, or national level may be immensely helpful to reducing barriers to bathroom use while at school. The national conversation about increased water intake while at school goes hand-in-hand with addressing bathroom policy. Adolescent women should be allowed autonomy to use the bathroom whenever the biologic urge occurs, with minimal fanfare to obtain a bathroom pass, and without any penalty such as the loss of extra credit points. Adolescent women in this study described having each teacher describe his or her policy for bathroom use at the beginning of each semester. This represents a lot of conversation related to bathroom use, but is currently focused on the policies that act as barriers. These conversations may serve as another key opportunity for optimal bladder health education for adolescent women.

To reduce fear of stigma that is a barrier to school bathroom use, increased privacy through providing single stall bathrooms available for use for all students should be prioritized in high schools. Preferable bathrooms as described by the adolescent women in this study involve single stall bathrooms with a door directly off of a hallway, with a toilet, sink, and lockable main door. The lockable door was seen as particularly desirable, as it reduced the fear that at any moment a peer might walk in and find judgement. Access to many single-stall bathrooms throughout the building, instead of strategically placed larger bathrooms, may also aid in reducing the timing challenges that many women face when attempting to use the bathroom during passing time. More conveniently located bathrooms that are single-stall, thus affording

maximum privacy in a public setting, would serve to reduce several large barriers to bathroom use that adolescent women described facing while at school.

Emphasis on improving bathroom environments in high school should be considered. School districts and individual schools, when considering building and maintaining high schools, should prioritize environmental considerations related to bladder health. Bathroom environments at schools should be kept clean, stocked with supplies, and with working appliances. These were listed as major contributors to adolescent women's decisions to avoid bathrooms during the school day. In addition to general upkeep, adolescent women described finding positive messages from peers as uplifting and enjoyable. Although requiring management to ensure that messages are positive and not offensive, allowing adolescent women to leave positive messages in the bathroom may serve as a simple way to provide support for each other in an anonymous and unassuming manner.

Although important in terms of high school buildings, considerations of number, size, and placement of bathrooms in schools do not adequately support bathroom use for adolescent women. In addition to the physical aspects of high school bathrooms, consideration needs to be given to the difficulties that adolescent women face when navigating bathroom use in terms of managing shame and fear of stigma related to bathroom activities. Many adolescent women described an increase in bathroom use in conjunction with their menstrual cycles, but also desired more privacy during the process of caring for their menstrual needs. School policies need to address this complication. Ensuring that feminine hygiene products are available in school bathrooms, either in mechanical dispensers or another method of placement, would aid in decreasing an adolescent woman having to figure out how to hide a product from peers. National policies regarding free access to school bathrooms would aid in addressing this complication as

well, in that adolescent women would be able to use the bathroom as needed without having to navigate individual teacher policies with trepidation of being told to wait until a different time.

In addition to the many areas identified as requiring change to better support school bathroom use, the Adapted Optimal Bladder Health Model for Adolescent Women was developed in part through the results of this study. The Adapted OBH Model serves to improve future research in adolescent women, as adolescence is a critical time in the lifespan in which bladder health decisions are made that could potentially be carried throughout the rest of a person's life. Adolescence is also a time in which women are particularly vulnerable to seeking peer approval and are forced to navigate the many barriers to bladder health placed on them during the school day. The Adapted OBH Model takes into account these barriers, including developmental, societal, and environmental in nature, and highlights the intersecting factors that require consideration when studying bladder health in this population. None of the factors included in the Adapted OBH Model occurs in seclusion, and the model incorporates that idea. Future research should assess the factors present in the model, both originally and provided by this study, and their relevance in adolescent women with varied backgrounds in order to confirm or refute their congruency in other populations.

Strengths and Limitations

The qualitative approach used in this study is a major strength, as there is little research available regarding adolescent women and bladder health. A qualitative approach moves beyond the presumed understandings of bladder health and this population, which may or may not be relevant, and allows for information to flow directly from the voices of adolescent women. The use of adolescent women's voices to share the barriers and facilitators to bathroom use while in

school, as well as other issues related to bladder health, allowed for greater understanding of the issues faced in this population.

Another strength of this study was the successful recruitment of a demographically-diverse sample from a variety of schools in one geographic area. The sample was able to speak to the adolescent woman's perspective while acknowledging their environmental contexts. This was a critical component of understanding bladder health behaviors in adolescent women, and recruiting thirty adolescent women from a variety of backgrounds provided a range of experiences while simultaneously reaching great depth in topics. The topics remained related to bladder health, but the multitude of experiences, beliefs, and behaviors described by the diverse sample adds significant knowledge to the current understandings of bladder health behaviors in this population.

This study focused on the early adoption of behaviors that may lead to longer term challenges with regard to lower urinary tract symptoms. There is relatively little known about adolescent women's behaviors due to the paucity of research in adolescent women and bladder health. This study aimed to identify factors that influence bathroom behaviors and highlight the unique challenges that are faced in the high school environment. Evidence was also provided that the normalization of urinary incontinence has already begun in this age group, as almost everyone in the study identified either experiencing it themselves or knowing someone who has. Although the focus here was not to clinically diagnose urinary incontinence in this population, this finding indicates that the belief that urinary incontinence is something normal begins early in the lifespan and thus underscores the importance of discussing optimal bladder health to younger populations.

Limitations for this study include a lack of heterogeneity in participants, which limits its generalizability. Homogeneity in participants allows for reaching depth in experiences within a certain population, which aids in illuminating critical issues that are shared by the participants in that group. Without homogeneity, issues that are a considerable problem for a group of participants may be difficult to parse out with the multitude of experiences, contexts, and environments. Because of this, it was determined that for the purposes of this study, only adolescent women between the ages of 14-18 years, who attend high school, speak English, and are able to meet in-person for an interview would be included.

Another limitation is that adolescent women in this sample may have had higher social support and therefore experienced less bullying. In addition to this, the sample had an overall fairly high socioeconomic status. Although there was a wide range in school demographics, the average socioeconomic status across schools was fairly high. Further research is needed from adolescent women from a variety of backgrounds and varied school demographics to fully elicit the challenges that adolescent women face with regard to performing optimal bladder health practices while in school.

Conclusion

The aim of this study was to use a qualitative approach to explore adolescent women's high school bathroom use to better understand early lifespan behaviors that may lead to future development of urinary incontinence. Very little research has focused on this topic, although the importance of understanding early lifespan behaviors and their effects have recently received recognition.

This study identified the many factors that adolescent women must navigate in order to use the school bathrooms in response to their biological urges to void or stool. Structural barriers were particularly difficult to navigate, as they represented addressing several layers of barriers including individual teachers' policies and school policies. These policies aimed at placing pressure, both direct and indirect, on adolescent women staying in the classroom and ignoring their biological imperative to void. In addition to this, environmental and psychosocial barriers to bathroom use were identified, as well the emerging concept that bathrooms in schools serve a necessary duty as a safe space in which to receive support or take a break from the classroom environment and peers within it.

