

GENERATIONAL COMPARISON: COGNITIONS, BARRIERS AND SUPPORTS OF
WEIGHT-RELATED BEHAVIORS AMONG GENERATION X AND MILLENNIAL
PARENTS ENROLLED IN THE HOMESTYLES INTERVENTION PROGRAM

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ABSTRACT OF THE THESIS

GENERATIONAL COMPARISON: COGNITIONS, BARRIERS AND SUPPORTS OF WEIGHT-RELATED BEHAVIORS AMONG GENERATION X AND MILLENNIAL PARENTS ENROLLED IN THE HOMESTYLES INTERVENTION PROGRAM

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Obesity, as a chronic disease and a risk factor for many serious diseases, is a highly prevalent public health problem in the United States. Although there were no significant changes in childhood obesity prevalence, adults showed an increasing trend in the past decade. However, childhood obesity can be a risk factor for adult obesity as behavior patterns and eating preferences can track across childhood and become lifelong habits that are resistant to change. Thus, early interventions are necessary and potentially more effective to prevent excessive weight gain.

HomeStyles, as a health promotion intervention program, targets parents of preschoolers to help shape their home environment and weight-related behaviors. To further investigate study outcome and discover potential new strategies for future health education programs, we evaluated whether generational differences exist in HomeStyles participants in terms of weight-related parenting. Study participants were categorized into Generation X (born in 1965-1981) and Millennials (born in 1982-1999) for comparison. Based on the analyses of 333 participants (164 as Generation X, and 169 as Millennials), we discovered a few differences in socio-demographic, behavioral and cognitive aspects of the two generations. Generation X participants

had higher education levels, were more likely to have a paid employment, and more affluent as well as less food insecure than Millennial participants. Millennial participants reported higher outcome expectations from eating healthy and exercising than Generation X participants did, but the higher cognitive level is not reflected in better weight-related behaviors. Moreover, we evaluated participants remained versus dropped out to seek potential factors that affect their decision making. For Millennial participants, they tend to stay for follow-up studies if their spouse or partner shared more financial responsibilities of supporting the family, while this connection was not discovered for Generation X. For those who dropped out of the study, Generation X participants were more likely to report depressive symptoms than Millennials. Thus, we might take the effect of mood status on retention efforts into consideration for future health education programs. Although we discovered a few differences between Generation X and Millennials participating HomeStyles, we attribute the difference as the result of being in different life stages instead of generation specific culture. In our conclusion, Generation X and Millennial adults were more similar than different as parents of preschoolers in the scenario of weight-related parenting. Tailored health intervention programs targeting different generations might not be warranted.

Abbreviations

CDC: Center for Disease Control and Prevention

SD: Standard Deviation

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Chapter 1

Introduction

Obesity, as a chronic disease and a risk factor for many serious diseases [1], is a highly prevalent public health problem in the United States [2]. The prevalence of obesity in youth (2- to 19-years-old) is 18.5%, and specifically, 13.9% of preschoolers (2- to 5-years-old) are obese according to the recent national health statistics from CDC [3]. Childhood obesity, as a strong predictor of adulthood obesity [4], increases the risk of children for poor health [5-7]. Moreover, physical activity, food preferences, and other behavioral patterns can track across childhood and become lifelong patterns that are resistant to change [8-10]. Hence early interventions or guidance are necessary. Although the prevalence of obesity in preschoolers decreased in recent years according to previous reports [2], indicating the important role of current health education programs, it is still at a high level that requires public health efforts. A very recent study looking at obesity prevalence in US youth reported that there was actually a significant increase in severe obesity among children aged 2 to 5 years since the 2013-2014 cycle [11]. Thus, present public health efforts must continue and innovate.

Obesity can be the result of genetic, behavioral, and/or environmental factors [12-14]. While genetic factors are not easy to modify, interventions on weight-related behaviors and environment can be potential strategies to prevent excess weight gain of children [15-18]. According to Bandura's Social Cognitive Theory, parents as influential models play important roles in providing examples of behavior and teaching children positive behaviors [19]. For children, especially young children, parents as role models and food gatekeepers have a great influence on their eating habits, physical activities, sedentary behaviors, and beliefs about weight-related

behaviors [20-29]. For instance, evidence has shown that maternal obesity is a strong predictor of childhood obesity [30], availability and accessibility of certain food at home largely affects children's food preferences and consumption patterns [20, 25], parental awareness and attitudes towards their own and their children's physical activity levels greatly influences children's exercise level [22], and home media device availability and parental rules on screen time significantly predict children's time spent on sedentary behaviors [28]. Thus, interventions improving parental weight-related behaviors and home environments are essential for childhood obesity prevention.

To maximize the results, ideal obesity prevention programs for preschoolers need to be multicomponent and family-based as preschoolers spend a significant amount of time at home, and the home environment largely affects or dictates their lifestyle practices [29, 31, 32]. On the other hand, the family is also a highly suitable target for health intervention programs as it provides a variety of components and opportunities for health behavior communication and maintenance [23]. For obesity prevention programs targeting preschoolers but having parents as experimental units [33], it is important to not only have parents gain information on easily implementable healthy lifestyle practices, but also understand that a child's home environment can be the result of complex factors such as parents' socioeconomic status [34-37], health status and lifestyle [38, 39], parenting styles [40-42], as well as neighborhood environment [43]. Researchers are supposed to know the target population so as to develop practical interventions.

The responsibility for building a healthy lifestyle for children in the early ages mainly falls on parents. Therefore, understanding how parents' cognitions (e.g., values, self-efficacy) related to creating an obeso-preventive home environment is

essential in obesity prevention programs. For instance, studies show that overweight parents had fewer positive family meal practices and family rules compared to healthy weight parents [44], and parental concern about children's weight is associated with lower energy-dense snack intake among children [45]. Modifiable behaviors and environments at home, such as restrictions on unhealthy foods, availability of healthy foods, and restrictions on media devices during mealtime, could all potentially have positive effects on children's eating habits [37, 46]. Besides, maternal negative parenting is associated with greater levels of children's impulsivity, which can lead to higher food intake and higher BMIs [47]. In summary, characteristics of parents and consequent home environment as a whole largely affect the building of preschoolers' lifestyle, thus to understand different factors affecting parents might provide new insights for reducing the prevalence of childhood obesity.

Many childhood obesity prevention intervention and observational studies have examined parental characteristics, such as demographic features and socioeconomic status, in analyses aiming to understand the factors behind children's weight-related behaviors [48-53]. However, limited research has considered how parent cognitions and behaviors differ by generation and whether generational differences exist in the scenario of weight-related parenting. Therefore, this study applied generational comparison as a potential new angle to further evaluate study results of HomeStyles.

Generation is defined by Kupperschmidt [54] as an identifiable group that shares birth years and significant life events at critical developmental ages. There are currently four generations in American society: the Silent Generation, Baby Boomers, Generation X, and Millennials or Generation Y [55]. Those born between 1982 and 1999 are labeled as Millennials and those born between 1966 and 1981 are labeled as

Generation X and represent the generations who are currently parents of young children. As the two generations experienced different growing environment and life events, it is possible that they value things differently and look at things in different ways. For instance, Generation X witnessed the shift of communication tools whereas Millennials grew up surrounded by modern technology and Internet [56].

Generational differences have been studied in many aspects, such as career patterns, leadership, financial decisions, creativity, work values, and marketing strategies [57-71]. Indeed, the two generations are different in many ways. For instance, Millennial students tend to value extrinsic or social capital reasons, such as to make more money or to meet new friends for college education to a higher level than anti-extrinsic reasons, such as the appreciation of knowledge, when compared to Generation X students [66, 69]. Millennials also are more individualistic, less altruistic at work than previous generations [57, 63], and face more challenges in homeownership [72].

Despite the evidence mentioned above, there has been opposite opinions questioning the existence of generational differences between Generation X and Millennials: Lyons et al. [73] found that Millennials were more job mobile than older generations, however, they attributed the difference as the result of being in early life stage and less mature. Millennials are known to be techno-savvy being born surrounded by electronic devices and Internet, yet the older generations are catching up fast [74]. Even in work values, where researchers tend to focus on differences, Generation X and Millennials have far more similarities than differences [71].

