

DEVELOPMENT, VALIDITY, AND RELIABILITY OF HOME OPPORTUNITIES
FOR PHYSICAL ACTIVITY (HOP) QUESTIONNAIRE FOR HOUSEHOLDS WITH
YOUNG CHILDREN

By

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ABSTRACT OF THE THESIS

Development, Validity, and Reliability of Home Opportunities for Physical activity

(HOP) Questionnaire for Households with Young Children

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Childhood obesity continues to have long-term health implications for millions of children in the United States. Physical activity is a key component to preventing obesity. Based on the Social Learning Theory and the concept of reciprocal determinism, behavior and environment interact with each other simultaneously and reciprocally. Thus, early identification of physical activity opportunities in and around the home is important to promote physical activity behaviors in young children. Few questionnaires exist that assess the availability, accessibility, and frequency of use of the physical activity (and media) opportunities in the home environment of young children. Existing ones are burdensome for parents, not suited for preschoolers, or do not report psychometric measures. The 52-item Home Opportunities for Physical activity (HOP) questionnaire was developed to address these limitations. HOP is a comprehensive questionnaire developed in an 8-step process that assesses availability, accessibility, and frequency of use of physical activity (and media) opportunities in the home environment

encompassing inside and right outside the home/yard, as well as the neighborhood using 5-point Likert-type scales and checklists. Home visits were conducted in 50 homes of parents of young children to administer the questionnaire and conduct an objective assessment by researchers to establish criterion validity. Approximately 2 weeks later, parents completed the same questionnaire online for test-retest reliability. Intra-Class Correlations (ICCs) to assess criterion validity of scales ranged from 0.29 to 0.82. Most scales had substantial to almost perfect agreement between parents and researchers, while lower agreements were found for Physical Activity Availability and Accessibility Inside the Home scales and Accessibility Outside the Home (Yard) scale. ICCs to assess test-retest reliability of scales ranged from 0.77 to 0.95. All scales had excellent or good test-retest reliability. Cronbach's alphas to assess internal consistency reliability for the scales ranged from 0.46 to 0.85. Majority of the scales were acceptable, except for Physical Activity Accessibility Outside the Home (Yard) scale and Media Accessibility Inside the Home. HOP is an easy-to-use, reliable, and valid questionnaire for parents of young children to use to assess their home environment for physical activity (and sedentary activity) opportunities.

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CHAPTER 1

INTRODUCTION

The prevalence of childhood obesity in the United States for children and adolescents aged 2-19 years is approximately 17% (or 12.7 million).¹ For young children aged 2-5 years, prevalence has significantly decreased for the past 10 years, from 13.9% to 8.4%; however, it continues to have a positive trend from when tracking began in the 1970s.² Therefore, preventing childhood obesity remains a major public health concern in America. Obesity for children is defined as a BMI-for-age and gender at or above the 95th percentile.^{3,4}

Obesity is associated with numerous health-related problems such as, increased risk of impaired glucose tolerance, hyperinsulinemia, and type 2 diabetes,⁵ – conditions that were once rare in American children are now seen in an increasing number of children.⁴ There is also evidence that obese children are at risk for nonalcoholic fatty liver disease^{5,6} and gastro-esophageal reflux (i.e., heartburn).⁶ More over, young children who are obese have a greater risk of social and psychological problems.⁵ Other consequences of childhood obesity include sleep-disordered breathing (i.e., obstructive sleep apnea)^{4,5} and asthma.^{4,7}

The persistence of obesity from childhood to adulthood is evident as obese children are more likely to remain obese as adults.⁸⁻¹¹ In fact, the risk of adult obesity increases in obese children as their age increases.¹² The social and psychological problems developed in the childhood years likely will continue into adulthood.⁵ Adult obesity is a major concern in America because it is associated with serious health conditions like heart disease, diabetes, and some cancers.¹³ The severity of comorbidities

associated with obesity in childhood and adulthood makes this a major public health concern. Medical costs related to obesity are \$1,429 more per year, or roughly 42 percent higher, for people who are obese compared to people who are normal weight.¹⁴

The rapid increase in prevalence of childhood obesity is attributed to widespread energy imbalances.⁴ American society today is characterized by eating and physical activity behaviors that result in high energy intake and low energy expenditure. Based on Bandura's concept of reciprocal determinism, behavior and the environment interact simultaneously and reciprocally. Behavior can affect the environment, but the environment can also shape behavior;¹⁵ hence, changing the physical activity environment could increase physical activity behavior and reduce sedentary activity behaviors. Physical activity is key to obesity prevention; thus, physical activity environments that support or promote physical activity behaviors could reduce the risk for obesity.

The home and neighborhood are key locations that should support or promote physical activity for young children. One barrier to physical activity in the neighborhood is the availability and accessibility to parks and recreation centers. Half of the children in the United States do not have a park, community center, and sidewalk in their neighborhood.¹⁶ Perceptions of crime and traffic safety among families with young children also influence accessibility to physical activity.¹⁷ That is, parents of preschoolers have stated that they have safety concerns about letting their young children play outdoors.^{17,18}

Physical activity environment inside the home not support or promote active play, instead promotes sedentary activity for young children. Young children are growing up in

a world of media and living in homes with multiple media devices, especially the presence of a television in the child's bedroom. Children are often exposed to a daily average of 2 to 4 hours of screen time (i.e., watching TV or videos/DVDs),^{19,20} behaviors that take away from time young children can participate in physical activity.

Additionally, TV watching may promote energy intake by increasing snacking behavior and suppressing satiety cues during meals with the TV on.^{21,22} TV food advertisements also can influence children to make unhealthy food choices^{21,23-25} and promote greater energy intake.²⁶ The physical activity environment, such as neighborhood parks, recreation centers, and availability of playmates, can support physical activity and a healthy lifestyle at a young age to prevent obesity.⁴

Early identification of the availability and accessibility (or lack) of physical activity opportunities in the home and neighborhood environments can help improve obesity prevention efforts in households with young children. Several studies^{17,27-29} have focused on the neighborhood physical activity environment; however, little is known about physical activity opportunities in and right outside the homes for young children. Existing instruments³⁰⁻³⁹ for assessing home physical activity and media environments tend to be burdensome (lengthy, difficult to use), unsuitable for households with preschoolers, or do not report psychometric data. Few existing instruments are validated or have reliability established.³⁴⁻³⁹ Published data^{17,28-34,37,38,40} are difficult to compare across because there is no standard questionnaire specific to physical activity environments for young children.

Thus, the purposes of the study were to:

- develop a brief, easy-to-use, self-report questionnaire to evaluate the availability and accessibility of physical activity space and equipment as well as availability and accessibility of sedentary activity (i.e., media) equipment in homes with preschool children
- establish the validity of the questionnaire
- assess the reliability of the questionnaire

This study was part of a larger study, called HomeStyles: Shaping Home Environments and Lifestyle Practices to Prevent Childhood Obesity, which focused on families with preschool children.

CHAPTER 2

REVIEW OF LITERATURE

Based on the National Health and Nutrition Examination Surveys (NHANES), it was estimated that approximately 12.7 million children and adolescents in the U.S. are obese.^{1,2} The prevalence of obesity in preschool children (aged 2 to 5 years) is 8.4%.³ Childhood obesity prevention is of high importance as numerous young children are at an increased risk of health-related problems associated with excess weight, and not only physical problems, but also social and psychological problems.⁴⁻⁷

The persistence of childhood obesity is evident;⁸⁻¹¹ the risk of adult obesity increases as the age of the child increases.¹² Social and psychological problems are likely to persist, as well.⁵ There is strong evidence that adult obesity is associated with serious health problems, such as heart disease, diabetes, and some cancers.¹³ Also, overweight and obese adults are less likely to meet the recommendations for physical activity than their normal-weight counterparts.⁴¹

The role of physical activity is key to weight management. Balancing physical activity and diet together are required for weight management. Physical activity expends energy, while diet is about providing energy for the body. With an imbalance of one or the other, weight is difficult to balance.

To prevent childhood obesity and its long-term health effects, physical activity is a key component. Physical activity can help manage weight of children by increasing calorie expenditure. Sedentary behaviors, such as TV viewing of food advertisements, promote consumption of energy-dense foods and drinks.²⁵ High energy intake paired with

low physical activity levels leads to weight gain. Getting adequate physical activity could significantly decrease from childhood to adolescence.⁴²

There are few intervention studies that measure physical activity or sedentary behaviors of young children. Reilly reviewed four longitudinal observational studies and four cross-sectional studies that support the hypothesis that higher levels of physical activity in young children protect against excess fat gain, and higher levels of exposure to television viewing significantly increase the risk of obesity.²⁵ For instance, Janz et al. studied 4-6 year olds in a longitudinal study using accelerometers and dual-energy X-ray absorptiometry, where after a 3-year follow up more physically active children had smaller increases in body fat content (compared to sedentary children).⁴³ Metallinos-Katsaras et al. studied 2-5 year olds in a cross-sectional study, and found that high physical activity was associated with a lower risk of overweight and obesity in 2-5 year olds.⁴⁴ One of the strengths of the study was its method of measuring physical activity, using data reported from a 7-day accelerometer, however, the sample size was small (n=36). In Lumeng et al.'s cross-sectional study, the researchers found that being exposed to TV viewing for 2 hours or more per day in 3-year-olds was significantly associated with risk of obesity via parent-proxy report measurement.⁴⁵ Despite the limited number of studies found, they all point to the health benefits of increasing physical activity and decreasing sedentary activity, like watching TV.

PHYSICAL ACTIVITY ENVIRONMENT

Based on Bandura's Social learning theory and reciprocal determinism, behavior and the environment interact simultaneously and reciprocally. Behavior can affect the

environment, but the environment can also shape behavior.^{15,46} There is a continuous reciprocal interaction between the two influences.

To be more specific, in social learning theory, Bandura states behavior is learned from the environment through the process of observational learning. According to Bandura,⁴⁶ the way to learn by example is for the modeled behavior to hold the attention of the observer, which then must be retained or rehearsed and finally overtly modeled and practiced; it may require 1, 10, or 100 demonstration trials before evoking the behavior. Parents and guardians can model the behaviors in a safe environment for their preschool children to recognize and imitate, as well as, make it easy to model the behavior by setting up the environment to support it.

By organizing physical environments to support or promote physical activity behaviors, children's physical environment could increase physical activity behaviors, and thus, increase physical activity levels and reduce sedentary activity. With factors promoting physical activity built into the environment, children's physical activity behaviors would be prompted over and over again.

Home physical environment is related to a child's weight, such that children who have home physical environments that promote physical activity are negatively associated with the child's weight,^{34,47} and children with access to home physical environments are negatively associated with the child's weight.^{38,47} Few studies look at the physical environment inside the home. In addition, few studies have investigated the relationship between physical activity environments and weight in young children (2-5 year olds); existing studies usually include children starting at the age of 5 or kindergarten.

Availability of Physical Activity Environments Relates to Child Weight

Availability of physical activity environment in the neighborhood plays an important role in young children's health. The five most commonly used recreation sites for physical activity among children are swimming pools, small public parks, large public parks, playgrounds, and play fields/courts.⁴⁸ From using the data from the 2007 National Survey of Children's Health (NSCH), Fan et al. investigated the effect of neighborhood characteristics (i.e., parks and playgrounds, community centers and kids' clubs) on child weight status and the risk of being overweight or obese; children 10- to 17-years that reported having such neighborhood characteristics had a lower BMI and lower risk of being overweight or obese. Fan et al. also measured the effect of living in a neighborhood with a park/playground on weight, independent of other neighborhood characteristics; on average, children had a lower BMI and lower risk of being overweight or obese.⁴⁷ In addition, having a walking trail near a home was found to reduce children's weight.⁴⁹

Availability (or lack of) physical activity environment in the home that supports sedentary behavior can be related to child weight, for example, having a television in the child's bedroom is positively associated with child's weight status.³⁴

Accessibility of Physical Activity Environments Relates to Child Weight

Studies have looked at neighborhood environments that are accessible to children. Accessibility to environments that promote physical activity in the neighborhood is an important factor in fighting childhood obesity. Good access to playgrounds, parks, and recreational facilities have been found to decrease the likelihood of overweight or obesity in 5th graders in Canada.⁵⁰ Children 9- to 10-years old with access to parks and recreational resources (i.e., public recreation programs at recreation centers and/or

nonprofit sport centers) are less likely to significantly increase their BMI over a period of time.⁵¹ Children who have access to both parkland and recreation programs reduce the risk of overweight and obesity at an older age.^{50,51}

Traffic density and perceived safety of walking in the neighborhood are possible influences on childhood obesity. Parents of preschoolers may have heightened sense of danger for their child that reduces accessibility to physical activity in the neighborhood. Accessibility to safe places for physical activity can help increase physical activity behavior.¹⁶ If aspects of the physical environment, such as traffic, are perceived as a threat to young children among parents, then it may create contextual effects that limit the activity of children. Jerrett et al. examined the relationship between measured traffic density near homes of children aged 9 to 10 years and body mass index (BMI) at age 18, and detected a significant positive association when measured traffic density was within 150 meters from the home. Thus, proximate exposure to traffic is associated with an increase in BMI over a period of time.⁵² It is also possible air pollution exerts a stronger effect on BMI of children than traffic density, as traffic-related air pollution was associated with significant BMI increases in children aged 5 to 11 years.⁵³ Sandy et al. found that crime level is significantly associated with higher weights in younger children (3-8 years old), suggesting that an area with high crime levels give children fewer opportunities for physical activity outside the home.⁴⁹

No studies could be located about accessibility of physical environment in and right outside the homes in young children and its relationship with children's weight status.

Availability and Accessibility of Physical Activity Environments Relates to Child Weight

Both availability and accessibility of physical activity environments are important in the task to increase physical activity levels of young children. While the presence of physical activity environments (i.e., space and active play supports) are necessary in promoting physical activity, the access and use of space and equipment are equally important in ultimately improving children's weight status. Physical activity environments in the neighborhood need both the presence of space and equipment and accessibility to them are needed for children and their families. The Task Force on Community Preventive Services strongly recommends "creating or enhancing access to places for physical activity combined with informational outreach activities" as an effective strategy to increase physical activity levels in neighborhoods and communities.⁵⁴ Accessibility in the neighborhood includes, but is not limited to, neighborhood safety from traffic and crime. Sandy et al., using fixed effects regressions, found that having a walking trail near a home reduces children's weight in low crime areas, but the effect on children's weight is reversed in areas with high nearby violent crimes. This was primarily found in boys 8- to 16-years old living in high income neighborhoods with more significant finding in older children.⁴⁹

Likewise, physical activity environments in and right outside the homes may have tricycles/bikes or swings/slides, however, they must be in good working condition for children to use as well as accessible for frequent use. Preliminary work suggests that combining the two may produce a better variable than either as single variables. For example, in a study of children 3- to 12-years old, child BMI percentile was negatively

correlated with availability of child fixed and portable play equipment in good condition and easy of access ($r = -0.25$ and -0.23 , respectively).³⁸

VALIDITY TYPES

Validity is the extent to which a test or measurement adequately reflects the concept or construct of interest⁵⁵⁻⁵⁷. There are several types of validity, including face, content, criterion, and construct validity. Face validity is when the test accurately translates the intended construct “at face value”. Participants or experts in the field establish face validity. Content validity is any validity strategy that focuses on the content of the test; it is demonstrated by investigating the degree to which a test is representative of the content the test is designed to measure.⁵⁵ Content validity, established by content experts, ensures that the content defines the construct that is being measured. Criterion validity is any validity strategy that focuses on the relationship between the test and criterion.⁵⁵ Criterion is usually an established procedure, theory, or well-respected standard of the same objectives and specifications as the test. This relationship may be described using correlation coefficients (such as Pearson or Spearman), percent agreement, Cohen’s kappa (κ), or intra-class correlation coefficients (ICC) to determine the degree of agreement between the test and criterion. Higher correlation or agreement between the test and criterion indicates greater validity of the measured test. While construct validity ensures the test measures the construct it claims to measure. This could be done through multiple correlations or experimental demonstrations.⁵⁶ Construct validity is demonstrated when there is a significant association between the two measures.

RELIABILITY

Reliability is the extent of the consistency or repeatability of a measurement (e.g., responses to a questionnaire). Test-retest reliability assesses the consistency of a measurement from one time to another rated by the same rater. For test-retest reliability the test is administered on two separate occasions. Test-retest reliability is determined with a correlation coefficient; a high correlation coefficient indicates high reliability or agreement between the two measurements.

Internal consistency reliability assesses the consistency of items that purports to reflect the same construct. Cronbach's Alpha (α) measures internal consistency of a test that has multiple items designed to measure the same construct.⁵⁷

INSTRUMENTS ASSESSING PHYSICAL ACTIVITY AVAILABILITY AND/OR ACCESSIBILITY IN THE HOME

Instruments used in previous studies to assess physical activity availability and/or accessibility in the home are described below. Table 1 summarizes the characteristics of the instruments reviewed.

*Children's Leisure Activities Study Survey (CLASS)*⁴⁰ assesses children's activity type, frequency, intensity, and duration, in which validity and reliability are reported. CLASS includes three scales that assess the influence of the home and community environments on physical activity and sedentary behavior as reported by parents of children aged 5 to 6 years and 10 to 12 years in Australia. Preliminary key findings were reported, but total number of items, total time to complete, and reliability data were not reported for these scales.³⁰ *CLASS: Physical Environment Scale* is an environmental audit of the home and yard (i.e., bicycle, bats/racquets, active toys [e.g., balls], skipping rope, scooter, rollerblades, medium yard, large yard, front fence), measures sedentary

Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a

Instrument	Characteristics	Type of Questions	Survey Completion Length	Audience	Content Validity	Face Validity	Criterion Validity	Construct Validity	Test-Retest Reliability	Internal Consistency Reliability	Researchers' suggestions for improving the instrument and Significant findings:
Children's Leisure Activities Study Survey (CLASS): Physical Environment Scale ³⁰	availability of environmental items in the home and yard (i.e., bicycle, bats/racquets, active toys [e.g., balls], skipping rope, scooter, rollerblades, medium yard, large yard, front fence), sedentary opportunities within the home (i.e., TV, VCR/DVD, Computer, Electronic games, Internet, 3+ TVs, Pay TV, TV in bedroom), and accessibility of public amenities such as, shops, schools, and parks within their local communities	Not Reported	Time not reported, total items not reported	parents and their children 5-6 and 10-12 years old (n=1,210) in Australia	Not Reported	Not Reported	Not Reported	Children who had 7 or more physical activity equipment items in the home were 2-4 times more likely to be in the highest physical activity category	Not Reported	Not Reported	Not Reported

Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Children's Leisure Activities Study Survey (CLASS): Rules and Restrictions Scale ³⁰	how often parents restrict their children's participation in physical activities (e.g., "I don't allow my child to play outside after dark"), television viewing, and electronic game use and how often these activities are supervised by the parent	Not Reported	Time not reported, total items not reported	parents and their children 5-6 and 10-12 years old (n=1,210) in Australia	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Not Reported	Significant finding: Over 50 percent of parents of children 5-6 years old reported needing to supervise their child while he or she plays outside
Children's Leisure Activities Study Survey (CLASS): Barriers to Physical Activity Scale ³⁰	reasons why child does not participate in more activity than they currently do	Not Reported	Time not reported, total items not reported	parents and their children 5-6 and 10-12 years old (n=1,210) in Australia	Not Reported	Not Reported	Not Reported	Parents of 5- to 6-year old children who reported having concerns about road safety were more likely to have children in the lowest physical activity category.	Not Reported	Not Reported	Significant finding: Over 80 percent of parents perceive dangers posed by strangers and road safety as barriers to children's physical activity

Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Physical and Nutritional Home Environment Inventory ³¹	availability and accessibility of 33 physical home environment items (Direct observation items: the size of back yard and lawn area, the number of pieces of outdoor play equipment, presence of a paved area for bike riding, number and positioning of televisions, and presence of other types of small screen entertainment; Parent interview item constructs: family use of active transport, parental role-modeling, presence of community facilities in close proximity [e.g., library, playground], extracurricular activities for preschool children [e.g., swimming, dance classes, sport classes], family rules about use of television, and use of labor saving devices) and 41 nutritional home	4-point Likert scales, dichotomous yes/no, and open-ended	75 minutes, total items=74	parents of preschoolers (n=280) in Australia	Not Reported	Not Reported	Not Reported	1. More outdoor play equipment and larger backyard were associated with children having more outdoor PA 2. More rules about TV viewing was associated with less screen time in children 3. Presence of PlayStation in home associated with more screen time in children	Not Reported	Not Reported	Not Reported
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environment
items

Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Project on Human Development in Chicago Neighborhoods (PHDCN): Home and Life Interview (version 2) ³²	aspects of the home environment (i.e., quality of physical environment) assessed with 2 scales: Internal environment (e.g., has 100 sq ft space per person, clean and minimally cluttered, not overcrowded with furniture) and External environment (e.g., conditions of street and buildings) ³³	dichotomous yes/no, Likert scales, open-ended	Time not reported, total items=134	families with children 3-6 or 9-15 years old from 80 neighborhoods (n=2,685) ³³	121 items were reviewed by a group of psychologists, psychiatrists, and experienced field interviewers (n=9) ³³	Not Reported	Not Reported	1. Internal and external environment scales were significantly associated with preschool-aged children's verbal skills before taking into account child and family demographic variables. 2. Internal environment scale was negatively associated with preschool-aged children's behavior problems before controlling for child and family demographic variables. ³³	Not Reported	rho of scales: ≥ 0.70 ³³	Researchers' suggestions for improving the instrument³³: 1. assess test-retest reliability 2. assess inter-observer reliability
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Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Home Physical Activity Equipment Scale ³⁴	availability of physical activity equipment in and around the home: bikes, basketball hoops, jump rope, sports equipment (e.g., balls, racquets, bats), swimming pool, roller skates, fixed play equipment (e.g., swing set, play house, jungle gym), home aerobic equipment (e.g., treadmill, cycle, cross trainer, stepper, workout video), weight lifting equipment, water or snow equipment, yoga/exercise mats, exercise/play/recreation room, trampoline, and stairs	dichotomous yes/no	5-10 minutes, total items=14	parents of children 5-11 years old	Not Reported	Phone and in-person interviews (total number not reported)	Not Reported	Home physical activity equipment was negatively associated with television viewing time ($\beta=-.23$, $p<0.05$) and BMI z-score in children ($\beta=-.19$, $p=0.07$).	ICC of scale: 0.80 (N=116); ICC of items: 0.53-0.85 (Swimming pool was the lowest and Bikes was the highest; N=116)	Not Reported	Researchers' suggestions for improving the instrument: 1. remove swimming pool 2. include parent rules and physical activity opportunities in the neighborhood
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Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Physical Activity and Media Inventory (PAMI) ³⁵	availability and accessibility of 50 physical activity equipment items (categories: sports equipment, fitness equipment, transportation equipment, athletic footwear, water sports, outdoor/yard equipment) and 5 media equipment items including, television, VCR/DVD, digital video recorder (DVR) and/or TiVo, video game system, and computer (desktop or laptop) in the home environment and variables	Checklist type and Likert scale	40 minutes	parents/guardians of children 10-17 years old (n=31)	Clarity of questions and format and feasibility of administration (total number of experts not reported)	Reviewed by study investigators with researchers who study family health	Comparison of parent and research assistant of PAMI variables: $r=0.67-0.98$ (N=31); of overall home environment score (Activity:Media Ratio Score): $r=0.94$, $P<0.01$	physical activity equipment density, Physical activity Availability and Accessibility Summary Score (PAASS), Activity:Media ratio score, and sports equipment were positively associated with physical activity of adolescent males and females measured by a validated accelerometer ($p\leq 0.05$) ⁵⁸	ICC of PAMI variables (i.e., # of items, density of items in the home, # of items in bedrooms, # of televisions in the home, # of televisions in bedrooms, checklist quantity, and summary scores): 0.72-0.96 (N=24); ICC of overall home environment score (Activity:Media Ratio Score): 0.91 (range:0.81-0.96)	Not Reported	Significant finding: parents/guardians reported a greater percentage of items as “put away and difficult to get to” and smaller percentage of items as “in plain view and easy to get to” ($p<0.001$). Researchers’ suggestions for improving the instrument: 1. modify accessibility response options to improve validity 2. re-format inventory to be less burdensome
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Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Home Environment Survey (HES) ³⁶	availability, accessibility, parental role modeling, and parental policies related to physical activity (PA) resources, fruits and vegetables, and sugar sweetened drinks and snacks in 10 scales: 1) PA availability, 2) PA accessibility, 3) Fruit/vegetable availability, 4) Fruit/vegetable accessibility, 5) Fat/sweet availability, 6) Fat/sweet accessibility, 7) Parental role modeling of PA, 8) Parental role modeling of healthy eating, 9) Parental policies to support PA, and 10) Parental policies to support healthy eating	dichotomous yes/no and 5-point Likert scale	Time not reported, total items=126	parents of overweight and obese children 8-12 years old (white and high SES based on education level) (n=219)	Not Reported	Not Reported	Not Reported	Child physical activity, assessed by a valid and reliable accelerometer, was significantly associated with parental policies to support child physical activity (r=0.21), accessibility of physical activity toys (r=0.15), and parent role modeling of activity (r=0.14)	ICC of scales:>0.75 (range:0.78-0.99) (n=156)	Cronbach's Alphas of scales:0.66-0.84 (except for Fruit/vegetable accessibility)	Researchers' suggestions for improving the instrument: 1. include separate scale for items related to sedentary activity rather than reverse scoring those items within existing scales. 2. test in different age populations to determine validity
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Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Healthy Home Survey (HHS) ³⁷	attributes of the home environment, including, food environment, eating practices, eating policies, physical activity environment, physical activity policies, media environment, and media policies	dichotomous yes/no, yes/no/don't know, Likert scales, and open-ended	29.0-34.4 minutes (SD 8.6-9.2), total items=113	parents of children 3-8 years old (n=85)	Relevance of items and the factors of interest, clarity of wording, and identification of items which should be added/removed (n=5)	n=5	between phone interview and home assessment of environment items: percent agreement: 43-99%; κ:-0.02-0.96; Number of researchers present: 3	Not Reported	between 2 phone interviews (n=45) of environment items: percent agreement 75-100%, mean κ:0.81 (0.29-1.00); of policy items: percent agreement 51-87%, κ:0.41-0.77, ICC range:0.54-0.86, restrictions of outdoor play in the yard was the lowest	Not Reported	Researchers' suggestions for improving the instrument: 1. further develop physical activity environment items 2. identify both social (e.g., encouragement to be active) and physical (e.g., presence and size of yard) factors related to healthy weight behaviors and BMI levels that are valid and discriminate
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Table 1. Instruments that assess Physical Activity Availability and/or Accessibility in the Home^a, continued

Home Self-administered Tool for Environmental assessment of Activity and Diet (HomeSTEAD): Physical activity and media equipment inventory ³⁸	presence, number, accessibility, condition, location, and/or other characteristics of 221 physical activity items (4 adult exercise equipment, fixed play equipment, child portable play equipment, and yard characteristics) and 83 screen time items (5 categories: TVs, computers, video games, portable electronic devices, use of portable screens in the car), and derived/summary variables	dichotomous yes/no, Likert scales, and open-ended	Time not reported, total items=304	Parents of children 3-12 years old (n=125)	content coverage, item relevance and intention, and question format and clarity (n=4)	6 in-home cognitive interviews conducted	comparison of parents and researchers of items and derived variables: average $r=0.46$ (range:-0.32-1.00), average percent agreement=85% (range:54-100%), average $\kappa=0.54$ (range:-0.02-1.0); Number of trained researcher staff: 2	1. Presence of TV and video games and TV and video game time ($r=0.21-0.37$) 2. Amount of child portable play equipment and TV time ($r=-0.24$) 3. Accessibility of child portable play equipment and child outside play time ($r=-0.21$) 4. Child fixed and portable play equipment in good condition and easy to access and child BMI percentile ($r=-0.25$ and -0.23 , respectively)	using all 3 parent self-administrations of items and derived variables: average ICC=0.68 (range:-0.15-1.00), average percent agreement=93% (range:72-100%), average $\kappa=0.80$ (range:0.22-1.00)	Not Reported	Researchers' suggestions for improving the instrument: issue of low ICC due to lack of variation for certain items will need further exploration (e.g., better instructions for response categories or expanding/redefining response options, combining accessibility and condition into single indicator) before eliminating certain items
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^a This table was developed in collaboration with Jennifer Martin-Biggers (Home Environment Characteristics Associated with Obesity Risk in Preschool-Aged Children and Their Parents, Unpublished Doctoral Dissertation, Rutgers University, 2016) and Carol Byrd-Bredbenner as part of the HomeStyles project (USDA NIFA #2011-68001-30170).

opportunities within the home (i.e., TV, VCR/DVD, Computer, Electronic games, Internet, 3+ TVs, Pay TV, TV in bedroom), and accessibility of public amenities (e.g., shops, schools, and parks) within local communities. For construct validity, children who had 7 or more physical activity equipment items in the home were 2 to 4 times more likely to be in the highest physical activity category. *CLASS: Rules and Restrictions Scale* investigates how often parents restrict their children's participation in physical activities (e.g., I don't allow my child to play outside after dark), television viewing, and electronic game use, in addition to, how often these activities are supervised by the parent. Over 50 percent of parents of children 5-6 years old reported needing to supervise their child while he or she plays outside. *CLASS: Barriers to PA Scale* assesses reasons why children do not participate in more activity than they currently do. Over 80 percent of parents perceived dangers posed by strangers and road safety as barriers to children's physical activity. For construct validity, parents who reported having concerns about road safety and were more likely to have children in the lowest physical activity category.

The *Physical and Nutritional Home Environment Inventory*³¹ assesses the availability and accessibility of 33 physical home environment items hypothesized to be associated with either children's physical activity or sedentary behavior and 41 nutritional home environment items hypothesized to be associated with children's dietary pattern. The 74-item inventory was assessed by direct observation and parent interview by one trained researcher in households of families in Australia with preschoolers, in an average of 75 minutes. Direct observation of physical home environment items included the size of the back yard and lawn area, number of pieces of outdoor play equipment, presence of a paved area for bike riding, number and positioning of televisions, and

presence of other types of small screen entertainment). Parent interview items had constructs, such as family use of active transport, parental role-modeling, presence of community facilities in close proximity (e.g., library, playground), extracurricular activities for preschool children (e.g., swimming, dance classes, sport classes), family rules about use of television, and use of labor saving devices). Response options for physical home environment items include 4-point Likert scales, dichotomous scales (yes/no), and open-ended questions. No reliability data were located. Construct validity was determined using the inventory and a questionnaire assessing preschool children's physical activity patterns: the number of items of outdoor play equipment and the size of backyard outdoor physical activity were significantly associated with greater children's outdoor play. It was also found that more frequent rules about TV viewing was associated with less screen time, while the presence of a PlayStation in the home was significantly associated with more screen time.

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assesses aspects of the home environment, including quality of physical environment. Home and Life Interview (version 2)³² is a 134-item instrument for parents of children 0-15 years old, with age-specific items for different cohorts. Various response scales were utilized, including, dichotomous (e.g., yes/no), open-ended, and 4- or 5-point Likert scales. The length of the interview was not stated, and no validity or reliability data were reported. The original 136-item Homelife Interview³³, designed for U.S. families with children aged 3 to 15 years, had 8 scales based on interviewer observation and parent report. Two of the 8 scales, Internal Environment (e.g., has 100 sq ft space per person, clean and minimally cluttered, not overcrowded with furniture) and External

Environment (e.g., conditions of street and buildings), encompass the physical environment of the home and are based solely on observation. A total of 121 items were reviewed by a group of psychologists, psychiatrists, and experienced field interviewers (n=9) before augmenting to 136 items. The scales had acceptable internal consistency ($\rho \geq 0.70$) based on items that were coded dichotomously (i.e., present/absent). For construct validity, both scales were significantly associated with preschool-aged children's verbal skills before taking into account child and family demographic variables. In addition, internal environment scale was negatively associated with preschool-aged children's behavior problems before controlling for child and family demographic variables. To improve the scales, Leventhal et al. discussed additional information such as test-retest reliability and inter-observer reliability would have bolstered the results.