Although some of these barriers relate to psychosocial developmental stage, which are appropriate for adolescence, opportunities to reduce barriers were presented. These include addressing the structural barriers that teachers and schools place to keep students in their classrooms, providing bladder health education to adolescent women, and improving bathroom environments. Adolescent women provided meaningful information that should be considered when designing future interventions aimed at preventing urinary incontinence later in the lifespan.

APPENDICES

APPENDIX A

Interview Guide

Thank you so much for agreeing to chat with me today. I will be asking about several things about schools and bathrooms. These things include actually getting to the bathroom while at school, any rules there may be about using the bathrooms at school, and then your more personal feelings and physical experiences that you might have had while using the bathroom at school. I'm interested in knowing what you thought when you heard about the topic of this research study. Did you think it was weird?

Well, to begin, I'd like to start by talking about actually getting to the bathroom while at school.

1. To begin, I'd like you to tell me about your school. How many bathrooms are there in the whole school that you can use?
2. How many bathrooms do you use in a whole day at school?
3. Are these bathrooms clean or dirty?
4. Do a lot of people use them?
5. How many stalls are there?
6. Do all of the toilets work, or are there some stalls you avoid because they are always broken?
7. Are the toilets clean or dirty?
8. Are there any bathrooms you avoid?
 - a. Possible probe: Please tell me more about what is it about these bathrooms that you make you want to avoid them.
 - b. Possible probe: Since there are no bathrooms that you want to avoid, what is it about the bathrooms at your school that you like?
9. Walk me through the process of walking to the bathroom. Are there any challenges that you face?
 - a. Possible probes: Please tell me more about your decision to go to the bathroom, and if you feel comfortable going in between classes or if you wait to go during class. Please tell me more about your teacher's response when you say you need to go during class- do you feel like it's supported or is there pressure to wait until

class is over?

10. When going to the bathroom, do you prefer to go by yourself or with a friend?

11. Please tell me about the privacy in the bathrooms.

a. Possible probe: are some bathrooms more private than others?

Well, now that we've talked at length about toilets, I'd like to move on to some more open-ended questions to discuss behaviors and beliefs you may have about actually using the bathroom.

12. Are there certain times that you are more likely to go to the bathroom?

a. Possible probe: Are you more likely to go to the bathroom while on your period?

13. How often do you think you should go to the bathroom during the day?

14. Do you make sure you relax your bladder so that all of the pee, urine, whatever you want to call it, is out?

a. Possible probe: Please tell me more about how you relax your bladder, and if this is something you think about actively or if it's something you don't think about.

15. Sometimes women pee a little bit when they laugh or sneeze or cough. Has this ever happened to you or anyone you know?

a. Please tell me more about these experiences, and how they made you or the person you know feel.

16. Have you or anyone you know had a bad experience related to bullying in the bathroom?

a. Possible probe: Please tell me more about that particular situation.

17. What else should I know about bathroom use?

a. Possible probe: Is there something you think I should know that I haven't asked you?

18. How comfortable do you even feel about talking about this? Does this make you uncomfortable or do you feel okay?

Well, those are all of the questions I have. Thank you again for speaking with me today. I would like to give you a \$30 Visa Gift Card to compensate you for your time.

APPENDIX B

Recruitment Flyer



Principal Investigator:
Elissa Allen, RN, MSN
Faculty Advisor:
Lisa Kane Low, PhD, CNM

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

Bathroom Experiences
Study,Contact: Elissa
elissall@med.umich.edu
Call/Text(734)252-9345

APPENDIX C

Parental Consent Form

Dear Parent:

Elissa Allen, RN, MSN. of the University of Michigan, School of Nursing, invites your child to participate in a research study entitled *Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences*. You and your child are being contacted because you or your child recently expressed interest in potentially assisting in this research project.

I would like to talk with your child about her experiences, feelings, and decisions regarding bathroom use at school. Bathroom use is an important part of bladder health throughout the lifespan. Bathroom use during the school day is particularly important, as school is where adolescent women frequently spend the majority of their day. The purpose of this study is to explore the experiences of adolescent women in school bathrooms and their relationship with bladder health. We plan to ask 30 adolescent women between the ages of 14 and 18 years to participate in our research.

If you agree, your child will talk to an interviewer about topics such as bathroom environment, experiences, and decisions. An interviewer will meet your child at a place that is mutually acceptable to you, your child, and the researcher to conduct the interview at a time convenient for you and your child. The interview is expected to take about 1 hour to complete. We would like to audiotape the interview, but taping is not required for your child to be part of the study. We would also like your child to fill out several questionnaires about demographic information, psychosocial developmental stage, femininity, and urinary incontinence. The interview and questionnaires should take about 1 hour to complete.

While your child may not directly benefit from participating in our interview, we hope that this study will contribute to understanding bathroom behaviors in adolescent women.

Answering questions about bathroom experiences at school may be difficult for your child. The interviewer has been trained to work with children and will stop the interview if your child seems upset. We have attached a list of support agency

referrals to this letter if your child needs additional help coping with feelings.

Your child will be paid a \$30 MasterCard gift card for completing the full interview. If your child decides not to finish the interview, your child will still be paid a \$30 MasterCard gift card. We will need your child's name and address at the time of the interview for payment. Any travel or parking expenses will not be reimbursed by the study team.

We plan to publish the results of this study, but will not include any information that would identify you or your child. To keep this information safe, the voice file from the audiotape of your child's interview will be stored in an encrypted file on a password protected computer. Your child's voice file from the interview and any notes taken during the interview will be destroyed after your child finishes her participation in the study. The researchers will enter study data on a computer that is password-protected, and any notes taken during the interview will be placed in a locked file cabinet until we create a written word-for-word copy of the discussion. To protect confidentiality, your child's real name will not be used in the written copy of the discussion and instead will be known by an ID number. We plan to keep this study data to use for future research regarding adolescent women bathroom behaviors.

There are some reasons why people other than the researchers may need to see information your child provided as part of the study. This includes organizations responsible for making sure that the research is done safely and properly, including the University of Michigan and government offices. Also, if your child tells us something in the interview that makes us believe that your child or others have been or may be physically harmed, we may report that information to the appropriate agencies.

An interviewer will call you to make an appointment to interview your child. We hope that you will be willing allow your child to share her experiences with us.

If you have questions about this research, including questions about scheduling the interview or about your child's payment for participating, you can contact Elissa Allen, RN, MSN., University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 269-599-3475, elissall@umich.edu or Lisa Kane Low, PhD, CNM, University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 734-647-0136.

If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Bldg. 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 or toll free, (866) 936-0933, irbhsbs@umich.edu.

Sincerely,

Elissa Allen,
RN, MSN
University of
Michigan
School of
Nursing
400 N. Ingalls
Ann Arbor, MI 48104



Parental Permission

By signing this document, you are agreeing to allow your child, _____, to be part of the study entitled *Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences*. Your child's participation in this study is completely voluntary. If you allow your child to be part of the study, you may change your mind and withdraw your approval at any time. Your child may choose not to be part of the study, even if you agree, and may refuse to answer an interview question or stop participating at any time.