Common to both generations is the obesity epidemic. Little research has examined whether Generation X and Millennials differ when it comes to their own personal health and weight-related behaviors. Given the importance of parents in creating home environments and lifestyles that affect child health, it is perhaps

surprising that no research comparing differences in these generations with regard to their weight-related parenting cognitions and behaviors could be located.

In addition to delivering essential and applicable health education information, engaging and retaining participants in the intervention program is important to maximize public health impact [75]. On the basis of improving study retention, we are interested in what contributes to participant dropout and retention. For example, do personal and family characteristics affect parent decisions to remain in an intervention study? Results could be applied to future health intervention studies to improve participant engagement and retention. Interventions might tailor to better address generational differences and improve retention rates.

Thus, the purpose of this study is to compare generational differences in weight-related cognitions and behaviors of participants in the HomeStyles randomized controlled trial at baseline and to investigate how those who remained vs dropped out differed at follow-up. HomeStyles, a childhood obesity prevention program, aims to enable and motivate parents to shape their home environment and weight-related behaviors to prevent excessive weight gain in their preschool children. Understanding the differences between Millennial and Generation X parents could enable nutrition educators to design programs more responsive to generational differences.

Chapter 2

Review of Literature

Overview

“Generation” is a common term used to stratify individuals by age. A generation is defined as an “identifiable group that shares birth years, age location, and significant life events at critical developmental stages” by Kupperschmidt [54]. Thus, theoretically, generations are not simply categorized as 25-year sets of birth cohorts (i.e. children, parents, grandparents) [70]. Although there have been slightly different years of birth cutoffs for each generation, one of the commonly agreed categorizations is that today’s workforce mainly consists of Baby Boomers (born 1946-1964), Generation X (born 1965-1981), and Millennials (1982-1999) [60, 67, 70, 71, 76, 77].

As a result of experiencing distinct life events during critical development stages, each generation is thought to be different in many ways, including but not limited to personality, motivation, sense of value, attitude toward rules, and goals in life [63-65, 78-82]. These all together might help to explain why generations are varied in many situations, such as work ethic, approach to online privacy and security, and even parenting style [71]. Many studies have investigated how generations are different in career patterns [73], work values [61, 67, 70], and education [65, 69], while few studies have focused on how generations are different as parents.

While the diversity of career patterns has not undergone significant changes, younger generations tend to be more mobile in jobs and organizations [73]. Millennials were found to be more motivated by career progression and advancement compared to older generations; however, this finding could be due to millennials being in the earlier stages of their career according the authors [73]. Moreover,

millennials tend to value work-life balance and leisure more compared to older generations, and again, most are still in the trial stage of their career and may feel their career is a main contributor to emotional exhaustion [61, 67]. Although no significant generational difference was found between Generation X and Millennials in the relationship between exhaustion and job satisfaction, there is evidence showing Generation X are more serious and attached to their current career than the younger generation [61]. A study examining differences in work values and job entitlement beliefs was conducted with two cohorts representing two generations, high school classes of 1985 (Generation X) and 1996 (Millennials). Findings indicate that for the class of 1996, the value placed on extrinsic work rewards (e.g., being well paid, having little chance of being laid off, or having good chances for promotion) increased between ages 18 and 25, and at age 25 job entitlement beliefs were stronger when compared to the class of 1985, while the cohorts did not differ at age 25 in intrinsic work values (feeling of accomplishment, decision making, or interesting work) [70].

A study looking at agentic self-evaluations among American college students in 1966-2009 found that more recent college students tend to evaluate themselves as better than peers in terms of academic abilities; however, the trend cannot be explained by the decreased objective academic performance and effort spared on study [65]. Although the two cohorts were not specified as different generation categories, the study indicated enhanced self-evaluations for the younger generation. A more recent study evaluating the same set of survey results from the American Freshman survey categorized the study population into Baby Boomers, Generation X and Millennials. Study results indicated that more recent generations tend to consider extrinsic values as more important in decision making. For instance, “to make more

money” was more likely to be the reason for Millennials to go to college rather than “to gain a general education and appreciation of ideas” compared to the previous generations [66]. Moreover, when evaluating perceived value placed on college, Millennials were reported to perceive college education as more of a social capital investment (e.g. meeting new friends, and better work environment) rather than a human capital investment (e.g. increasing skills, and increasing knowledge), while Generation X ranked human capital reasons higher than social capital reasons [69].

As enumerated above, the current body of generation studies are more interested in how the environment in critical developmental stages shape the generations, which is then reflected in different attitudes to self and to the society. Study results are more directly applicable to workforce management and motivation. Few studies have looked at how generations are different as parents, thus this study is interested in whether generational differences reported by others are also reflected in parenting styles. And, if so, what are the differences with regard to weight-related behaviors in families with young children. Specifically for this study, the result would provide insight into whether health promotion programs for parents of young children should be developed to address generational differences. The goal is to understand whether generational differences do exist in the scenario of parenting or is it simply prejudice caused by stereotypes.

Studies on generational differences allow researchers to draw inferences about how generations are different in values, attitudes, beliefs, goals and ambitions, which can be applied to, for instance, marketing strategy development, educational program development, and workforce management [62, 67, 71, 76, 77, 83]. However, it should be noted that the categorization of generational groups is based on culture-specific context, which is thought to be more applicable to “western” countries thereby

making accurate generalizations to other cultures doubtful [71]. More importantly, generational categorizations are not an exact science, yet they can be viewed as a tool for analyses [84]. They provide potential new insights to look at and understand human behaviors. This sets up the background of our study. If the concept of generational difference holds true, and people have different senses of value due to the differential forces of socialization experienced by difference generation, we can expect generational differences in weight-related parenting [71].

Generation X

Generation X adults were born between 1965 and 1981, the demographic cohort following Baby Boomers. Growing up in times characterized by globalization, industrial restructuring, massive organizational downsizing, job insecurity, rising of part-time and temporary employment, and increasing divorce rates, Generation X has been described to be more “me” oriented and less loyal to organizations than the previous generation due to financial, family, and societal insecurity [64, 67, 70, 76, 77]. Some of the labels for Generation X include “cynical”, “distrusting”, and “independent” [71]. Bearing higher career expectations while the job market opportunities are limiting, Generation X tends to be less loyal to organizations and value more extrinsic goals than previous generations [66, 70, 77]. They have almost twice as many job changes per year as the Baby Boomers, indicating high career mobility [73]. Materialistic values were built up largely in Generation X and continued to be at historically high levels for Millennials [85]. Overall, Generation X can be considered as a transition from “Generation WE” to “Generation ME” [78].

Millennials (Generation Y)

Millennial adults were born between 1982 and 1999, and they grew up with the rapid development of technology and popularization of Internet. As described by

Giambatista et al. [63], “coming of age awash in technology”, Millennials tend to embrace “complexity avoidance”. Internet search and abundant online resources provide users easy access to all kinds of information. Millennials, as a generation growing up in the information age, are used to convenience and quick access to solutions. The process of seeking solutions has become so simple that Millennials tend to process information in a superficial manner [63]. On the other hand, evidence shows that millennials have higher levels of self-esteem and narcissism [82], as they have been raised as a generation with freedom to pursue what they want [86]. The importance of social rewards was lower for Millennials when compared to Generation X and Baby Boomers, which also could be the result of narcissism and more value placed on the individual [65, 66, 69, 87]. Millennials have been described as having realistic expectations of their first job but being unrealistic about the likelihood of rapid advancement and development [79]. They also are more likely to be attracted to organizations providing them with work-life balance and person-organization fit [88]. A large body of studies have investigated the stereotypes of Millennials in career patterns and values, but few studies have focused on family building and parenting styles. This could be due to that they are still in the earlier stage of life.