The *Home Physical Activity Equipment Scale*³⁴ measures the availability of 14 types of physical activity equipment in and around the home. The equipment included bikes, basketball hoops, jump rope, sports equipment (e.g., balls, racquets, bats), swimming pool, roller skates, fixed play equipment (e.g., swing set, play house, jungle gym), home aerobic equipment (e.g., treadmill, cycle, cross trainer, stepper, workout video), weight lifting equipment, water or snow equipment, yoga/exercise mats, exercise/play/recreation room, trampoline, and stairs. This scale is a yes/no response checklist designed for parents of children aged 5 to 11 years, and was completed twice, each time taking parents approximately 5 to 10 minutes to complete. Face validity consisted of phone and in-person interviews (total number not reported), in which participants for this process did not participate in the actual study. Construct validity of

this scale was supported by observing an inverse association between home physical activity equipment and television viewing time and body mass index z-score. For test-retest reliability, majority of scale items were above 0.60 (ICC range: 0.53-0.85) with an ICC of 0.80 for the scale. To improve the scale, researchers recommended removing swimming pool from the scale as it was below the 0.60 cutoff. Researchers also recommended future studies to include moderators of home environment, such as parent rules, and physical activity opportunities in the neighborhood.

The *Physical Activity and Media Inventory (PAMI)*³⁵ assesses the availability and accessibility of 50 physical activity equipment items grouped in categories (sports equipment, fitness equipment, transportation equipment, athletic footwear, water sports, and outdoor/yard equipment) and 5 media equipment items in the home environment that may support family members' participation in active and sedentary behaviors. The study investigators reviewed face validity (i.e., clarity of the questions and format) and feasibility of administering the instrument with researchers who study family health (total number not reported). The instrument included a list of all of the equipment items along with a list of 16 possible rooms in the house, the yard/outdoor space, and 3 "other" rooms where parents and/or guardians of at least one child aged 10 to 17 years indicated the location of the available equipment item and rated accessibility with a Likert-type scale. Parents/guardians completed it twice, taking an average of 40 minutes each time. Validity of respondent's instrument was assessed with the criterion PAMI completed simultaneously by a trained research assistant; there was strong correlation for PAMI variables (i.e., number of items, density of items in the home, number of items in bedrooms, number of televisions in the home, number of televisions in bedrooms,

checklist quantity, and summary scores) and overall home environment score, calculated as the ratio of the Physical activity Availability and Accessibility Summary Score (PAASS) to the Media Availability and Accessibility Summary Score (MAASS), were acceptable ($r=0.67-0.98$ and $r=0.94$, $P<0.01$, respectively; $N=31$). Construct validity was supported in another study using the PAMI assessment tool, in which physical activity equipment density in the home, PAASS, the ratio of activity to media equipment, and sports equipment were positively associated with physical activity of adolescent males and females measured by a validated accelerometer ($p \leq 0.05$).⁵⁸ Test-retest reliability was also acceptable for PAMI variables (ICC range: 0.72-0.96; $N=24$) and the overall home environment score (ICC range: 0.87-0.99; $N=24$). It should be noted that athletic footwear category was not included in analyses due to considerable disagreement and confusion on identifying particular types of shoes and one pair of athletic shoes may serve multiple roles, which resulted in low correlation between the participant and the research assistant. Researchers recommended modifications and testing of accessibility response options to improve validity. Also, code numbers for equipment items were reported sometimes difficult to find and record; researchers believe a re-formatted version of the inventory will be easier for participants to complete³⁵.

The *Home Environment Survey (HES)*³⁶ measures the availability, accessibility, parental role modeling, and parental policies related to physical activity (PA) resources, fruits and vegetables, and sugar-sweetened drinks and snacks with 126 items divided into 10 scales. Four out of the ten scales related to the following aspects of physical activity: availability, accessibility, parental role modeling, and parental policies to support physical activity. The instrument was developed for parents of overweight and obese

children aged 8 to 12 years (majority white and of high socioeconomic status based on education level of college and graduate school) enrolled in *Family Connections*, a randomized controlled trial that evaluated the efficacy of different forms of parental interventions to support child weight management. Responses were either dichotomous or 5-point Likert scale, and validated with physical activity and dietary consumption measures in validated questionnaires and validated and reliable accelerometer data. Total time to complete HES was not reported. Construct validity analyses showed child physical activity was significantly associated with physical activity accessibility ($r = 0.15$), parental role modeling ($r = 0.14$), and parental policies to support child physical activity ($r = 0.21$). HES scales also had acceptable internal consistency ($\alpha = 0.66-0.84$), except for one related to accessibility of fruits and vegetables, and test-retest reliability ($r > 0.75$, range: 0.78-0.99). To improve the survey, researchers recommended having a separate scale for items related to sedentary activity rather than reverse scoring those items within existing scales. Researchers originally had a scale about parental limits for sedentary behaviors; however, parents had a difficult time responding to items. Researchers also suggest testing this survey in different age populations to determine validity.

The *Healthy Home Survey (HHS)*³⁷ is a 113-item assessment of the home environment that are hypothesized to influence healthy weight in children, including diet and physical activity. The specific domains assessed, with regard to physical activity, include physical activity environment, physical activity policies, media environment, and media policies. The HHS was conducted on families that were predominantly white and with moderately high socioeconomic status in North Carolina with children aged 3 to 8

years through telephone interviews and home visits. Approximately 50% of participants received two telephone interviews to establish test-retest reliability. Mean duration time to complete survey was 29.0-34.4 minutes (SD=8.6-9.2 minutes). Items responses included, dichotomous scales (yes/no), yes/no/don't know, Likert scales, and open-ended questions. The development of the instrument underwent content validity (n=5) and face validity (n=5) in the first phase to make the necessary amendments with regard to the relevance of the items and the factors of interest, clarity of wording, as well as, meaning of each item and clarity of the response options. Validity between the first telephone interview and the home visit, in which two of the three trained researchers present assessed the environment and one continuously monitored and supervised to ensure quality control, of physical activity and media environment items varied (percent agreement: 43-99%; κ : -0.02-0.96) with unexpected low kappas for yard size, presence of a bike or riding toy, and 'adequate play space inside' (κ = 0.49, -0.02, and 0.06, respectively). Test-retest reliability of physical activity and media environment items was acceptable (percent agreement 75-100%, mean κ : 0.81 [0.29-1.00]), except for a low kappa for presence of bike or riding toy (κ = 0.29, percent agreement = 91%). For media and physical activity policy items, test-retest reliability was acceptable (percent agreement: 51-87%, κ : 0.41-0.77, ICC: 0.54-0.86); restriction of outdoor play in the yard had the lowest reliability. Researchers recommended further work on developing physical activity environment items, and identifying both social (e.g., encouragement to be active) and physical (e.g., presence and size of yard) factors related to healthy weight behaviors and BMI levels that are valid and discriminate.

*The Home Self-administered Tool for Environmental assessment of Activity and Diet (HomeSTEAD): Home physical activity and media equipment inventory*³⁸ consists of 221 items that capture the presence, number, accessibility, condition, and location of adult exercise equipment, fixed play equipment, child portable play equipment, and yard characteristics and 83 items that capture the presence, number, accessibility, location, and/or other characteristics of TVs, computers, video games, and portable electronic devices, for a total of 304 items. Many items are follow-up questions that can be skipped if certain equipment pieces are not present. Content validity was assessed and experts (n=4) were prompted to provide feedback and suggestions related to content coverage, item relevance and intention, and question format and clarity, in which revisions were made based on the feedback. For face validity, 6 in-home cognitive interviews were conducted. It was designed for parents of children aged 3 to 12 years to complete three separate self-administrated surveys and one in-home observational assessment by 2 trained research staff to establish validity and reliability of individual items, as well as, for the scale. The inventory includes various responses, including, dichotomous (yes/no), 4-, 5-, or 6-point Likert scales, and open-ended responses. Mean time to complete the inventory was not reported, however, the entire HomeSTEAD instrument was completed in one hour as reported during the pilot phase. Criterion validity between Time 2 parent self-administration and direct observation had good agreement with majority of the items with correlations and kappas greater than 0.50. Across all items, the average correlation was 0.46 (range: -0.32 to 1.00), average percent agreement was 85% (range: 54 to 100%), and average kappa was 0.54 (range: -0.02 to 1.0). Construct validity was evidenced with correlations between physical environment factors and screen time, outside play time,

and BMI of children: the presence of TV and video games with parent-reported TV and video game time ($r = 0.21-0.37$), the amount of child portable play equipment with parent-reported TV time ($r = -0.24$), the accessibility of child portable play equipment and outside play time ($r = -0.21$), and amount of child fixed and portable play equipment in good condition and easy to access with child BMI percentile ($r = -0.25$ and -0.23 , respectively). Test-retest reliability for majority of items was strong with single-measure ICCs greater than 0.60, percent agreements above 88%, and kappas above 0.70. Across all items, the average ICC was 0.68 (range: -0.15 to 1.00), average percent agreement was 93% (range: 72-100%), and average kappa was 0.80 (range: 0.22 to 1.00).

Researchers recommend in future iterations of the tool that the issue of low ICC due to lack of variation for certain items will need further exploration (e.g., better instructions for response categories or expanding/redefining response options, combining accessibility and condition into single indicator) before eliminating certain item(s).

INSTRUMENTS ASSESSING PHYSICAL ACTIVITY AVAILABILITY AND/OR ACCESSIBILITY IN THE NEIGHBORHOOD

Instruments used in previous studies to assess physical activity availability and/or accessibility in the neighborhood are described below. Table 2 summarizes the characteristics of the instruments reviewed.

The *Neighborhood Environment Walkability Scale-Youth (NEWS-Y)*¹⁷ measures the walkability of the neighborhood environment using the following 9 subscales: land use mix-diversity, land use mix-access, pedestrian and automobile safety, crime safety, neighborhood aesthetics, walking/cycling connectivity, street connectivity, residential density, and recreation facilities (within a 10 minute walk from home). This 66-item,

Table 2. Instruments that assess Physical Activity Availability and/or Accessibility in the Neighborhood^a

Neighborhood Physical Activity Environment Instrument	Characteristics evaluated	Type of Questions	Survey Length	Intended Audience	Content Validity	Criterion Validity	Construct Validity	Test-Retest Reliability	Internal Consistency Reliability	Significant findings
Neighborhood Environment Walkability Scale-Youth (NEWS-Y) ¹⁷	walkability of the neighborhood environment summarized from 9 subscales: Land use mix-diversity, Land use mix-access, Pedestrian and automobile safety, Crime safety, Neighborhood aesthetics, Walking/cycling facilities, Street connectivity, Residential density, and Recreation facilities (within a 10 min walk from home)	Likert scales	30-45 minutes, total items=66	US parents of children 5-11 years old (n=116)	4 new items added to Crime safety scale	Not reported	Children were more likely to be active in the street if the crime safety score was lower (less perception of crime) and more likely to walk to school if the residential density was higher	ICC of subscales: 0.56-0.87 (street connectivity subscale was the lowest and crime safety was the highest; N=94)	Cronbach's Alphas of subscales: 0.75-0.87 (N=94)	Not Reported
International Physical Activity Prevalence Study (IPS) Environmental Module (also known as Physical Activity Neighborhood Environment Survey [PANES]) ²⁷	aspects of the neighborhood environment (defined as the area within a 10- to 15-minute walk from home) related to PA, for example, types of houses in the area, amount of shops within walking distance, access to transit stop, sidewalk availability, facilities to bicycle to nearby, presence of low-cost recreation	Likert scale and open-ended questions	Time not reported, total items=17 (7 core, 4 recommended, and 6 optional)	Adults 20-64 years old living in cities in 11 countries (N=11,541)	Not reported	Not reported	Increased PA prevalence (measured by the validated and reliable International Physical Activity Questionnaire [IPAQ]) was significantly related to 5 environmental variables: many shops nearby (OR=1.29 [95% CI=1.15, 1.44]); transit stop in neighborhood (OR=1.32 [95% CI=1.16, 1.54]); sidewalks on most streets (OR=1.47 [95% CI=1.32, 1.65]); bicycle facilities (OR=1.21 [95% CI=1.10, 1.33]); and low-cost recreational	ICC of items: 0.64-0.84 (free or low-cost recreation facilities was the lowest and sidewalks on most streets was the highest; n=135 US adults)	Not reported	1. The United States had the most limited access to transit stops compared to the other countries 2. Less than 60% of participants from the United States were within walking distance of shops

Neighborhood Environment for Children Rating Scales ²⁸	perception of neighborhood safety and social disorder (see events in neighborhood such as, loitering adults, gang activity, drunks or drug dealers hanging around, and disorderly or misbehaving groups of youths or adults)	Likert scale	Time not reported, total items=8	US mothers of young children (~3 years old) from Fragile Families and Child Wellbeing Study; (n=2,445)	Not reported	Not reported	When neighborhood safety was perceived as less safe among women, they had higher mean BMIs and higher prevalence of obesity	Not reported	Cronbach's Alpha of items: 0.91	Not Reported
Parental Perceptions of the Neighborhood Environment Survey ²⁹	perceptions of neighborhood environment, including, traffic density, stranger danger, road safety, pedestrian and cycling conditions (i.e., lights/crosswalks and crossing streets), sporting venues, and public transportation facilities, and crime rates	Likert scale	Time not reported, total items=7	parents of children 5-6 years old (n=291) in Australia	Not reported	Not reported	Girls whose parents owned more than one car and perceived there to be limited public transportation were less likely to walk or cycle.	ICC of items: 0.60-0.89 (n=97 parents of 5-6-year old children in a separate study)	Not reported	Not Reported
							facilities (OR=1.16 [95% CI=1.05, 1.27])			

Table 2. Instruments that assess Physical Activity Availability and/or Accessibility in the Neighborhood^a, continued

^a This table was developed in collaboration with Jennifer Martin-Biggers (Home Environment Characteristics Associated with Obesity Risk in Preschool-Aged Children and Their Parents, Unpublished Doctoral Dissertation, Rutgers University, 2016) and Carol Byrd-Bredbenner as part of the HomeStyles project (USDA NIFA #2011-68001-30170).

Likert-type instrument, adapted from the validated NEWS and NEWS-A,⁵⁹ was developed for parents of children aged 5 to 11 years, and takes 30 to 45 minutes to complete. New items added to the crime safety scale went through expert review and formative interviews with children, adolescents, and their parents. For construct validity, the study suggests children are more likely to be active in the street if the crime safety score was lower (i.e., less perception of crime) and to walk to school if the residential density was higher. Therefore, *Physical Activity Accessibility in the Neighborhood* scale findings indicate a *Neighborhood Safety* subscale to assess overall safety, including safety from crime, and overall conditions in the neighborhood is important to assess. Test-retest reliability of subscales was acceptable (ICC range: 0.56-0.87). Cronbach's alpha to measure the internal consistency reliability for the subscales ranged from 0.75 to 0.87, indicating good reliability.

The *International Physical Activity Prevalence Study (IPS) Environmental Module*,²⁷ also known as the *Physical Activity Neighborhood Environment Survey (PANES)*, is a 17-item survey assessing aspects of the neighborhood environment (defined as the area within a 10- to 15-minute walk from home) such as, types of houses in the area, number of shops within walking distance, access to a transit stop, sidewalk availability, facilities to bicycle to nearby, presence of low-cost recreation facilities, and crime rates. Of the 17 items, 7 are core questions, 4 recommended questions, and 6 optional questions. Items are Likert scale questions and open-ended questions. This instrument has been used in 11 countries and used with participants having an age range of 20 to 64 years. Construct validity was evidenced with significant positive associations found between physical activity prevalence, which was measured by the validated and

reliable short interviewer-administered *International Physical Activity Questionnaire (IPAQ)*, and these environmental variables assessed by the *IPS Environmental Module*: many shops nearby, transit stop in neighborhood, sidewalks on most streets, bicycle facilities, and low-cost recreational. Test-retest reliability in a sample of U.S. adults (n=135) ranged from a low of ICC=0.64 for free or low-cost recreation facilities to a high of ICC=0.84 for sidewalks on most streets. The United States had the most limited access to transit stops compared to the other countries and was the only country in which less than 60% of participants were within walking distance of shops.

*Neighborhood Environment for Children Rating Scales*²⁸ is an 8-item scale that measures neighborhood social disorder by assessing the perception of mothers with young children (approximately 3 years old) about their neighborhood safety. The scale asks how often participants saw events in their neighborhood, such as, loitering adults, gang activity, drunks or drug dealers hanging around, and disorderly or misbehaving groups of youths or adults, to which they responded based on a 4-point Likert scale. The duration time to complete this scale was not reported. It was adapted from another questionnaire⁶⁰ examining the neighborhood environment. For construct validity, researchers found when there is a low level of perceived neighborhood safety women had higher mean BMI and higher prevalence of obesity, even after adjusting for confounding factors. Internal reliability of the items was reported as high ($\alpha = 0.91$), but data were not shown.

The *Parental Perceptions of the Neighborhood Environment Survey*²⁹ is a 7-item survey with Likert scale responses that assesses parents of children aged 5 to 6 years perceptions on each of the following: traffic density, stranger danger, road safety,

pedestrian and cycling conditions (i.e., lights/crosswalks and crossing streets), sporting venues, and public transportation. Perceived features of the neighborhood environment was examined for association with walking or cycling to local destinations from multivariate logistic regression analyses, and girls whose parents owned more than one car and perceived there to be limited public transportation were less likely to walk or cycle at least three times a week to destination. Test-retest reliability of each item was established in a separate study with parents of 5- to 6-year old children in Australia (n=97); 2-week test-retest reliability was acceptable (ICC range: 0.60-0.89).

INSTRUMENTS THAT ASSESS MEDIA AVAILABILITY AND/OR ACCESSIBILITY IN THE HOME

The availability and accessibility of media equipment is positively associated with sedentary behavior,^{31,38} thus media in the home is used as a proxy for sedentary behavior. Instruments commonly used to assess media availability and/or accessibility in the home are described below. Table 3 summarizes the discussion below.

The *Home Electronic Equipment Scale*³⁴ consists of 21 items and 3 subscales that measure the availability of electronic entertainment or information devices in the home and in the child's bedroom: electronics available in the home (televisions, VCR/DVD, digital television recorder, music players, desktop computer with Internet, desktop computer without Internet, video game player, and telephone (non-cell phone), electronics available in the child's bedroom (same as in the home), and portable electronics (music players, video game player, laptop with Internet, laptop without Internet, and cell phones). The scale has parents of children aged 5 to 11 year complete the survey in an open-ended format to count the number of each type of electronic

Table 3. Instruments that assess Media Availability and/or Accessibility in the Home^a

Media Environment Scales	Characteristics evaluated	Type of Questions	Survey Length	Audience	Face Validity	Criterion Validity	Construct Validity	Test-Retest Reliability
Home Electronic Equipment Scale ³⁴	availability of electronic entertainment or information devices in the home and in the child's bedroom in 3 subscales: 1) electronics available in the home (televisions, VCR/DVD, digital television recorder, music players, desktop computer with Internet, desktop computer without Internet, video game player, and telephone (non-cell phone) 2) electronics available in the child's bedroom (same as in the home) and 3) portable electronics (music players, video game player, laptop with Internet, laptop without Internet, and cell phones)	open-ended	5-10 minutes, total items=21	US parents of children 5-11 years old	Phone and in-person interviews (total number not reported)	Not reported	'Electronics available in the home' subscale and 'TVs in the home' item were positively associated to child television viewing time ($\beta=0.29$ [$p=0.006$] and $\beta=0.39$ [$p=0.00$], respectively)	ICC of subscales: 0.71-0.92 (range: 0.26-0.96; N=116) Digital TV recorder was the lowest and removed
Sedentary Opportunities at Home Scale ³⁹	availability of items that may encourage or support children's screen-based behaviors or low levels of activity: pay TV (cable), free-to-air TV (regular free channels with an antenna), video/DVD player, electronic games (e.g., PlayStation, Nintendo, Gameboy), computer, Internet access, a TV in the child's bedroom, and # of TVs in the home	dichotomous yes/no and open-ended	Time not reported, total items=8	parents of children 10-12 years (n=156) in Australia	Not reported	Not reported	Not reported	percent agreement of items: 91-99%; Cohen's Kappa of items: 0.6-0.9; ICC for 'the number of TV sets in the home' item: 0.99
Rules and Restrictions Scale ³⁹	rules and restrictions parents apply to their child's screen-based behaviors (e.g., During mealtimes, I do not allow the TV to be on, My child is not allowed to watch TV/play Playstation/Nintendo until his/her homework is done, My child must be supervised when playing the Playstation/Nintendo, My child must be supervised when he/she is watching TV, My child must be supervised on the Internet)	Likert scales	Time not reported, total items not reported	parents of children 10-12 years (n=156) in Australia	Not reported	Not reported	Not reported	ICC of items: 0.71-0.90

^a This table was developed in collaboration with Jennifer Martin-Biggers (Home Environment Characteristics Associated with Obesity Risk in Preschool-Aged Children and Their Parents, Unpublished Doctoral Dissertation, Rutgers University, 2016) and Carol Byrd-Bredbenner as part of the HomeStyles project (USDA NIFA #2011-68001-30170).

equipment in the home. It takes approximately 5-10 minutes to complete. Test-retest reliability of the subscales ranged from 0.71 to 0.92 indicating high reliability. One subscale, electronic available in the home, and one item, the number of televisions in the home, were positively associated to children's television viewing time ($\beta=0.29$ [$p=0.006$] and $\beta=0.39$ [$p=0.00$], respectively).

Salmon et al's two scales, *Sedentary Opportunities at Home Scale* and *Rules and Restrictions Scale*,³⁹ assess factors in the family environment related to screen-based behaviors was used by families of children aged 10 to 12 years in Australia. The time duration to complete the scales was not reported. The 2-week test-retest reliability was done on a separate sample of parents of 10- to 12-year old children. The *Sedentary Opportunities at Home* scale is an inventory of 8 items that may encourage or support children's screen-based behaviors or low levels of activity: pay TV (cable), free-to-air TV (regular free channels with an antenna), video/DVD player, electronic games (e.g., PlayStation, Nintendo, Gameboy), computer, Internet access, a TV in the child's bedroom, and the number of TVs in the home. Responses were yes/no, except for the number of TVs in the home. Test-retest reliability of all items, except for the number of TVs in the home, was reported to be high (percent agreement: 91% to 99%; $\kappa = 0.6$ to 0.9). Test-retest of 'the number of TVs in the home' item was also reported as high (ICC = 0.99). The *Rules and Restrictions* scale measures the rules and restriction parents apply to their child's screen-based behaviors using Likert scales. Items included, TV restriction, computer restriction, electronic games restriction, no TV until homework done, no TV during meals, TV must be supervised, computer use must be supervised, and electronic

games must be supervised. Test-retest reliability of all items was high (ICC = 0.71 to 0.90).

CHAPTER 3

METHODOLOGY

The purposes of the study were to:

- develop a brief, easy-to-use, self-report questionnaire to evaluate the availability and accessibility of physical activity space and equipment as well as availability and accessibility of sedentary activity (i.e., media) equipment in homes with preschool children
- establish the validity of the questionnaire
- assess the reliability of the questionnaire

DEFINITIONS

The terms used in this study are defined below.

Obesogenic environment: an environment that promotes gaining weight due to the sum of influences from an individual or population's surroundings, opportunities, or conditions.⁶¹

Preschool children/Young children: children ages 2 to 5 years old.

Active play: engaging in activities that make the child sweat and breathe harder than normal, like riding scooters or tricycles, running, dancing, jumping, and horseplay or "wrestling".

Validity: the extent to which the measure adequately reflects the concept or construct; there are several types of validity tests, for example, face, content, criterion, and construct validity. Face validity is when the measure translates the intended construct "at face value". Content validity ensures that the content defines the construct that is being measured. Criterion validity describes a correlation or agreement between the test and

criterion, which can be an established procedure, theory, or well-respected standard of the same objectives and specifications. Construct validity is demonstrated when the measure reflects the construct it claims to reflect.

Reliability: the extent of the consistency or repeatability of a measure.

Physical activity availability: degree to which space and/or equipment are ready-for-use and suitable for physically active play by preschool-aged children; a high degree of availability is reflective of an anti-obesogenic environment.

Media availability: degree to which equipment supportive of sedentary behavior (i.e., electronic entertainment equipment) is ready-for-use by preschool-aged children; a high degree of availability is reflective of an obesogenic environment.

Physical activity accessibility: degree to which space and/or equipment supportive of physically active play are easy and safe for preschool-aged children to reach and use without help of older children or adults; a high degree of accessibility is reflective of an anti-obesogenic environment.

Media accessibility: degree to which equipment supportive of sedentary behavior (i.e., electronic entertainment equipment) are easy for preschool-aged children to reach and use without help of older children or adults; a high degree of accessibility is reflective of an obesogenic environment.

Frequency of access/use: how often preschool-aged children use space or equipment/device.

Parent policies: practices of parents of preschool-aged children that affect children's physical activity accessibility inside the home and in the yard/area right outside the home, accessibility of home media environment, and related interactions such as talking with

children about TV advertisements and other forms of media. A high degree of parent policies supportive of physical activity, media availability curtailment, and frequent discussions related to media content is reflective of an anti-obesogenic environment.

Home Environment: aspects inside the home (i.e., physical activity equipment, electronic entertainment equipment) that contribute to the lifestyle of preschool-aged children

Near Home Environment: aspects of area right outside the home, such as the yard, that contribute to the lifestyle of preschool-aged children

Neighborhood Environment: aspects of the neighborhood or nearby the home (i.e., free or low-cost recreation centers, traffic safety, walkability) that contribute to the lifestyle behaviors of preschool-aged children

INSTRUMENT DEVELOPMENT

The Home Opportunities for Physical activity (HOP) questionnaire was developed to address known limitations in existing instruments, such as participant burdensomeness, poorly matched to preschool-aged children, and lack of reports supporting validity and/or reliability. For many existing instruments, researchers focused on only part of the physical activity environment and did not consider the broad array of opportunities for physical activity.

The HOP questionnaire was designed to accomplish two goals, to assess the availability, accessibility, and frequency of use of physical activity equipment and space inside homes, immediately outside homes (yard), and in neighborhoods of families with preschool-aged children and to assess the availability, accessibility, and frequency of use of sedentary activity equipment (i.e., electronic media) inside the homes of families with preschool children.

Development of the HOP questionnaire was an eight-phase process (Figure 1). The first phase was an extensive examination of published questionnaires designed to assess physical activity and/or sedentary activity availability and/or accessibility in the home to identify key components to incorporate in the study instrument.^{17,27-39,58} These components are described in Chapter 2. The second phase involved creating a bank of items from the review conducted in the first phase that, based on this instrument's purpose, could be used or adapted, and organized by location category (i.e., inside home, immediately outside the home [i.e., yards], and neighborhood [i.e., playgrounds]). Items were derived from numerous published questionnaires.^{28,31,32,36,37,62-65}

In phase three, a panel of experts in tests and measurements, physical activity, and community-based obesity prevention programs (n=6) reviewed the bank of items to identify items assessing each key component, appropriateness to instrument purpose, gaps and overlaps in items, and suitability of items for use in homes with preschool children. In the fourth phase researchers developed, adapted, and/or expanded items to address gaps, and eliminated or collapsed overlapping items. Researchers also revised or eliminated items that did not pertain to physical activities that were age-appropriate for preschool children (e.g., presence of basketball hoop at the home). Guidelines for development of instrument items were carefully followed throughout the development and refinement of the instrument.^{66,67} In phase five, the items were formatted and scoring procedures established. In phase six, the instrument underwent review by a panel of experts (n=8) to establish content and construct validity and further refine the items. Experts were instructed to determine whether the items comprehensively reflected the key environmental factors in and around the home that could affect activity levels of

Figure 1. The Eight-Phases of Instrument Development

Phase 1 Literature Review

- Extensive review of published questionnaires that assess physical activity and/or sedentary activity availability and/or accessibility in the home to identify key components of the home and near environment related to obesity risk

Phase 2 Item Bank Creation

- Identification of items pertinent to study purpose
- Adaptation, enhancement, and expansion of instrument items
- Organization of items by location category (i.e., inside home, immediately outside the home [i.e., yards], and neighborhoods [i.e., playgrounds])

Phase 3 Initial Expert Review of Items

- Expert review (n=6) of items to identify appropriateness, gaps in assessment, and suitability for use in homes with preschool children

Phase 4 Item Refinement

- Further item adaptation, expansion, and *de novo* development
- Revision or elimination of items that were age-inappropriate (e.g., presence of basketball hoop at the home)

Phase 5 Instrument Design

- Creation of instrument layout
- Creation of scoring procedures

Phase 6 Content Validity Review

- Second expert (n=8) review and refinement to establish content validity and confirm scoring procedure
- Refinement of items

Phase 7 Cognitive Testing

- Cognitive testing conducted with parents of preschoolers (n=5) to ensure accurate comprehension
- Refinement of items

Phase 8 Field Testing

- Field-tested instrument with parents age ≥ 18 and < 45 years and having at least one child 2- to 5-years-old
 - **Part 1:** At home visits, parents and researchers simultaneously, but independently, completed the instrument (researchers served as the “gold standard” and used specific guidelines complete the instrument to provide criterion validity)
 - **Part 2:** ~2 weeks later, parents completed the instrument online again to establish test-retest reliability

preschool-aged children.

In phase seven, the instrument was subjected to cognitive testing to ensure that the parents of preschoolers (n=5) interpreted the items as intended. During cognitive testing, parents of preschoolers were asked to read each item aloud, paraphrase what they read aloud, and then respond to the item. Moderators and note-takers assessed the accuracy of their interpretations using a scale from 1 to 5, with 1 being not at all accurate, and 5 being exactly accurate. Cognitive testing results were used to further refine the instrument. Refinements included use of bolding, italicizing, and underlining to emphasize keywords, such as *inside* [the home], *outside* [the home], *neighborhood*, and *active play* to reinforce the question to help ensure accurate responses (Figure 2). The instrument was field-tested in phase eight to establish test-retest reliability, internal consistency, criterion validity, and usability (see below).

INSTRUMENT CONTENT

The final instrument has two main components: home physical activity environment and home media environment. The instrument consists of 3 sections having a total of 8 scales and 18 subscales, containing a total of 52 items that assessed physical activity and media environment in and around the homes of preschool children.

Physical Activity Environment

The instrument assessed the physical activity environment in three locations: inside the home, area right outside the home (yard), and neighborhood. Each location was assessed by one of the 3 sections of the instrument. Active play was defined at the beginning of each section of the instrument dealing with each location as: *Active play means doing activities that make you sweat and breathe harder than normal, like riding*

Figure 2. Bolding, Italicizing, and Underlining of Keywords

Think about your child doing active play inside your home.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

***Active play** means doing activities that make you sweat and breathe harder than normal, like riding scooters or tricycles, running, dancing, jumping, and horseplay or “wrestling”.*

How much do you agree with each statement below?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

SA	A	N	D	SD	1. My child has plenty of room for <u>active</u> play <u>inside</u> our home.
SA	A	N	D	SD	2. My child has plenty of toys for <u>active</u> play that can be used <u>indoors</u> to help build muscles. These are toys like balls, tricycles, and scooters.

scooters or tricycles, running, jumping, and horseplay or “wrestling”.

Section 1: Inside the Home. The *Physical Activity Environment Inside the Home* section of the instrument has two main scales: Physical Activity Availability Inside the Home and Physical Activity Accessibility Inside the Home (Table 4). The Physical Activity Availability Inside the Home scale has two subscales composed of Likert items (5-point scale, strong agree to strongly disagree). The two-item *In Home Space* subscale asked parents to indicate whether children had plenty of room for active play and whether children had enough space to do somersaults and cartwheels without hitting walls or furniture. The *In Home Active Play Supports* subscale has three items evaluating physical activity availability. On this subscale, parents indicated whether children had supports for active play, including toys (e.g., balls, tricycles, and scooters), active video games (e.g., Wii Fit or Xbox Kinect), and playmates.