You will be given a copy of this document for your records and one copy will be kept with the study records. Be sure that the questions you have asked about the study have been answered and that you understand what your child will be asked to do. You may contact the researcher if you think of a question later.

I give my permission for my child to participate in this study.

Signature

Date

I give my permission for the interview with my child to be audiotaped.

Signature

Date

APPENDIX D

Assent Form

Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences

Assent to Participate in a Research Study (14- 17 year olds)

Principal Investigator:

Elissa Allen, MSN, RN, School of Nursing, University of Michigan

Co-Investigator:

Lisa Kane Low, PhD, CNM, School of Nursing, University of Michigan

Overview and purpose

Bathroom use is an important part of bladder health throughout the life span. Bathroom use during the school day is particularly important, as school is where adolescent women frequently spend the majority of their day. Currently, we do not know the experiences of adolescent women in school bathrooms and their relationship with bladder health.

We plan to ask 30 adolescent women between the ages of 14 and 18 to participate in our research.

Description of your involvement

If you agree to be part of this study at least one of your parents or guardian must give his or her permission. You will talk to an interviewer about the feelings, experiences, and decisions regarding your bathroom use. An interviewer will meet you at a location of your choosing to talk with you when it is convenient for you and your parent. We would like to audiotape the interview to make sure that our conversation is recorded accurately. But, you can still be a part of the study if you don't want to be audiotaped. We would also like you to fill out several questionnaires about demographic information, psychosocial developmental stage, femininity, and urinary incontinence. The interview and questionnaires should take about 1 hour to complete.

Benefits

You may not receive a direct benefit from participating. We hope that what we find out in this study will help us to better understand adolescent women's behaviors and feelings regarding bathroom use.

Risks and discomforts

Sometimes, answering questions about experiences, feelings, and decisions related to bathroom use may be uncomfortable. You can choose not to answer a question or you may stop the interview at any time. Just tell the interviewer you want to stop.

Incentive to be in the study

We will pay you a \$30 MasterCard gift card for doing the whole interview. We will need your name and address at time of interview for payment. If you decide to quit before the interview is over, you will still receive the \$30 MasterCard gift card.

Confidentiality

We plan to publish the results of this study. We will not include any information that would identify you. To keep your information safe, the voice file from the audiotape will be stored in an encrypted file on a password protected computer. Your voice file and any notes taken during the interview will be destroyed after you finish your participation in the study. The researchers will enter study data on a computer that is password-protected, and your assent as well as any notes from your interview will be placed in a locked file cabinet until we create a written word-for-word copy of the discussion. The word-for-word copy of the discussion will not have your name attached, but instead will be known by an ID number. We plan to keep this study data to use for future research regarding adolescent women bathroom behaviors.

There are some reasons why people other than the researchers may need to your information. The people work for organizations that make sure our research is done safely and properly. The organizations include the University of Michigan and government research offices. Also, if you tell us something that makes us believe that you or others have been or may be physically harmed we may report that information to the appropriate agencies.

Voluntary nature of the study

It is completely up to you whether you want to be in the study. Even if your parents say you can talk to us, you do not have to do so. Even if you say yes, you may change your mind and stop at any time. You may also choose to not answer a question for any reason. Audiotaping the interview is also not a requirement to be a part of this research study.

Contact information

If you have questions about this research, including questions about the scheduling the interview or compensation for participating, you can contact Elissa Allen, RN, MSN., University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 269-599-3475, elissall@umich.edu or Lisa Kane Low, PhD, CNM, University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 734-647-0136.

If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board, 2800 Plymouth Rd., Bldg. 520, Room 1169, Ann Arbor, MI 48109-2800, (734) 936-0933 or toll free, (866) 936-0933, irbhsbs@umich.edu.

Assent

By signing this document, you are agreeing to be in the *Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences* study. We will give you a copy of this document and we will keep a copy in our study records. Be sure that we have answered your questions about the study and you understand what you are being asked to do. You may contact me if you think of a question later.

I agree to participate in this study.

Signature

Date

I agree to have my interview audiotaped.

Signature

Date

APPENDIX E

Consent Form

Consent to Participate in a Research Study

Title of the Project: Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences

Principal Investigator: Elissa Allen, MSN, RN, School of Nursing, University of Michigan

Faculty Advisor: Lisa Kane Low, PhD, CNM, School of Nursing, University of Michigan

Invitation to Participate in a Research Study

We invite you to be part of a research study about bathroom feelings, experiences, and decisions. Bathroom use is an important part of bladder health throughout the life span. Bathroom use during the school day is particularly important, as school is where adolescent women frequently spend the majority of their day. Currently, we do not know the experiences of adolescent women in school bathrooms and their relationship with bladder health.

We plan to ask 30 adolescent women between the ages of 14 and 18 to participate in our research.

Description of Your Involvement

If you agree to be part of the research study, you will talk to an interviewer about feelings, experiences, and decisions regarding your bathroom use. An interviewer will meet you at a location of your choosing to talk with you when it is convenient for you. We would like to audiotape the interview to make sure that our conversation is recorded accurately. But, you can still be a part of the study if you don't want to be audiotaped. We would also like you to fill out several questionnaires about demographic information, psychosocial developmental stage, femininity, and urinary incontinence. The interview and questionnaires should take about 1 hour to complete.

Benefits of Participation

You may not receive a direct benefit from participating. We hope that what we find out in this study will help us to better understand adolescent women's behaviors and feelings regarding bathroom use.

Risks and Discomforts of Participation

Sometimes, answering questions about experiences, feelings, and decisions related to bathroom use may be uncomfortable. You can choose not to answer a question or you may stop the interview at any time. Just tell the interviewer you want to stop.

Compensation for Participation

We will pay you a \$30 MasterCard gift card for doing the whole interview. If you decide to quit before the interview is over, you will still receive the \$30 MasterCard gift card. We will need your name and address at time of interview for payment. Any additional fees related to parking or travel that may occur will not be reimbursed by the study team.

Confidentiality

We plan to publish the results of this study. We will not include any information that would identify you. We will keep your information safe.

There are some reasons why people other than the researchers may need to your information. The people work for organizations that make sure our research is done safely and properly. The organizations include the University of Michigan and government research offices. Also, if you tell us something that makes us believe that you or others have been or may be physically harmed we may report that information to the appropriate agencies.

Storage and Future Use of Data

To keep your information safe, the voice file from the audiotape will be stored in an encrypted file on a password protected computer. The researchers will enter study data on a computer that is password-protected, and any notes of your interview will be placed in a locked file cabinet until we create a written word-for-word copy of the discussion. Your voice file from the audiotape and any notes taken during the interview will be destroyed after you finish your participation in the study. The word-for-word copy of the discussion will not have your name attached, but instead will be known by an ID number. We plan to keep this study data to use for future research regarding adolescent women bathroom behaviors.