Study Retention and Outcome Enhancement

Study retention is essential for research requiring human participants, which greatly affects the cost effectiveness of study. By evaluating current intervention study outcomes, researchers summarized some of the program characteristics that could positively improve study effectiveness: a review of 19 early childhood intervention studies concluded that center-based programs and combined home- and center-based programs are more effective than home-based alone programs, and program inclusion of coaching of parenting skills could potentially improve study

outcome in the cognitive domain [89]. A study evaluating randomized-controlled trials in parent and child mental health programs indicated that integrating motivational interviewing, family systems, and enhanced family stress and coping support strategies at multiple points throughout treatment could produce long-term impact on study engagement and retention [75]. A meta-analysis comparing the effects of tailored and non-tailored web-based health behavior change interventions concluded that web-based tailored interventions were significantly more effective in health outcome improvements [90]. Limited studies evaluated generational differences in study retention and whether tailored nutrition education programs are necessary for outcome enhancement.

Chapter 3

METHODS

This chapter depicts sample recruitment, study instruments, and data analysis methods. The study protocol [91] was approved by the Institutional Review Board for the Protection of Human Subjects from Rutgers University. All participants gave informed consent.

Sample

Parents of children aged 2 to 5 years old were recruited for the HomeStyles program. Prior to receiving intervention materials and before randomization, participants completed the baseline survey (described below), which is the data set used in this study. Eligible participants were individuals aged between 20 and 45 who had at least basic reading and writing skills, had at least one 2- to 5-year-old child, were the family food gatekeeper (made most or all food purchasing and preparation decisions), lived in the study catchment area (New Jersey or Arizona), and had regular internet access.

Multiple methods were used for recruitment [92]. Materials (e.g., printed flyers, posters, bookmarks, and brief videos) were posted to email listservs of workplaces; philanthropic, religious, and community groups; preschool/day care centers; professional associations; and extracurricular activity/afterschool groups. Additionally, these materials were posted to websites (e.g., online community newspapers, local business, parent blogs), distributed via social media (e.g., Facebook, Pinterest), and included in a variety of media (e.g., magazines, newspapers, radio, and television). Community partners (e.g., pediatric and dietetic associations, fitness centers, schools), personal contacts (e.g., colleagues, family, friends, neighbors), and a professional study recruitment company also distributed recruitment

materials. In-person recruitment strategies included tabling activities at community events, parent resource centers, WIC offices, and farmers' markets.

Survey Measures

An array of valid, reliable measures were included in the survey. Participants completed these questionnaires at baseline and post surveys. The survey measures are described below.

Demographic and Socioeconomic Characteristics

Participants' age was used to categorize them into Generation X (born in 1965 - 1981) and Millennials (born in 1982 - 1999). Parents reported race as "non-Hispanic White", "Hispanic White and Black", "African American", or "other" (e.g. Asian Indian, Asian, Pacific Islander, American Indian, Alaskan Native, or Mixed race). Education levels were reported and categorized as "less than high school", "high school", "some college", "associate degree or technical school graduate", "baccalaureate degree", "advanced degree", or "other". Participants were asked to provide hours of paid employment per week, which were further categorized into three groups by hours worked including "do not work", "work part-time" (less than 30 hours per week), or "work near full-time/full-time" (30 or more hours per week). Same categorization was applied to ask participants' spouse employment status. Participants were also asked to indicate number of children under 18 living in household. Food security was assessed via a two-item screener for identifying families at risk for food insecurity [93], where two items were averaged for an overall score with higher scores indicating greater food security. Family affluence was assessed as the sum of points from 4 items that comprise the family affluence scale [94]. Total family affluence scale scores range from 0 to 9 with higher scores being a proxy for greater family affluence.

Parental Health

General health was assessed through self-rated health status by asking, “how would you rate your general health” [95]. Responses were coded into five categories: 5 = excellent, 4 = very good, 3 = good, 2 = fair, and 1 = poor, with higher scores indicating better self-rated general health.

Parental quality of life (i.e., physical and mental health and stress) was assessed through three items adapted from the standard 4-item set of Healthy Day core questions by asking average of days in past month that physical health and mental health were not good and days that mental health hindered usual activities [96]. The three items were averaged for an overall score ranging from 1 to 4 with a lower score indicating higher quality of life (physical and mental) perceptions.

Parental control of stress was assessed through two items adapted from Cohen’s Perceived Stress Scale by asking frequency during the past two weeks (not at all, several days, more than half the days, or nearly every day) of difficulties in stress control [97]. The two items were averaged for an overall score ranging from 1 to 4 and reversed with higher overall scores indicating better control of stress.

Parental depression severity was assessed through a two-item screener adapted from the Patient Health Questionnaire-2 which asked frequency during the past two weeks (not at all, several days, more than half the days, or nearly every day) of depression symptoms [98]. The two items were averaged for an overall score ranging from 1 to 4 with higher scores indicating greater depression severity.

Parent Personal Characteristics

Personal Organization (i.e., dependability, time management and organization) was assessed through five-point Likert scales (i.e., levels of agreement: strongly disagree, disagree, neither disagree nor agree, agree, strongly agree) adapted from a

longer scale named the Confusion, the Hubbub and Order scale [99]. Four items were averaged for an overall score ranging from 1 to 5 with higher scores indicating greater parent planning and personal organization.

Need for cognition (i.e., inclination to engage in effortful cognitive activities) was assessed through a five-point Likert (strongly agree to strongly disagree) scale adapted from the Need for Cognition scale [100]. Higher scores indicate more thinking is required in dealing with situations.

Parenting self-efficacy (i.e., confidence in parenting skills) was assessed through a five-point Likert (strongly agree to strongly disagree) scale adapted from the parenting satisfaction and efficacy measure [101]. Higher scores indicate parents feel more confident in their parenting skills.

Parent's Own Weight-related Behaviors

Eating behaviors were assessed with scales from the Three-Factor Eating Questionnaire [102, 103], where participants indicated whether the scale item was definitely false, mostly false, mostly true, or definitely true for them. Dietary restraint was assessed by asking whether they restrict food intake to prevent weight gain. Four items were averaged for an overall score ranging from 1 to 4 with higher scores indicting participant exhibiting more dietary restraint.

Disinhibited eating was assessed by asking whether they have uncontrolled eating behaviors and three items were averaged for an overall score ranging from 1 to 4 with higher scores indicating more exhibition of disinhibited eating. Similarly, emotional eating was assessed by asking whether they eat in response to their emotional state, with three items averaged for an overall score ranging from 1 to 4 and higher scores indicating participant exhibiting more emotional eating [102, 103].

Block's Food Frequency Questionnaires were applied to determine daily fruit and vegetable intakes and percent calories from fat and sugar-sweetened beverages (SSBs) servings. Daily fruit/vegetable intake was calculated by summing scores for seven items asking frequency of fruit/vegetable intakes to create a fruit/vegetable screener score and putting it in the prediction equation (Fruit/vegetable servings (pyramid definitions of servings per day) = $-0.23 + 0.37 (\text{Fruit/Veg score}) - 0.55(S)$) [104]. Total servings per day range from 0 to 12.2. Percent calories from fat was calculated by summing 17 items asking frequency of fatty food items intake to calculate a meat/snack score and putting it in the prediction equation (Percent Fat = $19.8 + 0.6 (\text{meat/snack score}) + 2.3(S)$) [104]. Total scores range from 0 to 100 with higher scores indicating higher percentage of calories from fat per day.

Daily SSBs consumption was assessed by taking the average of four items asking weekly frequency of SSB intake and divided by 7 for an overall score [105]. Total scores range from 0 to 4.6 with higher scores indicating more servings of SSBs per day.

Physical activity level was measured using the scale modified from an existing validated instrument (i.e., the International Physical Activity Questionnaire) [106]. Scores from three items asking frequency of physical activities in different intensity levels were summed to calculate physical activity level accounting for relative intensity (i.e., Number of days on vigorous activities per week * 3) + (Number of days on moderate activities * 2) + (Number of days walking 10 minutes at a time). Total scores range from 0 to 42 with higher scores indicating higher physical activity level.

Screentime in total was measured by asking amount of time parents spent during last week using sedentary screentime devices each day [107]. Total scores

range from 0 to 1440 with higher scores indicating more time spent on sedentary behaviors.