The Physical Activity Accessibility Inside the Home scale has three subscales. The two-item *In Home Ease of Accessibility* subscale assesses how easy it is for a preschool child to actively play in the home without the assistance of an older child or adult and how easy it is for a preschool child to see and reach indoor equipment for active play. The *In Home Parent Policies* subscale has a single item that evaluated policies parents had with regard to time limits on active indoor play. These two subscales were 5-point Likert scales (strongly agree to strongly disagree).

In Home Frequency of Active Play subscale has three items that assessed frequency of playing actively indoors, playing actively indoors with toys, and playing actively indoors with playmates. Answer choices for this subscale were: almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, and every day.

Table 4. Physical Activity Environment Inside the Home

Scale Subscale Item
Physical Activity Availability Inside the Home <i>In Home Space</i> 1. My child has plenty of room for active play inside our home. *^a 2. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls. *^a <i>In Home Active Play Supports</i> 1. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters. *^a 2. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect. *^a 3. My child has siblings or friends that live nearby to play with indoors. ^a
Physical Activity Accessibility Inside the Home <i>In Home Parent Policies</i> 1. I put limits on the amount of time my child can have active play indoors. ^a <i>In Home Ease of Accessibility</i> 1. It's easy for my child to actively play indoors without my help. ^a 2. Indoor equipment for active play is stored where it is easy for my child to see and reach. *^a <i>In Home Frequency of Active Play</i> 1. How often does your child usually play actively inside your home? ^b 2. How often does your child play actively indoors with toys that help build muscles? These are toys like balls, tricycles, scooters. ^b 3. How often does your child play actively indoors with siblings or kids that live nearby? ^b

*Researchers and parents answered these questions. Items without an asterisk were answered only by parents.

^aAnswer choices: Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree

^bAnswer choices: Almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, Every day

Section 2: Right Outside the Home (Yard). Table 5 shows the items used to assess physical activity environment immediately outside the home. The Physical Activity Availability Outside the Home scale has two subscales. For the *Outside Home Space* subscale, parents used a 5-point Likert scale (strongly agree to strongly disagree) to rate the sufficiency of space for active play, like tag or chase and flat or paved area for riding a wheeled toy in areas the around outside their homes. A third item assessed the availability of space by asking parents to quantify the total amount of space for active play by estimating the amount of space available for children to actively play using car parking space equivalents.

The *Outside Home Active Play Supports* subscale used the following four items to evaluate physical activity play equipment (e.g., swings and slides), toys (e.g., balls, jump ropes, and skates), wheeled toys (e.g., tricycles, bikes, and scooters), and play shoes and clothes. Each item had a 5-point response scale (strongly agree to strongly disagree).

The Physical Activity Accessibility Outside the Home scale has three subscales. The *Outside Home Parent Policies* subscale assesses parent policies related to time restrictions for active play. The *Outside Home Ease of Accessibility* subscale has items that assessed whether the child could easily reach physical activity equipment without help and whether the child could actively play independently without help. The policy and ease of accessibility subscales had five response choices (strongly agree to strongly disagree).

Outside Home Frequency of Active Play subscale has two items with these response choices: almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, and every day. One item asked if the family has a dog and if so, how often the

Table 5. Physical Activity Environment in the Area Right Outside the Home (Yard)

Scale Subscale Item
Physical Activity Availability Outside the Home (Yard) <i>Outside Home Space</i> 1. The yard or area outside our home has plenty of room for my child to actively play games like tag or chase. ^{*a} 2. There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy. ^{*a} 3. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be? ^{*c} <i>Outside Home Active Play Supports</i> 1. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use. ^{*a} 2. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds. ^{*a} 3. My child has a tricycle, bike, scooter, or other wheeled toy to use outside. ^{*a} 4. My child has shoes and clothes for playing actively outside. ^{*a}
Physical Activity Accessibility Outside the Home (Yard) <i>Outside Home Parent Policies</i> 1. I often limit my child's active play in the yard or area right outside our home. ^a <i>Outside Home Ease of Accessibility</i> 1. It's easy for my child to see and reach toys for playing actively outside. ^{*a} 2. It's easy for my child to actively play in the yard or area right outside our home without my help. ^a <i>Outside Home Frequency of Active Play</i> 1. Do you have a dog? ^{*d} If Yes, How often does your child go on walks with the dog or play with it outside (doing things like throwing balls)? ^b 2. When the weather is good, how often does your child usually play actively in the yard or area outside your home? ^b

*Researchers and parents answered these questions. Items without an asterisk were answered only by parents.

^aAnswer choices: Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree

^bAnswer choices: Almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, Every day

^cAnswer choices: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10 or more

^dAnswer choices: Yes, No

child goes on walks or plays with the dog outside, the other item asked how often the child plays actively right outside the home when the weather is good.

Section 3: Neighborhood. Table 6 shows the items used to assess physical activity environment in the neighborhood. The Physical Activity Availability In the Neighborhood scale has two subscales. The *Neighborhood Space* subscale and the *Neighborhood Active Play Supports* subscale used a 5-point Likert scale (strongly agree to strongly disagree), plus a “don’t know” option in case parents were not familiar with neighborhood facilities. *Neighborhood Space* subscale assesses the availability of space and consists of two items: availability of parks, playgrounds, and pools nearby the home where the child can play and free or low-cost indoor places (i.e., recreation center). The *Neighborhood Active Play Supports* subscale consists of one item that assessed availability of equipment for active play such as swing sets, slides, or other play equipment in outdoor areas.

The Physical Activity Accessibility in the Neighborhood scale has three subscales. The *Neighborhood Safety* subscale assesses overall safety (i.e., safety from traffic, crime, and biting insects) and overall condition of the neighborhood (i.e., safe to actively play, cleanliness, crowded with people). Among the six-item *Neighborhood Safety* subscale, items about overall safety of the neighborhood included five answer choices (strongly agree to strongly disagree), and items about overall condition of the neighborhood included a “don’t know” option in addition to the five answer choices. The *Neighborhood Ease of Accessibility* subscale was evaluated with one item about the ease of taking children to outdoor areas in the neighborhood to play using the five answer choices strongly agree to strongly disagree.

Table 6. Physical Activity Environment in the Neighborhood

Scale Subscale Item
Physical Activity Availability in the Neighborhood Neighborhood Space 1. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively. * ^e 2. There are free or low-cost recreation centers or other indoor places where kids can play actively. * ^e Neighborhood Active Play Supports 1. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use. * ^e
Physical Activity Accessibility in the Neighborhood Neighborhood Safety 1. There is so much traffic near where I live that I do not feel safe walking in the area. * ^a 2. I feel safe from crime in my neighborhood and nearby. * ^a 3. I feel safe from biting insects, like mosquitos, ticks, and scorpions, and animals, like dogs running loose, in my neighborhood and nearby. ^a 4. The outdoor areas in my neighborhood where my child can play actively are safe. * ^e 5. The outdoor areas in my neighborhood where my child can play actively are clean. * ^e 6. The outdoor areas in my neighborhood where my child can play actively are crowded with other people. ^e Neighborhood Ease of Accessibility 1. In my neighborhood, it's easy to get to outdoor areas where kids can play actively. * ^e Neighborhood Frequency of Active Play 1. When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, and playgrounds, near your home? ^b 2. How often does your child usually play actively in free or low-cost recreation centers or other indoor places near your home? ^b

*Researchers and parents answered these questions. Items without an asterisk were answered only by parents.

^aAnswer choices: Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree

^bAnswer choices: Almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, Every day

^eAnswer choices: Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree, Don't Know

The *Neighborhood Frequency of Active Play* subscale has one item about frequency of playing in outdoor areas and one item about frequency of playing in indoor areas. Frequency of active play was a 5-point Likert scale with these answer choices: almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, and every day.

Subscales for inside the home, outside the home, and/or in the neighborhood tend to have several analogous items. Table 7 compares the physical activity environment items by location (i.e., indoor, outdoor, neighborhood).

Scoring Methodology for Home and Neighborhood Physical Activity Environment

All 5-point Likert type items on the instrument were scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree, respectively. Items that had a “don’t know” answer choice were not scored. Scoring for Likert scales took the polarity of the item into consideration. Items with positive polarity were scored 5, 4, 3, 2, or 1 points for strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree, respectively. In contrast, those with negative polarity were scored in an opposite fashion. Frequency items were scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered every day, 5 to 6 times a week, 3 to 4 times a week, 1 or 2 times a week, or almost never, respectively.

The item asking parents to estimate physical activity space in the yard (in terms of parking lot spaces at the shopping mall) was assigned a numerical score ranging from 1 to 5. The item was scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered 9 or more parking spaces, 7 to 8 parking spaces, 5 to 6 parking spaces, 3 to 4 parking

Table 7. All physical activity items categorized by subscale construct and location

Construct	Indoor Item	Outdoor Item	Neighborhood Item
<i>Space</i>	My child has plenty of room for active play inside our home.	The yard or area outside our home has plenty of room for my child to actively play games like tag or chase.	There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively.
	My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.	There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy.	There are free or low-cost recreation centers or other indoor places where kids can play actively.
		Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be?	
<i>Active Play Supports</i>	My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters.	My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds.	
		The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use.	The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use.
	My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect.	My child has a tricycle, bike, scooter, or other wheeled toy to use outside.	
	My child has siblings or friends that live nearby to play with indoors.	My child has shoes and clothes for playing actively outside.	
<i>Parent Policies</i>	I put limits on the amount of time my child can have active play indoors.*	I often limit my child's active play in the yard or area right outside our home.*	

Table 7. All physical activity items categorized by subscale construct and location, continued

<i>Ease of Accessibility</i>	It's easy for my child to actively play indoors without my help.	It's easy for my child to actively play in the yard or area right outside our home without my help.	In my neighborhood, it's easy to get to outdoor areas where kids can play actively.
	Indoor equipment for active play is stored where it is easy for my child to see and reach.	It's easy for my child to see and reach toys for playing actively outside.	
<i>Frequency of Active Play</i>	How often does your child usually play actively inside your home?	When the weather is good, how often does your child usually play actively in the yard or area outside your home?	When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, and playgrounds, near your home?
			How often does your child usually play actively in free or low-cost recreation centers or other indoor places near your home?
	How often does your child play actively indoors with toys that help build muscles? These are toys like balls, tricycles, scooters.	Do you have a dog? If so, How often does your child go on walks with the dog or play with it outside (doing things like throwing balls)?	
	How often does your child play actively indoors with siblings or kids that live nearby?		
			There is so much traffic near where I live that I do not feel safe walking in the area.*
			I feel safe from crime in my neighborhood and nearby.
<i>Safety</i>			I feel safe from biting insects, like mosquitos, ticks, and scorpions, and animals, like dogs running loose, in my neighborhood and nearby.
			The outdoor areas in my neighborhood where my child can play actively are safe.
			The outdoor areas in my neighborhood where my child can play actively are clean.
			The outdoor areas in my neighborhood where my

			child can play actively are crowded with other people.
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*Reverse code item

spaces, or 2 parking spaces or less, respectively.

The item asking parents about a dog had two parts with one composite score. Access to a dog was a dichotomous question with a yes or no response, and the frequency of access of dog walks was a 5-point Likert scale. The item scored 0 if there was no dog. If they had a dog, scoring was based on the frequency scoring above.

Scores for each item in a subscale were averaged to create the subscale score. Higher scores indicated greater availability of space, greater availability of active play supports, greater enforcement of parent policies on active play, easier accessibility to physical activity, greater sense of safety for active play, and greater frequency of active play.

Home Media Environment

The instrument also addressed the home media environment availability and accessibility (Table 8). The Media Availability Inside the Home scale assesses the media devices, like TVs, DVD players, computers, and smart phones that work in the home. The first item assesses the number of working media devices (i.e., TVs, DVD players, computers/laptops, smart phones/tablets/LeapPads, and video games usually played sitting down and video games usually played standing up and require lots of moving) in the home. For each media device, answer choices included 0 to 10 and more than 10. The second item assesses whether media devices and/or Internet were permitted in the child's bedroom. The third item asks if there was Internet access in the home. The second and third items of the Media Availability Inside the Home scale were dichotomous (yes/no) items that were presented in a checklist format.

The Media Accessibility Inside the Home scale has three subscales: *Media Parent*

Table 8. Home Media Environment

Scale <i>Subscale</i> Item
Media Availability Inside the Home 1. How many of each of these are in your home? (TV, DVD Player, Computer/Laptop, Smart Phone/Tablet/LeapPad, Video games that usually are played sitting down, Video games that are played standing up and require lots of moving [like Wii Fit, Xbox Kinect]) * ^f 2. Which of these can your child use in his or her bedroom? (TV, DVD Player, Computer/Laptop, Smart Phone/Tablet/LeapPad, Video games that usually are played sitting down, Video games that are played standing up and require lots of moving [like Wii Fit, Xbox Kinect], Internet, None of the above) * ^g 3. Do you have Internet access in your home? * ^g
Media Accessibility Inside the Home Media Parent Policies 1. I try to limit the number of TV commercials my child sees. ^a 2. I try to limit the TV shows and movies my child sees to only those made for kids. ^a 3. I often talk with my child about advertisements on TV. ^a 4. I often talk with my child about TV shows, video games, or movies. ^a Ease of Media Accessibility 1. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help. * ^a 2. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help. * ^a 3. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect) with little or no help. * ^a Frequency of Media Use 1. How often is a TV on when meals and snacks are eaten at your home? ^b 2. How often do you use a computer, tablet, video game, smart phone, or electronic educational device (like LeapPad) during meals and snacks at home? ^b 3. Each day, how much time is the TV on when no one is watching it? ^h 4. Each day, how much time do you usually allow your child to watch TV or movies at home? ^h 5. Each day, how much time do you allow your child to play at home with computers, tablets, video games that are played sitting down, smart phones, or electronic educational devices (like LeapPad)? ^h 6. Each day, how much time do you allow your child to play at home with video games that are played standing up and require lots of moving (like Wii Fit or XBox Kinect)? ^h

*Researchers and parents answered these questions. Items without an asterisk were answered only by parents.

^aAnswer choices: Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly Disagree

^bAnswer choices: Almost never, 1 or 2 times a week, 3 to 4 times a week, 5 to 6 times a week, Every day

^fAnswer choices: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, more than 10

^gAnswer choices: Yes (Check Mark)/No (No Check Mark)

^hAnswer choices: Actual time in hours and minutes

Policies, Ease of Media Accessibility, and Frequency of Media Use. The *Media Parent Policies* subscale has 4 items. Two of the items assess whether parents limited children's exposure to TV commercials and limited TV shows or movies access to those that are kid-friendly. The other two items evaluate whether the parent discussed TV advertisements TV shows, video games, or movies with their children.

The *Ease of Media Accessibility* subscale used three items to assess how easy parents thought it was for a preschool-aged child to use TVs or DVD players and other media devices (i.e., computers, tablets, video games, smart phones, and electronic educational devices [like LeapPad]), and video games that are played standing up and require lots of moving (like Wii Fit, Xbox Kinect games) in their homes without the help of older siblings or adults. The 5-point answer choices for these three items ranged from strong agree to strongly disagree.

The *Frequency of Media Use* subscale has six items. Two items assessed how often (almost never, 1 to 2 times a week, 3 to 4 times a week, 5 to 6 times a week, everyday) the child uses a TV or media device while eating in the home. The other four items focus on the actual amount of time media devices are in use daily; time TV was on when no one was watching it, time child is usually allowed to watch TV or movies, time allowed to use sedentary media devices, and time allowed use video games that are played standing up and require lot of moving.

Scoring Methodology for Home Media Environment

Media Availability Inside the Home scale items had responses in multiple forms. The item that asked about the number of media devices was assigned a numerical score ranging from 0 to more than 10. The item was scored as 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, or

0 points if parents of preschoolers answered more than 10, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, or 0, respectively. The number of different media devices permitted in a child's bedroom was summed and assigned a score equal to the number of different devices permitted (possible range was 0 to 7). Internet access in the home was a dichotomous item (i.e., Yes/No) and "Yes" responses were scored as 1 point and "No" responses were scored as 0 points.

All 5-point Likert type items on the Media Accessibility Inside the Home scale were scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree, respectively. Higher scores indicated greater congruence of parent policies with expert recommendations or easier access of media. Frequency of media use items with 5-point Likert type scale responses were scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered every day, 5 to 6 times a week, 3 to 4 times a week, 1 or 2 times a week, or almost never, respectively. Higher scores indicated greater frequency of media use. For frequency of media use items answered in actual time in hours and minutes, minutes were rounded to the nearest 15-minute increment. The time increment items were summed and scores were based on whether screen time complied with recommendations of less than 2 hours per day from The American Academy of Pediatrics⁶⁸ (0 points for compliance; 1 point for non-compliance) or summed and scored as 5, 4, 3, 2, or 1 points if parents of preschoolers answered 6 or more hours, 4 to <6 hours, 2 to <4 hours, less than 2 hours, or 0 time, respectively.

Scores for each item in a subscale were averaged to create the subscale score. Higher scores indicated greater availability of media devices in the home and in the

child's bedroom, greater congruence of parent policies with expert recommendations, easier accessibility of media, and more frequency of media use.

FIELD TEST OF INSTRUMENT

Sample

During the Summer of 2013, parents of preschool-aged children living in New Jersey were recruited by multiple listserv announcements, word of mouth, and notices distributed in daycare centers and preschools in central New Jersey. Recruitment materials described the purpose of the study, expectations of participants, time commitment, and compensation for participation (Appendix A). The recruitment advertisement included a link to the online eligibility screener questionnaire. Eligibility criteria included ≥ 18 and < 45 years of age and at least one child 2- to 5-years old. All participants gave informed consent. This study was approved by Rutgers' Institutional Review Board (IRB).

Research Design

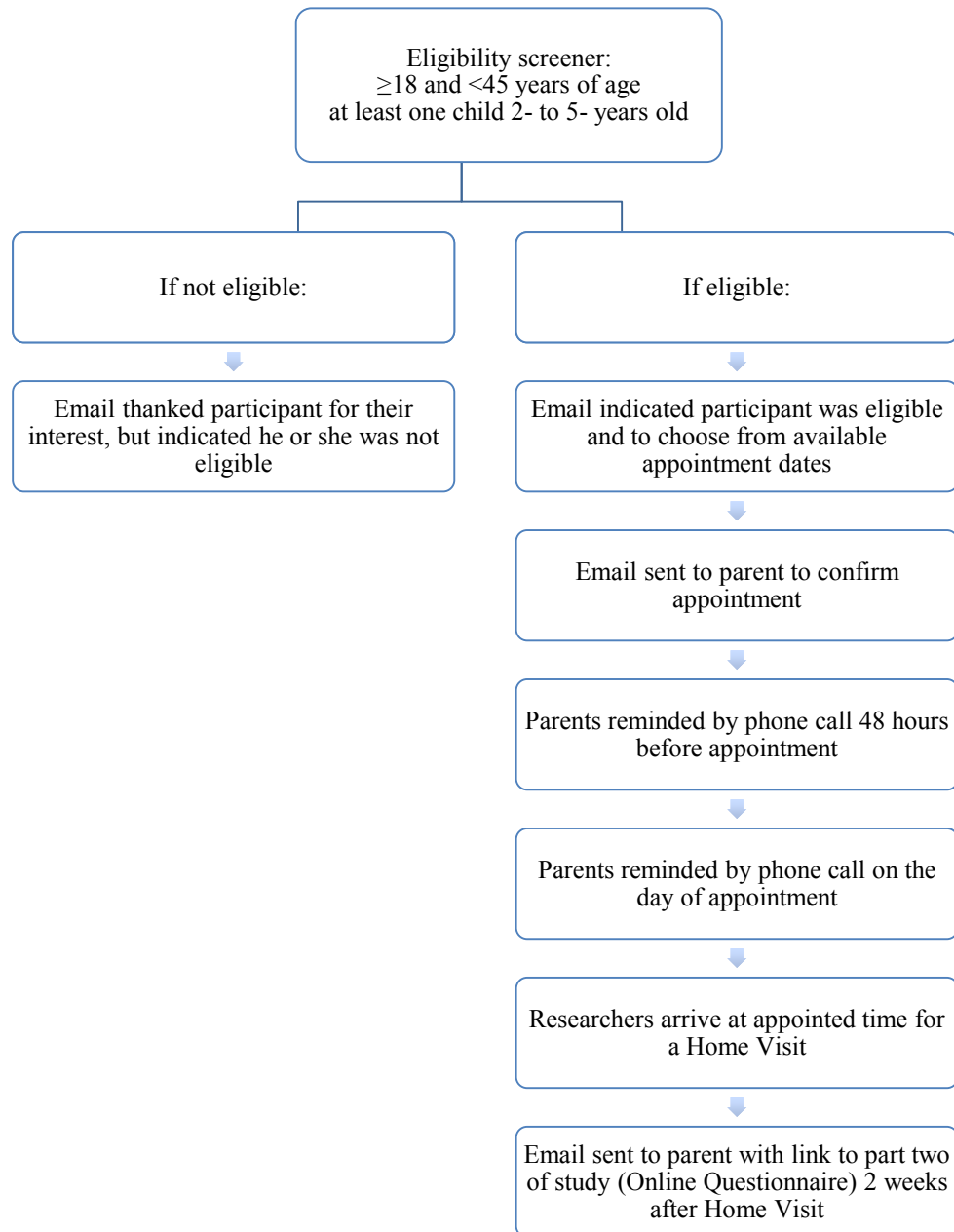
The research design was observational and survey. Researchers observed physical and sedentary activity aspects of participants' homes and parents completed the survey on two occasions. The study had two parts. In part one, two trained researchers visited the homes of participants. During the home visit, researchers and parents simultaneously, but independently, assessed the physical and sedentary activity environment of parents' home environments using a pencil and paper format. The purpose of part one was to allow researchers to serve as the "gold standard" comparison for parent responses in order to establish criterion validity of the instrument. In part two of the study, parents again completed the survey two weeks later, but used an online format.

The purpose of part two was to compare parent responses with part one responses to determine test-retest reliability of the instrument. Parents were compensated \$20 for part one and \$30 for part two of the study.

Data Collection

Eligible participants were sent an email with instructions on how to set up an appointment for a home visit and a copy of the informed consent for review prior to the visit. Once an appointment was made, a confirmation email was sent to the parent. Forty-eight hours prior to the home visit, researchers called to remind participants of their appointment and clarify any travel directions. In addition, participants were reminded that no preparations were necessary for the visit (i.e., not to make changes to their home). One to three hours before leaving for participant's home, researchers called to give them a second reminder of the home visit. Figure 3 describes this process for communicating with participants. See Appendix B for a copy of the Home Visit Protocol.

Two trained researchers were present at each home visit; one researcher conducted the home visit and one researcher assisted with measurements and took notes. Researcher training included 3 sessions, during which the protocol was thoroughly reviewed. Subsequent training sessions following the initial one were necessary to address any refinements made to the study protocol or data collection materials to make visits and data collection as efficient and accurate as possible. The purpose of the training sessions was to review study procedures to maintain the same level of accuracy and consistency for each home visit. The sessions also helped to minimize inter-rater error and ensure good inter-rater reliability. A total of five different researchers conducted home visits.

Figure 3. Points of Contact with Participants

At the start of the home visit, the participant signed the informed consent form and received a copy for their records. Next, participants completed the parent version of the instrument (Appendix C) independently, while researchers completed the researcher version of the instrument (Appendix D). Participants and researchers assessed the areas inside the home first (both physical activity and media), and then proceeded to areas outside the home second, and then neighborhood last. If participants had a question about the instrument, they were asked to complete the instrument as they would if researchers were not present. However, researchers took note of the questions asked by participants in order to further refine the instrument.

The researcher version of the instrument was made up of interview questions and researcher notes, and contained only the items that the researchers could observe. For the first section, inside the home, to compare parent perceptions of space, equipment, and media availability with objective measures, researchers measured play space areas, counted toys and video games for active play, and counted all working media equipment in the home. Researchers were instructed to measure the two largest rooms where the child can actively play, in addition to the child's bedroom. Concurrently in the child's bedroom, researchers also assessed the availability of child's clothes and shoes for outdoor play since they are usually stored inside the home. Instructions given to the researchers for this item included asking parents what kinds of shoes and clothes the child has for playing actively outside. Instructions did not include counting the number of shoes and clothes.

The assessment of the second section, or outside the home, was conducted outdoors to make the most accurate observations, unless there was an uncontrollable

reason (i.e., rain). Parents were asked to complete the second set of questions before leading the researchers outside.

For the third and final section, researchers assessed the neighborhood in multiple steps: they used online resources prior to the visit, conducted observations upon arrival into the neighborhood of the appointed visit, interviewed the parent about outdoor and indoor active play opportunities, conducted another observation nearby the home after the visit, if appropriate, and reviewed additional online resources if new information was given.

The dog item on the Physical Activity Accessibility Outside the Home scale was answered at the end of the home visit. This sequence was used to permit parents and researchers to complete the instrument as efficiently as possible.

At the completion of the home visit, parents were thanked, paid \$20 for their participation, and informed to expect an email in two weeks for part two of the study. Researchers left the home promptly and discussed observations at an off-site location. The comparison of the parent and researcher version of HOP (Appendix E) provided further instructions on utilizing the data collected to match up with the most accurate response.

A link to the online version of the survey (Appendix F) was sent to the participant 2 weeks after the home visit. An email reminder was sent if the survey was not completed within 24 hours of the first email.

Coding of Data

Data collected from home visits were manually entered in spreadsheets. One spreadsheet was created for the questionnaire completed by parents and another

spreadsheet for the questionnaire completed by researchers. A data dictionary provided guidelines for entering each item response. Entries made into the spreadsheets were double-checked by research assistants for accuracy.

To ensure uniformity in coding of data collected by researchers during home visits, response equivalents were provided for each item's response options (i.e., strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) for researchers to follow. Researchers' judgment was also used for responses that did not have an equivalent. See Tables 9 through 11 for the researcher instructions for coding data categorized by location.

Data Analysis

Frequencies were conducted in Microsoft Excel as another check to be certain answers were plausible; for example, Likert items that ranged from 1 to 5 were checked to make sure no other entries were accidentally made. A third spreadsheet was generated for the online parent survey responses. Then all three spreadsheets were merged into one, matching participant data across all three, and analyzed with IBM SPSS Statistics 20.0.

For each scale item completed by parents and researchers at the home visit (part 1 of the study), means and standard deviations were calculated. Mean scores for each scale and subscale were also calculated. Independent two-tailed t-tests were conducted to determine whether significant differences occurred between parent and researcher ratings. Two-way mixed consistency intra-class correlations (ICC) were calculated for each item, subscale, and scale to compare researcher and parents responses and establish criterion validity. Criterion validity was assessed by comparing parent responses from the survey completed during the home visit to researcher responses from home visit observations.

Table 9. Instructions given to Researchers to complete the Indoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire

Scale <i>Subscale</i> Items	Researcher Instructions
Physical Activity Availability Inside the Home	
<i>In Home Space</i>	
1. My child has plenty of room for active play inside our home.	Measurement of play space and response equivalent: SA=Ample space; >14ft x 14ft space for active play (>196 ft ²) A=Adequate space; >12ft x 12ft and ≤14ft x 14ft space for active play (>144 ft ² and ≤196 ft ²) N= Some space; >10ft x 10ft and ≤12ft x 12ft space for active play (>100 ft ² and ≤144 ft ²) D=Limited space; >8ft x 8ft and ≤10ft x 10ft space for active play (>64 ft ² and ≤100 ft ²) SD=Very limited or no space for active play; up to 8ft x 8ft space (≤64 ft ²)
2. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.	Based on observation and response equivalent: SA=Ample space; 5 or more somersaults or cartwheels without hitting furniture or wall A=Adequate space; 4 somersaults or cartwheels without hitting furniture or wall N= Some space; 3 somersaults or cartwheels without hitting furniture or wall D=Limited space; 2 somersaults or cartwheels without hitting furniture or wall SD=Very limited or no space for active play; 1 or less somersault or cartwheel without hitting furniture or wall
<i>In Home Active Play Supports</i>	
1. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters.	Total # of toys for active indoor play and response equivalent: SA=Ample toys; 15 or more toys A=Adequate toys; 10-14 toys N=Some toys; 5-9 toys D=Limited toys; 1-4 toys SD=No toys

Table 9. Instructions given to Researchers to complete the Indoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

2. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect.	Total # of active video games that help child be active and response equivalent: SA= More than 1 active video game N=1 active video game SD=Does not have active video games at home
Physical Activity Accessibility Inside the Home	
<i>In Home Ease of Accessibility</i>	
1. Indoor equipment for active play is stored where it is easy for my child to see and reach.	Based on observation and response equivalent: SA=All stored active play toys and active video games are easy to see and reach or no storage area A=Most active play toys and active video games are easy to see and reach N=Half of active play toys and active video games are easy to see but hard to reach or gathering dust. D=Nearly all active play toys and active video games are hidden and unreachable SD=No active play toys or active video games
Media Availability Inside the Home	
1. How many of each of these are in your home? (TV, DVD Player, Computer/Laptop, Smart Phone/Tablet/LeapPad, Video games that usually are played sitting down, Video games that are played standing up and require lots of moving [like Wii Fit, Xbox Kinect])	Based on # of working media
2. Which of these can your child use in his or her bedroom? (TV, DVD Player, Computer/Laptop, Smart Phone/Tablet/LeapPad, Video games that usually are played sitting down, Video games that are played standing up and require lots of moving [like Wii Fit, Xbox Kinect], Internet, None of the above)	Based on observation

3. Do you have Internet access in your home?	Based on observation
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Table 9. Instructions given to Researchers to complete the Indoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

Media Accessibility Inside the Home	
<i>Ease of Media Accessibility</i>	
1. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help.	Based on observation and response equivalent: SA=The controls are in a place that child can reach and turn on A= N= D= SD=The controls or access to the TV and movies are kept in a place purposely inaccessible to the child
2. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help.	Based on observation and response equivalent: SA=All devices are easy to turn on and use with little or no help A=Most devices are easy to turn on and use with little or no help N=Half of the devices are easy to turn on and use with little or no help D=Less than half of the devices are easy to turn on and use with little or no help SD=Nearly all devices are hidden/unreachable and child needs help to turn on and use
3. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect) with little or no help.	Based on observation and response equivalent: SA=Devices are kept in a place that the child can get to them and use them WITHOUT needing the parents help. A= N= D= SD=Devices require a parent to help use them; otherwise child cannot access them alone

Table 10. Instructions given to Researchers to complete the Outdoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire

Scale <i>Subscale</i> Items	Researcher Instructions
Physical Activity Availability Outside the Home (Yard)	
<i>Outside Home Space</i>	
1. The yard or area outside our home has plenty of room for my child to actively play games like tag or chase.	Based on estimation or measurement of yard space/space right outside of home for active play and response equivalent: SA=Child has space to play freeze tag A=Has space but not ideal to play tag (e.g. too close to street) N= D=
2. There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy.	SD=No space to run around and play tag or chase Based on estimation or measurement of paved/flat area for riding wheeled toy and response equivalent: SA=Paved or flat area is big enough to safely ride wheeled toy A= N= D=Paved or flat area is not big enough to ride wheeled toy SD=No paved or flat area for opportunity to ride wheeled toy
3. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be?	No specific researcher instructions given

Table 10. Instructions given to Researchers to complete the Outdoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

<i>Outside Home Active Play Supports</i>	
1. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use.	Based on observation and response equivalent: SA=Ample equipment; 3 or more active play equipment: playset (with swing, slide, and climbing wall) or 3 separate equipment (monkey bars, trampoline, bounce house) or a mix A=Adequate equipment; 2 active play equipment: playset (with swing and slide) or 2 separate equipment N=Some equipment; 1 active play equipment D=Limited equipment; active play equipment for summer or winter only (e.g., slip n slide) SD=No outside active play equipment
2. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds.	Total # of toys for outdoor active play and response equivalent: SA=Ample toys; 15 or more toys A=Adequate toys; 10-14 toys N=Some toys; 5-9 toys D=Limited toys; 1-4 toys SD=No toys
3. My child has a tricycle, bike, scooter, or other wheeled toy to use outside.	Total # of wheeled toys to use outside and response equivalent: SA=At least one wheeled toy A= N= D= SD=No wheeled toy
4. My child has shoes and clothes for playing actively outside.	Based on notes and criteria: SA=At least one pair of play shoes (sneakers, snow boots) and one coat for winter A= N= D= only sneakers or only snow boots SD=No sneakers, snow boots, or winter coat

Table 10. Instructions given to Researchers to complete the Outdoor Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

Physical Activity Accessibility	
Outside the Home (Yard)	
<i>Outside Home Ease of Accessibility</i>	
1. It's easy for my child to see and reach toys for playing actively outside.	Based on observation and response equivalent: SA= All equipment (outside active play toys and wheeled toys) is easy to see and reach or no storage area A= Most outside active play toys and wheeled toys are easy to see and reach N= Half of outside active play toys and wheeled toys are easy to see and reach D= Nearly all outside active play toys and wheeled toys are locked up, hidden, and unreachable SD= No outside active play toys or wheeled toys
<i>Outside Home Frequency of Active Play</i>	
1. Do you have a dog?	Based on observation and interview (if there was no evidence of one [e.g., bowl])

Table 11. Instructions given to Researchers to complete the Neighborhood Section of the Home Opportunities for Physical activity (HOP) Questionnaire

Scale <i>Subscale</i> Items	Researcher Instructions
Physical Activity Availability in the Neighborhood	
<i>Neighborhood Space</i>	
1. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively.	Based on observation, interview, online resources, and response equivalent: SA=Multiple parks, pools, and playgrounds within 1 mile walking/driving distance A=At least one park, pool, or playground within 1 mile walking/driving distance N=At least one park, pool, or playground 1-3 miles drive away D=There are parks, pools, and/or playgrounds but they are 4-7 miles drive away SD=No parks, pools, or playgrounds within 7 miles
2. There are free or low-cost recreation centers or other indoor places where kids can play actively.	Based on observation, interview, online resources, and response equivalent: SA=Two or more free or low-cost recreation center or indoor place A=One N= D= SD=No Recreation center or indoor place or they cost over \$100/month/person
<i>Neighborhood Active Play Supports</i>	
1. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use.	Based on observation, online resources, and response equivalent: SA=Two or more areas have plenty of play equipment A=One area N= D=One with limited equipment SD=No outdoor areas with play equipment for preschooler to use

Table 11. Instructions given to Researchers to complete the Neighborhood Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

Physical Activity Accessibility in the Neighborhood <i>Neighborhood Safety</i>	
1. There is so much traffic near where I live that I do not feel safe walking in the area.	Based on observation and response equivalent: SA=There are no sidewalks or pedestrian signs/crosswalks and there is so much traffic A= N=Pedestrian signs and crosswalks all over make it feel safer among the heavy traffic D= SD=Pedestrian signs/crosswalk all over; no heavy traffic.
2. I feel safe from crime in my neighborhood and nearby.	Based on observation and response equivalent: SA=Area is clean, no suspicious people hanging around, no bars on windows of homes A= N=May/may not be safe D= SD=I keep on looking over my shoulder. The place looks run down and dirty. There are bars on the windows of homes.
3. The outdoor areas in my neighborhood where my child can play actively are safe.	Based on observation and response equivalent: SA=Fence around the border; not located along busy roads A= N= D= SD=Heavy traffic right along the outdoor space and no fences
4. The outdoor areas in my neighborhood where my child can play actively are clean.	Based on observation and response equivalent: SA=No garbage laying around and garbage can in eyesight from all outdoor area grounds A=Some garbage that looks out of place in all outdoor area grounds N= D=Garbage laying around in more than one outdoor area SD=Garbage all over

Table 11. Instructions given to Researchers to complete the Neighborhood Section of the Home Opportunities for Physical activity (HOP) Questionnaire, continued

<i>Neighborhood Ease of Accessibility</i>	
1. In my neighborhood, it's easy to get to outdoor areas where kids can play actively.	Based on observation, online resources, and response equivalent: SA=Outdoor areas are less than ½ a mile walk away A=Outdoor areas are ½-1 mile walk or within a 5 minute drive N= Outdoor areas are more than 1 mile walk or within a 5-10 minute drive D=Outdoor areas are within a 10-15 minute drive SD=Outdoor areas are more than a 15 minutes drive away

The researcher observation was used as the “gold standard” criterion.