Voluntary Nature of the Study

It is completely up to you whether you want to be in the study. Even if you say yes, you may change your mind and stop at any time. You may also choose to not answer a question for any reason. Audiotaping the interview is also not a requirement to participate in this research study.

Contact Information for the Study Team

If you have questions about this research, including questions about the scheduling the interview or compensation for participating, you can contact Elissa Allen, RN, MSN., University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 269-599-3475, elissall@umich.edu or Lisa Kane Low, PhD, CNM, University of Michigan, Department of Nursing, 400 N. Ingalls, Ann Arbor, MI 48104, 734-647-0136.

Contact Information for Questions about Your Rights as a Research Participant

If you have questions about your rights as a research participant, or wish to obtain information, ask questions or discuss any concerns about this study with someone other than the researcher(s), please contact the:

University of Michigan Health Sciences and Behavioral Sciences Institutional Review Board
2800 Plymouth Road
Building 520, Room 1169
Ann Arbor, MI 48109-2800
Phone: (734) 936-0933 or toll free, (866) 936-0933 Email: irbhsbs@umich.edu

Consent

By signing this document, you are agreeing to be in the *Bathroom Behaviors of Adolescent Women: Decisions, Feelings, and Experiences* study. We will give you a copy of this document for your records. We will keep one copy with the study records. Be sure that I/we have answered any questions you have about the study and that you understand what you are being asked to do. You may contact the researcher if you think of a question later.

I agree to participate in the study.

Printed Name

Signature Date

Consent to be Audio Recorded
I agree to be audio recorded.
YES _____ NO _____

Signature Date

APPENDIX F

Demographic Questionnaire

1. How old are you (in years)? _____

2. What race do you consider yourself to be?
Black or African American _____
Asian _____
Native Hawaiian or Pacific Islander _____
White _____
American Indian or Alaskan Native _____
Other (please state) _____

3. What grade are you in school? _____

4. What type of school are you attending?
Public _____
Private _____

5. How well-off do you think your family is?
Not at all _____
Not particularly _____
Fairly _____
Rather _____
Very _____

6. Do you feel that there is enough money in your family to get what you need?
All of the time _____
Most of the time _____
Sometimes _____
Not usually _____
Never _____

7. What does your parent or guardian do for a living?

Parent/guardian 1 _____

Parent/guardian 2 _____

APPENDIX G

Erikson Psychosocial Stage Inventory

Erikson Psychosocial Stage Inventory (EPSI) (Rosenthal, Gurney, & Moore, 1981)		Almost Always True	Usually True	Sometimes True	Usually Not True	Hardly Ever True
1	I get embarrassed when someone begins to tell me personal things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	I change my opinion of myself a lot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I'm ready to get involved with a special person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I've got a clear idea of what I want to be	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I feel mixed up	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	The important things in life are clear to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I don't seem to be able to achieve my ambitions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	I've got it together	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I know what kind of person I am	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	I don't enjoy working	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	I'm a hard worker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	I'm warm and friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	I can't decide what I want to do with my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	It's important to me to be completely open with my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	I feel I am a useful person to have around	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	I keep what I really think and feel to myself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	I'm trying hard to achieve my goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	I have a strong sense of what it means to be female/male	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Almost Always Usually True	Sometimes True	Usually Not True	Hardly Ever True
19 I'm good at my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20 I think it's crazy to get too involved with people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21 I like myself and am proud of what I stand for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22 I don't really know what I'm on about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23 I can't stand lazy people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24 I care deeply for others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25 I find I have to keep up a front when I'm with people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26 I don't really feel involved	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27 I waste a lot of my time messing about	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28 I'm basically a loner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29 I'm not much good at things that need brains or skill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30 I have a close physical and emotional relationship with another person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31 I stick with things until they're finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32 I prefer not to show too much of myself to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33 I don't get things finished	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34 I don't get much done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35 Being alone with other people makes me feel uncomfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36 I find it easy to make close friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX H

Adolescent Femininity Ideology Scale

ADOLESCENT FEMININITY IDEOLOGY SCALE

(Tolman et al., 2000)

		Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
1	I would tell a friend I think she looks nice, even if I think she shouldn't go out of the house dressed like that.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	I worry that I make others feel bad if I am successful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I would not change the way I do things in order to please someone else.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I tell my friends what I honestly think even when it is an unpopular idea.a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	Often I look happy on the outside in order to please others, even if I don't feel happy on the inside.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I wish I could say what I feel more often than I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I feel like it's my fault when I have disagreements with my friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	When my friends ignore my feelings, I think that my feelings weren't very important anyway.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I usually tell my friends when they hurt my feelings.a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	The way I can tell that I am at a good weight is when I fit into a small size.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	I often wish my body were different	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	I think that a girl has to be thin to feel beautiful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	I think a girl has to have a light complexion and delicate features to be thought of as beautiful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	I am more concerned about how my body looks than how my body feels.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	I often feel uncomfortable in my body.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	There are times when I have really good feelings in my body.a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	The way I decide I am at a good weight is when I feel healthy.a	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX I

Michigan Incontinence Symptom Index

**Michigan Incontinence Symptom Index
(M-ISI) v.1**

This brief questionnaire is designed to assess the severity of your urinary incontinence (involuntary urine leakage). For each question, please mark the number associated with the response that best describes your voiding habits during the past month.

During the Past Month...	Never	Rarely	Occasionally	About Half the time	Most or all of the time
1. How often has urine leakage occurred in association with any physical activity (such as lifting, bending, sitting down, standing up, exercising, etc)?	0	1	2	3	4
2. How often has lifting light objects (such as a gallon of milk) caused you to leak urine?	0	1	2	3	4
3. How often has walking or light exercise caused you to leak urine?	0	1	2	3	4
	Never	Seldom	About once a week	About once a day	More than once a day
4. How often have you leaked urine because you could not wait to empty your bladder?	0	1	2	3	4
5. How often has a sudden urge to urinate caused you to leak urine?	0	1	2	3	4
6. How often have you leaked urine because you could not reach a bathroom in time?	0	1	2	3	4
	None	Thin Pad or tissue	Medium/regular pad	Large/ maxi pad	Absorbant, disposable, undergarments
7. On average, what form of protection do you use to protect against wetness during the day?	0	1	2	3	4
	None	1 per day or less, or only for security	1 per day and it is usually wet	2-3 per day	4 or more per day
8. On average, how many of these (pads, tissues, disposable undergarments) would you use to protect against wetness during the day?	0	1	2	3	4
Total Severity Score _____					
	Never	Rarely	Sometimes	Most of the time	All of the time
9. Overall, how often have you needed to change your daily activities because of your urinary incontinence?	0	1	2	3	4
	No problem	Very small problem	Small problem	Moderate problem	Big Problem
10. Overall, how big of a social problem (anxiety/ embarrassment/ avoiding social activities) has your urinary incontinence been for you during the past month?	0	1	2	3	4
Total Bother Score _____					