Sleep duration in total was measured through an item adapted from a validated, shortened version of the Pittsburgh Sleep Quality Index [108, 109]. Sleep duration was calculated by summing hours and minutes that parents report usually sleeping each night, and only participants reporting between 4 to 12 hours of sleep per night were included as others were considered biologically implausible. Total scores range from 4 to 12 with higher scores indicating longer sleep duration.

Weight-Related Parenting Behaviors

Number of family meals per week was assessed by summing the total frequency of breakfast, lunch, and dinner meals shared together with family each week. The three items were adapted from the Family Meal Time Questionnaire [110] and total scores range from 0 to 21 with higher scores indicating more frequent family meals per week.

Frequency of family meals are eaten at the dining room table each week, and in front of the TV each week were measured [111]. Both scores range from 0 to 7 with higher scores indicating more frequent family meals at a dining room table and more frequent family meals in front of TV, respectively.

Frequency that a media device is used while eating family meals was assessed through one item adapted from Project EAT [112] asking frequency of several media devices being used during meals at home. The total score ranges from 0 to 7 with higher scores indicating more frequent media devices are used while eating family meals.

Media in children's bedrooms was assessed by asking which of the media devices including television, DVD player, computer, smart phone/tablet/LeapPad,

video game devices, and internet are allowed to use in children's bedrooms. Overall media devices availability was calculated by summing the number of available devices. The total score ranges from 0 to 7 with higher total scores indicating more media equipment is available to the child to use in his/her bedroom.

Frequency of parent and child co-physical activity was assessed through two items asking frequency of parent playing with the preschool child weekly indoors and outdoors in the last month. Total score is the average of the two items ranging from 0 to 7 with higher scores indicating parents do more physical activity with the child.

Limits on child exposure to TV ads was assessed by through a five-point Likert scale asking whether parents try to limit the number of TV commercials their preschool child see [113]. Total scores range from 1 to 5 with higher scores indicating greater tendency for parent to limit child exposure to TV ads.

Child sedentary screen time was measured by asking length of time child spent on watching TV or movies, and playing games on a computer or smart phone in the past week. Total values could range from 0 to 1440 minutes.

Five-point (strongly agree to strongly disagree) Likert scales were used to assess whether parents decide timing of children's eating episodes, pressure children to eat, and/or restrict child eating. Overt control of food timing was assessed through items adapted from a variety of questionnaires [114-119]. Total scores range from 1 to 5 with higher scores indicating parent overtly controls child's food intake. Pressure on children to eat was assessed through three items adapted from the Child Feeding Questionnaire [119] asking tendency of parents to pressure children to eat vegetables or fruits or drink milk. Total scores range from 1 to 5 with higher scores indicating greater parent pressures on children to eat. Restriction on child eating was assessed through two items adapted from the Child Feeding Questionnaire as well, asking

whether parents restrict children from eating too many salty snacks and sweets. Total scores range from 1 to 5 with higher scores indicating greater restrictions on children's food choices.

Frequency of using food rewards was assessed through three items adapted from the Caregiver's Feeding Styles Questionnaire [114] and Parental Feeding Style Questionnaire [115]. Items consist of five-point frequency scales asking how often parent uses food reward to restrain children's behaviors. Total scores range from 1 to 5 with higher scores indicating greater frequency of using food rewards for child eating and behaving.

Parent Weight-Related Cognitions

Modeling

Parental modeling of healthy eating was assessed through items adapted from the Parental Feeding Style Questionnaire [120], Home Environment Survey [121], and Overt/Covert Control Scale [118]. Four five-point (strongly agree to strongly disagree) Likert scales were applied to assess whether parents model healthy eating habits and avoid unhealthy eating habits in front of children. Total scores range from 1 to 5 with higher scores indicating greater parent modeling of healthy eating behaviors.

Parental modeling of physical activity was assessed through two items adapted from the Physical and Nutrition Home Environment Inventory [122] asking frequency parents model moderate and heavy physical activities. Total scores range from 0 to 7 with higher scores indicating parents more frequently models physical activity for their children. Parental modeling of sedentary behaviors was assessed through two items asking frequency of parents using media devices, and watching TV or movies in front of children [122]. Two items were averaged for an overall score ranging from 1

to 7 with higher scores indicating parents model sedentary behaviors for their children more often.

Outcome Expectations

Five-point (strongly agree to strongly disagree) Likert scales were used to assess outcome expectations of healthy behaviors. Outcome expectations of healthy eating and physical activities were both measured through six items asking whether parents expect eating healthier food and getting 60 minutes of physical activity most everyday would help with having more energy, having a healthier weight, looking better, being happier, feeling better and being a good role model for children. Total scores were both averaged and range from 1 to 5 with higher scores indicating greater outcome expectations for eating healthy and physical activity, respectively.

Values

Value placed on family meals were assessed through three items, where two were adapted from the Project EAT survey [116] and one created *de novo*. Five-point (strongly agree to strongly disagree) scales were used to determine whether parents consider eating family meals together is worth the effort and whether they find no time for eating dinner together. Total scores were averaged for an overall score ranging from 1 to 5 with higher scores indicating greater value placed on importance of family meals.

Importance of physical activity for self were assessed through two five-point (strongly agree to strongly disagree) scales adapted from the Parental Support, Importance, and Enjoyment Scales [123, 124] asking whether parents keep physically active almost every day. Two items were averaged for an overall score ranging from 1 to 5 with higher scores indicating parent places greater values on being physically active for themselves.

Importance of not modeling sedentary behaviors was assessed by asking whether parents feel it is important that preschool children not see them spending a lot of time watching TV and movies. A higher score in the five-point Likert scales indicates parents place greater values on not modeling sedentary behavior for children.

Self-Efficacy

Parental self-efficacy for better child eating and weight management was assessed through seven items asking how confident (not at all confident to very confident) parents are for promoting healthier eating and weight management behaviors [125-127]. Item scores were averaged for an overall score ranging from 1 to 5 with higher scores indicating greater confidence in promoting healthier child eating and weight management.

Parental self-efficacy in personally engaging in weight-protective behaviors was assessed through five items asking how confident they are for more physical activities, avoiding weight gain and purchasing healthy food [125]. Total scores were averaged for an overall score ranging from 1 to 5 with higher scores indicating greater confidence in personally engaging in weight-protective behaviors.

Self-efficacy in meal preparation was assessed through two five-point Likert scales asking whether they enjoy making meals and have skills for preparing healthy foods [128]. Total scores were averaged for an overall score ranging from 1 to 5 with higher scores indicating parent has greater confidence in preparing meals.

Data Analysis

Descriptive analyses were used to assess participants' demographic and socioeconomic characteristics. Two sample *t* tests were used to assess the statistical significance of the relationship between Generation X and Millennials in terms of

weight-related behaviors and cognitions. Bivariate correlations were assessed between study variables and participating parents' generation. Linear regression models were used to assess the effect of generation on parent's weight-related behaviors and cognitions controlling for education level and family affluence. Two sample *t* tests were applied to assess whether there was a difference between participants who dropped out of the follow-up study and those who stayed. Generational comparison was performed in each group respectively. Analyses were performed in R, version 1.0.143. (R Core Team [2013]. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria.).