Means and standard deviations for each scale item on the questionnaire completed during the home visit and two weeks later by parents (part 2 of the study) were calculated. Paired, two-tailed t-tests were conducted to compare test and re-test responses. To assess test-retest reliability, 2-way mixed consistency ICCs were computed to compare the parents’ data from the home visit and online survey. Cronbach’s alpha of the online survey data was calculated to determine the internal consistency of scales and subscales. Spearman rank-order correlations were conducted between parent BMI to the physical activity and media home environment scores for scales and subscales to determine how environment is related to BMI.

CHAPTER 4

RESULTS

The development of the instrument was an eight-phase process that resulted in 52 Likert-type items in 18 subscales for the final version. The instrument assessed the availability, accessibility, and frequency of use of physical activity equipment and space in three locations: inside the homes, immediately outside the homes (yard), and in the neighborhoods. It also assessed the availability, accessibility, and frequency of use of sedentary activity equipment (i.e., electronic media) inside homes. The target audience for the instrument was parents of preschool-aged children.

Instrument

The assessment of the home physical activity environment had 6 scales (*Physical Activity Availability Inside the Home, Physical Activity Accessibility Inside the Home, Physical Activity Availability Outside the Home (Yard), Physical Activity Accessibility Outside the Home (Yard), Physical Activity Availability in the Neighborhood, and Physical Activity Accessibility in the Neighborhood*). The subscales and items in each scale are shown in Tables 4 to 6 (see Chapter 3). There was a total of 36 items in this component of the instrument.

For the assessment of the home media environment, there were 2 scales (*Media Availability Inside the Home and Media Accessibility Inside the Home*). There was a total of 16 items in this component of the instrument. Table 7 in Chapter 3 displays the subscales and items for these scales.

Sample

Parents of preschool-aged children living in New Jersey were recruited by multiple listserv announcements, word of mouth, and notices distributed in daycare centers and preschools in central New Jersey. A total of 128 people responded and 104 people finished the eligibility screener. Of those who finished, 97 parents met the eligibility criteria that included being ≥ 18 and < 45 years of age and having at least one child 2- to 5-years old. Among the eligible parents, to control research travel time obligations, those living within 30 miles of Rutgers University-New Brunswick ($n=67$) were invited to participate with the remainder ($n=30$) waitlisted. Home visits were scheduled with the eligible parents on a first-come, first-serve basis until the study quota of 50 homes was reached; majority of the parents ($n=46$) lived within the 30-mile radius and a handful ($n=4$) lived outside the radius. Home visits took no more than 45 minutes to complete. The administration of the survey online took parents an average of 19 minutes ± 7.78 SD minutes to complete. Almost all parents (96%, $n=48$) completed the second part of the study (Figure 4).

Demographics were collected in the online version of the HOP questionnaire. The sample for home visits consisted of 50 participants and was predominantly female (94%). Two participants did not complete the online survey, thus the sample for comparison of parent responses between home visit and online consisted of 48 participants that were female (94%), White (71%), had a bachelors degree or higher (64%), and overweight or obese (48%) (Table 12).

Comparison of Parent and Researcher Instrument Responses

At baseline, trained researchers and 50 parents simultaneously, but independently, assessed parents' home environments using 5-point Likert-type scales and checklists. The

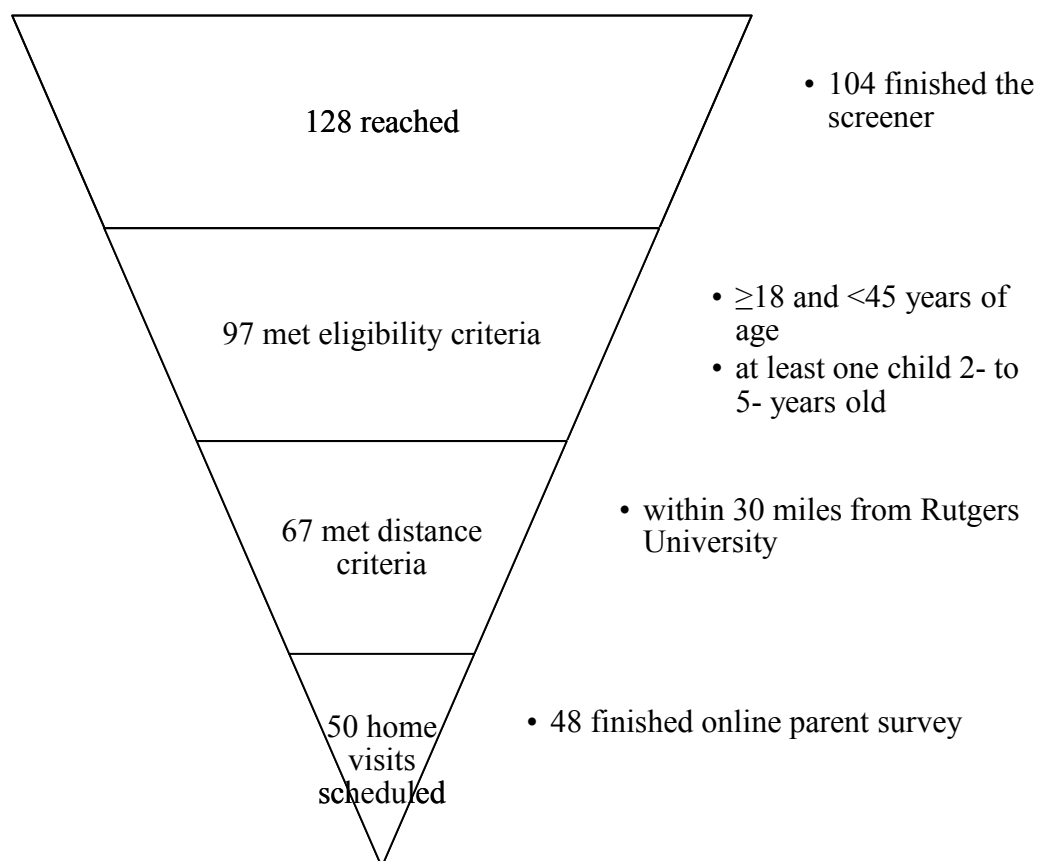
Figure 4. Sample

Table 12. Demographic Characteristics

Demographic Characteristic		Parents* (n=48)	
		N	%
Gender			
	Female	45	94
	Male	3	6
Ethnicity/race[#]			
	Hispanic, Latino, or Spanish	9	19
	White	34	71
	Black	1	2
	Asian Indian	2	4
	Asian	1	2
	Other	1	2
Education[#]			
	High school graduate	5	10
	Some college	6	13
	Associates degree or technical school graduate	6	13
	Baccalaureate degree	14	29
	Advanced college degree	17	35
Body Mass Index (BMI)[#]			
	<18.5	5	10
	18.5-24.9	20	42
	25.0-29.9	11	23
	30.0-34.9	8	17
	35.0-39.9	3	6
	>40	1	2

*Online surveys (~2 weeks after Home Visit) were completed by 48 out of the 50 parents. The 2 parents not completing the online survey were female (94%; n=50)

[#]Data were not collected during home visits, n=48.

home visit did not include leaving the premises of the participant's home. For the items about the neighborhood, researchers gathered data prior and upon the arrival of the parent's home, as well as, during the home visit and after (if needed), to complete the neighborhood items as accurately as possible. So, items from the Physical Activity Availability in the Neighborhood (*Neighborhood Space* and *Neighborhood Active Play Supports* subscales) and Physical Activity Accessibility in the Neighborhood (*Neighborhood Safety* and *Neighborhood Ease of Accessibility* subscales) scales were based on an accumulation of one-time observations, data collected during the home visit, and distances and times from Google Maps.

Means and standard deviations for each scale item on the instrument completed during the home visit by both researchers and parents were calculated. Independent two-tailed t-tests were conducted to determine whether significant differences occurred between parent and researcher ratings. Intra-Class Correlations (ICC) were calculated for each item to compare researchers' and parents' responses.

ICCs for the Physical Activity Availability Inside the Home subscales are reported in Table 13. Parent and researchers' mean scores for the two items in the *In Home Space* subscale did not differ significantly. Mean scores for the *In Home Space* subscale also did not differ significantly. The ICCs for the subscale items were 0.34 and 0.47, with the ICC for this subscale equaling 0.51. The *In Home Active Play Supports* subscale mean scores for the two items did not differ between parents and researchers, however, mean parent score for the subscale was significantly higher than researchers. The ICCs for the two items in this subscale were 0.31 and 0.59 with the subscale ICC equaling 0.35.

Table 13. Comparison of Researcher and Parent Responses to Physical Activity Availability Inside the Home Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability Inside the Home	3.78±0.74	3.47±0.76*	0.32
<i>In Home Space</i>	3.75±1.02	3.90±0.95	0.51
1. My child has plenty of room for active play inside our home. ^a	3.96±1.03	4.06±1.15	0.34
2. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls. ^a	3.54±1.28	3.74±1.17	0.47
<i>In Home Active Play Supports</i>	3.80±0.74	3.03±0.97*	0.35
3. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters. ^a	3.98±1.12	3.66±1.24	0.31
4. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect. ^a	3.00±1.51	2.40±1.63	0.59

^aPossible score range = 1 to 5

*Significantly different (P<.05) using independent 2-tailed t-tests.

ICC for the Physical Activity Accessibility Inside the Home scale *In Home Ease of Accessibility* subscale is reported in Table 14. Mean researcher score for the item focusing on ease of access to indoor equipment was significantly higher than parent's score. The ICC for this subscale equaled 0.29.

ICCs for the Physical Activity Availability Outside the Home (Yard) subscales are reported in Table 15. The *Outside Home Space* subscale mean scores for the three items did not differ between parents and researchers. The ICCs for the subscale items ranged from 0.25 to 0.81, with the ICC for this subscale equaling 0.49. The *Outside Home Active Play Supports* subscale mean scores for the items focusing on swings and toys as supports for outside active play indicated that researchers assigned significantly lower scores than parents whereas the shoes and clothes item mean scores indicated that researchers assigned significantly higher scores than parents. Researchers' mean scores for the item focusing on wheeled toys in this subscale did not differ with parents' mean scores. The ICCs for the four items in this subscale ranged from 0.31 to 0.86, with the ICC for this subscale equaling 0.83.

ICCs for the Physical Activity Accessibility Outside the Home (Yard) subscales are reported in Table 16. The *Outside Home Ease of Accessibility* subscale mean scores for the item focusing on ease of access to outside active toys did not differ between parents and researchers. The ICC for this item equaled 0.30. The *Outside Home Frequency of Active Play* subscale mean scores for the one item also did not differ between parents and researchers. The ICC for this subscale was 0.97.

ICCs for the Physical Activity Availability in the Neighborhood subscales are reported in Table 17. The *Neighborhood Space* subscale mean scores for the two items

Table 14. Comparison of Researcher and Parent Responses to Physical Activity Accessibility Inside the Home Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility Inside the Home			0.29
<i>In Home Ease of Accessibility</i>			0.29
1. Indoor equipment for active play is stored where it is easy for my child to see and reach. ^a	4.38±0.75	4.84±0.42*	0.29

^aPossible score range = 1 to 5

*Significantly different (P<.05) using independent 2-tailed t-tests.

Table 15. Comparison of Researcher and Parent Responses to Physical Activity Availability Outside the Home (Yard) Scale Items (n=48[^])

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability Outside the Home (Yard)	5.26±0.88	5.28±0.67	0.71
<i>Outside Home Space</i>	6.20±1.14	6.51±0.92	0.49
1. The yard or area outside our home has plenty of room for my child to actively play games like tag or chase. ^a	4.71±0.58	4.90±0.37	0.81
2. There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy. ^a	4.50±0.88	4.65±1.00	0.74
3. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be? ^b	9.40±2.66	9.98±2.33	0.25
<i>Outside Home Active Play Supports</i>	4.32±0.80	4.05±0.70	0.83
1. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use. ^a	3.65±1.51	2.98±1.68*	0.85
2. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds. ^a	4.33±1.10	3.52±1.35*	0.62
3. My child has a tricycle, bike, scooter, or other wheeled toy to use outside. ^a	4.60±0.82	4.75±0.86	0.86
4. My child has shoes and clothes for playing actively outside. ^a	4.69±0.85	4.96±0.20*	0.31

[^]n=48 because 2 parents reported no outdoor space for active play.

^aPossible score range = 1 to 5

^bPossible score range = 0 to 11

*Significantly different (P<.05) using independent 2-tailed t-tests.

Table 16. Comparison of Researcher and Parent Responses to Physical Activity Accessibility Outside the Home (Yard) Scale Items (n=48[^])

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility Outside the Home (Yard)	2.17±0.58	2.25±0.64	0.60
<i>Outside Home Ease of Accessibility</i>			0.30
1. It's easy for my child to see and reach toys for playing actively outside. ^a	4.13±1.10	4.23±1.15	0.30
<i>Outside Home Frequency of Active Play</i>			0.97
1. Do you have a dog? ^b	0.29±0.46	0.27±0.45	0.97

[^]n=48 because 2 parents reported no outdoor space for active play.

^aPossible score range = 1 to 5

^bPossible score range = 0 to 1

Table 17. Comparison of Researcher and Parent Responses to Physical Activity Availability in the Neighborhood Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability in the Neighborhood[^]	4.11±0.88	4.15±0.77	0.70
Neighborhood Space[^]	4.03±0.85	4.01±0.85	0.79
1. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively. ^a	4.46±0.93	4.16±0.68	0.52
2. There are free or low-cost recreation centers or other indoor places where kids can play actively. ^{a^}	3.49±1.40	3.94±1.51	0.81
Neighborhood Active Play Supports			0.69
1. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use. ^a	4.18±1.22	4.26±1.16	0.69

^aPossible score range = 1 to 5

[^]n=47 because 3 parents answered “Don’t Know” and were not included in analyses.

did not differ between parents and researchers. The ICCs for the two items in this subscale were 0.52 and 0.81, with the ICC for this subscale equaling 0.79. The *Neighborhood Active Play Supports* subscale mean scores for the one item also did not differ between parents and researchers. The ICC for this one item subscale was 0.69.

ICCs for the Physical Activity Accessibility in the Neighborhood subscales are reported in Table 18. The *Neighborhood Safety* subscale mean scores for the four items did not differ between parents and researchers. The ICCs for the four items in this subscale ranged from 0.48 to 0.62, with the ICC for this subscale equaling 0.66. The *Neighborhood Ease of Accessibility* subscale mean score for the one item also did not differ between parents and researchers. The ICC for this one item subscale was 0.54.

ICCs for Media Availability Inside the Home scale are reported in Table 19. Researchers' mean scores did not differ with parents' mean scores in this scale. The ICCs for items in this scale ranged from 0.60 to 1.00, with the ICC for this scale equaling 0.82.

ICCs for Media Accessibility Inside the Home scale *Ease of Media Accessibility* subscale are reported in Table 20. Mean parent and researcher scores for the three items did not differ significantly. The ICCs for the subscale items ranged from 0.66 to 0.77, with the ICC for this subscale equaling 0.75.

Comparison of Parent Home Visit and Online Instrument Responses to Assess Test-Retest Reliability

Parents reassessed their home environment during the home visit (test) and ~2 weeks later at follow-up (re-test). Means and standard deviations for each scale item on the questionnaire completed during the home visit and two weeks later by parents were calculated. Paired, two-tailed t-tests were conducted to compare test and re-test

Table 18. Comparison of Researcher and Parent Responses to Physical Activity Accessibility in the Neighborhood Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility in the Neighborhood[^]	4.27±0.64	4.40±0.56	0.69
Neighborhood Safety	4.16±0.69	4.32±0.75	0.66
1. There is so much traffic near where I live that I do not feel safe walking in the area. ^{a*}	4.12±0.92	4.16±1.08	0.62
2. I feel safe from crime in my neighborhood and nearby. ^a	4.00±1.03	4.28±1.18	0.57
3. The outdoor areas in my neighborhood where my child can play actively are safe. ^a	4.34±0.72	4.34±0.96	0.48
4. The outdoor areas in my neighborhood where my child can play actively are clean. ^a	4.18±0.92	4.50±0.81	0.62
Neighborhood Ease of Accessibility			0.54
1. In my neighborhood, it's easy to get to outdoor areas where kids can play actively. ^{a^}	4.33±0.78	4.50±0.74	0.54

^aPossible score range = 1 to 5

*Reverse code item

[^]n=48 because 2 parents who answered “Don’t Know” and were not included in analyses.

Table 19. Comparison of Researcher and Parent Responses to Media Availability Inside the Home Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Media Availability Inside the Home[^]	1.03±0.45	0.99±0.48	0.82
1. How many of each of these are in your home? ^a			
TV	2.62±1.40	2.18±1.21	0.85
DVD Player	1.60±1.11	1.50±1.02	0.91
Computer/Laptop	2.06±1.02	1.90±0.97	0.88
Smart Phone/Tablet/LeapPad	3.42±1.62	3.32±1.36	0.66
Video games that usually are played sitting down [^]	1.93±2.65	1.80±3.12	0.76
Video games played standing up and require lots of moving [^]	1.07±1.90	1.39±2.89	0.83
2. Which of these can your child use in his or her bedroom? ^b			
TV	0.16±0.37	0.16±0.37	0.83
DVD Player	0.14±0.35	0.12±0.33	0.85
Computer/Laptop	0.10±0.30	0.12±0.33	0.82
Smart Phone/Tablet/LeapPad	0.64±0.48	0.62±0.49	0.76
Video games that usually are played sitting down [^]	0.15±0.36	0.04±0.21	0.60
Video games played standing up and require lots of moving [^]	0.02±0.15	0.02±0.15	1.00
Internet	0.22±0.42	0.36±0.48	0.67
None of the above [^]	0.28±0.46	0.30±0.47	0.85
3. Do you have Internet access in your home? ^b	0.98±0.14	0.96±0.20	0.80

^aPossible score range = 1 to 5^bPossible score range = 0 to 1[^]n=46 because slight modifications were made to these items to improve clarity of “video games” and to add a “none of the above” option after completing 4 home visits

Table 20. Comparison of Researcher and Parent Responses to Media Accessibility Inside the Home Scale Items (N=50)

Scale Subscale Items	Mean Parent Score Mean±SD	Mean Researcher Score Mean±SD	Intra-Class Correlation (ICC)
Media Accessibility Inside the Home			0.75
<i>Ease of Media Accessibility</i>	2.89±1.06^{^^^}	3.03±1.43^{^^}	0.75
1. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help. ^{a^}	3.04±1.54	3.45±1.74	0.73
2. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help. ^{a^}	3.82±1.36	3.22±1.61	0.66
3. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, Xbox Kinect) with little or no help. ^{a^^}	2.05±1.36	2.50±1.91	0.77

^aPossible score range = 1 to 5

[^]n=49 because 1 parent did not respond to this item

^{^^}n=20 because slight modification to the wording of this item was made to improve clarity of "video games" after completing 4 home visits and included only the homes that have active video games

^{^^^}n=46 because slight modification to the wording of this item was made to improve clarity of "video games" after completing 4 home visits

responses. Intra-Class Correlations (ICC) for the test and re-test responses were calculated for each item.

Results of the t-tests for the Physical Activity Availability Inside the Home subscale, *In Home Space*, did not differ significantly. The ICCs for the two items in this subscale were both 0.79, with the ICC for this subscale equaling 0.83. For the *In Home Active Play Supports* subscale, mean scores for the item focusing on toys as support for active play indicated that parents at follow-up (re-test) scored significantly lower than during the home visit (test) whereas no significant differences occurred between the test and re-test for the other two items in this subscale. The ICCs for the 3 items in this subscale ranged from 0.68 to 0.90, with the ICC for this subscale equaling 0.84 (Table 21).

Results of the t-tests for the Physical Activity Accessibility Inside the Home subscale, *In Home Parent Policy*, did not differ significantly. The ICC for this subscale was 0.78. For the *In Home Ease of Accessibility* subscale, again, no significant differences occurred between the test and re-test. The item ICCs were 0.45 and 0.54, with the ICC for this subscale equaling 0.62. For the *In Home Frequency of Active Play* subscale, also, no significant differences occurred between the test and re-test. The ICCs for the 3 items on this subscale ranged from 0.70 to 0.81, with the ICC for this subscale equaling 0.84 (Table 22).

Results of the t-tests for the Physical Activity Availability Outside the Home (Yard) subscale, *Outside Home Space*, did not differ significantly. The ICCs for the 3 items on this subscale ranged from 0.45 to 0.92, with the ICC for this subscale equaling 0.91. For the *Outside Home Active Play Supports* subscale, mean scores for the item

Table 21. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Availability Inside the Home Scale Items (N=48)

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability Inside the Home			0.84
<i>In Home Space</i>			0.83
1. My child has plenty of room for active play inside our home. ^a	3.96±1.03	3.94±0.78	0.79
2. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls. ^a	3.56±1.29	3.85±1.13	0.79
<i>In Home Active Play Supports</i>			0.84
1. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters. ^a	4.00±1.09	3.75±1.02*	0.85
2. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect. ^a	2.92±1.49	2.85±1.44	0.90
3. My child has siblings or friends that live nearby to play with indoors. ^a	4.42±0.96	4.19±1.00	0.68

^aPossible score range = 1 to 5

*P<0.05 using paired, 2-tail t-tests.

Table 22. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Accessibility Inside the Home Scale Items (N=48)

Scale <i>Subscale</i> Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility Inside the Home			0.84
<i>In Home Parent Policies</i>			0.78
1. I put limits on the amount of time my child can have active play indoors. ^{a*}	3.44±1.35	3.42±1.11	0.78
<i>In Home Ease of Accessibility</i>			0.62
1. It's easy for my child to actively play indoors without my help. ^a	4.23±0.95	4.17±0.78	0.54
2. Indoor equipment for active play is stored where it is easy for my child to see and reach. ^a	4.35±0.76	4.19±0.76	0.45
<i>In Home Frequency of Active Play</i>			0.84
1. How often does your child usually play actively inside your home? ^a	4.35±1.00	4.21±1.03	0.76
2. How often does your child play actively indoors with toys that help build muscles? These are toys like balls, tricycles, scooters. ^a	3.48±1.37	3.25±1.38	0.70
3. How often does your child play actively indoors with siblings or kids that live nearby? ^a	3.71±1.43	3.71±1.44	0.81

^aPossible score range = 1 to 5

*Reverse code item

focusing on swings, slides, or other active play equipment as support for active play indicated that parents at follow-up (re-test) scored significantly higher than during the home visit (test) whereas no significant differences occurred between the test and re-test for the other three items in this subscale. The ICCs for this 4-item subscale ranged from 0.80 to 0.95, with the ICC for this subscale equaling 0.93 (Table 23).

Results of the t-tests for the Physical Activity Accessibility Outside the Home (Yard) subscale, *Outside Home Parent Policies*, did not differ significantly. The ICC for this subscale was 0.60. For the *Outside Home Ease of Accessibility* subscale, again, no significant differences occurred between the test and re-test. The ICCs for the 2 items on this subscale were 0.80 and 0.81, with the ICC for this subscale equaling 0.85. For the *Outside Home Frequency of Active Play* subscale, also, no significant difference occurred between the test and re-test. The ICCs for the 3 items on this subscale ranged from 0.88 to 1.00, with the ICC for this subscale equaling 0.94 (Table 24).

Results of the t-tests for the Physical Activity Availability in the Neighborhood subscale, *Neighborhood Space*, indicated that parents at follow-up (re-test) scored significantly lower than during the home visit (test) for both items about outdoor and indoor areas in the neighborhood as spaces for active play. The ICCs for this subscale's items were 0.81 and 0.92, with the ICC for this subscale equaling 0.80. For the *Neighborhood Active Play Supports* subscale, no significant difference occurred between the test and re-test. The ICC for this subscale was 0.87 (Table 25).

Results of the t-tests for the Physical Activity Accessibility in the Neighborhood subscale, *Neighborhood Safety*, did not differ significantly. The ICCs for the 6 items on this subscale ranged from 0.53 to 0.81, with the ICC for this subscale equaling 0.75. For

Table 23. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Availability Outside the Home (Yard) Scale Items (n=44[^])

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re- Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability Outside the Home (Yard)			0.95
<i>Outside Home Space</i>			0.91
1. The yard or area outside our home has plenty of room for my child to actively play games like tag or chase. ^a	4.73±0.59	4.68±0.52	0.64
2. There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy. ^a	4.66±0.61	4.61±0.69	0.45
3. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be? ^b	9.73±2.32	9.64±2.49	0.92
<i>Outside Home Active Play Supports</i>			0.93
1. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use. ^a	3.73±1.45	3.95±1.31*	0.93
2. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds. ^a	4.43±1.02	4.45±0.85	0.80
3. My child has a tricycle, bike, scooter, or other wheeled toy to use outside. ^a	4.64±0.81	4.55±0.82	0.95
4. My child has shoes and clothes for playing actively outside. ^a	4.66±0.89	4.68±0.71	0.84

[^]n=44 because 4 parents indicated not having a yard or area right outside the home where their child can play actively

^aPossible score range = 1 to 5

^bPossible score range = 0 to 11

* $P < 0.05$ using paired, 2-tail t-tests.

Table 24. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Accessibility Outside the Home (Yard) Scale Items (n=44[^])

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility Outside the Home (Yard)			0.81
Outside Home Parent Policies			0.60
1. I often limit my child's active play in the yard or area right outside our home. ^{a*}	3.45±1.32	3.14±1.36	0.60
Outside Home Ease of Accessibility			0.85
1. It's easy for my child to actively play in the yard or area right outside our home without my help. ^a	3.91±1.33	4.02±1.11	0.80
2. It's easy for my child to see and reach toys for playing actively outside. ^a	4.18±1.08	4.36±0.87	0.81
Outside Home Frequency of Active Play			0.94
1. Do you have a dog? ^{b^^}	0.30±0.47	0.30±0.47	1.00
2. How often does your child go on walks with the dog or play with it outside (doing things like throwing balls)? ^{a^^^}	3.08±1.38	2.77±1.42	0.92
3. When the weather is good, how often does your child usually play actively in the yard or area outside your home? ^a	4.11±1.13	3.98±1.13	0.88

[^]n=44 because 4 parents indicated not having a yard or area right outside the home where their child can play actively

^{^^}n=46 because 2 parents did not respond at time point 1 (test) and another 2 parents did not respond at time point 2 (retest)

^{^^^}n=13 because only 13 parents reported having a dog

^aPossible score range = 1 to 5

^bPossible score range = 0 to 11

*Reverse code item

Table 25. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Availability in the Neighborhood Scale Items (N=48)

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Availability in the Neighborhood			0.85
Neighborhood Space			0.80
1. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively. ^a	4.46±0.94	4.29±0.97*	0.92
2. There are free or low-cost recreation centers or other indoor places where kids can play actively. ^{a^}	3.59±1.37	3.25±1.35*	0.81
Neighborhood Active Play Supports			0.87
1. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use. ^a	4.19±1.23	4.15±1.05	0.87

^aN=44 because 3 parents answered “Don’t Know” at test and 1 parent answered “Don’t Know” at retest

^aPossible score range = 1 to 5

*P<0.05 using paired, 2-tail t-tests.

the *Neighborhood Ease of Accessibility* subscale, also, no significant difference occurred between the test and re-test. The ICC for this subscale was 0.42. For the *Neighborhood Frequency of Active Play* subscale, also, no significant differences occurred between the test and re-test. The item ICCs for this subscale were 0.76 and 0.79, with the ICC for this subscale equaling 0.79 (Table 26).