References

- Abrams, P., Andersson, K.E., Birder, L., et al...Wyndaele, J. J. (2009). Evaluation and treatment of urinary incontinence, pelvic organ prolapse and faecal incontinence. Retrieved from http://www.ics.org/publications/ici_4/files-book/recommendation.pdf
- Abrams, P., Cardozo, L., Fall, M., Griffiths, D., Rosier, P., Ulmsten, U., Van Kerrebroeck, P., Victor, A., & Wein, A. (2002). The standardization of terminology of lower urinary tract function: Report from the standardization sub-committee of the International Continence Society. *American Journal of Obstetrics and Gynecology*, *187*(1), 116-126.
doi:10.1067/mob.2002.125704
- Alnaif, B., & Drutz, H. P. (2001). The prevalence of urinary and fecal incontinence in Canadian secondary school teenage girls: Questionnaire study and review of the literature. *International Journal of Urogynecology*, *12*, 134-138. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/11374512>
- Baldwin, M. W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, *112*, 461-484. doi:10.1037/0033-2909.112.3.461
- Bardino, M., Di Martino, M., Ricci, E., & Parazzini, F. (2015). Frequency and determinants of urinary incontinence in adolescent and young nulliparous women. *Journal of Pediatric and Adolescent Gynecology*, *28*(6), 462-470. doi:10.1016/j.jpag.2015.01.003
- Ben-Shlomo, Y., & Kuh, D. (2002). A life course approach to chronic disease epidemiology: Conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology*, *31*, 285-293. doi:10.1093/intjepid/31.2.285

- Bendsten, A. L., Andersen, J. R., & Andersen, J. T. (1991). Infrequent voiders syndrome (nurses bladder). Prevalence among nurses and assistant nurses in a surgical ward. *Scandinavian Journal of Urology and Nephrology*, 25(3), 201-204. doi:10.3109/00365599109107947
- Blum, N. J., Taubman, B., & Nemeth, N. (2003). Relationship between age at initiation of toilet training and duration of training: A prospective study. *Pediatrics*, 111(4), 810-814.
Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12671117>
- Bo, K., & Sundgot-Borgen, J. (2010). Are former female elite athletes more likely to experience urinary incontinence later in life than non-athletes? *Scandinavian Journal of Medicine & Science in Sports*, 20, 100-104.
- Bower, W. F., Yip, S. K., & Yeung, C. K. (2005). Dysfunctional elimination symptoms in childhood and adulthood. *The Journal of Urology*, 174(4), 1623-1628.
doi:10.1097/01.ju.0000176599.91836.12
- Buckley, B., & Lapitan, M. C. M. (2010). Prevalence of urinary incontinence in men, women, and children- current evidence: Findings of the Fourth International Consultation on Incontinence. *Urology*, 76, 265-271. doi:10.1016/j.urology.2009.11.078
- Bush, T. A., Castellucci, D. T., & Phillips, C. (2001). Exploring women's beliefs regarding urinary incontinence. *Urologic Nursing*, 21(3), 211-218.
- Carls, C. (2007). The prevalence of stress urinary incontinence in high school and college-age female athletes in the Midwest: Implications for education and prevention. *Urologic Nursing*, 27(1), 21-24.
- Carney, A. G., & Merrell, K. W. (2001). Bullying in schools: Perspective on understanding and preventing an international problem. *School Psychology International*, 22(3), 364-382.
doi:10.1177/0143034301223011

- Chakrabarti, S. D., Ganguly, R., Chatterjee, S. K., & Chakravarty, A. (2002a). Is squatting a triggering factor for stroke in Indians? *Acta Neurologica Scandinavica*, *105*(2), 124-127. doi:10.1034/j.1600-0404.2002.1o196.x
- Chakrabarti, S. D., Ganguly, R., Chatterjee, S. K., & Chakravarty, A. (2002b). Squatting, blood pressure and stroke. *Journal of the Association of Physicians in India*, *50*, 382-386. Retrieved from <http://europepmc.org/abstract/med/11922227>
- Charmaz, K. (2003). Grounded theory. In J. A. Smith, J. A. Smith (Eds.), *Qualitative psychology: A practical guide to research methods* (pp. 81-110). Thousand Oaks, CA: SAGE Publications, Inc.
- Charmaz, K. (2014). *Constructing grounded theory, 2nd edition*. Thousand Oaks, CA: SAGE Publications, Inc.
- Chang, S.J., Chiang, I.N., Lin, C.D., Hsieh, C.H., & Yang, S. S.D. (2015). Obese children at higher risk for having overactive bladder symptoms: A community-based study. *Neurourology and Urodynamics*, *34*(2), 123-127. doi:10.1002/nau.22532
- Ching, C. B., Lee, H., Mason, M., Clayton, D. B., Thomas, J. C., Pople, J. C., ... Tanaka, S. T. (2015). Bullying and lower urinary tract symptoms: Why the pediatric urologist should care about school bullying. *Journal of Urology*, *193*(2), 650-654. doi:10.1016/j.juro.2014.08.103
- Choby, B. A., & George, S. (2008). Toilet training. *American Family Physician*, *78*(9), 1059-1064. Retrieved from <https://pdfs.semanticscholar.org/65d2/1762af0594c09a642cbeb1e59f4f46982d0b.pdf>
- Coyne, K.S., Sexton, C. C., Irwin, D. E., Kopp, Z. S., Kelleher, C. J., & Milsom I. (2008). The impact of overactive bladder, incontinence and other lower urinary tract symptoms on

- quality of life, work productivity, sexuality and emotional well-being in men and women: results from the EPIC study. *British Journal of Urology International*, 101, 1388–1395. doi:10.1111/j.1464-410X.2008.07601.x
- Coyne, K.S., Sexton, C. C., Thompson, C., Kopp, Z. S., Milsom, I., & Kaplan, M. D. (2011). The impact of OAB on sexual health in men and women: Results from EpiLUTS. *The Journal of Sexual Medicine*, 8(6), 1603-1615. doi:10.1111/j.1743-6109.2011.02250.x
- Coyne, K.S., Wein, A.J., Tubaro, A. et al (2009). The burden of lower urinary tract symptoms: evaluating the effect of LUTS on health-related quality of life, anxiety and depression: EpiLUTS [Supplemental]. *British Journal of Urology International* 103, 4–11. doi:10.1111/j.1464-410X.2009.08371.x
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: SAGE Publications, Inc.
- Curtis, V., & Biran, A. (2001). Dirt, disgust, and disease. Is hygiene in our genes? *Perspectives in Biology and Medicine*, 44, 17-31. doi:10.1353/pbm.2001.0001
- Dallosso, H.M, McGrother, C.W., Matthews, R.J., & Donaldson, M.M.K. (2003). The association of diet and other lifestyle factors with overactive bladder and stress incontinence: A longitudinal study in women. *British Journal of Urology International*, 92(1), 69-77. doi:10.1046/j.1464-410X.2003.04271.x
- DeLancey, J. O. L., Low, L. K., Miller, J. M., Patel, D. A., & Tumbarello, J. A. (2008). Graphic integration of causal factors of pelvic floor disorders: An integrated life span model. *American Journal of Obstetrics and Gynecology*, 199, 610.e1-610.e5. doi:10.1016/j.ajog.2008.04.001