Chapter 4

Results

Recruitment and Screening

Figure 1. HomeStyles randomized control trial participants for generation analyses from baseline

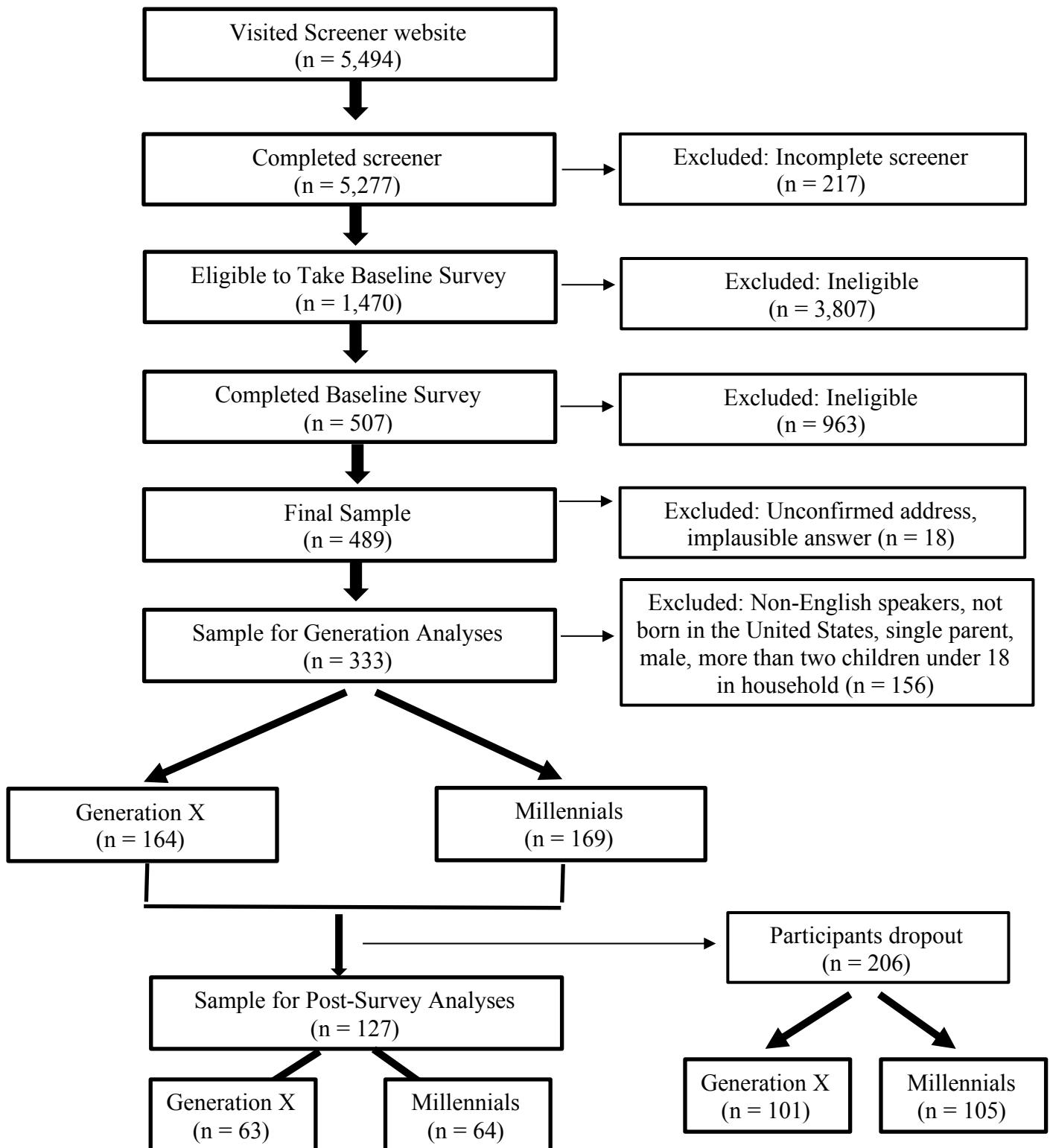


Figure 1 depicts the recruitment and screening of the study sample. Of the 5,494 individuals who visited the screener website, 5,277 completed the screener. A total of 1,470 met the study eligibility criteria and 507 of them completed the informed consent along with the baseline survey. Of these, participants with unconfirmed addresses and implausible answers were excluded, which resulted in 489 participants as the final sample for the randomized controlled trial. Specifically, for the generation study reported here, the sample was further narrowed to include only those who spoke English and were born in the U.S., as the categorization of generational groups is thought to be a cultural phenomenon unique to the prevailing culture. This categorization is more applicable to “western” countries. Non-English speakers and those born outside the U.S. might not have had experienced the same critical events growing up as those born in the U.S. [71]. Only dual-parent households were included to control for the effects of single-parent family structure on parents and children [129]. Only families with no more than two children under 18 in the households were included to control for the effects of extra financial and time burden from coping with raising more than two young children at the same time. Only mothers were included due to the different roles female and male tend to play in a family, and its potential effects on parenting styles. Sample was kept as homogeneous as possible to increase the likelihood of detecting differences due to generation rather than other salient characteristics. Therefore, participants who were not born in the United States, not English speaking, single parent, having more than two children under 18 in household, or male were excluded, which resulted in a sample of 333 participants for generation comparison, with 164 in the Generation X group (born between 1965 - 1981) and 169 in the Millennial group (born between 1982 - 1999). They were all mothers living with spouse or partner.

Baseline Demographic and Socio-economic Characteristics

Table 1			
Demographic and Socioeconomic Characteristics of Study Participants by Generation			
N = 333			
	Overall (n = 333)	Generation X (n = 164)	Millennials (n = 169)
Characteristics			
Age in years (mean)	32.59±5.33SD	36.98±3.05SD	28.34±3.17SD
Race			
White, Non-Hispanic	67.9%	70.1%	65.7%
Hispanic, White and Black	18.3%	15.9%	20.7%
African American	6.3%	7.9%	4.7%
Other	7.5%	6.1%	8.9%
Education Level***			
High school or less	24.0%	17.1%	30.8%
Some college	20.2%	17.7%	22.5%
Associate degree/technical school graduate	14.1%	12.2%	16.0%
Baccalaureate degree	24.3%	28.7%	20.1%
Advanced degree	17.1%	24.4%	10.1%
Other	0.3%	0.0%	0.6%
Paid Employment**			
Unemployed	34.8%	25.0%	44.4%
Part-time (less than 30 hours/week)	27.3%	31.1%	23.7%
Full-time (30 or more hours/week)	37.8%	43.9%	32.0%
Family affluence score (mean)***	5.56±1.74SD	6.05±1.59SD	5.09±1.75SD
Food insecurity score (mean)*	3.29±0.92SD	3.45±0.85SD	3.12±0.96SD
Note:			
* p<0.01, as determined by <i>t</i> test. Significant difference between generations.			
** p<0.001, as determined by <i>t</i> test. Significant difference between generations.			
*** p<0.0001, as determined by <i>t</i> test. Significant difference between generations.			

Table 1 presents descriptive statistics for demographic and socio-economic characteristics of the study sample. The sample had a mean age of 32.59 ± 5.33SD, with a mean age of 36.98±3.05SD for the Generation X and 28.34±3.17SD for the Millennials. The overall distribution of race/ethnicity was 67.9% White, 18.3% Hispanic, 6.3% Black, and 7.5% other (e.g. Asian Indian, Asian, Pacific Islander, American Indian, Alaskan Native, or Mixed race). There were slightly more White and Black participants in Generation X group compared to the Millennial group, but the difference was not statistically significant. Participants' education levels were

significantly different ($p < 0.0001$) between the two groups, with more than 82% of Generation X mothers having at least some college education while only 69% of Millennial mothers had the same or higher degrees. A significant difference ($p < 0.001$) was also noticed in employment status with 75% of Generation X mothers working part-time or full-time, while only 55.6% of Millennial mothers had paid employment. Family affluence scores for both groups were moderate (possible score 0 to 9) and food insecurity risk was low (possible score 1 to 4, low scores indicate greater risk). By comparing family affluence and food insecurity scores between generations, Millennial mothers were found to be less affluent ($p < 0.0001$) and had higher food insecurity risk ($p < 0.01$) than Generation X mothers.

Bivariate Correlations

Table 2 Bivariate Correlations for Demographic and Socio-Economic Characteristics Among Generation X and Millennial Parents						
Variable	1	2	3	4	5	6
1. Age						
2. Race	-0.07					
3. Education Level	0.37**	0.00				
4. Employment	0.21**	-0.03	0.24**			
5. Food Insecurity Risk	-0.26**	0.06	-0.33	-0.10**		
6. Family Affluence	0.30**	-0.06	0.37*	0.13**	-0.41**	
7. Number of children under 18	0.10	0.00	-0.12**	-0.16	0.08	0.06
* $p < 0.05$, as determined by linear correlation function. Significant association between study variables.						
** $p < 0.01$, as determined by linear correlation function. Significant association between study variables.						