Results of the t-tests for the Media Availability Inside the Home scale did not differ significantly. The ICCs for the 3 items on this scale ranged from 0.34 to 1.00, with the ICC for this scale equaling 0.84 (Table 27).

Results of the t-test for the Media Accessibility Inside the Home subscale, *Media Parent Policies*, indicated that parents at follow-up (re-test) scored significantly lower than during the home visit (test) for the item focusing on limiting TV shows to preschool-age appropriate as a parent policy enforced in the home. The ICCs for the 4 items on this subscale ranged from 0.53 to 0.88, with the ICC for this subscale equaling 0.89. For the *Ease of Media Accessibility* subscale, no significant differences occurred between the test and re-test. The ICCs for the 3 items on this subscale ranged from 0.87 to 0.88, with the ICC for this subscale equaling 0.90. For the *Frequency of Media Use* subscale, again, no significant differences occurred between the test and re-test. The ICCs for the 6 items on this subscale ranged from 0.67 to 0.91, with the ICC for this subscale equaling 0.87 (Table 28).

Internal Consistency Reliability

Cronbach's alphas for scales and subscales are reported in Table 29. Cronbach's alpha was computed using the 48 parent online responses. Cronbach's alpha for the scales and subscales related to the yard or area right outside the home were computed based on

Table 26. Comparison of Parent Responses at Home (test) and Online (retest) to Physical Activity Accessibility in the Neighborhood Scale Items (N=48)

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Physical Activity Accessibility in the Neighborhood			0.77
Neighborhood Safety			0.75
1. There is so much traffic near where I live that I do not feel safe walking in the area. ^{a*}	4.13±0.94	4.15±0.74	0.75
2. I feel safe from crime in my neighborhood and nearby. ^a	4.00±1.05	4.13±0.89	0.53
3. I feel safe from biting insects, like mosquitos, ticks, and scorpions, and animals, like dogs running loose, in my neighborhood and nearby. ^{a^}	3.13±1.24	3.13±1.17	0.78
4. The outdoor areas in my neighborhood where my child can play actively are safe. ^a	4.35±0.73	4.21±0.82	0.81
5. The outdoor areas in my neighborhood where my child can play actively are clean. ^a	4.23±0.88	4.17±0.83	0.76
6. The outdoor areas in my neighborhood where my child can play actively are crowded with other people. ^{a^^}	2.14±0.90	2.34±1.01	0.55
Neighborhood Ease of Accessibility			0.42
1. In my neighborhood, it's easy to get to outdoor areas where kids can play actively. ^a	4.21±1.13	4.27±0.61	0.42
Neighborhood Frequency of Active Play			0.79
1. When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, and playgrounds, near your home? ^a	3.44±1.30	3.19±1.25	0.79
2. How often does your child usually play actively in free or low-cost recreation centers or other indoor places near your home? ^a	1.77±0.83	1.73±0.87	0.76

^aPossible score range = 1 to 5

*Reverse code item

[^]n=47 because 1 parent did not respond to this item at time point 1 and another 2 parents did not complete the online version of the instrument (retest)

^{^^}n=44 because this item was added after completing 4 home visits and another 2 parents did not complete the online version of the instrument (retest)

Table 27. Comparison of Parent Responses at Home (test) and Online (retest) to Media Availability Inside the Home Scale Items (N=48)

Scale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Media Availability Inside the Home			0.84
1. How many of each of these are in your home? ^a			
TV	2.67±1.40	2.56±1.29	0.97
DVD Player	1.65±1.10	1.85±1.18	0.85
Computer/Laptop	2.06±1.02	1.96±1.01	0.84
Smart Phone/Tablet/LeapPad	3.42±1.65	3.25±1.60	0.81
Video games that usually are played sitting down [^]	1.98±2.70	1.36±1.95	0.60
Video games played standing up and require lots of moving [^]	1.09±1.94	1.23±2.37	0.96
2. Which of these can your child use in his or her bedroom? ^b			
TV	0.17±0.38	0.17±0.38	1.00
DVD Player	0.15±0.36	0.13±0.33	0.95
Computer/Laptop	0.10±0.31	0.17±0.38	0.86
Smart Phone/Tablet/LeapPad	0.65±0.48	0.67±0.48	0.87
Video games that usually are played sitting down [^]	0.14±0.35	0.05±0.21	0.34
Video games played standing up and require lots of moving [^]	0.02±0.15	0.02±0.15	1.00
Internet	0.19±0.39	0.25±0.44	0.83
None of the above [^]	0.30±0.46	0.32±0.47	0.77
3. Do you have Internet access in your home? ^b	0.98±0.14	0.98±0.14	1.00

^aPossible score range = 1 to 5^bPossible score range = 0 to 1[^]n=44 because these items were added after completing 4 home visits and another 2 parents did not complete the online version of the instrument (retest)

Table 28. Comparison of Parent Responses at Home (test) and Online (retest) to Media Accessibility Inside the Home Scale Items (N=48)

Scale Subscale Items	Mean Parent Test Score Mean±SD	Mean Parent Re-Test Score Mean±SD	Intra-Class Correlation (ICC)
Media Accessibility Inside the Home			0.87
Media Parent Policies			0.89
1. I try to limit the number of TV commercials my child sees. ^a	3.38±1.35	3.38±1.14	0.80
2. I try to limit the TV shows and movies my child sees to only those made for kids. ^a	4.73±0.54	4.42±0.77*	0.53
3. I often talk with my child about advertisements on TV. ^a	2.73±1.25	2.90±1.12	0.88
4. I often talk with my child about TV shows, video games, or movies. ^a	3.63±1.14	3.67±0.91	0.74
Ease of Media Accessibility			0.90
1. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help. ^{a^}	3.02±1.54	3.06±1.34	0.88
2. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help. ^{a^}	3.77±1.37	3.74±1.24	0.87
3. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, Xbox Kinect) with little or no help. ^{a^^}	1.89±1.19	2.09±1.07	0.88

Table 28. Comparison of Parent Responses at Home (test) and Online (retest) to Media Accessibility Inside the Home Scale Items (N=48), continued

<i>Frequency of Media Use</i>				0.87
1. How often is a TV on when meals and snacks are eaten at your home? ^a	3.00±1.70	2.75±1.52	0.89	
2. How often do you use a computer, tablet, video game, smart phone, or electronic educational device (like LeapPad) during meals and snacks at home? ^a	1.96±1.37	1.63±1.08	0.67	
3. Each day, how much time is the TV on when no one is watching it? ^b	85.63±120.08	84.06±107.40	0.73	
4. Each day, how much time do you usually allow your child to watch TV or movies at home? ^{b^}	131.81±96.09	134.36±111.90	0.82	
5. Each day, how much time do you allow your child to play at home with computers, tablets, video games that are played sitting down, smart phones, or electronic educational devices (like LeapPad)? ^b	74.69±80.48	75.00±65.86	0.91	
6. Each day, how much time do you allow your child to play at home with video games that are played standing up and require lots of moving (like Wii Fit or XBox Kinect)? ^{b^^}	22.16±33.69	27.27±41.84	0.74	

^aPossible score range = 1 to 5

^bPossible score range = 0 to 1440

*P<0.05 using paired, 2-tail t-tests.

[^]n=47 because 1 parent did not respond to this item at time point 1 and another 2 parents did not complete the online version of the instrument (retest)

^{^^}n=44 because these items were added after completing 4 home visits and another 2 parents did not complete the online version of the instrument (retest)

Table 29. Internal Consistency Reliability of Scales and Subscales (N=48)

Scale <i>Subscale</i>	Cronbach's Alpha	Number of Items
Physical Activity Availability Inside the Home	0.66	5
<i>In Home Space</i>	0.83	2
<i>In Home Active Play Supports</i>	0.35	3
Physical Activity Accessibility Inside the Home	0.71	6
<i>In Home Parent Policies</i>	*	1
<i>In Home Ease of Accessibility</i>	0.62	2
<i>In Home Frequency of Active Play</i>	0.71	3
Physical Activity Availability Outside the Home (Yard)^	0.85	7
<i>Outside Home Space^</i>	0.69	3
<i>Outside Home Active Play Supports^</i>	0.76	4
Physical Activity Accessibility Outside the Home (Yard)^	0.46	5
<i>Outside Home Parent Policies</i>	*	1
<i>Outside Home Ease of Accessibility^</i>	0.71	2
<i>Outside Home Frequency of Active Play^</i>	0.18	2 ^a
Physical Activity Availability in the Neighborhood^^	0.66	3
<i>Neighborhood Space^^</i>	0.27	2
<i>Neighborhood Active Play Supports</i>	*	1
Physical Activity Accessibility in the Neighborhood	0.65	9
<i>Neighborhood Safety</i>	0.43	6
<i>Neighborhood Ease of Accessibility</i>	*	1
<i>Neighborhood Frequency of Active Play</i>	0.73	2
Media Availability Inside the Home	**	3
Media Accessibility Inside the Home	0.47	10
<i>Media Parent Policies</i>	0.53	4
<i>Ease of Media Accessibility</i>	0.70	3
<i>Frequency of Media Use</i>	0.64	3 ^b

*Cronbach's alpha cannot be calculated for subscales with one item

**Cronbach's alpha cannot be calculated for checklist items

^n=44 because 4 parents indicated not having a yard or area right outside the home where their child can play actively

^^n=47 because 1 parent answered "Don't Know" (DK) for an item in this subscale and was excluded from analysis

^aItems about dog were combined into a composite score ranging from 1-5 (1=no dog or Almost never walk/play with dog, 2=1 or 2 times a week walk/play with dog, 3=3 to 4 times a week walk/play with dog, 4=5 to 6 times a week walk/play with dog, 5=Every day walk/play with dog)

^bItems about daily media use and screen time (in 15 minute increments) were collapsed to 1-5 (1=0 minutes, 2=15-105 minutes, 3=120-225 minutes, 4=240-345 minutes, 5=>360 minutes)

44 parents reporting they had access to these areas.

Cronbach's alpha for the Physical Activity Availability Inside the Home scale, which included 5 items, was 0.66. The 2-item *In Home Space* subscale had a Cronbach's alpha of 0.83. *In Home Active Play Supports*, a 3-item subscale, had a Cronbach's alpha of 0.35.

The Physical Activity Accessibility Inside the Home scale included 6 items and had a Cronbach's alpha of 0.71. A Cronbach's alpha could not be calculated for the 1-item *In Home Parent Policies* subscale. The 2-item *In Home Ease of Accessibility* subscale had a 0.62 Cronbach's alpha. *In Home Frequency of Active Play* 3-item subscale had a Cronbach's alpha of 0.71.

The 7-item Physical Activity Availability Outside the Home scale resulted in a Cronbach's alpha of 0.85. The *Outside Home Space* 3-item subscale had a 0.69 Cronbach's alpha. The *Outside Home Active Play Supports* subscale, which included 4 items, had a 0.76 Cronbach's alpha.

The Physical Activity Accessibility Outside the Home scale, which included 5 items, had a 0.46 Cronbach's alpha. Both the *Outside Home Parent Policies* and *Outside Home Frequency of Active Play* were 1-item subscales and Cronbach's alphas could not be calculated. The 2-item *In Home Ease of Accessibility* subscale had a Cronbach's alpha of 0.71. The 2-item *Outside Home Frequency of Active Play* subscale had a Cronbach's alpha of 0.18.

Physical Activity Availability in the Neighborhood 3-item scale had a Cronbach's alpha of 0.66. The Cronbach's alpha rose to 0.92 when one item from the *Neighborhood Space* subscale (item about availability of low-cost recreation centers and indoor places

for kids to actively play) was deleted. The 2-item *Neighborhood Space* subscale resulted in a Cronbach's alpha of 0.27. A Cronbach's alpha could not be calculated for the 1-item *Neighborhood Active Play Supports* subscale.

Physical Activity Accessibility in the Neighborhood 9-item scale had a Cronbach's alpha of 0.65. The *Neighborhood Safety* subscale included 6 items and Cronbach's alpha was 0.43. When one item was deleted from this subscale (item about outdoor areas being too crowded with other people for kids to actively play), Cronbach's alpha rose to 0.62. For the 1-item *Neighborhood Ease of Accessibility* subscale, a Cronbach's alpha could not be calculated. The 2-item *Neighborhood Frequency of Active Play* subscale had a Cronbach's alpha of 0.73.

Media Availability Inside the Home scale included a checklist of items so a Cronbach's alpha could not be calculated. Media Accessibility Inside the Home scale included 10 items and had a Cronbach's alpha of 0.47. The *Media Parent Policies* subscale, which included 4 items, had a Cronbach's alpha of 0.53. *Ease of Media Accessibility* 3-item subscale had a 0.70 Cronbach's alpha. The *Frequency of Media Use* subscale included 6 items and Cronbach's alpha was 0.64. If the item about limiting TV shows and movie was deleted, the Media Accessibility Inside the Home scale's Cronbach's alpha rose from 0.47 to 0.56 and *Media Parent Policies* subscale's rose from 0.53 to 0.62.

Description of Home Physical Activity Availability and Accessibility in Households of Young Children

Scores for physical activity scales and subscales are reported in Table 30. These scores reported here are from the second administration of the instrument. Mean parent

Table 30. Description of Physical Activity and Media Availability and Accessibility in Households with Preschool Children (N=48)

Scale Subscale	Mean Parent Score Mean±SD	Minimum	Maximum
Physical Activity Availability Inside the Home	3.75±0.73	2.08	5.00
<i>In Home Space</i>	3.90±0.90	1.50	5.00
<i>In Home Active Play Supports</i>	3.60±0.77	2.00	5.00
Physical Activity Accessibility Inside the Home	3.80±0.66	2.25	5.00
<i>In Home Parent Policies</i>	3.42±1.11	1.00	5.00
<i>In Home Ease of Accessibility</i>	4.18±0.66	3.00	5.00
<i>In Home Frequency of Active Play</i>	3.72±1.03	1.33	5.00
Physical Activity Availability Outside the Home (Yard)*	4.51±0.59	3.00	5.00
<i>Outside Home Space*</i>	4.61±0.57 ^a	3.00	5.00
<i>Outside Home Active Play Supports*</i>	4.41±0.73	2.00	5.00
Physical Activity Accessibility Outside the Home (Yard)*	3.25±0.66	1.50	4.33
<i>Outside Home Parent Policies*</i>	3.14±1.36	1.00	5.00
<i>Outside Home Ease of Accessibility*</i>	4.19±0.88	2.00	5.00
<i>Outside Home Frequency of Active Play*</i>	2.42±0.96 ^b	1.00	5.00
Physical Activity Availability in the Neighborhood**	3.95±0.89	1.25	5.00
<i>Neighborhood Space**</i>	3.77±0.88	1.50	5.00
<i>Neighborhood Active Play Supports</i>	4.15±1.05	1.00	5.00
Physical Activity Accessibility in the Neighborhood	3.48±0.48	2.67	4.50
<i>Neighborhood Safety</i>	3.70±0.47	2.33	5.00
<i>Neighborhood Ease of Accessibility</i>	4.27±0.61	3.00	5.00
<i>Neighborhood Frequency of Active Play</i>	2.46±0.96	1.00	4.50
Media Availability Inside the Home	1.50±0.68	0.56	3.56
Media Availability Inside the Home-Media Devices	2.03±0.97	0.67	5.00
Media Availability Inside the Home-Media Devices in Child's Bedroom	1.48±1.53 ^c	0.00	7.00
Media Availability Inside the Home-Internet	0.98±0.14	0.00	1.00
Media Accessibility Inside the Home	2.78±0.48	1.81	3.78
<i>Media Parent Policies</i>	3.59±0.64	2.25	5.00
<i>Ease of Media Accessibility</i>	3.02±0.97	1.00	5.00
<i>Frequency of Media Use</i>	1.74±0.80 ^d	0.67	3.67

*n=44 because additional refinements to scale were made after completing 4 home visits and another 2 parents did not complete the online version of the instrument (retest)

**n=47 because 1 parent answered "Don't Know" (DK) for an item in this subscale and was excluded from calculation

^aItem about parking spaces were collapsed to 1-5 (1=0-2 parking spaces, 2=3-4 parking spaces, 3=5-6 parking spaces, 4=7-8 parking spaces, and 5=9, 10, 10 or more parking spaces)

^bItems about dog were combined into a composite score ranging from 0-5 (0=no dog 1=Almost never walk/play with dog, 2=1 or 2 times a week walk/play with dog, 3=3 to 4 times a week walk/play with dog, 4=5 to 6 times a week walk/play with dog, 5=Every day walk/play with dog)

^cItem about media permitted in child's bedroom (checklist) were summed and scored 0-7 indicating the number of media devices available in child's bedroom.

^dTime increment items were summed and scored 0-1 based on compliance of screen time recommendations of less than 2 hours per day from The American Academy of Pediatrics (0 for compliance, 1 for non-compliance)

subscale score for *In Home Space* was $3.90 \pm 0.90SD$, with a range from 1.50 to 5 (out of a possible range from 1 to 5). This indicates parents perceive their children have adequate space available for physical activity inside their homes. Mean parent subscale score for *Outside Home Space* was $4.61 \pm 0.57SD$, with a range from 3 to 5 (out of a possible range from 1 to 5). This score indicates parents felt there was plenty of space available for physical activity in the yard or right outside their home for their preschool children. Mean parent subscale score for *Neighborhood Space* was $3.77 \pm 0.88SD$, with a range from 1.50 to 5 (out of a possible range from 1 to 5). Parents felt there were indoor and outdoor spaces available in the neighborhood for physical activity for their children. All in all, parents felt there was a great availability of space inside, outside the home, and in the neighborhood for preschool children in the study.

For the *In Home Active Play Supports* subscale, mean parent scores ranged from 2 to 5 (out of a possible range from 1 to 5), with a mean of $3.60 \pm 0.77SD$. Mean parent score for this subscale indicates adequate toys and other active play supports available for physical activity inside the home. For the *Outside Home Active Play Supports* subscale, parents had mean scores that ranged from 2 to 5 (out of a possible range from 1 to 5), with a mean score of $4.41 \pm 0.73SD$. From the sample studied, there were ample active play supports for the yard or right outside the home for preschool children to use. For the *Neighborhood Active Play Supports* subscale, the mean scores for parents ranged from 1 to 5 (out of a possible range from 1 to 5), with a mean score of $4.15 \pm 1.05SD$. The neighborhood, according to surveyed parents, also had plenty of active play supports for their child to use. Overall, parents reported great availability of active play supports inside, outside the home, and in the neighborhood for preschool children.

Together, physical activity availability subscale scores indicate that the surveyed families are not lacking in physical activity space or active play supports for their preschool child inside their homes, outside their homes, and in their neighborhoods. This is also indicated by the parent mean scale scores: Physical Activity Availability Inside the Home scale had a mean score of $3.75 \pm 0.73SD$ and a range from 2.08 to 5 (out of a possible range from 1 to 5); Physical Activity Availability Outside the Home scale had a mean score of $4.51 \pm 0.59SD$ and a range from 3 to 5 (out of a possible range from 1 to 5); and Physical Activity Availability in the Neighborhood scale had a mean score of $3.95 \pm 0.89SD$ and a range from 1.25 to 5 (out of a possible range from 1 to 5).

Scores for physical activity accessibility scales and subscales are also reported in Table 30. Mean score for the *In Home Parent Policies* subscale was $3.42 \pm 1.11SD$, with mean scores ranging from 1 to 5 (out of a possible range from 1 to 5). This score indicates that, on average, parents neither restrict nor have no rules about active play inside the home. Similarly, mean score for the *Outside Home Parent Policies* subscale was $3.14 \pm 1.36SD$ with mean scores ranging from 1 to 5 (out of a possible range from 1 to 5). Again, this indicates that parents as a group have no consistent behavior with regard to restricting or setting rules about active play inside or right outside the home.

Parent mean scores for the *In Home Ease of Accessibility* subscale ranged from 3 to 5 (out of a possible range from 1 to 5), and mean score was $4.18 \pm 0.66SD$. This score indicates easy accessibility to physical activity for preschool children inside the homes of surveyed families. Parent mean scores for *Outside Home Ease of Accessibility* ranged from 2 to 5 (out of a possible range from 1 to 5), and mean score was $4.19 \pm 0.88SD$. Again, parents indicated easy accessibility to physical activity for their preschool child in

the yard or right outside the home. Parent mean scores for *Neighborhood Ease of Accessibility* ranged from 3 to 5 (out of a possible range from 1 to 5), and mean score was $4.27 \pm 0.61SD$. This mean score also indicates easy accessibility to physical activity for preschool children in the neighborhood. Altogether, according to parents of preschool children, it is easy for their children to actively play inside, outside the home, and in the neighborhood.

Mean parent score for the *In Home Frequency of Active Play* subscale was $3.72 \pm 1.03SD$ and mean scores ranged from 1.33 to 5 (out of a possible range from 1 to 5). The mean score for this subscale indicates parents of preschool children reported frequent active play inside their home. Mean parent score for the *Outside Home Frequency of Active Play* subscale was $2.42 \pm 0.96SD$ and mean scores ranged from 1 to 5 (out of a possible range from 0.5 to 5). This mean subscale score indicates that active play in the yard or right outside the home was moderately frequent in the studied sample. Mean parent score for *Neighborhood Frequency of Active Play* subscale was $2.46 \pm 0.96SD$ and mean scores ranged from 1 to 4.50 (out of a possible range from 1 to 5). This mean subscale score also indicates that neighborhood active play was moderately frequent in families with preschool children. Inside active play was reported to be more frequent than outside or neighborhood active play.

For *Neighborhood Safety* subscale, mean parent score was $3.70 \pm 0.47SD$ and mean scores ranged from 2.33 to 5 (out of a possible range from 1 to 5). This mean safety score indicates that parents felt a sense of safety for their child to actively play in the neighborhood.

Physical activity accessibility subscales with regard to ease and sense of safety had scores that indicate easy accessibility to physical activity inside, outside the home, and in the neighborhood and a sense of safety for active play in the neighborhood for preschool-aged children. Accessibility subscales with regard to parent policies had scores that indicate rules on active play inside and right outside the home were neither restrictive nor lax. Last but not least, the accessibility subscale with regard to frequency of active play indicated moderate frequency of outside and neighborhood active play, while active play inside the home was frequent. For all physical activity accessibility scale scores, they indicated overall easy access and frequent physical activity in homes, right outside the homes, and in the neighborhood for preschool children: Physical Activity

Accessibility Inside the Home scale's mean score was $3.80 \pm 0.66SD$ and scores ranged from 2.25 to 5 (out of a possible range from 1 to 5); Physical Activity Accessibility Outside the Home scale's mean score was $3.25 \pm 0.66SD$ and scores ranged from 1.50 to 4.33 (out of a possible range from 0.80 to 5); and Physical Activity Accessibility in the Neighborhood scale's mean score was $3.48 \pm 0.48SD$ and scores ranged from 2.67 to 4.50 (out of a possible range from 1 to 5).

Media Availability and Accessibility for Young Children

Scores for media availability and accessibility scales and subscales are reported in Table 30. These scores are calculated from the parent online data. Mean parent scores for Media Availability Inside the Home, with regard to media devices inside the home, ranged from 0.67 to 5.00 (out of a possible range from 0 to 11), and mean score was $2.03 \pm 0.97SD$. This mean score indicates that the availability of media devices inside the home of families studied is not high. For Media Availability Inside the Home, with

regard to media devices in the child's bedroom, parent's scores ranged from 0 to 7 (out of a possible range from 0 to 7), and mean score was $1.48 \pm 1.53SD$. This mean score also indicated that the availability of media devices found in the child's bedroom of the participants is low. *Media Availability Inside the Home*, with regard to Internet access in the home, had mean parent scores that ranged from 0 to 1 (out of a possible range from 0 to 1), and a mean score of $0.98 \pm 0.14SD$. This mean score indicates that the availability of Internet access found in the homes of participating families with preschool children is high. Altogether, the Media Availability Inside the Home scale had a mean score of $1.50 \pm 0.68SD$ that ranged from 0.56 to 3.56 (out of a possible range from 0 to 6.3), indicating that there is not a great availability of media inside the homes of parents in this study.

For the *Media Parent Policies* subscale, mean score was $3.59 \pm 0.64SD$ and scores ranged from 2.25 to 5 (out of a possible range from 1 to 5). This mean score indicates that the parents in this study had policies that aligned with expert recommendations.

For the *Ease of Media Accessibility* subscale, mean score was $3.02 \pm 0.97SD$ and scores ranged from 1 to 5 (out of a possible range from 1 to 5). This mean score indicates that parents in the study neither agreed nor disagreed that it was easy to access media for their preschool child.

For the *Frequency of Media Use* subscale, mean score was $1.74 \pm 0.80SD$ and scores ranged from 0.67 to 3.67 (out of a possible range from 0.67 to 3.67). This mean score indicates that media use was not frequent among families with preschool children that participated in the study.

Media Accessibility Inside the Home subscale scores indicate parents reported that their rules on media are congruent with expert recommendations and use of media is not frequent. Parents believed media was easy for children to access with some help from an adult, such as turning on the TV and watching a show. Altogether, Media Accessibility Inside the Home scale score ranged from 1.81 to 3.78SD (out of a possible range from 0.90 to 4.60) and mean score was $2.78 \pm 0.48SD$. This mean score indicates that for preschool children from the study media inside the home was accessible, but may need some help and follow expert recommendations for media use.

Correlation between Parent BMI and Home Environment Scores

Spearman rank-order correlations were conducted to examine correlations between parent BMI and home environment scores for scales and subscales (Table 31). There were few significant correlations between parent BMI and home environment scores on the instrument. Significant negative associations were observed for parent BMI and *Neighborhood Active Play Supports* and *Media Parent Policies* subscales whereas *Frequency of Media Use* subscale was significantly positively associated with parent BMI. The significant negative associations indicate that parents who had plenty of neighborhood active play supports for their child to use and those who have rules and restrictions on the use of media by their child had lower BMIs than those who did not have active play supports in their neighborhood or more lax rules and restrictions for media use. The significant positive association indicates that parents who use media frequently with their child had higher BMIs than those that use media less frequently.

Table 31. Spearman Rank-Order Correlation of Parent BMI with Home Environment Scores (N=48)

Scale Subscale	Body Mass Index (BMI)	p
Physical Activity Availability Inside the Home	-0.05	0.754
<i>In Home Space</i>	0.10	0.516
<i>In Home Active Play Supports</i>	-0.09	0.528
Physical Activity Accessibility Inside the Home	0.04	0.783
<i>In Home Parent Policies</i>	0.19	0.205
<i>In Home Ease of Accessibility</i>	0.13	0.384
<i>In Home Frequency of Active Play</i>	-0.04	0.782
Physical Activity Availability Outside the Home (Yard)^	-0.11	0.479
<i>Outside Home Space</i>	-0.08	0.591
<i>Outside Home Active Play Supports</i>	-0.15	0.327
Physical Activity Accessibility Outside the Home (Yard)^	-0.01	0.974
<i>Outside Home Parent Policies</i>	0.23	0.140
<i>Outside Home Ease of Accessibility</i>	-0.22	0.150
<i>Outside Home Frequency of Active Play</i>	0.10	0.527
Physical Activity Availability in the Neighborhood^^	-0.17	0.280
<i>Neighborhood Space^^</i>	-0.11	0.514
<i>Neighborhood Active Play Supports</i>	-0.30	0.037
Physical Activity Accessibility in the Neighborhood	0.10	0.512
<i>Neighborhood Safety</i>	0.06	0.694
<i>Neighborhood Ease of Accessibility</i>	0.05	0.738
<i>Neighborhood Frequency of Active Play</i>	0.06	0.686
Media Availability Inside the Home	0.04	0.780
Media Accessibility Inside the Home	0.07	0.620
<i>Media Parent Policies</i>	-0.32	0.027
<i>Ease of Media Accessibility</i>	-0.03	0.861
<i>Frequency of Media Use</i>	0.32	0.026

^N=44 because 4 parents indicated not having a yard or area right outside the home where their child can play actively

^^N=47 because 1 parent answered “Don’t Know” for an item in this subscale and was excluded from analysis

Significant (p < 0.05) associations are in bold

CHAPTER 5

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This chapter begins with a brief summary of the goals and overview of the study. Next, findings of this study are discussed and recommendations for improving the questionnaire are proposed. Finally, the study's limitations, strengths, recommendations for future research, and conclusions are discussed.

Existing instruments for assessing home physical activity and media environment and neighborhood physical activity environment have limitations, such as significant participant burden, not well matched to families with preschool-aged children, lack of reported validity and/or reliability data, and limited assessment of the various physical activity environments. The objective of this study was to overcome these limitations and create a comprehensive instrument for assessing the physical activity and media home environments of preschool-aged children. Thus, the goals of this study were to develop and establish validity and reliability for a brief, easy-to-use, self-report instrument that evaluates the availability and accessibility of physical activity opportunities (as well as sedentary activity) and the frequency of use in the households of preschool-aged children.

Instrument development was an eight-phase process that resulted in a 52-item instrument with 8 scales and 18 subscales assessing availability and accessibility, including frequency of access, of active and sedentary opportunities inside the home, immediately outside the home (yard), and in the neighborhood of households with preschool-aged children. The process began with an extensive review of the literature, in which items from published instruments were adapted, enhanced, and expanded to address the goals of the instrument and ended in the last phase, field testing, when the

instrument was completed by parents of preschool-aged children on two separate occasions to validate the self-report instrument and assess test-retest reliability.

Researchers also completed the instrument during field testing to serve as the “gold standard” or criterion to establish criterion validity.

Validity

To establish criterion validity of the instrument, parents and researchers completed 8 scales (which included 12 of the 18 subscales) simultaneously, but independently. Only 12 subscales could be validated in this manner because researchers could complete only items that could be visually observed (28 items from 12 subscales out of 52 items from all 18 subscales). The Intra-Class Correlations (ICCs) for these 8 scales ranged from 0.29 to 0.82, ICCs for subscales ranged from 0.29 to 0.97, and ICCs for individual items ranged from 0.25 to 1.00 (see Tables 13-20). As determined by Landis and Koch’s benchmarks for observational categorical data,⁶⁹ ICCs that range from 0.81-1.00 indicate almost perfect agreement, 0.61-0.80 indicate substantial agreement, 0.41-0.60 indicate moderate agreement, 0.21 to 0.40 indicate fair agreement, 0.00-0.20 indicate slight agreement, and less than 0.00 indicate poor agreement. ICCs for scales, subscales, and individual items indicated fair to almost perfect agreement between researcher and parent.

Physical Activity Inside the Home. An examination of the Physical Activity Availability Inside the Home scale’s ICC showed fair agreement (see Table 13). The subscales, *In Home Space* and *In Home Active Play Supports*, were rated as fair and moderate, respectively. The Physical Activity Accessibility Inside the Home scale’s ICC showed fair agreement (see Table 14).

An examination of the ICC for each item was conducted to identify how well each item functioned and identify items that needed improvement. For the “plenty of room” item on the *In Home Space* subscale, both parent and researcher responses were similar and indicated that they believed children had “adequate” space for active play. To improve uniformity in data coding, “adequate” space was objectively defined for researchers as square footage available (see Table 9). Although mean parent and researcher scores were not significantly different, this item’s ICC showed only fair agreement. This fair agreement may be because of the greater specificity of the researcher instructions in contrast to the more subjective phrasing parents used. Similarly, for the “enough space” item on the *In Home Space* subscale, parent’ and researcher responses did not differ, yet had moderate agreement. The specificity and objectivity of instructions given to researchers vs. the more subjective items presented to parents likely also contributed to the ICC rating. Findings reported by others reveal that the use of subjective phrasing (i.e., “adequate” play space inside) resulted in low kappa agreement.³⁷ The items on this subscale may benefit from revisions that exclude the use of subjective phrases. An improved phrasing of the items may be “My child has a large area for active play inside our home” and “Inside our home, my child has space to do somersaults and cartwheels without hitting furniture or walls”. However, dichotomous answers (e.g., yes/no child has large area) typically result in lower internal consistency and reduce the ability of researchers to detect differences in participants. Using a 5-point rating scale (e.g., from strongly agree to strongly disagree) and instructing participants to indicate how much they agree with the item could overcome this psychometric problem. Another alternative may be to include measurement ranges for parents like those used by

the researchers, however, requiring parents to measure space available may be too burdensome. Alternate measurement methods (e.g., 5 giant steps long by 10 giant steps wide) may be an easier and fairly accurate assessment of play space available and should be investigated in the future.