- Diokno, A. C., Sampsel, C. M., Herzog, A. R., Raghunathan, T. E., Hines, S., Messer, K. L., ...
Leite, C. A. (2004). Prevention of urinary incontinence by behavioral modification program: A randomized, controlled trial among older women in the community. *The Journal of Urology*, 171(3), 1165-1171. doi:10.1097/01.ju.0000111503.73803.c2
- Erdem, E., Lin, A., Kogan, B. A., & Feustel, P. J. (2006). Association of elimination dysfunction and body mass index. *Journal of Pediatric Urology*, 2, 364-367.
doi:10.1016/j.jpuro.2006.05.002
- Erikson, E. H. (1963). *Childhood and Society*. New York, NY: W. W. Norton and Company, Inc.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York, NY: W.W. Norton and Company, Inc.
- Erikson, E. H. (1980). *Identity and the Life Cycle*. New York, NY: W. W. Norton and Company, Inc.
- Fingerson, L. (2002). "Only 4-minute passing periods!" Private and public menstrual identities in school. In P. Bettis & N. Adams (Eds.), *Geographies of girlhood identities in-between* (pp. 115-135). New York, NY: Routledge.
- Fitzgerald, M. P., Thom, D. H., Wassel-Fyr, C., Subak, L., Brubaker, L., Van Den Eeden, S. K., & Brown, J. S. (2006). Childhood urinary symptoms predict adult overactive bladder symptoms. *The Journal of Urology*, 175(3), 989-993. doi:10.1016/S0022-5347(05)00416-7
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory*. Chicago: Aldine.
- Hägglund D., Olsson, H., & Leppert, J (1999). Urinary incontinence: an unexpected large problem among young females. Results from a population-based study. *Family Practice*, 16, 506–509. doi:10.1093/fampra/16.5.506

- Hannestad, Y. S., Rortveit, G., Daltveit, A. K., & Hunnskaar, S. (2003). Are smoking and other lifestyle factors associated with female urinary incontinence? The Norwegian EPINCONT study. *British Journal of Gynaecology*, *110*(3), 247-254. doi:10.1046/j.1471-0528.2003.02327.x
- Hebert-Beirne, J. M., O’Conor, R., Donateli, I. B.S., Parlier, M. K., Lavender, M. D., & Brubaker, L. (2017). A pelvic health curriculum in school settings: The effect on adolescent females’ knowledge. *Journal of Pediatric and Adolescent Gynecology*, *30*(2), 188-192. doi:10.1016/j.jpag.2015.09.006
- Hellström, A., Hanson, E., Hansson, S., Hjalmas, K., & Jodal, U. (1995). Micturation habits and incontinence at age 17- reinvestigation of a cohort studied at age 7. *British Journal of Urology*, *76*, 231-234. Retrieved from <http://europepmc.org/abstract/med/7663917>
- Horrocks, S., Somerset, M., Stoddart, H., & Peters, T.J. (2004). What prevents older people from seeking treatment for urinary incontinence? A qualitative exploration of barriers to the use of community continence services. *Family Practitioner*, *21*, 689–696. doi:10.1093/fampra/cmh622
- Hunnskaar, S., Burgio, K., Clark, A., Lapitan, M.C., Nelson, R., Sillen, U., & Thom, D. (2005). Results from the 3rd International Consultation on Incontinence: Epidemiology of urinary (UI) and faecal (FI) incontinence and pelvic organ prolapse (POP). Retrieved from https://www.ics.org/publications/ici_3/v1.pdf/chap5.pdf
- Issenman, R. M., Filmer, R. B., & Gorski, P. A. (1999). A review of bowel and bladder control development in children: How gastrointestinal and urologic conditions relate to problems in toilet training. *Pediatrics*, *103*(6 part 2), 1362-1363.

- Joinson, C., Heron, J., & von Gontard (2006). Psychological problems in children with daytime wetting. *Pediatrics, 118*(5), 1985-1993. doi:10.1542/peds.2006-0894
- Kaefer, M., Zurakowski, D., Bauer, S. B., Retik, A. B., Peters, C. A., Atala, A., & Treves, S. T. (1997). Estimating normal bladder capacity in children. *The Journal of Urology, 158*, 2261-2264.
- Kajiwara, M., Inoue, K., Usui, A., Kuhihara, M., Usui, T. (2004). The micturition habits and prevalence of daytime urinary incontinence in Japanese primary school children. *Journal of Urology, 171*(1), 403-407. doi:10.1097/01.ju.0000101907.87169.06
- Kenton, K., & Mueller, E. R. (2006). The global burden of female pelvic floor disorders [Supplement]. *British Journal of Urology, 98*, 1-5. doi:10.1111/j.1464-410X.2006.06299.x
- Kinchen, K., S., Burgio, K., Diokno, A. C., Fultz, N. H., Bump, R., & Obenchain, R. (2003). Factors associated with women's decisions to seek treatment for urinary incontinence. *Journal of Women's Health, 12*(7), 687-698. doi:10.1089/154099903322404339
- Ko, L. N., Chuang, K., Champeau, A., Allen, I. E., & Copp, H. L. (2016). Lower urinary tract dysfunction in elementary school children: Results of a cross-sectional teacher survey. *The Journal of Urology, 194*(4 part 2), 1232-1238. doi:10.1016/j.juro.2015.09.091
- Koff, S. A., Wagner, T. T., & Jayanthi, V. R. (1998). The relationship among dysfunctional elimination syndromes, primary vesicoureteral reflux and urinary tract infections in children. *Journal of Urology, 160*(3), 1019-1022. doi:10.1016/S0022-5347(01)62686-7
- Lally, P., Wardle, J., & Gardner, B. (2011). Experiences of habit formation: A qualitative study. *Psychology, Health & Medicine, 16*(4), 484-489. doi:10.1080/13548506.2011.555774