Table 2 presents bivariate correlations between demographic and socioeconomic study variables among Generation X and Millennial mothers. Their correlations were conducted to understand the inner associations between demographic and socio-economic characteristics. Significant positive correlations were found between age and education level ($p < 0.01$), employment status ($p < 0.01$),

as well as family affluence ($p < 0.01$). Employment status was positively correlated with education level ($p < 0.01$), as well as family affluence ($p < 0.05$). Results indicated that older parents were more likely to have higher education level, work more, and be more affluent. Participants who worked more hours per week were more likely to have higher education level, and be more affluent. Significant negative correlations were identified between food insecurity risk and age, employment status, as well as family affluence ($p < 0.01$), and between education level and number of children under 18 in household ($p < 0.01$), indicating younger participants who worked less and had lower family affluence scores were more likely to have a greater food insecurity risk, and parents with higher education level were more likely to have less children under 18 living with them. As the result of these findings, education level and family affluence score were controlled in future analyses conducted in generation comparisons. Analyses were not adjusted for employment status and food insecurity risk because they were both found to be associated with family affluence, which was already selected to control for comparison. Besides, employment status was significantly associated with education level. Thus, to avoid over-adjustment bias [130] only education level and family affluence score were adjusted for in generational comparison.

Baseline Generational Comparison

Table 3 presents comparisons between generation X and Millennials on baseline survey results. Comparisons of parental health status variables showed no significant between-group difference in general health, depression status, quality of life (as indicated by physical and mental health and stress), and control of stress. Similarly, no significant difference was found when adjusted for education level and family affluence. However, controlling for education level and family affluence

reversed the direction of difference for general health, depression status, and control of stress, and increased significance level of difference in quality of life between two generations.

Table 3
Baseline Comparison between Generation X and Millennials (N = 333)

	Generation X (n = 164)		Millennials (n = 169)		P value (between group difference)	Coefficient ¹	Adjusted p-value ²
	Mean	SD	Mean	SD			
Parent Health							
General Health	3.46	0.94	3.43	0.92	0.76	-0.13	0.22
Cigarettes	0.09	0.28	0.14	0.34	0.15	0.02	0.65
Depression [98]	1.52	0.70	1.58	0.74	0.46	0.08	0.35
Physical/Mental Health & Stress [96]	3.89	6.18	3.55	4.59	0.58	1.06	0.10
Control of stress [97]	3.40	0.75	3.39	0.77	0.94	-0.10	0.24
Parent Personal Characteristics							
Personal Organization [99]	2.70	0.93	2.60	0.92	0.31	0.03	0.78
Need for Cognition [100]	3.36	1.02	3.40	0.93	0.73	-0.09	0.42
Parenting Self-efficacy [101]	3.79	0.89	3.89	0.91	0.31	-0.09	0.42
Parent's Own Weight-related Behaviors							
Dietary Restraint [102, 103]	2.41	0.65	2.40	0.71	0.92	-0.06	0.47
Disinhibited Eating	2.08	0.76	2.04	0.77	0.63	0.04	0.66
Emotional Eating	2.35	0.99	2.11	0.86	0.02	0.23	0.04
Fruit/Veg Servings/Day [104]	4.81	2.00	4.77	2.31	0.86	-0.07	0.79
Percent Calories from Fat [104]	36.50	5.60	36.61	5.87	0.87	0.44	0.51
SSB Servings/Day [105]	0.55	0.67	0.78	0.84	0.01	-0.06	0.49
Physical Activity [122-124]	12.98	9.91	13.97	9.64	0.35	-1.25	0.28
Screen time Total	308.05	250.86	391.33	291.25	0.01	-53.17	0.10
Total Sleep [108, 109]	7.06	1.17	7.04	1.21	0.87	-0.01	0.94
Weight-Related Parenting Behaviors							
Number of Family Meals/week [110]	12.20	4.32	13.44	5.00	0.02	-1.13	0.04
Days/week Family Meals at Kitchen/Dining Tables [116]	5.15	2.13	4.77	2.48	0.14	0.07	0.79
Days/week Media Devices used at Family Meals [107, 122]	1.47	2.27	1.73	2.43	0.32	-0.06	0.84
Media in Child Bedroom	0.95	1.45	1.41	1.64	0.01	-0.29	0.11
Frequency of Playing with Child	3.70	1.85	3.62	1.79	0.68	0.12	0.57
Limits Child Exposure to TV ads	3.36	1.21	3.30	1.29	0.67	0.07	0.65
Child Total Sedentary Screen Time	307.13	285.54	297.07	266.33	0.74	27.97	0.39

Limits Decisions about Food	1.00	0.00	1.02	0.13	0.08	-0.02	0.12
Decides Food Timing [114-118]	3.40	0.87	3.28	0.86	0.21	0.19	0.07
Pressures Child to Eat [119]	2.35	0.94	2.16	0.89	0.06	0.19	0.08
Use Food Rewards [114, 115]	2.33	0.71	2.36	0.69	0.72	-0.01	0.95
Restricts Child Eating [114-118]	3.70	0.90	3.78	0.86	0.39	-0.02	0.84
Parent Weight-Related Cognitions							
Modeling							
Healthy Eating [118, 120, 121]	3.66	0.77	3.51	0.81	0.09	0.01	0.94
Physical Activity [122]	2.30	1.62	2.64	1.67	0.06	-0.30	0.13
Not Modeling Sedentary Behaviors	3.90	0.95	3.73	0.99	0.11	-0.02	0.89
Outcome Expectation							
Eating Healthy	4.50	0.56	4.64	0.51	0.03	-0.16	0.01
Exercising	4.39	0.62	4.53	0.56	0.03	-0.15	0.03
Values							
Family Meals [116]	4.38	0.68	4.50	0.59	0.10	-0.07	0.35
Physical Activity for Self [123, 124, 131]	2.73	1.13	3.05	1.12	0.01	-0.34	0.01
Self-Efficacy							
Child Eating and Weight Management	3.77	0.70	3.84	0.70	0.36	-0.15	0.08
Personally Engaging in Weight-Protective Behaviors	3.15	0.86	3.35	0.91	0.04	-0.20	0.06
Meal Preparation Self-Efficacy	3.94	0.92	3.93	0.93	0.90	0.00	1.00
1. Coefficients for the generation variable in the linear correlation models. Positive coefficients indicate that Generation X sample yielded higher scores, whereas, negative coefficients indicate that Millennial sample yielded higher scores. 2. P-value adjusted for education level and family affluence							

Comparison of parental personal characteristics showed no difference between generations in personal organization, need for cognition, and parenting self-efficacy. Results remain the same when adjusting for education level and family affluence.

Comparison of parents' own weight-related behaviors showed no difference in dietary restraint, disinhibited eating, daily fruit/vegetable servings, daily percent calories from fat, physical activity level, and sleep duration. Results remained the same after adjustment. However, Generation X mothers experienced more emotional

eating ($p = 0.017$) than Millennials mothers, and the difference remained statistically significant ($p = 0.04$) when controlling for education level and family affluence.

Comparison of weight-related parenting behaviors showed no difference between generations in frequency of having family meals at kitchen or dining tables, frequency of using media devices at family meals, frequency of playing with child, limitation on child exposure to television ads, total child sedentary screen time, limitation on children's ability to make decisions about which foods to eat or when to eat them, using food rewards, and restriction on child eating. Results remained the same after adjustment. However, Millennial parents were found to have more family meals per week ($p = 0.016$), and more media devices available in children's bedroom ($p = 0.007$) compared to Generation X parents. The difference in frequency of family meals remained statistically significant ($p = 0.040$) when controlling for education level and family affluence, while the difference in availability of media devices in children's bedrooms lost its significance after adjustment. Generation X parents were more likely to pressure children to eat, and the difference was close to statistically significant ($p = 0.06$), but it lost significance after adjustment.