For the “plenty of toys” item on the *In Home Active Play Supports* subscale, both parents’ and researchers’ responses were similar and indicated that they believed children had “some” to “adequate” toys for active play. For the video games item, responses were similar and both raters suggested children have around 1 video game that is played standing up and require lots of moving. Both items were defined objectively for researchers to respond accurately and consistently (see Table 9). Between the two items, the one with subjective phrasing had a lower ICC than the one that did not use imprecise quantification term (i.e., plenty). Thus, subjective phrasing may have lowered the agreement between parents and researchers. The “plenty of toys” item may benefit from removal of the subjective term and be rephrased as “My child has toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds”. In addition, further investigation of what constitutes “plenty of toys” for parents would be helpful in improving the item. Furthermore, the video games item may benefit from clarification of the video game examples; for example, “My child has video games that help the child be active. These are video games played standing up and require lots of moving, like Just Dance, Zumba, Wii Fit, or Kinect Sports.”

For the item asking about “ease” of access to indoor equipment on the 1-item *In Home Ease of Accessibility* subscale, researchers responded significantly higher than parents, and responses between parents and researchers had fair agreement. Preschool

children (ages 2 to 5 years) have a wide variation in ability as they are developing and expanding motor activity skills.⁷⁰ Researchers judged accessibility from a single observation of the home environment (see Table 9). Thus, parents may be more accurate at judging their child's capabilities compared to researchers. This item may benefit from revisions that avoid subjective phrasing. An example of the rephrased items may be "Indoor equipment for active play is stored where my child can see and reach it". Alternately, items may benefit from revising them to have more quantification, for example "How much of your child's indoor play equipment is easy for your child to see and reach?" with answer choices ranging from none to all of it.

Physical Activity Outside the Home (Yard). An examination of the Physical Activity Availability Outside the Home (Yard) scale's ICC showed substantial agreement (see Table 15). Its subscales, *Outside Home Space* and *Outside Home Active Play Supports*, were rated as moderate and almost perfect, respectively. The Physical Activity Accessibility Outside the Home scale's ICC showed moderate agreement (see Table 16). Its subscales, *Outside Home Ease of Accessibility* and *Outside Home Frequency of Active Play*, showed fair and almost perfect ICCs, respectively.

The item that asked raters to estimate the outside areas available for active play in terms of the equivalent number of parking spaces on the *Outside Home Space* subscale had similar mean scores, but the ICC for the item was fair (ICC=0.25). For the other two items on this subscale that assess availability of space, ICCs were substantial to almost perfect (ICC=0.74 and 0.81, respectively). Although both parents and researchers indicated outdoor areas for active play were equivalent to about 9-10 parking spaces, the parking spaces estimation item required spatial abilities, such as spatial perception,

mental rotation, and spatial visualization, which are known to have significant sex differences that favor men.⁷¹ Thus, parents in this study, who were predominantly women, may have had poor skills for this task. This subscale may benefit from revisions that exclude the parking spaces item, which would increase in the ICC for the subscale from moderate to substantial (ICC=0.69). However, this item is needed to ensure consistency of the other two items in the subscale. Therefore, one way to keep the phrasing of the item, but possibly improve ICC may be to separate it into two items, one to estimate “paved or flat areas” and another to estimate “grassy areas”. Incorporating the idea of counting the number of “giant” steps in each direction as suggested above for indoor space estimates may be appropriate for outdoor space estimates, too.

Both the *In Home Space* and *Outside Home Space* subscales assessed the availability of space for active play. Both of these “space” subscales had moderate agreement, yet had different researcher instructions: unlike the *In Home Space* subscale, scoring for the “plenty of room” item on the *Outside Home Space* subscale did not have space defined objectively. An item by item comparison reveals that the ICC for the “plenty of room” item on the inside scale was 0.34 whereas on the outside scale it was 0.81, thus indicating that the specificity of instructions given to researchers for the inside scale, rather than the subjective phrasing, may be the source of the differences between researcher and parent ratings. Similarly, the ICCs for the space item assessing somersaults/cartwheels (inside) and paved/flat area (outside) were quite different (0.47 vs. 0.74), again suggesting that the objective measurements used by researchers inside but not outside may be contributing to the ICC differences. That is, trying to compare “reality” (i.e., actual measurements by researchers) to parents’ “perceptions” appears to

result in lower ICCs than comparing parent perceptions to researcher perceptions. Future research could investigate the effect of using or not using objective measurements by researchers on ICCs.

For the “plenty of swings” and “plenty of toys” items on the *Outside Home Active Play Supports* subscale, parents rated these significantly higher than researchers. Again, this difference in scores may be because researchers followed precise criteria (see Table 10), while parents rated the items based solely on personal judgment. However, agreements between parents and researchers for both items were substantial to almost perfect, thereby indicating consistent agreement between researcher and parent ratings. The “plenty of swings” and “plenty of toys” items may benefit from revisions that avoid subjective phrasing and/or add greater specificity for the parent item, for example, “The yard or area outside our home has at least one swing, slide, or other active play equipment my child can use” and “My child has toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds”. For the item that assessed whether a child has shoes and clothes for active play, researchers rated it significantly higher than parents; in essence, parent felt children needed more clothes (e.g., coats) and shoes for outside play. Perhaps, in this case, researcher criteria were not specific enough (see Table 10) or did not take into consideration aspects important to parents (e.g., “good” outdoor clothes vs. “play” clothes; child’s growth rate and likelihood the clothes and shoes would continue to fit in the coming weeks or months), and contributed to the fair ICC for the item. One way to improve the shoes and clothes item may be for responses to be dichotomous; however this type of scoring generally results in lower internal consistency coefficients and does not permit gradations in

ratings. In order to keep the original 5-point responses to allow for gradations in ratings, further investigation is needed to define/quantify each response.

Mean scores for the *In Home Active Play Supports* and the *Outside Home Active Play Supports* subscales indicated both raters believed there were “some” to “adequate” toys for active play inside and outside the home, however parents scored significantly higher than researchers for the *In Home Active Play Supports* subscale. Both subscales included an item using the subjective phrase “plenty of toys” with the same scoring criteria given to researchers; a significant difference was detected for this item between researchers and parents on the *Outside Home Active Play Supports* subscale, but not on the *In Home Active Play Supports* subscale. Interestingly, the item on the *Outside Home Active Play Supports* subscale had a higher ICC than the analogous item in the *In Home Active Play Supports* subscale. So, there was a stronger agreement on the interpretation of “plenty of toys” for outside active play toys than for inside active play toys. Thus, it would be beneficial to investigate why these perceptions differed between locations and what constitutes “plenty of toys” for parents in both locations to help improve this item. The *Outside Home Active Play Supports* subscale had an additional item that used the imprecise quantification term “plenty” (i.e., plenty of swings, slides, or other active play equipment) that had an almost perfect agreement between parents and researchers, but scores were significantly different. This item may benefit from removing the imprecise quantification term as other statements in these subscales fared better without it (i.e., active video games inside the home or wheeled toy for outside active play items). All items are important to these subscales to assess the availability of all active play supports inside and outside the home.

The “ease” of access to toys for outside active play on the 1-item *Outside Home Ease of Accessibility* subscale also had subjective phrasing. Parent and researcher responses were similar, yet like its counterpart on the *In Home Ease of Accessibility* subscale, there was only fair agreement. As indicated above, there is a wide variation in abilities of children ages 2 to 5 as motor skill abilities are expanding.⁷⁰ Thus, parents may be better at judging their child’s capabilities compared to researchers. This subscale may benefit from the removal of the subjective phrasing from the fair ICC item, for example “My child can see and reach toys for playing actively outside”. Alternately, the item may benefit by revising it so that the phrasing is more quantifiable: “How much of your child’s toys for playing actively outside is easy for your child to see and reach?” with answer ranging from none to all of it.

Mean parent and researcher scores appear to indicate that few (3 out of 10) families had a dog. The 1-item *Outside Home Frequency of Active Play* subscale showed almost perfect agreement (ICC=0.97). Along with the *Outside Home Ease of Accessibility* subscale’s fair ICC, the two items contributed to a moderate-rated Physical Activity Accessibility Outside Home scale. With suggested revisions mentioned earlier, it may be possible to improve ICC ratings in this 2-item scale.

Physical Activity in the Neighborhood. An examination of the Physical Activity Availability in the Neighborhood scale’s ICC showed substantial agreement (see Table 17). Its subscales, *Neighborhood Space* and *Neighborhood Active Play Supports*, also showed substantial agreement. Physical Activity Accessibility in the Neighborhood scale’s ICC showed substantial agreement (see Table 18). Its subscales, *Neighborhood*

Safety and *Neighborhood Ease of Accessibility*, were rated as substantial and moderate, respectively.

The item about the availability of indoor areas for active play from the *Neighborhood Space* subscale had a higher agreement than the item about the availability of outdoor areas. Researcher instructions did differ between these two items (see Table 11); with outdoor areas having mileage requirements and indoor differentiating between cost and free. The lower ICC for outdoor areas may be because parents may not be aware of all the available parks, pools, and playgrounds nearby their home. Additionally, research has shown that parents' sense of "neighborhood" varies across individuals.⁶⁰ Therefore, researchers' objective assessment across all homes compared with parents' subjective awareness and sense of "neighborhood" or "nearby" may have contributed to moderate agreement. Although the mean scores for this item were similar and indicated that neighborhoods had at least one park, pool, or playground within one mile of the home. Thus, revisions to this item may benefit from clarifying the phrase "nearby my home". For example, an improved phrasing may be "There are outdoor areas, like parks, pools, and playgrounds within 1-2 miles away from my home where kids can play actively".

In addition to the *In Home Space* and *Outside Home Space* subscales, the *Neighborhood Space* subscale also assessed the availability of space for active play and had substantial agreement. A comparison of analogous items from inside, outside, and neighborhood indicates that the indoor plenty of room item had the lowest ICC, outdoor plenty of room and neighborhood indoor areas (recreation centers) tied for the highest, with neighborhood outside areas (e.g., parks) falling in the middle. A comparison of the

construction of the four items reveals no consistent pattern. That is, both indoor and outdoor use qualifiers (i.e., plenty) whereas neither neighborhood items did. One of the highest ICC items (outdoor plenty of room item) defined active play (e.g., games like tag or chase) but the other high ICC item (neighborhood indoor areas item) did not. Revising items to define active may be worth investigating.

Parent and researcher responses to the item about the availability of play equipment for active play on the *Neighborhood Active Play Supports* 1-item subscale indicate there is plenty of play equipment for preschool-aged children to use in the neighborhood and had substantial agreement between parents and researchers. The item about plenty of play equipment in the *Neighborhood Active Play Supports* subscale is analogous to the item in the *Outside Home Active Play Supports* subscale. Both used subjective phrasing, but ICCs were substantial (neighborhood) to almost perfect (outside). The substantial agreement may be because examples of play equipment were included in both (e.g., swings, slides).

For the 4 items from the *Neighborhood Safety* subscale that were compared, responses between parents and researchers were similar for all items. Parents and researchers felt the neighborhood was safe and clean. However, the items about feeling safe from crime and safety of outdoor areas where children can play had lower agreement than items about traffic safety and outdoor area cleanliness. These items may have had lower ICCs due to parents' greater familiarity with the neighborhood and researchers' objective assessment criteria. Parent perception of crime and safety in the neighborhood likely cannot be measured objectively (i.e., visually observed) from a single visit; therefore, it was an unequal comparison to researchers' one-time observations. However,

parent perceptions on the items in the *Neighborhood Safety* subscale are important because if parents' perceive the neighborhood as safe, then they may be more likely to use the neighborhood space and active play supports with their child.

The 1-item *Neighborhood Ease of Accessibility* subscale's use of subjective phrasing may have contributed to the moderate agreement between parents and researchers. Parents and researchers had similar responses that indicated they felt it was "easy" to get to outdoor areas where kids can play actively. The item may benefit from revisions to remove the subjective phrasing and/or include greater clarity for parents. An improved phrasing of this item could be, "In my neighborhood, outdoor areas where kids can play actively are within walking distance".

Ease of accessibility subscales in all three locations suffered from the use of subjective phrasing. For inside and outside the home, the items about "ease" of access to indoor equipment and outside toys had fair agreement. For the neighborhood, the item about "ease" of access to outdoor areas in the neighborhood had moderate agreement. To improve the ICC of these items, it may be beneficial to remove the subjective phrasings and revise the phrasings to be more quantifiable for parents (See Table 32). Alternatively, more explicit phrasing may be helpful. For instance, for the indoor equipment item it may be better to say, "It's easy for children in my home to get out and use games and toys without help. These games cause them to sweat and breathe hard." Overall, the Physical Activity scales, subscales, and items had good criterion validity.

Media Inside the Home. An examination of the Media Availability Inside the Home scale's ICC showed almost perfect agreement (Table 19), while the Media Accessibility Inside the Home scale's ICC showed substantial agreement (see Table 20).

Table 32. Suggested Revisions to Items

Current Phrasing of Item	Suggested Revisions
Physical Activity Availability Inside the Home	
<i>In Home Space</i>	
1. My child has plenty of room for active play inside our home.	Improved phrasing: My child has a large area for active play inside our home Instructions for parents: measure play space with number of “giant” steps (e.g., 5 giant steps long by 10 giant steps wide)
2. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.	Improved phrasing: Inside our home, my child has space to do somersaults and cartwheels without hitting furniture or walls
<i>In Home Active Play Supports</i>	
1. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters.	Improved phrasing: My child has toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds Investigate: what constitutes “plenty of toys” for parents
2. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect.	Improved phrasing: My child has video games that help the child be active. These are video games played standing up and require lots of moving, like Just Dance, Zumba, Wii Fit, or Kinect Sports
Physical Activity Accessibility Inside the Home	
<i>In Home Ease of Accessibility</i>	
1. Indoor equipment for active play is stored where it is easy for my child to see and reach.	Improved phrasing: Indoor equipment for active play is stored where my child can see and reach it Alternative: How much of your child’s indoor play equipment is easy for your child to see and reach?
Physical Activity Availability Outside the Home (Yard)	
<i>Outside Home Space</i>	
1. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be?	Separate into two items: Think about the size of parking spaces at the shopping mall. Now, think about the 1)grassy/2)paved or flat areas where you would allow your child to play actively. If that became a parking lot, about how many parking spaces would there be? Instructions for parents: Incorporating the idea of the number of “giant” steps in each

direction as suggested above for indoor space
estimates

Table 32. Suggested Revisions to Items, continued

<i>Outside Home Active Play Supports</i>	
1. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use.	Improved phrasing: The yard or area outside our home has at least one swing, slide, or other active play equipment my child can use
2. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds.	Improved phrasing: My child has toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds
3. My child has shoes and clothes for playing actively outside.	Dichotomous responses: Yes/No Investigate (if to keep SA-SD responses): what constitutes ample, adequate, some, and limited clothes and shoes
Physical Activity Accessibility Outside the Home (Yard)	
<i>Outside Home Ease of Accessibility</i>	
1. It's easy for my child to see and reach toys for playing actively outside.	Improved phrasing: My child can see and reach toys for playing actively outside Alternative: How much of your child's toys for playing actively outside is easy for your child to see and reach?
Physical Activity Availability in the Neighborhood	
<i>Neighborhood Space</i>	
1. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively.	Improved phrasing: There are outdoor areas, like parks, pools, and playgrounds within 1-2 miles away from my home where kids can play actively
Physical Activity Accessibility in the Neighborhood	
<i>Neighborhood Ease of Accessibility</i>	
1. In my neighborhood, it's easy to get to outdoor areas where kids can play actively.	Improved phrasing: In my neighborhood, outdoor areas where kids can play actively are within walking distance
Media Availability Inside the Home	
1. Which of these can your child use in his or her bedroom?-Video games that usually are played sitting down	Improved phrasing: Which of these can your child use in his or her bedroom?-Video game consoles (like PlayStation, Nintendo DS)

All mean parent and researcher scores in the Media Availability Inside the Home scale were similar. One of the items on the scale is a checklist that asked raters to indicate media equipment the child can use in the child's bedroom. "Video games that usually are played sitting down" was the only item that was on the border of moderate and substantial agreement ($ICC=0.60$). This may be because these video games were not stored in the child's bedroom at the time of the home visit or researchers overlooked them in their observations. Revisions in the phrasing to this item to provide greater clarity and examples may be beneficial, for instance, "Which of these can your child use in his or her bedroom?-Video game consoles (like PlayStation, Nintendo DS)".

The *Ease of Media Accessibility* subscale included three items that used the subjective phrasing "It's easy" to assess accessibility to media. All items had similar responses between parents and researchers. These items asked whether the child could turn on the device and watch or play with media, and responses indicate moderate ease of accessibility at best, which likely reflects an age effect with families with younger children being less able to use the device independently than other children. Future research should investigate this age effect. Overall, the Media Inside the Home scales had good criterion validity.

Test-Retest Reliability

Test-retest reliability of the instrument was analyzed from two time points ~2 weeks apart. The home environment was assessed by parents during the home visit (test) and reassessed at follow-up (re-test) via an online version of the instrument. Analysis was conducted on all 8 scales (which included 18 subscales and 52 items). Benchmarks for the reliability coefficient ICCs are based on Landis & Koch's guidelines with

terminology adapted from Cicchetti and Sparrow's evaluation of psychological measures.⁷² So that for almost perfect agreements (i.e., ICC=0.81-1.00), it could be said that there is excellent reliability. For substantial agreements (i.e., ICC=0.61-0.80), it is considered good reliability. Moderate agreement (i.e., ICC=0.41-0.60) would be fair reliability. Fair agreement (i.e., ICC=0.21-0.40) would be poor reliability. The ICCs for the 8 scales ranged from 0.77 to 0.95, of which 7 had excellent reliability and 1 had good reliability. The ICCs for the 18 subscales ranged from 0.42 to 0.94, of which 10 had excellent reliability, 6 had good reliability, and 2 had fair reliability. The ICC for the 64 items (50 items plus 14 individual media devices items on the Media Availability Inside the Home scale) ranged from 0.34 to 1.00, of which 34 had excellent reliability, 20 had good reliability, 9 had fair reliability, and 1 had poor reliability.

All scales on the HOP questionnaire had excellent or good test-retest reliability. All subscales had acceptable test-retest reliability except *Outside Home Parent Policies* and *Neighborhood Ease of Accessibility* subscales. Both subscales had only one item. The item about limiting outdoor active play on the *Outside Home Parent Policies* subscale had fair reliability, but was on the border between fair and good. In comparison, the analogous item on the *In Home Parent Policies* subscale had good reliability. Parent responses between the first and second survey were likely inconsistent because parents' policies may depend on outside factors (e.g., safety), whereas parents' inside policies do not have similar factors to consider. Other researchers appear to also report a low ICC outdoor play (yard) policies.³⁷ The item about "ease" of accessibility to outdoor areas in the neighborhood on the *Neighborhood Ease of Accessibility* subscale also had fair reliability. In comparison to the analogous items on the in home and outside home

subscales, this item was comparable in ICC to the in home subscale, but not to the outside home subscale. No consistent pattern was found to explain the inconsistent responses for the in home and neighborhood items but not the outside home item. That is, the in home and outside home items used qualifiers (i.e., without my help) whereas the neighborhood did not. The only difference between the in home and neighborhood subscales was the number of items (1 vs. 2). Thus, if the neighborhood subscale had a second item supporting this construct, test-retest reliability may improve. Overall, HOP had strong test-retest reliability evidence.

Internal Consistency

Internal consistency reliability was calculated using the parents' second time point responses. Cronbach's alpha coefficients for the scales ranged from 0.46 to 0.85 and subscales ranged from 0.35 to 0.83. Given the brevity of the scales, the alphas are generally acceptable, except for the Physical Activity Accessibility Outside the Home (Yard) and Media Accessibility Inside the Home scales. The 5-item Physical Activity Accessibility Outside the Home (Yard) scale had an alpha of 0.46, which was surprising to see because the analogous scale for Inside the Home had 6 items and had an alpha of 0.71. The difference is because one of the subscales, *Outside Home Frequency of Active Play*, had 2 items of which one was the combined item about walking/playing with a dog. Because only 13 families had a dog, the variance in the score was narrow which adversely affects the calculation of alpha coefficients. If this item was deleted from the scale, alpha rose from 0.46 to 0.50, thereby improving the internal consistency. However, dogs are important active play supports that may help promote physical activity. Recent research has shown that dog owners have increased physical activity levels when they

exercise with their dog.⁷³ Therefore, it would be beneficial to keep this item in the Physical Activity Accessibility Outside the Home (Yard) scale. Similarly, the Media Accessibility Inside the Home 13-item scale had an alpha of 0.47. Typically, alpha coefficients increase as the number of items on a scale increase.⁷⁴ However, the alpha for this scale was not higher perhaps because some of the items had narrow variances, therefore affecting the calculation of the alpha coefficient. An examination of the individual item variances could provide insights into how to improve this scale.

Physical Activity Availability and Accessibility in Households with Young Children

Parents in this study indicated that there is a great availability of both space and active play supports inside and outside their homes and neighborhoods. These are important for supporting and promoting physical activity starting at a young age.^{4,34,47} Parents also indicated that it was easy to actively play in all three locations. Therefore, young children were not limited to one location for active play. Interestingly, parents from this study reported higher frequency of play inside the home than the other two areas of the home environment, despite no consistent behaviors of restricting active play right outside the home (or inside the home) or concerns about neighborhood safety. This may be due to the young age of the children targeted in this study. Perhaps, there are other factors to consider that were not studied. Future research could investigate the differences in physical activity levels by location across age groups of children.

Taking a look at availability and accessibility of media that promotes sedentary behavior, parents reported low availability of media devices inside the home and in the child's bedroom. Parents also reported that media devices are accessible to young children, but children may need help to turn on and watch or play with, in addition to,

rules and restrictions set by parents that align with expert recommendations. In this study, parents reported low frequency of media use. Thus, increasing time opportunities for physical activity inside the home.

In this study, correlations between parent BMI and home environment scores were examined. The *Neighborhood Active Play Supports* and *Media Parent Policies* subscales had a significant negative correlation with parent BMI. Thus, those who had higher availability of neighborhood active play supports (i.e., swings sets and slides) had lower BMIs than those who had lower availability. Similarly, parents who enforced rules and restrictions about media use inside the home, tended to have lower BMIs than parents who did not enforce rules and restrictions. Parents who reported greater use of media had higher BMIs. These findings are new contributions to the literature on home opportunities for physical activity in young children, which indicate that supports for physical activity and controlled use of media are associated with lower BMIs of parents. Future research should investigate whether this same association is true for children.

HOP, a 52-item instrument, was developed to assess the physical activity opportunities in the home environment of preschool-aged children. The instrument uses 8 scales and 18 subscales with mainly 5-point Likert-type scales to address the physical activity availability and accessibility inside the home, outside the home (yard), and in the neighborhood, as well as, media availability and accessibility inside the home. Assessment of criterion validity indicated Physical Activity Availability and Accessibility Inside the Home scales had the lowest ICCs, which may be related to the instructions given to researchers compared to parent perceptions as indicated by the significant differences in mean scores. This may not be the best method for comparison,

thus more research is needed. The majority of the items that were assessed by both the parent and researcher also had subjective phrasing that may have contributed to low ICC ratings, however, a comparison of these items to analogous items in other areas of the home environment indicates subjective phrasing may not be the sole source of discordance between raters. Further comparison also indicates items that include examples or qualifiers in the phrasing fare better than those that do not. There is much room for improvement of these items and multiple suggestions have been discussed above. Assessment of reliability indicated excellent or good reliability and acceptable internal consistency reliability for all scales. Therefore, HOP is a brief, reliable, and valid questionnaire that parents can complete on their own to assess their preschooler's physical activity environment.

Limitations

There were some limitations to this study. To start, the sample size was small ($n=50$). Participants in this study were predominantly white, female, and well educated (i.e., bachelors degree or higher). They also tended to live in suburban areas of central New Jersey. The sample was not representative of other races/ethnicities, of low-income populations, and not nationally representative.

Researchers were trained for data collection; however inter-observer reliability among trained researchers was not evaluated in this study. It is possible researcher responses were not consistent across the 50 home visits, which could have affected validity results.

For construct validity, this study was limited to analyzing correlations between parent BMI and the scales/subscales from the small and homogenous sample described

above. No anthropometric data were collected from children living in the households participating in this study and no measures of family physical activity level was assessed. Future studies should collect anthropometric measurements (e.g., height and weight) and/or physical activity levels to determine significant correlations.

Strengths

Despite the limitations, this study had multiple strengths. Firstly, the HOP questionnaire is a comprehensive measure of the home environment that focuses on the neighborhood physical activity environment as well as in and right outside the home. It also expands on previous dichotomous checklist instruments^{34,37} by using Likert type scales, but keeping to a short and succinct number of items (i.e., 52), which is about half the amount in lengthy instruments found in the literature.

This comprehensive measure of the home environment for households with young children has undergone a careful 8-phase development process comprised of two expert reviews, continuous item refinement, and incorporation of cognitive and field testing. Item refinement after most phases led to improvements, such as removing items that were age-inappropriate. Testing and refining HOP prior to implementation helped minimize respondent burden and measurement error, as well as maximize reliability and validity.

The availability of physical activity space and active play supports is necessary for active play, but accessibility to space and supports, as well as, frequency of using available spaces and supports are just as important to encourage physical activity. In this study, frequency of use of physical activity equipment and space inside the homes, immediately outside the homes (yard), and in the neighborhoods of families with preschool-aged children was an important addition to the instrument. A review of the

literature did not find any of the instruments measuring frequency of use.^{17,27-39} This instrument also provides an objective assessment of the presence of physical activity space and supports and media equipment items, whereas other research only examined parent and/or child report of active play without attempting to assess criterion validity.^{31,34,36,75}

The HOP questionnaire was thoroughly developed with the use of psychometric measures of validity (content, face, and criterion) and reliability (test-retest and internal consistency). Despite the numerous opportunities identified for improving the instrument, it demonstrated good overall criterion validity, test-retest reliability, and internal consistency. Similar to HOP, the Physical Activity and Media Inventory³¹ was also developed where face and content validity were reported, in addition to reports of strong criterion validity and test-retest reliability evidence. However, internal consistency reliability could not be located. In comparison, this study used a more robust measure of criterion validity (ICC of items=0.25-1.00) than Spurrier et al.'s Pearson correlation coefficients ($r=0.67-0.98$). Bryant et al.'s survey development for the Healthy Home Survey included content and face validity that resulted in varied reliability and validity estimates, but were generally high with the exception of lower scores for policy items; no internal consistency reliability was reported.³⁷ The study reported here, again, used the most robust measure to assess test-retest reliability (ICC of policy items=0.53-0.88) whereas Bryant et al used kappa statistics ($\kappa=0.41-0.77$). The findings regarding subjective phrasing and low reliability for outdoor policies reported by Bryant et al were also found in this study. More recently, Hales et al.'s development of the home physical activity and media equipment inventory also included the content and face validity with

reports of strong reliability and validity for most items, however, internal consistency reliability also was not reported in their study.³⁸ Findings from this study compared to Hale et al.'s study were similar for test-retest reliability, despite different measures to assess test-retest. That is, this study used ICCs whereas Hale et al used kappa statistics (ICC of item=0.25-1.00 vs. κ =0.22-1.00). For criterion validity, this study reported stronger validity evidence than the findings reported by Hale et al (ICC of items=0.34-1.00 vs. κ =-0.02-1.00).

Recommendations for Future Research

Physical activity availability and accessibility scales examined in this study may benefit from revisions discussed above and other modifications to strengthen criterion validity. For example, investigation should be done to determine a less burdensome way to measure play space. An alternate measurement method of counting steps along the length and width of a play space area will need more research to determine its usability and accuracy.

Future research could also revise the scales to reduce the length and increase internal consistency reliability while retaining the subscales. Improvements for instrument design may include re-categorization by scales to combine availability in all locations into a single scale. Similarly, combining all locations for accessibility and frequency of use may be worthwhile. The rationale for combining these is that physical activity is important whereas the location where it occurs may be less relevant. Indeed, preliminary analyses that are beyond the scope of this study indicate that this re-categorization holds promise for streamlining and improving the HOP questionnaire.

Additional psychometric analyses with a larger, more diverse sample are needed to ascertain the usefulness of this questionnaire. For instance, after revision, a widespread field test and factor analysis to verify the organization of items within the scales is warranted.

Conclusions

This study is one of the first to report the development of an instrument for assessing the availability, accessibility, and frequency of use of physical activity in the home, outside the home (yard), and neighborhood for use in households with young children. Although other instruments exist, published studies were less complete than this study, omitting descriptions of instrument development, reliability, and/or validity^{17,27-32,34-38}. Therefore,

The HOP questionnaire is a brief, and easy-to-use parent-report assessment of the home physical and sedentary activity environment of households with young children. It demonstrates good content validity. With the exception of the indoor availability and accessibility scales, there was moderate to almost perfect criterion validity evidence for the instrument. Significant correlations between parent BMI and HOP scales suggest good construct validity. In addition, almost all scales had excellent or good test-retest reliability and acceptable internal consistency evidence so that these are ready to be used in other studies to evaluate intervention effects in regards to childhood obesity. Use of this instrument in other studies can provide useful information to obesity prevention researchers and practitioners to increase our understanding of how the home environment-inside, outside, and/or nearby the home, may impact young children's physical activity levels over time or help determine how to protect against declines in

physical activity and increases in sedentary behaviors in the home environment of preschool-aged children, thereby helping to prevent childhood obesity.

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Appendix A
Recruitment Notice



Department of Nutritional Sciences
School of Environmental and Biological Sciences
26 Nichol Avenue
New Brunswick, NJ 08901

Dear Parents of Preschoolers (ages 2 to 5 years),

Researchers at Rutgers University are developing a program to help parents build healthier kids. We need your input!

Participation involves learning to use a questionnaire that assesses how well your home and lifestyle promote optimal child growth. A researcher will visit your home to explain how to use the questionnaire. Then, both you and the researcher will complete the questionnaire. About 2 weeks later, you will complete a second questionnaire. Total participation time takes about 60 minutes. Participants will receive \$50 payment.

Interested? To see if you are eligible, please complete a short survey at:

<http://tinyurl.com/homestylesvisit>

If you have any questions, please contact The HomeStyles Team at homestyles@aesop.rutgers.edu.

Sincerely,

Jennifer Martin-Biggers, MS, RD
Research Assistant

Carol Byrd-Bredbenner, PhD, RD, FADA
Professor of Nutrition/Extension Specialist
Rutgers University
Bredbenner@aesop.rutgers.edu

Appendix B
Home Visit Protocol

Procedures 48 Hours BEFORE Leaving for Participant's

Home

1. Review Participant Data Sheet (**BEFORE** Calling Participant)
 - a. *Do you have the Participant Data Sheet?*
 - b. *Do you have Mapquest driving instructions or address for GPS?*

2. Confirm time of meeting (Confirm your visit 48 hours ahead of time)

Script for Lead Interviewer: Hello, my name is _____; I am a researcher at Rutgers University. I am calling to confirm an appointment with _____. Is he/she available? *Exchange Greetings*

Thank you for agreeing to assist us with this project. My colleague and I are scheduled to visit your home on DAY: _____ DATE: _____ TIME: _____.