- Larson, R. W., Richards, M. H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10 to 18: Disengagement and transformation. *Developmental Psychology, 32*(4), 744-754. doi:10.1037/0012-1649.32.4.744
- Lee, J. (2008). Bodies at menarche: Stories of shame, concealment, and sexual maturation. *Sex Roles, 60*, 615-627. doi:10.1007/s11199-008-9569-1
- Lukacz, E. S., Sampsel, C., Gray, M., MacDiarmid, S., Rosenberg, M., Ellsworth, P., & Palmer, M. H. (2011). A healthy bladder: A consensus statement. *The International Journal of Clinical Practice, 65*(10), 1026-1036. doi:10.1111/j.1742-1241.2011.02763.x
- Lukacz, E. S., Whitcomb, E. L., Lawrence, J. M., Nager, C. W., & Luber, K. M. (2009). Urinary frequency in community-dwelling women: what is normal? *American Journal of Obstetrics and Gynecology, 200*(5), 552.e1-552.e7. doi:10.1016/j.ajog.2008.11.006
- Lundblad, B., & Hellström, A. L. (2005). Perceptions of school toilets as a cause for irregular toilet habits among schoolchildren aged 6 to 16 years. *Journal of School Health, 75*(4), 125-128. doi:10.1111/j.1746-1561.2005.00009.x
- Markland, A.D., Richter, H.E., Fwu, C.W., Eggers, P., & Kusek, J.W. (2011). Prevalence and trends of urinary incontinence in adults in the United States, 2001-2008. *The Journal of Urology, 186*(2), 589-593. doi:10.1016/j.juro.2011.03.114
- Maxwell, J. A. (2012). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: Sage Publications, Inc.
- Mazzola, B. L., von Vigier, R. O., Marchand, S., Tonz, M., & Bianchetti, M. G., (2003). Behavioral and functional abnormalities linked with recurrent urinary tract infections in

- girls. *Journal of Nephrology*, 16(1), 133-138. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/12649544>
- Memon, H. U., & Handa, V. L. (2013). Vaginal childbirth and pelvic floor disorders. *Women's Health*, 9(3), 265-277.
- Meyer-Adams, N., & Conner, B. T. (2008). School violence: Bullying behaviors and the psychosocial school environment in middle schools. *Children and Schools*, 30(4), 211-221.
- Michigan Institute for Clinical and Health Research. (2017). *REDCap software*. Retrieved from <https://www.michr.umich.edu/rdc/2016/8/3/redcap-software>
- Miller, J. M., & Low, L. K. (2015). *Optimal bladder health model*. Unpublished manuscript, School of Nursing, University of Michigan, Ann Arbor, United States.
- Milsom, I., Altman, D., Lapitan, M.C., Nelson, R., Sillen, U., & Thom, D. (2009). Report from the 4th International Consultation on Incontinence: Epidemiology of urinary (UI) and faecal (FI) incontinence and pelvic organ prolapse (POP). Retrieved from https://www.ics.org/publications/ici_4/files-book/comite-1.pdf
- Moore, K. H., Richmond, D. H., Suthers, J. R., Imrie, A. H., & Hutton, J. L. (1991). Crouching over the toilet seat: prevalence among British gynecological outpatients and its effect upon micturition. *British Journal of Obstetrics and Gynaecology*, 98(6), 569-572. doi:10.1111/j.1471-0528.1991.tb10372.x
- Morkved, S., & Bo, K. (2000). Effect of postpartum pelvic floor muscle training in prevention and treatment of urinary incontinence: a one-year follow up. *British Journal of Gynaecology*, 107(8), 1022-1028. doi:10.1111/j.1471-0528.2000.tb10407.x

- National Center for Education Statistics (2004). Retrieved from https://nces.ed.gov/surveys/pss/tables/table_2004_06.asp
- National Center for Education Statistics (2017). Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=30>
- Norling, M., Stenzelius, K., Ekman, N., & Wennick, A. (2016). High school students' experiences in school toilets or restrooms. *Journal of School Nursing, 32*(3), 164-171. doi:10.1177/1059840515611476
- Norton, C. (2004). Nurses, bowel incontinence, stigma, and taboos. *Journal of Wound Ostomy and Continence Nursing, 31*, 85-94. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15209431>
- Nussbaum, M. C. (2004). *Hiding from humanity: Disgust, shame, and the law*. Princeton, New Jersey: Princeton University Press.
- Nygaard, I., Barber, M. D., Burgio, K. L., Kenton, K., Meikle, S., Schaffer, J., ... Brody, D. J. (2008). Prevalence of symptomatic pelvic floor disorders in US women. *JAMA, 300*(11), 1311-1316. doi:10.1001/jama.300.11.1311
- Nygaard I. & Linder M. (1997) Thirst at work – an occupational hazard? *International Urogynecology Journal and Pelvic Floor Dysfunction, 8*(6), 340–343.
- Nygaard, I. E., Thompson, F. L., Svengalis, S. L., & Albright, J. P. (1994). Urinary incontinence in elite nulliparous athletes. *Obstetrics & Gynecology, 84*(2), 183-187. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/8041527>
- O'Connell, B., Wellman, D., Baker, L., & Day, K. (2006). Does a continence educational brochure promote health seeking behavior? *Journal of Wound Ostomy Continence Nursing, 33*, 389–395.

- O'Halloran, T., Bell, R.J., Robinson, P. J., & Davis, S.R. (2012). Urinary incontinence in young nulligravid women: A cross-sectional analysis. *Annals of Internal Medicine*, *157*, 87-93. doi:10.7326/0003-4819-157-2-201207170-00005
- Oliver, J. L., Campigotto, M. J., Coplen, D. E., Traxel, E. J., & Austin, P. F. (2013). Psychosocial comorbidities and obesity are associated with lower urinary tract symptoms in children with voiding dysfunction. *Journal of Urology*, *190*, 1511-1515. doi:10.1016/j.juro.2013.02.025
- Palmer, M. H. (1994). A health-promotion perspective of urinary continence. *Nursing Outlook*, *42*, 163-169. doi:10.1016/0029-6554(94)90004-3
- Palmer, M. H., Athanasopoulos, A., Lee, K. S., Takeda, M., & Wyandaele, J.J. (2012). Sociocultural and environmental influences on bladder health. *International Journal of Clinical Practice*, *66*(12), 1132-1138. doi:10.1111/ijcp.12029
- Palmer, M. H., Willis-Gray, M. G., Zhou, F., Newman, D. K., & Wu, J. M. (2017). Self-reported toileting behaviors in employed women: Are they associated with lower urinary tract symptoms? *Neurourology & Urodynamics*. Advance online publication. doi:10.1002/nau.23337
- Porta, C. M., Gower, A. L., Mehus, C. J., Yu, X., Saewyc, E. M., & Eisenberg, M. E. (2017). “Kicked out”: LGBTQ youths’ bathroom experiences and preferences. *Journal of Adolescence*, *56*, 107-112. doi:10.1016/j.adolescence.2017.02.005
- Prendergast, S. (2000). “To become dizzy in our turning”: Girls, body maps and gender as childhood ends. In A. Prout (Ed.), *The body, childhood, and society* (pp. 101-124). Houndmills, England: Macmillian.