Comparison of weight-related modeling cognitions showed no difference in parental healthy eating modeling and not modeling sedentary behaviors, and the results remained the same after adjustment. Generation X mothers were more likely to model physical activities in front of children, with close to statistically significant p value ($p = 0.058$), but it lost significance after adjustment. Comparison of weight-related outcome expectations showed that Generation X mothers expected more from eating healthy ($p = 0.026$) and exercising ($p = 0.026$) than Millennial mothers, and the results remained after adjustment. Comparison of weight-related values showed no difference in values placed on family meals between generations. Yet, Millennial

mothers placed more value on physical activity for self when compared to Generation X mothers, and the results remained the same after adjustment. Comparison of weight-related self-efficacy showed no difference in parental self-efficacy in child eating and weight management, personally engaging in weight-protective behaviors, as well as meal preparation. However, adjusting for education level and family affluence increased the significance levels of difference in parental self-efficacy of managing child eating and weight ($p = 0.076$) as well as personally engaging in weight-protective behaviors ($p = 0.058$). With a close to statistically significant level, Millennial mothers were found to be more confident in child eating and weight management as well as personally engaging in weight-protective behaviors when compared to Generation X mothers.

Retained and Dropout Comparison

Table 4 compares participants who stayed for the post-survey study and those who dropped out. Generally, no difference was discovered between the two groups. Some difference occurred when the two groups were stratified into generations. For those who stayed in the study, besides the already discovered differences in sociodemographic characteristics, the only difference between Generation X and Millennials was that Generation X mothers tend to rate not modelling sedentary behaviors as more important.

For those who did not stay for follow-up studies, Generation X mothers were more educated, more likely to work full-time, and more affluent than Millennials. Besides, Generation X mothers were more personally organized, but more likely to have emotional eating problems, while they were less confident in parenting and personally engaging in weight-protective behaviors and placed less value on family meals and physical activity for self than Millennials.

Comparing within each generation, for generation X, those who dropped out were more likely to be depressed and more likely to model sedentary behaviors than those who stayed. For millennial parents, the spouse of those who stayed in the study were more likely to have full-time employment, those who stayed in the study were more likely to have dietary restraint and disinhibited eating than those who dropped out.

Table 4
Comparison Between Participants Remained in the Study and Participants Left the Study (Unstratified and Stratified by Generation)

	Remained (n = 127)	Left (n = 206)		Participants Remained in the Study (n = 127)			Participants Left the Study (n = 206)			Remained vs. Left	
				Generation X (n = 63)	Millennials (n = 64)	p-value	Generation X (n = 101)	Millennials (n = 105)	p-value	Generation X	Millennials
	Mean	Mean	p-value	Mean	Mean		Mean	Mean		p-value	p-value
Parents Sociodemographic Characteristics											
Education	3.89	3.85	0.82	4.22	3.56	0.01	4.25	3.47	< 0.001	0.92	0.69
Employment	2.00	2.05	0.62	2.22	1.78	0.00	2.17	1.93	0.05	0.67	0.27
Spouse employment	2.82	2.72	0.13	2.73	2.91	0.07	2.81	2.71	< 0.05	0.20	0.00
Total paid employment	4.82	4.77	0.66	4.95	4.69	0.15	5.02	4.52	< 0.05	0.68	0.32
Family Affluence	5.68	5.50	0.34	6.05	5.31	0.01	6.06	4.95	< 0.001	0.96	0.19
Number of children under 18 live with you	2.06	2.20	0.40	2.03	2.08	0.81	2.30	2.11	0.21	0.14	0.83
Parent Health											
General Health	3.52	3.39	0.22	3.59	3.45	0.42	3.38	3.41	0.80	0.15	0.77
Depression	1.47	1.61	0.07	1.37	1.56	0.13	1.62	1.60	0.86	0.03	0.70
Physical/Mental Health & Stress	3.51	3.83	0.60	3.33	3.70	0.71	4.23	3.46	0.30	0.37	0.75
Control of stress	3.49	3.33	0.06	3.51	3.48	0.81	3.33	3.34	0.92	0.13	0.25
Parent Personal Characteristics											
Personal Organization	2.68	2.63	0.61	2.60	2.76	0.35	2.76	2.50	0.05	0.29	0.09
Need for Cognition	3.35	3.39	0.72	3.33	3.38	0.80	3.38	3.41	0.81	0.78	0.82
Parenting Self-efficacy	3.82	3.85	0.76	3.92	3.72	0.20	3.70	3.99	0.02	0.11	0.07
Weight-related Behaviors											
Dietary Restraint	2.50	2.35	0.05	2.43	2.57	0.27	2.40	2.30	0.28	0.79	2.50
Disinhibited Eating	2.16	2.00	0.08	2.11	2.20	0.53	2.06	1.94	0.24	0.70	2.16

Emotional Eating	2.29	2.19	0.37	2.37	2.20	0.34	2.34	2.05	0.02	0.84	2.29
Parent Weight-Related Cognitions											
Modeling											
Healthy Eating	3.56	3.60	0.63	3.63	3.48	0.30	3.67	3.53	0.19	0.74	0.71
Physical Activity	2.55	2.42	0.51	2.39	2.70	0.32	2.24	2.60	0.10	0.57	0.71
Not Modeling Sedentary Behaviors	3.87	3.79	0.45	4.06	3.67	0.01	3.80	3.77	0.83	0.05	0.54
Outcome Expectation											
Eating Healthy	4.59	4.56	0.55	4.51	4.67	0.10	4.50	4.61	0.13	0.91	0.41
Exercising	4.45	4.47	0.76	4.36	4.54	0.10	4.41	4.53	0.13	0.63	0.93
Parent Weight-Related Values											
Family Meals	4.46	4.43	0.75	4.47	4.45	0.88	4.33	4.53	0.03	0.22	0.40
Physical Activity for Self	2.88	2.90	0.84	2.83	2.93	0.60	2.67	3.12	0.01	0.40	0.28
Self-Efficacy											
Child Eating and Weight Management	3.79	3.81	0.86	3.73	3.85	0.34	3.79	3.82	0.69	0.62	0.81
Personally Engaging in Weight-Protective Behaviors	3.23	3.27	0.65	3.17	3.28	0.51	3.14	3.30	0.04	0.81	0.42
Meal Prep Self-Efficacy	3.90	3.96	0.61	3.80	4.00	0.28	4.03	3.89	0.23	0.14	0.45

Chapter 5

Discussion

Research evidence shows generational differences in career patterns [73] and expectations from education [65, 69], but limited studies have looked at how generations are different as parents. This study compares parents enrolled in the HomeStyles program as two generation groups (Generation X and Millennials). According to the baseline data, Generation X mothers were more educated than Millennial mothers, which is not surprising as Millennial mothers are younger and might go for higher educations at a later age. They might choose to pursue a higher educational degree for workplace advancement or to “make more money” [66]. Moreover, Generation X parents were more likely to work full-time than Millennial parents, which could partially contribute to their higher family affluence scores and lower food insecurity scores apart from wealth accumulation as they mature.

Bivariate correlation analysis among demographic and socio-economic characteristics indicated that older parents enrolled were more likely to have higher education levels, work more, and accordingly be more affluent as shown in the descriptive analysis. Younger parents enrolled worked less and had lower family affluence scores were most likely to be food insecure. Thus, as education level and family affluence score were both significantly associated with age, we controlled the two factors for study variable comparisons.

No significant difference was discovered between two generations in terms of baseline health status and personal characteristics with or without adjustment. Millennials’ self-rated quality of life tend to be better than that of Generation X after adjustment, but still, the difference was not at a significant level.

Generation X mothers were more likely to engage in emotional eating.

Emotional eating refers to eating behaviors triggered when feeling dysphoric and the concept was originally from the psychosomatic theory of obesity, which proposes that obese individuals tend to cope with dysphoric mood through eating [102]. It might be inferred that those who are emotional eaters are more likely to be over-weighted or have been suffering from weight-related problems.

Millennial mothers were found to consume more servings of sugar-sweetened beverages daily when compared to Generation X mothers, but the difference diminished after adjustment, indicating participants who were less affluent and/or with a lower education level were more likely to consume SSB. This consumption pattern was also noted by Han et al who reported that low-educated and low-income individuals were more likely to consume SSBs [132] Millennial mothers also spent more time watching tv or using other media devices than Generation X mothers did, yet the difference lost significance after adjustment. Again, this implies that participants who were less affluent and/or less educated were more likely to spend time on sedentary behaviors. It might be inferred that children in such households could consequently spend more sedentary time with media devices and potentially increase their risk of obesity [133].