Is this appointment time still OK? *If not, try to reschedule.*

- *If you don't reach the person, leave a message that they need to call you back as soon as possible. The number you should leave is: 732-932-9827 (you could also leave your cell phone number if you like).*
- *If there is a second phone number for the participant, call it.*
- *If you haven't heard from the participant within 18 hours of leaving the message, call again on all of her phone numbers.*
- *If necessary, leave a second message & call back within 12 hours on all of her phone numbers.*
- *If necessary, leave third message & call back within 8 hours on all of her phone numbers.*

3. Confirm study commitments.

Script once you reach the participant: **As you know, this study involves completing questionnaires that assess how well your home and lifestyle practices promote optimal child growth.**

While we are in your home, we will first explain to you how to use the questionnaire. Then both you and a member of the project team from Rutgers will visit areas inside and outside your home to complete the questionnaire. About 2 weeks later, you will complete a second questionnaire online. Our visit will take about 45 minutes. The online will take about 15 to 20 minutes. Total participation time will be about 60 minutes. During our visit, we will need to look at areas inside your home where your children play and use media (e.g., watch TV) and store play equipment. There is no need to make any changes to your home to prepare for our visit.

4. Review driving instructions with participant (correct as needed)

Script: **I'd like to confirm directions to your home. Starting at _____**

(a major road like 206, 287, etc.), read the Mapquest instructions

slowly noting any differences in the directions or on the Participant

Data Sheet.

Just in case we make a wrong turn, what phone number can we call when we are on our way to your home to get additional directions?

_____ Is there an additional number we could try?

5. Closing

Script: That sounds fine. My colleague and I will see you on **DAY:**

_____ **DATE:** _____ **TIME:** _____.

If you have any questions between now and then, please call me at:

732-932-9827 (*you could also leave your cell phone number if you like*).

6. Google search participant's location and click on map (or search directly from maps.google.com). Click on Search nearby and type in "park", "pool", and "playground" for 3 separate searches. Look in a 1-mile radius (use your best judgment; exclude if they need to cross rivers or major highways [4 or more lanes]). Use street view to browse around. Make a note on the sheet labeled "Google Info Sheet". If you feel the need to confirm Google searches, go to park or playground after Home Visit and determine if outdoor areas have swing sets, slides, etc. If you feel confident of street level pictures of park and/or playground, complete Section 3 of Researcher Questionnaire before Home Visit.

7. Re-read (even it is the 1000th home audit) the protocol for collecting data.

Participant Data Sheet

Name: _____

Address: _____

Town: _____

Email: _____

Phones: _____

CIRCLE PHONE NUMBERS

WHERE PARTICIPANT SAYS SHE CAN BE REACHED ON THE DAY OF THE
HOME VISIT (FROM SECTION 1 #4)

Appointment Time (day, date, time): _____

Driving Instructions:

Instructions Upon Arrival at Participant's

Home

Driving in: Observe surroundings. Did you pass outdoor areas nearby where kids can play (parks, pools, playgrounds)? Is there traffic nearby the home? How safe do you feel? Are there bars on the windows of the home and surrounding homes?

Script: Hello, my name is _____. I am scheduled to meet with _____ today at _____ o'clock. Is she available? *Exchange Greetings.* Thank you for agreeing to assist us with this project. This is my colleague _____. Here are our business cards.

- As we explained when we scheduled you for today, this study involves completing questionnaires that assess how well your home and lifestyle practices promote optimal child growth. During our visit, we will need to look at areas inside and outside your home where your children play and use media (e.g., watch TV) and store play equipment.
- As you know, in return for your help with this project, we will pay you \$20 after you and I complete the first questionnaire of the study today. If you also complete the second questionnaire 2 weeks later that you will do online, we will email you, you will receive an additional \$30. We will send you a reminder by email when it is time to complete the second questionnaire. Our visit today will take about 45 minutes.
- You can end your participation in the project at any time, but you and I must complete the questionnaire today to receive compensation today. And, you must complete the online questionnaire to receive further compensation.
- Now, please review this informed consent form; if you agree to participate, please sign it and keep a copy for yourself. If you have any questions please let me know.

Provide **2 copies** of the informed consent form (one for us and one for the participant to keep), answer any questions the individual has, and if he or she signs it, proceed on.

If they do not sign the form, **STOP**. Thank the individual for his or her interest in our project [e.g., I am sorry that you are unable to participate in our project, but thank you so much for considering us.]

- The questionnaire you will be completing has 3 sections.
 - a. The first section asks about the **INSIDE** of your home.
 - b. The second section asks about your yard or area **RIGHT OUTSIDE** your home.
 - c. The third section asks you to think about your **NEIGHBORHOOD and the area NEARBY** your home.

My colleague and I, together, will also be completing most of the same questions as you. There are a few other items on your questionnaire about what your child usually does that only you will answer. To answer questions, we will need to look at areas inside your home where your children play and use media (e.g., watch TV) and store play equipment as well as areas outside your home. We would like you to be with us as we move around your home. We will work as quickly as we can. Our visit will take about 45 minutes. Do you have any questions? *Answer questions. If no questions, hand them survey on clipboard with a pencil and begin by asking them to complete Section #1 (6 pages).*

SECTION #1: Inside Your Home

Reminder: Say “home” instead of “house” in case people live in apts.

Script: Thank you so much for allowing us to visit your home today. As you know, we are trying to improve a questionnaire we are developing for parents to use to assess their home and lifestyle with regard to child growth. We will need to visit areas inside and outside your home. While we make observations, you’ll complete the questionnaire. If there is something on the questionnaire you do not understand, please write a note beside it and answer it the best you can. Ok, let’s get started.

Think about your preschool child doing active play INSIDE, meaning activities that make him/her sweat and breathe harder than normal. Please complete Section #1 right now and stop when you see a stop sign. No additional verbal info given to parent. If parent has a question, ask him/her to complete it as best they can.

Write down question(s) asked by parent.

We’d like to see all the areas inside your home where active play usually occurs. Where should we start to see where active play usually occurs? *As you visit rooms or areas related to physical activity, also note media equipment (TV, DVD Player, computer, laptop, smart phone, tablet) in the room in the table below.*

When entering a room: Please open any closets, doors, and/or drawers where you may store toys (balls, wheeled toys) or video games related to active play. Measure play space and make notes.

Can you access the Internet in this room? *Repeat for each room.*

In child's bedroom: **In addition, please show me any shoes and clothes your child uses for outdoor play. This will help us answer questions related to that. Thank you for showing us (*the child's bedroom*).**

If parent does not show you child's sneakers, boots, or coats: **Please show us another room (e.g. garage, basement) that you may have to store any shoes and clothes your child uses for outdoor play. This will help us answer questions related to that.**

Please show us the next place inside your home that your preschool child does active play. Remember, this means doing activities that make him/her sweat and breathe harder than normal. Thank you for showing us (*the playroom*).

Please show us the next place where your child watches TV or movies or uses the computer, laptop, smart phone, tablet, or LeapPad. Please turn it on so we can verify it works. Also, please open a web browser so we can verify Internet access. Thank you for showing us (*the computer room*). *Repeat request until parent says there are no other areas inside the home child usually plays in and all media equipment child uses have been seen.*

Thank you for completing section 1. We have all the information we need. Let's move onto section 2.

SECTION #2: Outside Your Home

***Script:* Think about your preschool child doing active play OUTSIDE, meaning activities that make him/her sweat and breathe harder than normal. Please complete the rest of the questionnaire right now. No additional verbal info given to parent. If parent has a question, ask him or her to complete it as best they can.**

Write down question(s) asked by parent.

Please show us your yard or the area right outside your home where your child plays actively. *Bring measuring tape and umbrella, if needed, outside.*

If parent indicates there are NO places right outside their home where their child can play actively (e.g., live in an apartment), please note that and move to Section 3.

Please open any doors, gates, garage, etc. where you may store wheeled toys and/or outdoor toys related to active play, like balls, jump ropes, hula hoops, skates, or sleds.

Thank you for showing us outside your home.

SECTION #3: Nearby Your Home

We have a couple of final questions for you about your neighborhood and nearby your home.

What outdoor areas, like parks, pools, and playgrounds, where your kids can play are nearby? **Probe:** Maybe a grade/elementary school that has a playground? Or a town pool? What are the cross streets of the (playground, etc.)_____ so we can drive by and take a look?

What free or low-cost recreation centers or other indoor places where your kids can play are nearby? **Probe:** Is there a YMCA or Boys and Girls Club? Maybe you have a rec center inside a community center? Where would you go to sign up for a soccer or T-ball camp this summer?

If you don't see one or evidence of one (e.g. bowl)—be sure to ask, just in case he/she is at a kennel, getting groomed, etc. Do you have a dog? ____Yes ____No

Appendix C

Home Opportunities for Physical activity (HOP) Questionnaire – Parent Version

Name: _____ Date: _____

Parents, please tell us about you!

SECTION #1: Inside Your Home

Think about your child doing active play inside your home.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

Active play means doing activities that make you sweat and breathe harder than normal, like riding scooters or tricycles, running, dancing, jumping, and horseplay or “wrestling”.

How much do you agree with each statement below?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

SA	A	N	D	SD	1. My child has plenty of room for <u>active</u> play <u>inside</u> our home.
SA	A	N	D	SD	2. My child has plenty of toys for <u>active</u> play that can be used <u>indoors</u> to help build muscles. These are toys like balls, tricycles, and scooters.
SA	A	N	D	SD	3. My child has siblings or friends that live nearby to play with <u>indoors</u> .
SA	A	N	D	SD	4. My child has video games that help the child be <u>active</u> . These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect.
SA	A	N	D	SD	5. I put limits on the amount of time my child can have <u>active</u> play <u>indoors</u> .
SA	A	N	D	SD	6. It's easy for my child to <u>actively</u> play <u>indoors</u> without my help.
SA	A	N	D	SD	7. <u>Indoor</u> equipment for <u>active</u> play is stored where it is easy for my child to see and reach.
SA	A	N	D	SD	8. My child has enough space <u>inside</u> our home to do somersaults and cartwheels without hitting furniture or walls.

9. How often does your child usually play actively inside your home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

10. How often does your child play actively indoors with toys that help build muscles? These are toys like balls, tricycles, scooters.

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

11. How often does your child play actively indoors with siblings or kids that live nearby?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

Think about all the TVs, DVD players, computers, and smart phones in your home that work.

12. How many of each of these are in your home? (Circle how many)

TV

0 1 2 3 4 5 6 7 8 9 10 more than 10

DVD Player

0 1 2 3 4 5 6 7 8 9 10 more than 10

Computer/Laptop

0 1 2 3 4 5 6 7 8 9 10 more than 10

Smart Phone/Tablet/LeapPad

0 1 2 3 4 5 6 7 8 9 10 more than 10

Video games that usually are played sitting down

0 1 2 3 4 5 6 7 8 9 10 more than 10

Video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect)

0 1 2 3 4 5 6 7 8 9 10 more than 10

13. Which of these can your child use in his or her bedroom? (Check all that apply)

_____ TV

_____ DVD Player

_____ Computer/Laptop

_____ Smart Phone/Tablet/LeapPad

_____ Video games that usually are played sitting down

_____ Video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect)

_____ Internet

_____ None of the above

14. Do you have Internet access in your home? _____ Yes _____ No

How much do you agree with each statement?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

SA	A	N	D	SD	15. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help.
SA	A	N	D	SD	16. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help.
SA	A	N	D	SD	17. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect) with little or no help.

18. How often is a TV on when meals and snacks are eaten at your home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

19. How often do you use a computer, tablet, video game, smart phone, or electronic educational device (like LeapPad) during meals and snacks at home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

20. Each day, how much time is the TV on when no one is watching it?

_____ hours _____ minutes

21. Each day, how much time do you usually allow your child to watch TV or movies at home?

_____ hours _____ minutes

- 22. Each day, how much time do you allow your child to play at home with computers, tablets, video games that are played sitting down, smart phones, or electronic educational devices (like LeapPad)?**

_____ hours _____ minutes

- 23. Each day, how much time do you allow your child to play at home with video games that are played standing up and require lots of moving (like Wii Fit or XBox Kinect)?**

_____ hours _____ minutes

How much do you agree with each statement?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

SA	A	N	D	SD	24. I try to limit the number of TV commercials my child sees.
SA	A	N	D	SD	25. I try to limit the TV shows and movies my child sees to only those made for kids.
SA	A	N	D	SD	26. I often talk with my child about advertisements on TV.
SA	A	N	D	SD	27. I often talk with my child about TV shows, video games, or movies.



SECTION #2: Outside Your Home

Think about your yard or area right outside your home.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

***Active play** means doing activities that make you sweat and breathe harder than normal, like riding scooters or tricycles, running, dancing, jumping, and horseplay or “wrestling”.*

How much do you agree with each statement?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

SA	A	N	D	SD	28. The yard or area <u>outside</u> our home has plenty of room for my child to <u>actively</u> play games like tag or chase.
SA	A	N	D	SD	29. There is a paved or flat area in the yard or area <u>outside</u> our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy.
SA	A	N	D	SD	30. My child has shoes and clothes for playing <u>actively outside</u> .
SA	A	N	D	SD	31. The yard or area <u>outside</u> our home has plenty of swings, slides, or other <u>active</u> play equipment my child can use.
SA	A	N	D	SD	32. My child has plenty of toys for playing <u>actively outside</u> , like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds.
SA	A	N	D	SD	33. My child has a tricycle, bike, scooter, or other wheeled toy to use <u>outside</u> .
SA	A	N	D	SD	34. It's easy for my child to <u>actively</u> play in the yard or area right <u>outside</u> our home without my help.
SA	A	N	D	SD	35. I often limit my child's <u>active</u> play in the yard or area right <u>outside</u> our home.
SA	A	N	D	SD	36. It's easy for my child to see and reach toys for playing <u>actively outside</u> .

37. When the weather is good, how often does your child usually play actively in the yard or area outside your home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

38. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play actively—include grassy, paved, or other areas. If those areas became a parking lot, about how many parking spaces would there be? (Circle how many)

0 1 2 3 4 5 6 7 8 9 10 10 or more

SECTION #3: Nearby Your Home

Think about your neighborhood and the area nearby where you live.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

How much do you agree with each statement?

SA=Strongly Agree

A=Agree

N=Neither agree nor disagree

D=Disagree

SD=Strongly Disagree

DK=Don't Know

SA	A	N	D	SD	DK	39. There are free or low-cost recreation centers or other <u>indoor</u> places where kids can play <u>actively</u> .
SA	A	N	D	SD	DK	40. There are <u>outdoor</u> areas, like parks, pools, and playgrounds, nearby my home where kids can play <u>actively</u> .
SA	A	N	D	SD	DK	41. The <u>outdoor</u> areas in my <u>neighborhood</u> have plenty of swing sets, slides, or other play equipment my child can use.
SA	A	N	D	SD		42. There is so much traffic near where I live that I do not feel safe walking in the area.
SA	A	N	D	SD		43. I feel safe from crime in my <u>neighborhood</u> and nearby.
SA	A	N	D	SD		44. I feel safe from biting insects, like mosquitos, ticks, and scorpions, and animals, like dogs running loose, in my <u>neighborhood</u> and nearby.
SA	A	N	D	SD	DK	45. In my <u>neighborhood</u> , it's easy to get to outdoor areas where kids can play <u>actively</u> .
SA	A	N	D	SD	DK	46. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are safe.
SA	A	N	D	SD	DK	47. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are clean.
SA	A	N	D	SD	DK	48. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are crowded with other people.

49. When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, and playgrounds, near your home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

50. How often does your child usually play actively in free or low-cost recreation centers or other indoor places near your home?

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

51. Do you have a dog?

_____No

_____Yes: **52. How often does your child go on walks with the dog or play with it outside (doing things like throwing balls)?**

- a) Almost never
- b) 1 or 2 times a week
- c) 3 to 4 times a week
- d) 5 to 6 times a week
- e) Every day

Thank you!!

Appendix D

Home Opportunities for Physical activity (HOP) Questionnaire – Researcher Version

S1.1, 2, 4, 12, 13, 14

Measure inside play space(s) with tape measure (S1.1).

List types of toys child uses for active play (S1.2) and video games that help child be active (S1.4).

Count how many working TVs/DVD Players, computers/laptops, smart phones/tablets/LeapPads, video games played standing up/requires lots of moving, and video games usually played sitting down in each room (S1.12).

Identify if each room has Internet access (S1.14).

S = storage

Rooms visited related to PA, including S areas for toys and winter shoes/clothes	Measurement of play space for each room	Types of toys or video games (e.g. ball, Just Dance)	# of toys for active indoor play	# of working TVs	# of working DVD Player	# of working Computers/Laptops	# of working Smart Phones/Tablets/LeapPads	# of video games usually played sitting down	# of video games played standing up (Wii Fit, Xbox Kinect)	Internet access in the room (S1.14)
Child's Bedroom (S1.13)										
Total:			(S1.2)	(S1.12_1)	(S1.12_2)	(S1.12_3)	(S1.12_4)	(S1.12_5)	(S1.12_6)	

S2.30 What kind of shoes and clothes does the child have for playing **actively outside**?

S1.8 Can a preschool-aged child do somersaults and cartwheels without hitting furniture or walls in their play space in the home? About how many?

S1.7 *If the home has storage area(s) for toys for active play:* Is indoor equipment for active play stored where it is easy for preschool-aged child to see and reach? Is he/she only able to see but needs mom/dad to take out or bring down for child to use?

S1.15 Where does the parent keep remote controls, or movie-playing equipment? Does it look like the preschool-aged child can turn on TV or watch a movie without much help from the parent?

S1.16 What about access to other things like computers, tablets, video games usually played sitting down, smart phones, and educational devices? Are they behind a door, high up on a shelf, or easy to see and reach for child?

S1.17 What about access to video games that are played standing up and require lots of moving like, Wii Fit and Xbox Kinect?

S2.28, 29, 32, 33 Measure yard space or space right outside home for active play AND paved or flat area for riding wheeled toy. *Estimate* for large spaces (e.g. for backyard, measure patio and multiply for backyard space; for driveway, use car spaces to estimate length of driveway).

Outdoor areas for active play or storage for play equipment	Measurement of play space (e.g. 8 ft x 8 ft) or S for Storage	Play equipment stored (tricycle, bike, scooter, balls, jump ropes...)	# of toys for active outdoor play	# of wheeled toys
Yard space/space right outside of home for active play (S2.28)				
Paved/flat area space for riding wheeled toy (S2.29)				
			Total: (S2.32)	Total: (S2.33)

S2.31 What kind of play equipment do they have in their yard or in an area right outside their home that their preschool-aged child can play on? Are there swings, slides, and/or other play equipment?

S2.36 Where are the toys for outdoor play stored? Is it easy for the child to see or is it locked behind closed doors? Can a preschool-aged child reach the toys or are the toys stored so only adults can reach? *Note types and amount of active play equipment in table above.*

S2.38 If the outside area where the preschool-aged child actively plays – grassy, paved, or other is measured in parking spaces. How many parking spaces would their areas encompass? (Circle how many)

0 1 2 3 4 5 6 7 8 9 10 10 or more

S3.40 What outdoor areas, like parks, pools, and playgrounds, where your kids can play are nearby? **Probe:** Maybe a grade/elementary school that has a playground? Or a town pool? What are the cross streets of the (playground, etc.)_____ so we can drive by and take a look?

S3.39 What free or low-cost recreation centers or other indoor places where your kids can play are nearby? **Probe:** Is there a YMCA or Boys and Girls Club? Maybe you have a rec center inside a community center? Where would you go to sign up for a soccer or T-ball camp this summer?

S3.51 *If you don't see one or evidence of one (e.g. bowl)—be sure to ask, just in case he/she is at a kennel, getting groomed, etc.* **Do you have a dog?** ____Yes ____No

Appendix E

Comparison of Parent and Researcher Version of the Home Opportunities for Physical activity (HOP) Questionnaire

Researcher Questionnaire **AFTER** Leaving Participant's Home

Drive by outdoor areas (playgrounds, etc.) in the neighborhood, if needed.

Discuss responses between each other for most accurate answer.

Refer to the numbers on the Researcher Protocol. Numbers on the protocol corresponds to the section and question number on the Researcher Questionnaire below, for example, S1.1 = Section #1, Question 1.

SECTION #1: Inside Your Home

Parent Survey Items	RESEARCHER Data Collected From Home Visit	RESEARCHER Response equivalents (SA=5, A=4, N=3, D=2, SD=1)	Parent Response options (SA=5, A=4, N=3, D=2, SD=1)
1. My child has plenty of room for active play <u>inside</u> our home.	Measurement of play space	SA=Ample space; >14ft x 14ft space for active play (>196 ft ²) A=Adequate space; >12ft x 12ft and ≤14ft x 14ft space for active play (>144 ft ² and ≤196 ft ²) N= Some space; >10ft x 10ft and ≤12ft x 12ft space for active play (>100 ft ² and ≤144 ft ²) D=Limited space; >8ft x 8ft and ≤10ft x 10ft space for active play (>64 ft ² and ≤100 ft ²) SD=Very limited or no space for active play; up to 8ft x 8ft space (≤64 ft ²)	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
2. My child has plenty of toys active play that can be used <u>indoors</u> to help build muscles. These are toys like balls, tricycles, and scooters.	Total # of toys for active indoor play	SA=Ample toys; 15 or more toys A=Adequate toys; 10-14 toys N=Some toys; 5-9 toys D=Limited toys; 1-4 toys SD=No toys	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
3. My child has siblings or friends that live nearby to play with <u>indoors</u> .			SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree

4. My child has video games that help the child be active . These are video games played standing up and require lots of moving like Wii Fit, XBox Kinect.	Total # of video games that help child be active	SA= More than 1 active video game N=1 active video game SD=Does not have active video games at home	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
5. I put limits on the amount of time my child can have active play indoors .*			SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
6. It's easy for my child to actively play indoors without my help.			SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
7. Indoor equipment for active play is stored where it is easy for my child to see and reach.	Based on observation (S1.7)	SA=All stored active play toys and active video games are easy to see and reach or no storage area A=Most active play toys and active video games are easy to see and reach N=Half of active play toys and active video games are easy to see but hard to reach or gathering dust. D=Nearly all active play toys and active video games are hidden and unreachable SD=No active play toys or active video games	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
8. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.	Based on observation (S1.8)	SA=Ample space; 5 or more somersaults or cartwheels without hitting furniture or wall A=Adequate space; 4 somersaults or cartwheels without hitting furniture or wall N= Some space; 3 somersaults or cartwheels without hitting furniture or wall D=Limited space; 2 somersaults or cartwheels without hitting furniture or wall SD=Very limited or no space for active play; 1 or less somersault or cartwheel without hitting furniture or wall	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree

9 – 11. Parent Response Only

12. How many of each of these are in your home? (Circle how many)

(12_1) TV: 0 1 2 3 4 5 6 7 8 9 10 more than 10

(12_2) DVD Player: 0 1 2 3 4 5 6 7 8 9 10 more than 10

(12_3) Computer/Laptop: 0 1 2 3 4 5 6 7 8 9 10 more than 10

(12_4) Smart Phone/Tablet/LeapPad: 0 1 2 3 4 5 6 7 8 9 10 more than 10

(12_5) Video games that are usually played sitting down: 0 1 2 3 4 5 6 7 8 9 10 more than 10

(12_6) Video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect): 0 1 2 3 4 5 6 7 8 9 10 more than 10

13. Which of these can your child use in his or her bedroom? (Check all that apply)

(13_1) _____ TV

(13_2) _____ DVD Player

(13_3) _____ Computer/Laptop

(13_4) _____ Smart Phone/Tablet/LeapPad

(13_5) _____ Video games that usually are played sitting down

(13_6) _____ Video games that are played standing up and require lots of moving

(13_7) _____ Internet

(13_8) _____ None of the above

14. Do you have Internet access in your home? ____ Yes ____ No

15. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help.	SA=The controls are in a place that child can reach and turn on A= N= D= SD=The controls or access to the TV and movies are kept in a place purposely inaccessible to the child	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
16. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help.	SA=All devices are easy to turn on and use with little or no help A=Most devices are easy to turn on and use with little or no help N=Half of the devices are easy to turn on and use with little or no help D=Less than half of the devices are easy to turn on and use with little or no help SD=Nearly all devices are hidden/unreachable and child needs help to turn on and use	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
17. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect) with little or no help.	SA=Devices are kept in a place that the child can get to them and use them WITHOUT needing the parents help. A= N= D= SD=Devices require a parent to help use them; otherwise child cannot access them alone	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree

18-27. Parent Responses Only

SECTION #2: Outside Your Home

Parent Survey Items	RESEARCHER Data Collected From Home Visit	RESEARCHER Response equivalents (SA=5, A=4, N=3, D=2, SD=1)	Parent Response options (SA=5, A=4, N=3, D=2, SD=1)
28. The yard or area <u>outside</u> our home has plenty of room for my child to <u>actively</u> play games like tag or chase.	Based on estimation or measurement of yard space/space right outside of home for active play	SA=Child has space to play freeze tag A= Has space but not ideal to play tag (e.g. too close to street) N= D= SD=No space to run around and play tag or chase	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
29. There is a paved or flat area in the yard or area <u>outside</u> our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy.	Based on estimation or measurement of paved/flat area for riding wheeled toy	SA = paved or flat area is big enough to safely ride wheeled toy A = N= D= Paved or flat area is not big enough to ride wheeled toy SD= No paved or flat area for opportunity to ride wheeled toy	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
30. My child has shoes and clothes for playing <u>actively outside</u> .	Based on observation (S2.30)	SA=At least one pair of play shoes (sneakers, snow boots) and one coat for winter A= N= D= only sneakers or only snow boots SD=No sneakers, snow boots, or winter coat	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
31. The yard or area <u>outside</u> our home has plenty of swings, slides, or other <u>active</u> play equipment my child can use.	Based on observation (S2.31)	SA=Ample equipment; 3 or more active play equipment: playset (with swing, slide, and climbing wall) or 3 separate equipment (monkey bars, trampoline, bounce house) or a mix A=Adequate equipment; 2 active play equipment: playset (with swing and slide) or 2 separate equipment N=Some equipment; 1 active play equipment D=Limited equipment; active play equipment for summer or winter only (e.g., slip n slide) SD=No outside active play equipment	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree

32. My child has plenty of toys for playing <u>actively outside</u> , like balls, jump ropes, skates, swimming or kiddie pool , hula hoops, or sleds ⁶² .	Total # of toys for outdoor active play	SA=Ample toys; 15 or more toys A=Adequate toys; 10-14 toys N=Some toys; 5-9 toys D=Limited toys; 1-4 toys SD=No toys	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
33. My child has a tricycle, bike, scooter, or other wheeled toy to use <u>outside</u> .	Total # of wheeled toys to use outside	SA=At least one wheeled toy A= N= D= SD=No wheeled toy	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
34. It's easy for my child to <u>actively</u> play in the yard or area right <u>outside</u> our home without my help.			SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
35. I often limit my child's <u>active</u> play in the yard or area right <u>outside</u> our home.*			SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
36. It's easy for my child to see and reach toys for playing <u>actively outside</u> .	Based on observation (S2.36)	SA= All equipment (outside active play toys and wheeled toys) is easy to see and reach or no storage area A= Most outside active play toys and wheeled toys are easy to see and reach N= Half of outside active play toys and wheeled toys are easy to see and reach D= Nearly all outside active play toys and wheeled toys are locked up, hidden, and unreachable SD= No outside active play toys or wheeled toys	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree

37. Parent Response Only

38. Think about the size of parking spaces at the shopping mall. Now, think about all the areas outside your home where you would allow your child to play **actively—include grassy, paved, or other areas**. If those areas became a parking lot, about how many parking spaces would there be? (Circle how many)

0 1 2 3 4 5 6 7 8 9 10 10 or more

SECTION #3: Nearby Your Home

Parent Survey Items	RESEARCHER Response equivalents (SA=5, A=4, N=3, D=2, SD=1, DK=0)	Parent Response options (SA=5, A=4, N=3, D=2, SD=1, DK=0)
39. There are free or low-cost recreation centers or other indoor places where kids can play actively .	SA=Two or more free or low-cost recreation center or indoor place A=One N= D= SD=No Recreation center or indoor place or they cost over \$100/month/person	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
40. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively .	SA=Multiple parks, pools, and playgrounds within 1 mile walking/driving distance A=At least one park, pool, or playground within 1 mile walking/driving distance N=At least one park, pool, or playground 1-3 miles drive away D=There are parks, pools, and/or playgrounds but they are 4-7 miles drive away SD=No parks, pools, or playgrounds within 7 miles	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
41. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use.	SA=Two or more areas have plenty of play equipment A=One area N= D=One with limited equipment SD=No outdoor areas with play equipment for preschooler to use	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
42. There is so much traffic near where I live that I do not feel safe walking in the area.*	SA=There are no sidewalks or pedestrian signs/crosswalks and there is so much traffic A= N= Pedestrian signs and crosswalks all over make it feel safer among the heavy traffic D= SD=Pedestrian signs/crosswalk all over; no heavy traffic.	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strong Disagree
43. I feel safe from crime in my neighborhood and nearby.	SA=Area is clean, no suspicious people hanging around, no bars on windows of homes A= N=May/may not be safe D= SD=I keep on looking over my shoulder. The place looks run down and dirty. There are bars on the windows of homes.	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
44. I feel safe from biting insects, like mosquitos, ticks,		SA=Strongly Agree A=Agree

and scorpions, and animals, like dogs running loose, in my <u>neighborhood</u> and nearby.		N=Neither agree nor disagree D=Disagree SD=Strongly Disagree
45. In my <u>neighborhood</u> , it's easy to get to outdoor areas where kids can play <u>actively</u> .	SA=Outdoor areas are less than ½ a mile walk away A=Outdoor areas are ½-1 mile walk or within a 5 minute drive N= Outdoor areas are more than 1 mile walk or within a 5-10 minute drive D=Outdoor areas are within a 10-15 minute drive SD=Outdoor areas are more than a 15 minutes drive away	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
46. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are safe.	SA=fence around the border; not located along busy roads A= N= D= SD=heavy traffic right along the outdoor space and no fences	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
47. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are clean	SA=No garbage laying around and garbage can in eyesight from all outdoor area grounds A=Some garbage that looks out of place in all outdoor area grounds N= D=Garbage laying around in more than one outdoor area SD=Garbage all over	SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know
48. The outdoor areas in my <u>neighborhood</u> where my child can play <u>actively</u> are crowded with other people.		SA=Strongly Agree A=Agree N=Neither agree nor disagree D=Disagree SD=Strongly Disagree DK=Don't Know

49-50. Parent Response Only

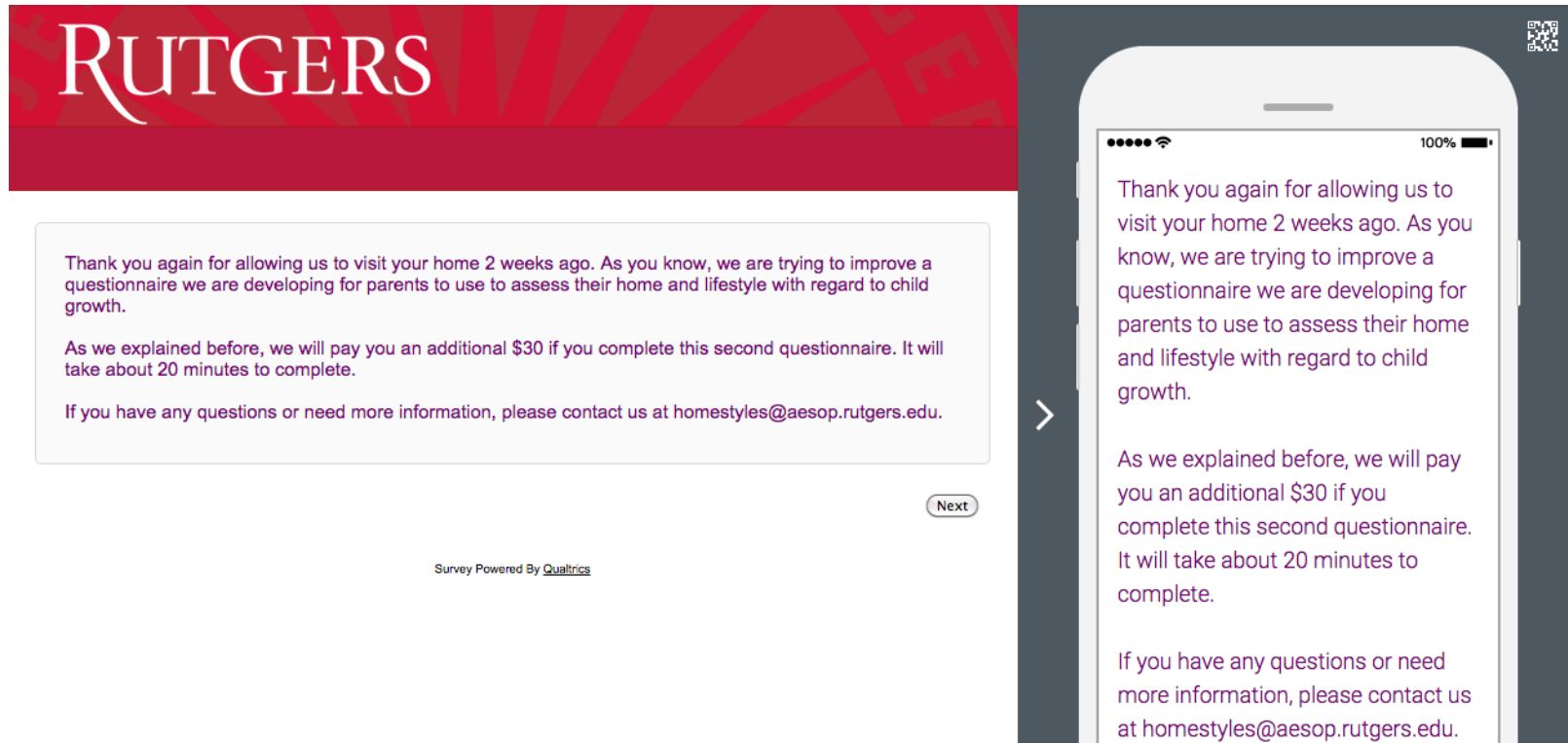
51. Do you have a dog? ____ No ____ Yes

*Reverse code items

Appendix F

Home Opportunities for Physical activity (HOP) Questionnaire – Online Version

Home Environment Parent Questionnaire





Think about your child doing active play inside your home.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

Active play means doing activities that make you sweat and breathe harder than normal, like riding scooters or tricycles, running, jumping, and horseplay or "wrestling".