- Roberts, T.A., Goldenberg, J. L., Power, C., & Pyszczyński, T. (2002). “Feminine protection”: The effects of menstruation on attitudes toward women. *Psychology of Women Quarterly*, 26(2), 131-139. doi:10.1111/1471-6402.00051
- Rogers, R.G., Kammerer-Doak, D., Villarreal, A., Coates, K., & Qualls, C. (2001). A new instrument to measure sexual function in women with urinary incontinence or pelvic organ prolapse. *American Journal of Obstetrics and Gynecology*, 184, 552–558. doi:10.1067/mob.2001.111100
- Rortveit, G., Daltveit, A. K., Hannestad, Y. S., & Hunnskaar, S. (2003). Urinary incontinence after vaginal delivery or cesarean section. *The New England Journal of Medicine*, 348, 900-907. doi:10.1056/NEJMoa021788
- Rosenthal, D. A., Gurney, R. M., Moore, S. M. (1981). From trust to intimacy: A new inventory for examining Erikson’s stages of psychosocial development. *Journal of Youth and Adolescence*, 10(6), 525-537. doi:10.1007/BF02087944
- Rudaitis, S., Pundziene, B., Jievaltas, M., Uktveris, R., & Kevelaitis, E. (2009). Recurrent urinary tract infection in girls: Do urodynamic, behavioral and functional abnormalities play a role? *Journal of Nephrology*, 22(6), 766-773.
- Schwartz, B., Wyman, J. F., Thomas, W., & Schwarzenberg, S. J. (2009). Urinary incontinence in obese adolescent girls. *Journal of Pediatric Urology*, 5, 445-450. doi:10.1016/j.jpuro.2009.07.005
- Sjogren, J., Malmberg, L., & Stenzelius, K. (2017). Toileting behavior and urinary tract symptoms among younger women. *International Journal of Urogynecology*, 28, 1677-1684. doi:10.1007/s00192-017-3319-2

- Steinberg, L. (1989). Pubertal maturation and parent-adolescent distance: An evolutionary perspective. In G. R. Adams, R. Montemayor, & T. P. Gullotta (Eds.), *Advances in adolescent development: An annual book series, Vol. 1. Biology of adolescent behavior and development* (pp. 71-97). Thousand Oaks, CA: Sage Publications.
- Subak, L., Van Den Eeden, S., Thom, D., Creasman, J. M., Brown, J. S. (2007). Reproductive Risks for Incontinence Study at Kaiser Research G. Urinary incontinence in women: direct costs of routine care. *American Journal of Obstetrics and Gynecology*, 197(6), 596e1-596e9. doi:10.1016/j.ajog.2007.04.029
- Suskind, A. M., Dunn, R. L., Morgan, D. M., DeLancey, J. O.L., McGuire, E. J., & Wei, J. T. (2014). The Michigan incontinence symptom index (M-ISI): A clinical measure for type, severity, and bother related to urinary incontinence. *Neurourology and Urodynamics*, 33, 1128-1134. doi:10.1002/nau.22468
- Swift, S., Woodman, P., O'Boyle, A., Kahn, M., Valley, M., Bland, D., ... Schaffer, J. (2005). Pelvic organ support study (POSST): The distribution, clinical definition, and epidemiologic condition of pelvic organ support defects. *American Journal of Obstetrics and Gynecology*, 192(3), 795-806. doi:10.1016/j.ajog.2004.10.602
- Tannenbaum, C., Drali, R., Holroyd-Leduc, J., & Richard, L. (2010). Lessons learned: impact of a continence promotion activity for older community-dwelling women. *Neurourology and Urodynamics*, 29, 540-544. doi:10.1002/nau.20800
- Taft, T. H., Keefer, L., Artz, C., Bratten, J., & Jones, M. P. (2011). Perceptions of illness stigma in patients with inflammatory bowel disease and irritable bowel syndrome. *Quality of Life Research*, 20, 1391-1399.

- Tolman, D. L., Impett, E. A., Tracy, A. J., & Michael, A. (2006). Looking good, sounding good: Femininity ideology and adolescent girls' mental health. *Psychology of Women Quarterly, 30*, 85-95. doi:10.1111/j.1471-6402.2006.00265.x
- Tolman, D. L., & Porche, M. V. (2000). The adolescent femininity ideology scale: Development and validation of a new measure for girls. *Psychology of Women Quarterly, 24*, 363-376. doi:10.1111/j.1471-6402.2000.tb00219.x
- United States Census Bureau (2017). Retrieved from <https://www.census.gov/quickfacts/fact/table/US/PST045216>
- United States Department of Agriculture (2017). Water availability in the child and adult care food program. Retrieved from <https://www.fns.usda.gov/cacfp/water-availability-child-and-adult-care-food-program>
- Vernon, S., Lundblad, B., & Hellström, A.L. (2003). Children's experiences of school toilets present a risk to their physical and psychological health. *Child: Care, Health and Development, 29*(1), 47-53.
- von Gontard, A., Baeyens, D., Van Hoecke, E., Warzak, W. J., & Bachmann, C. (2011). Psychological and psychiatric issues in urinary and fecal incontinence. *The Journal of Urology, 185*(4), 1432-1437. doi:10.1016/j.juro.2010.11.051
- von Gontard, A., & Equit, M. (2015). Comorbidity of ADHD and incontinence in children. *European Journal of Child and Adolescent Psychiatry, 24*, 127-140. doi:10.1007/s00787-014-0577-0
- Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *Journal of Adolescent Health, 45*, 368-375. doi:10.1016/j.jadohealth.2009.03.021

- Wang, K., & Palmer, M. H. (2010). Women's toileting behavior related to urinary elimination: concept analysis. *Journal of Advanced Nursing*, 66(8), 1874-1884. doi:10.1111/j.1365-2648.2010.05341.x.
- Webster, G. D., Koefoot, R. B., & Sihelnik, S. (1984). Urodynamic abnormalities in neurologically normal children with micturition dysfunction. *Journal of Urology*, 132(1), 74-77. doi:10.1016/S0022-5347(17)49468-7
- Welch, L. C., Botelho, E. M., & Tennstedt, S. L. (2011). Race and ethnic differences in health beliefs about lower urinary tract symptoms. *Nursing Research*, 60, 165–172. doi:10.1097/NNR.0b013e3182159cac
- Wennergren, H. M., Oberg, B. E., & Sandstedt, P. (1991). The importance of leg support for relaxation of the pelvic floor muscles. A surface electromyography study in healthy girls. *Scandinavian Journal of Urology and Nephrology*, 25(3), 205-213. doi:10.3109/00365599109107948
- World Health Organization (2016). Adolescent development. Retrieved June 4, 2016 from http://www.who.int/maternal_child_adolescent/topics/adolescence/dev/en/.
- Wu, J. M., Hundley, A. F., Fulton, R. G., & Myers, E. R. (2009). Forecasting the prevalence of pelvic floor disorders in U.S. women: 2010 to 2050. *Obstetrics and Gynecology*, 114, 1278-1283. doi:10.1097/AOG.0b013e3181c2ce96
- Yang, K.N., Chen, S.C., Chen, S.Y., Chang, C.H., Wu, H.C., Chou, E.C.L. (2010). Female voiding postures and their effect on micturition. *International Urogynecology Journal*, 21(11), 1371-1376. doi:10.1007/s00192-010-1204-3