Millennial parents were found to have more family meals per week than Generation X parents. Multiple reasons could contribute to the difference, and one possible reason is the lower employment hours of Millennial mothers, which allowed them more time to prepare meals for the family. Millennial parents were more likely to report media devices present in children's bedroom. As a generation growing up with the popularization of technology and media devices [56], Millennials are used to

living in a media-surrounded environment, and appear to be passing on their use habits and environment to their children.

Notable differences between the two generations in weight-related cognitions included higher outcome expectations from eating healthy and exercising, more value placed on personal physical activity, and more confidence in personally engaging in weight-protective behaviors for Millennial mothers. However, it might be too early to infer that a higher self-evaluation would lead to a better performance for Millennials. It could simply be due to “rate inflation”. A previous study noticed that the generally higher self-evaluations on academic performance for younger generations were not reflected on their objective academic performance [65]. Although in a different scenario, we might as well infer that millennial parents do expect more from “good behaviors”, but there is a discrepancy between the cognitions and the actual actions required to build a healthy lifestyle, as the higher expectations and more values placed on weight-protective behaviors were not reflected in their weight-related behaviors. According to recent data, a significantly increasing trend in obesity was observed in U.S. adults, from 30.5% in 1999-2000 to 39.6% in 2015-2016 [3]. According to a 2008 U.S. national survey of health-behavior among high school students, about two-thirds of students did not meet recommended guidelines for physical activity [134]. The poor health habits developed in youth could easily turn into obesogenic habits in adult that are change resistant, as noticed in current Millennial adults. Researchers proposed that the growing prevalence of obesity among the generations might have negative impacts on their productivity and resulting economic prosperity [135].

In the baseline comparisons, Millennials had higher outcome expectations from healthy behaviors and were more confident in maintaining a healthy lifestyle. Therefore, we looked into whether the better weight-related cognitions contribute to

their intention to come back for post-survey studies. Overall, no difference in sociodemographic, personal, behavioral and cognition-wise characteristics was identified between those who remained and dropped out. When evaluating generational differences in the two groups respectively, the higher education level, more employment hours and higher family affluence scores for Generation X in each group aligned with the overall generational differences previously identified. In addition, comparisons of spouse employment and total family (mother and spouse/partner) paid employment hours for those remaining and those who left the study indicated no generational difference in total employment and spouse employment hours. However, Generation X participants as well as their spouse worked more hours per week than Millennial participants in the dropout group. This might add little to what was already discovered, yet for millennial mothers who stayed for the follow-up studies, their spouse worked more than those who did not stay. Furthermore, this difference was not identified in the Generation X participants. Thus, as no difference was found among Millennials mothers who stayed, we might infer that Millennial participants are more likely to come back for follow-up studies if their spouse works more, regardless of their own employment status. Hence it could be inferred that when their spouse or partner shared more responsibilities in financially supporting the family, Millennial mothers would have more time and willingness to stay in a health education program. The trend was not found in Generation X participants; thus spouse employment hours might play a limited role in their decision making.

More generational differences were discovered between Generation X and Millennial participants who did not stay for follow-up studies. Generation X mothers were more personally-organized, more likely to be emotional eaters, less confident in

their parenting abilities as well as personally engaging in weight-protective behaviors, and placed less value on family meals and physical activity for themselves than Millennial mothers. These differences might not indicate specific reasons for losing some participants in follow-up studies, but it could be interpreted as that Generation X participants and Millennial participants left the study for different considerations. For instance, poor personal organization might be the reason why Millennial mothers failed to come back for follow-up studies, while this was not likely to be the case for Generation X mothers who also dropped out. Millennial mothers may have left the study because they were confident in current parenting skills, while parenting self-efficacy did not appear to be a factor of Generation X mothers' decision making. Also, although not reflected in the study results, one of the possible reasons for losing participants could be the less apparent results of study outcomes, especially for those who tend to seek for rapid results. The effect of weight-related behaviors on family and child health might sometimes be difficult to notice, plus behavior change takes time. Thus the desire for rapid results might not be fulfilled [79].

A finding that was not anticipated but worth paying attention to was that Generation X mothers who left the study reported more frequent feelings of depression at baseline. For overall comparison, the dropout participants reported slightly more depressed feelings than the remained group ($p = 0.07$). Although the depression symptoms were not at a severe level (severity level was 1.619 with a possible range from 1 to 4), we cannot ignore the possible connection between mental state and study drop-outs. In future studies, it likely will be important to try to engage more with participants reporting depression tendencies to retain them.

Maintaining a work-life balance has never been easy. Raising a young child while still working could put mothers under more pressure. While employment is

believed to have beneficial effects on one's mental health, the responsibility of young children can diminish the protective effects of mother's employment [136]. As Generation X mothers were more likely to be employed full-time, the original mental health rewards from the configuration of social roles might turn into a burden of family role when they are at the same time raising a young child. Moreover, depressive symptoms might lead to negative parenting and consequently increase the risk for poor child health [47]. Thus, in addition to providing educational information for program participations, it is also important to make it engaging to retain them, such as utilizing social media as the platform to develop peer support groups [137]. These findings could be considered for developing future health intervention programs.

Limitations

To interpret the result in a practical context, it is important to differentiate the observed differences in two generations from those that could be explained by age. For this specific analysis, we attributed most of the generational differences to the result of maturity instead of the generation's specific culture. Nevertheless, we were unable to discern the effects of maturity apart from generation. This could be due to that we were comparing two populations experiencing the same life events (raising a preschool child) in difference life stages. Hence, age cannot be controlled in this case. Another method for generation analysis would be to compare interested behavioral or cognitive differences in two generations as they were in the same age, and experiencing similar life events. However, it requires a long-time cohort study with at least 20 years of follow-up. In addition, this type of cohort study would be confounded by the differing environmental conditions.

The sharp demarcation of years used to categorize participants born might cause bias. For instance, for those born in 1982 were categorized as Generation X while those born in 1981 were assigned to the Millennial generation. Likely those born close to these cut off years share the characteristics of both generations. Thus, the categorization likely causes bias in the analysis.

Body Mass Index (BMI) were not included in the statistical analysis, as we had only part of participants' BMI information collected. Having individual BMI as a reference might help to better understand how participants' weight-related behaviors and cognitions were reflected in weight status as well as their willingness to stay in the post-test study.

Strengths

Despite study limitations, the study has many strengths. The sample of participants was a diverse group demographically, thus results can be applied to other health education programs to develop more tailored interventions. We had a comprehensive array of variables and we were able to identify study confounders and controlled for multiple comparisons. We were able to keep the sample as homogeneous as possible for generational comparison. To our knowledge, this is the first study evaluating generational differences on weight-related behaviors and food-related parenting styles. It is also the first study considering the effects of generation or age on study retention.

Conclusion

By evaluating cognitions, barriers and supports of weight-related behaviors among parents enrolled in the HomeStyles Intervention program as two generations, we identified differences in sociodemographic, behavioral and cognitive aspects of Generation X and Millennials. However, we attribute the differences largely to the

effect of maturity and stage of life rather than being born as a specific generation. The greater media device availability and higher self-evaluations in parenting for Millennials in the study reflect some of the “symbols” of the generation, but we consider being in the early adult life stage as the main source of differences when evaluating them as parents of preschoolers. The higher self-evaluation among Millennials can be the result of rate inflation. For future nutrition education programs, researchers might consider incorporating tailored interventions to improve study engagement and retention, but the tailored intervention targeting different generation groups are not warranted. The effect of participants’ mood status on study retention might be considered for future intervention development.

In summary, although a few differences identified in sociodemographic behavioral and cognitive aspects of Generation X and Millennials as parents of preschoolers, we attribute the differences as the results more of maturity, and generation specific culture and beliefs play a limited role here. In terms of weight-related parenting, Generation X and Millennials show far more similarity than difference.

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