How much do you agree with each statement below?

1. My child has plenty of room for active play inside our home.

Strongly Agree



Agree



Neither agree nor disagree



Disagree



Strongly Disagree



2. My child has plenty of toys for active play that can be used indoors to help build muscles. These are toys like balls, tricycles, and scooters.

Strongly Agree



Agree



Neither agree nor disagree



Disagree



Strongly Disagree



Think about
your child doing
active play
inside your
home.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

Active play means doing activities that make you sweat and breathe harder than normal, like riding scooters or tricycles, running, jumping, and horseplay or "wrestling".

3. My child has siblings or friends that live nearby to play with indoors.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

4. My child has video games that help the child be active. These are video games played standing up and require lots of moving like Wii Fit, Xbox Kinect.

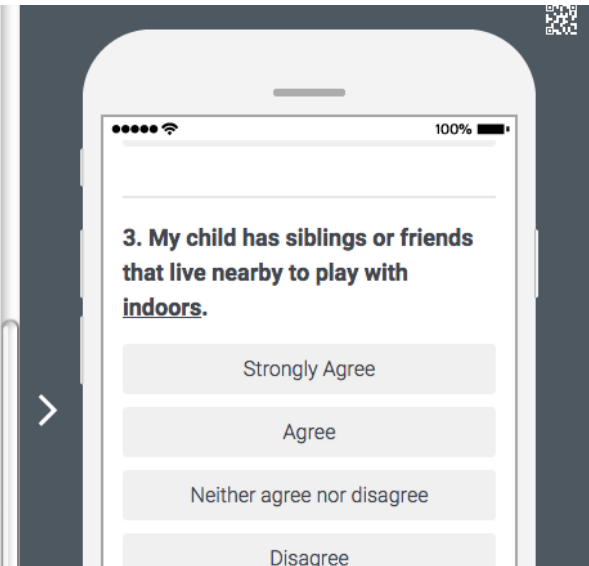
Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

5. I put limits on the amount of time my child can have active play indoors.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐



QR code in top right corner.

3. My child has siblings or friends that live nearby to play with indoors.

Strongly Agree

Agree

Neither agree nor disagree

Disagree

* Item 5 is a reverse code item

6. It's easy for my child to actively play indoors without my help.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

7. Indoor equipment for active play is stored where it is easy for my child to see and reach.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

8. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

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>

Strongly Agree

Agree

Neither agree nor disagree

Disagree

Strongly Disagree

8. My child has enough space inside our home to do somersaults and cartwheels without hitting furniture or walls.

9. How often does your child usually play actively inside your home?

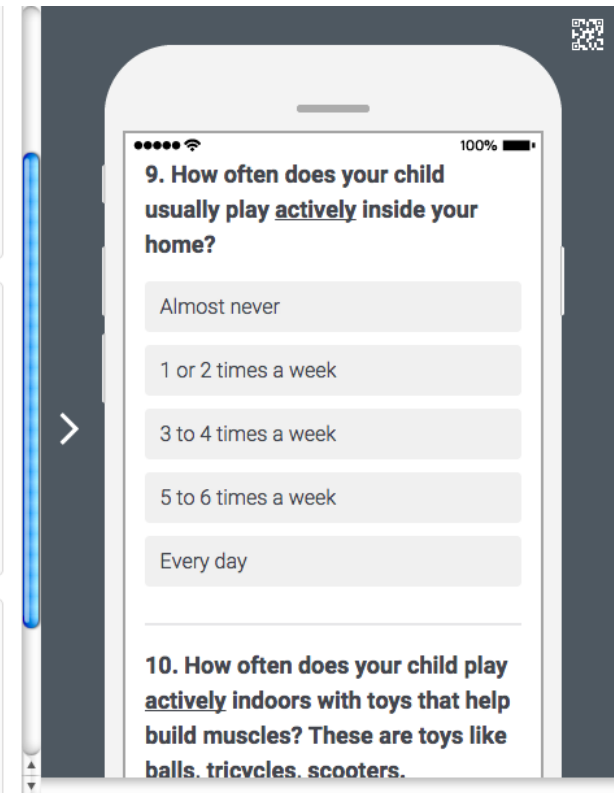
- ☐ Almost never
- ☐ 1 or 2 times a week
- ☐ 3 to 4 times a week
- ☐ 5 to 6 times a week
- ☐ Every day

10. How often does your child play actively indoors with toys that help build muscles? These are toys like balls, tricycles, scooters.

- ☐ Almost never
- ☐ 1 or 2 times a week
- ☐ 3 to 4 times a week
- ☐ 5 to 6 times a week
- ☐ Every day

11. How often does your child play actively indoors with siblings or kids that live nearby?

- ☐ Almost never
- ☐ 1 or 2 times a week
- ☐ 3 to 4 times a week
- ☐ 5 to 6 times a week



Think about all the TVs, DVD players, computers, and smart phones in your home that work.

12. How many of each of these are in your home?

TV	DVD Player	Computer/Laptop	Smart Phone/Tablet/LeapPad	Video games that usually are played sitting down	Video games played standing up and require lots of moving (like Wii Fit, Xbox Kinect)

Think about all the TVs, DVD players, computers, and smart phones in your home that work.

12. How many of each of these are in your home?

13. Which of these can your child use in his or her bedroom? (Check all that apply)

- ☐ TV
- ☐ DVD Player
- ☐ Computer/Laptop
- ☐ Smart Phone/Tablet/LeapPad
- ☐ Video games that usually are played sitting down
- ☐ Video games played standing up and require lots of moving (like Wii Fit, Xbox Kinect)
- ☐ Internet
- ☐ None of the above

14. Do you have Internet access in your home?

- ☐ Yes
- ☐ No

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13. Which of these can your child use in his or her bedroom? (Check all that apply)

TV

DVD Player

Computer/Laptop

Smart Phone/Tablet/LeapPad

Video games that usually are played sitting down

Video games played standing up and require lots of moving (like Wii Fit, Xbox Kinect)

Internet

None of the above

How much do you agree with each statement below?

15. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

16. It's easy for my child to turn on and play with computers, tablets, video games, smart phones, or electronic educational devices (like LeapPad) with little or no help.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

17. It's easy for my child to turn on and play with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect) with little or no help.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

100%

How much do you agree with each statement below?

15. It's easy for my child to turn on the TV or DVD and watch shows or movies with little or no help.

Strongly Agree

Agree

Neither agree nor disagree

Disagree

Strongly Disagree

16. It's easy for my child to turn on and play with computers, tablets,

18. How often is a TV on when meals and snacks are eaten at your home?

Almost never ☐ 1 or 2 times a week ☐ 3 to 4 times a week ☐ 5 to 6 times a week ☐ Every day ☐

19. How often do you use a computer, tablet, video game, smart phone, or electronic educational device (like LeapPad) during meals and snacks at home?

Almost never ☐ 1 or 2 times a week ☐ 3 to 4 times a week ☐ 5 to 6 times a week ☐ Every day ☐

20. Each day, how much time is the TV on when no one is watching it?

Please indicate **both** hours and minutes

hours minutes

hours minutes

22. Each day, how much time do you allow your child to play at home with computers, tablets, video games that usually are played sitting down, smart phones, or electronic educational devices (like LeapPad)?

Please indicate **both** hours and minutes

hours minutes

23. Each day, how much time do you allow your child to play at home with video games that are played standing up and require lots of moving (like Wii Fit, XBox Kinect)?

Please indicate **both** hours and minutes

hours minutes

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18. How often is a TV on when meals and snacks are eaten at your home?

Almost never

1 or 2 times a week

3 to 4 times a week

5 to 6 times a week

Every day

19. How often do you use a you usually allow your child to watch TV or movies at home?

Please indicate **both** hours and minutes

hours minutes

22. Each day, how much time do you allow your child to play at home with computers, tablets, video games that usually are played sitting down, smart phones, or electronic educational devices (like LeapPad)?

Please indicate **both** hours and minutes

How much do you agree with each statement below?

24. I try to limit the number of TV commercials my child sees.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

25. I try to limit the TV shows and movies my child sees to only those made for kids.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

26. I often talk with my child about advertisements on TV.

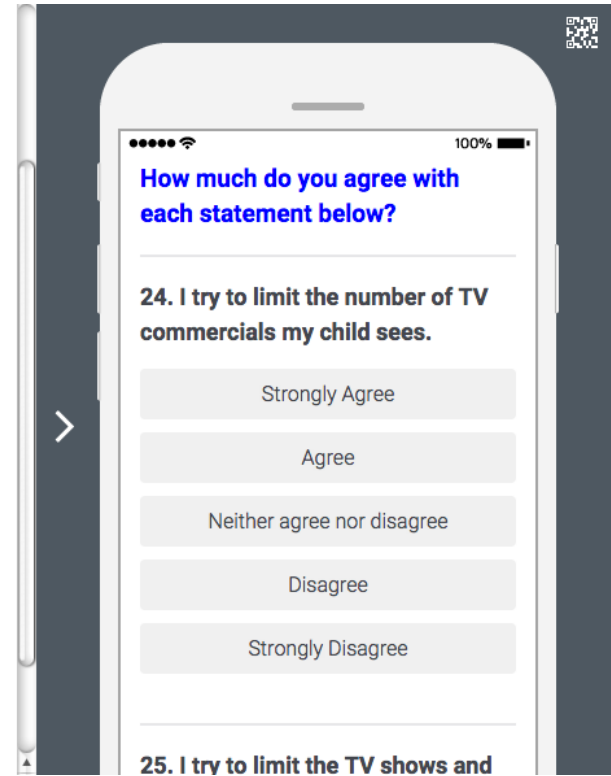
Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

27. I often talk with my child about TV shows, video games, or movies.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐



RUTGERS



Think about your yard or area right outside your home.

- ☐ There are NO places right outside my home where my child can play actively
- ☐ There ARE places right outside my home where my child can play actively

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Think about
your yard or
area right
outside your
home.

There are NO places right outside my home where my child can play actively

There ARE places right outside my home where my child can play actively

How much do you agree with each statement below?

28. The yard or area outside our home has plenty of room for my child to actively play games like tag or chase.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

29. There is a paved or flat area in the yard or area outside our home that is big enough for my child to safely ride a tricycle, bike, scooter, or other wheeled toy.

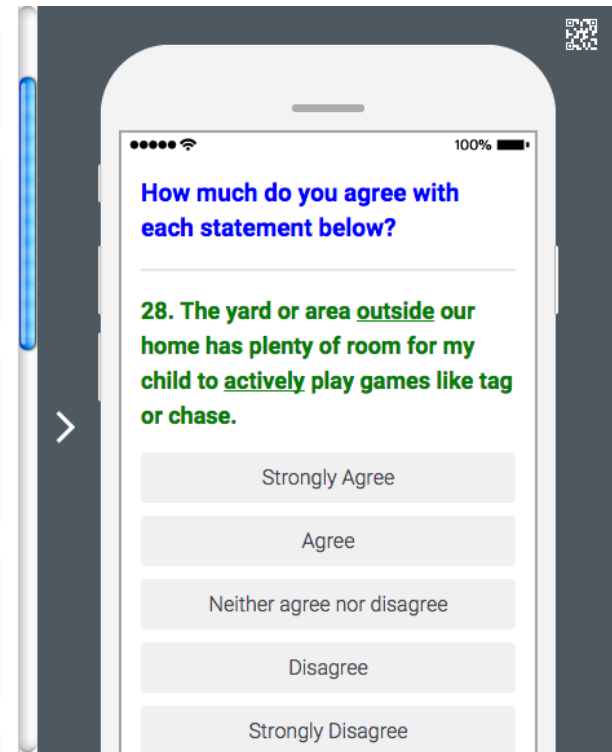
Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐

30. My child has shoes and clothes for playing actively outside.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

☐ ☐ ☐ ☐ ☐



31. The yard or area outside our home has plenty of swings, slides, or other active play equipment my child can use.

Strongly Agree

☐

Agree

☐

Neither agree nor disagree

☐

Disagree

☐

Strongly Disagree

☐

32. My child has plenty of toys for playing actively outside, like balls, jump ropes, skates, swimming or kiddie pool, hula hoops, or sleds.

Strongly Agree

☐

Agree

☐

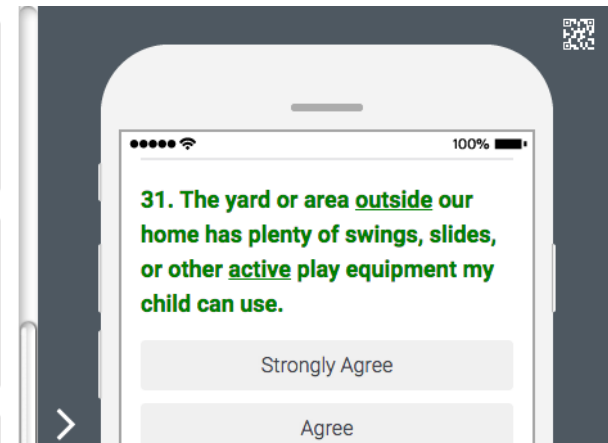
Neither agree nor disagree

☐

Disagree

☐

Strongly Disagree

☐

33. My child has a tricycle, bike, scooter, or other wheeled toy to use outside.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

34. It's easy for my child to actively play in the yard or area right outside our home without my help.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

35. I often limit my child's active play in the yard or area right outside our home.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

36. It's easy for my child to see and reach toys for playing actively outside.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

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33. My child has a tricycle, bike, scooter, or other wheeled toy to use outside.

Strongly Agree

Agree

Neither agree nor disagree

Disagree

Strongly Disagree

34. It's easy for my child to actively play in the yard or area right outside our home without my help.

* Item 35 is a reverse code item

RUTGERS

37. When the weather is good, how often does your child usually play actively in the yard or area outside your home?

Almost never 1 or 2 times a week 3 to 4 times a week 5 to 6 times a week Every day

☐ ☐ ☐ ☐ ☐

38. Think about the size of parking spaces at the shopping mall.

Now, think about all the areas outside your home where you would allow your child to play actively - include grassy, paved, or other areas.

If those areas became a parking lot, about how many parking spaces would there be?

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37. When the weather is good, how often does your child usually play actively in the yard or area outside your home?

Almost never

1 or 2 times a week

3 to 4 times a week

5 to 6 times a week

Every day

38. Think about the size of parking spaces at the shopping mall.



Think about your neighborhood and the area nearby where you live.

Think about what your child usually does, even if it differs on certain days of the week or times of the year.

How much do you agree with each statement below?

39. There are free or low-cost recreation centers or other indoor places where kids can play actively.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐

40. There are outdoor areas, like parks, pools, and playgrounds, nearby my home where kids can play actively.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐



Think about
your
neighborhood
and the area

nearby where you live.

Think about what your child usually does,
even if it differs on certain days of the
week or times of the year.

How much do you agree with

41. The outdoor areas in my neighborhood have plenty of swing sets, slides, or other play equipment my child can use.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

42. There is so much traffic near where I live that I do not feel safe walking in the area.

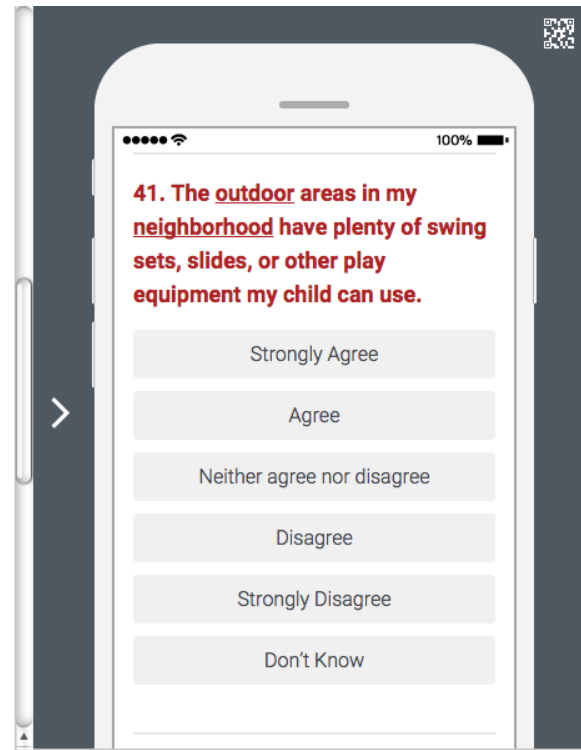
Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

43. I feel safe from crime in my neighborhood and nearby.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree

44. I feel safe from biting insects, like mosquitos, ticks, and scorpions, and animals, like dogs running loose, in my neighborhood and nearby.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree



* Item 42 is a reverse code item

45. In my neighborhood, it's easy to get to outdoor areas where kids can play actively.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐

46. The outdoor areas in my neighborhood where my child can play actively are safe.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐

47. The outdoor areas in my neighborhood where my child can play actively are clean.

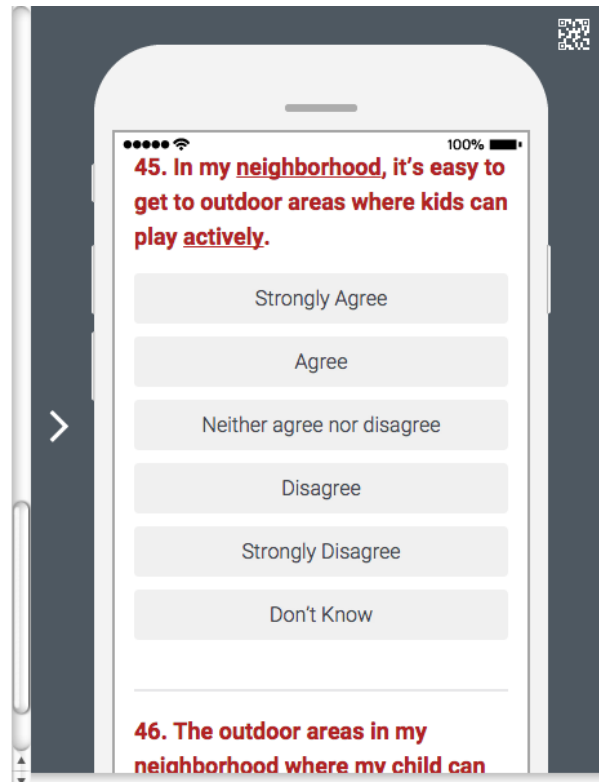
Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐

48. The outdoor areas in my neighborhood where my child can play actively are crowded with other people.

Strongly Agree Agree Neither agree nor disagree Disagree Strongly Disagree Don't Know

☐ ☐ ☐ ☐ ☐ ☐





49. When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, playgrounds, near your home?

☐ Almost never
 ☐ 1 or 2 times a week
 ☐ 3 to 4 times a week
 ☐ 5 to 6 times a week
 ☐ Every day

50. How often does your child usually play actively in free or low-cost recreation centers or other indoor places near your home?

☐ Almost never
 ☐ 1 or 2 times a week
 ☐ 3 to 4 times a week
 ☐ 5 to 6 times a week
 ☐ Every day

51. Do you have a dog?

☐ Yes
 ☐ No



49. When the weather is good, how often does your child usually play actively in outdoor areas, like parks, pools, playgrounds, near your home?

☐ Almost never
 ☐ 1 or 2 times a week
 ☐ 3 to 4 times a week
 ☐ 5 to 6 times a week
 ☐ Every day

50. How often does your child

RUTGERS

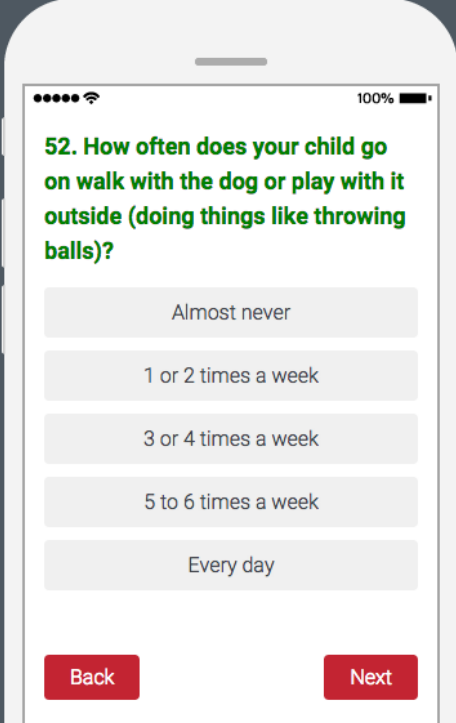
52. How often does your child go on walk with the dog or play with it outside (doing things like throwing balls)?

Almost never 1 or 2 times a week 3 or 4 times a week 5 to 6 times a week Every day

☐ ☐ ☐ ☐ ☐

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Think about how you spent your time in the last month.

53. In the last month, how often did you play actively indoors for at least 15 minutes with your child?

This could be dancing, jumping, horseplay or "wrestling".

Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day

54. In the last month, how often did you play actively outdoors for at least 15 minutes with your child?

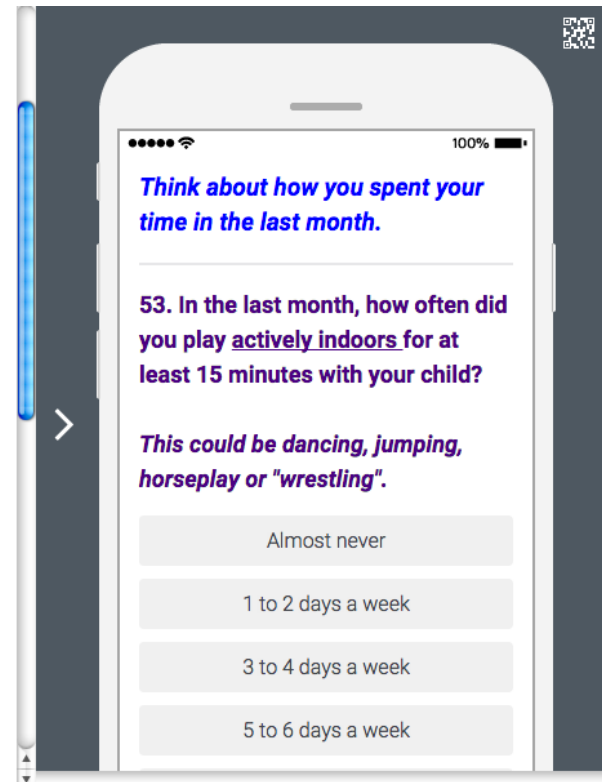
This could be going for a walk together, playing on swings, playing games like tag.

Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day

55. In the last month, how often did your child see you doing heavy physical activity?

Heavy physical activity includes things like running, fast bicycling, aerobics, digging. Think about only the times you did these activities for at least 10 minutes at a time.

Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day



56. In the last month, how often did your child see you doing moderate physical activity?

Moderate physical activity includes things like bicycling at a regular speed, sweeping, vacuuming the floor, raking leaves, walking the dog, or washing windows. Think about only the times you did these activities for at least 10 minutes at a time.

Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day

57. In the last month, how often did your child see you using computers, video games played sitting down, tablets, or smart phones for more than 2 hours daily?

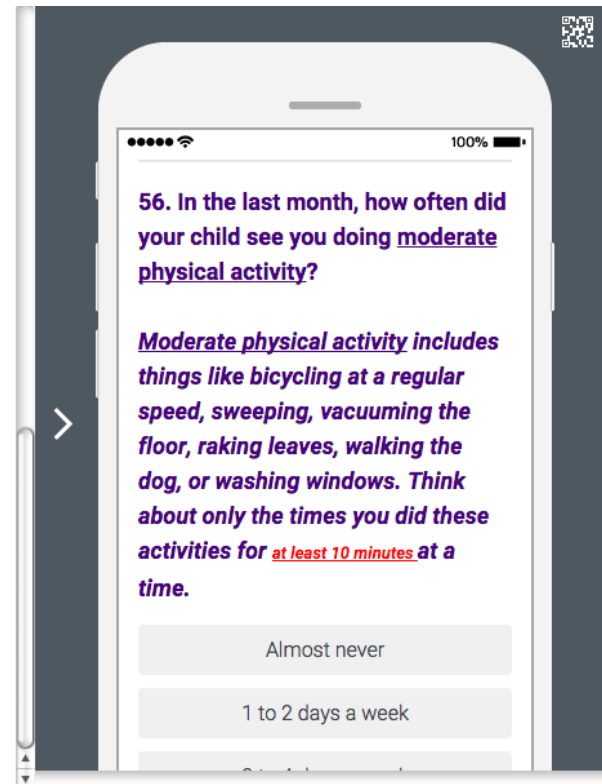
Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day

58. In the last month, how often did your child see you watching TV or movies for more than 2 hours daily?

Almost never 1 to 2 days a week 3 to 4 days a week 5 to 6 days a week Every day

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How much do you agree with these statements?

59. I make time to be physically active almost every day.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

60. I do not let things get in the way of keeping myself physically active.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

61. It's important for me to be physically active.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

62. It's important that my kids do not see me spending a lot of time watching TV and movies.

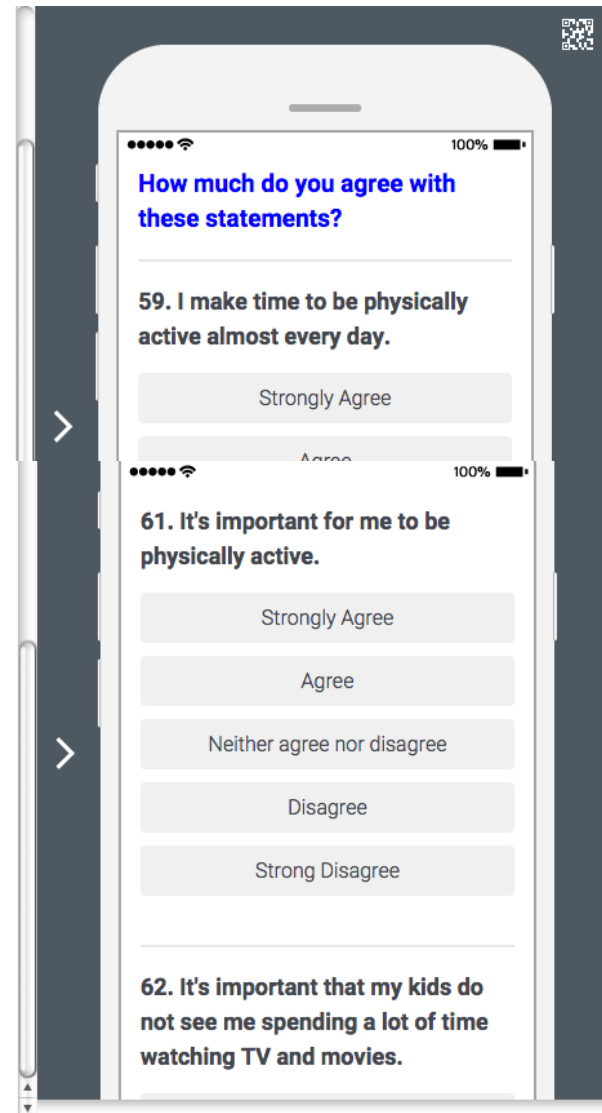
Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

63. I tell my kids it's important not to spend too much time watching TV and movies.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

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How much do you agree with these statements?

64. I make it easy for my kids to be physically active, such as by getting out play equipment, taking them to the park or classes like swimming, dance, or karate.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

65. I make sure my child is physically active almost every day.

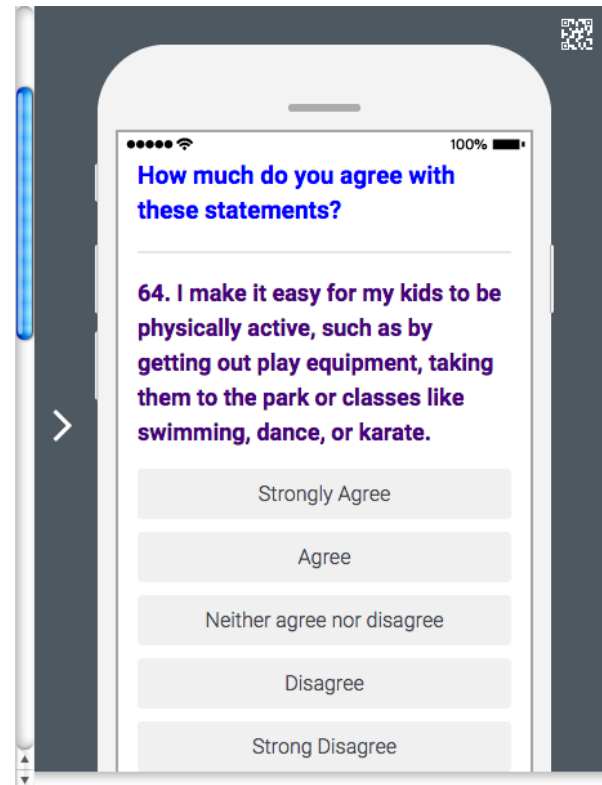
Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

66. I do not let things (like the weather) keep my child from being physically active.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐

67. It's important for my child to be physically active.

Strongly Agree ☐ Agree ☐ Neither agree nor disagree ☐ Disagree ☐ Strong Disagree ☐



68. I tell my kids that I enjoy being physically active.

Strongly Agree

☐

Agree

☐

Neither agree nor disagree

☐

Disagree

☐

Strong Disagree

☐

69. It's important for my kids to see me being physically active.

Strongly Agree

☐

Agree

☐

Neither agree nor disagree

☐

Disagree

☐

Strong Disagree

☐

70. I often encourage my child to do something other than watch TV or movies, like play outside.

Strongly Agree

☐

Agree

☐

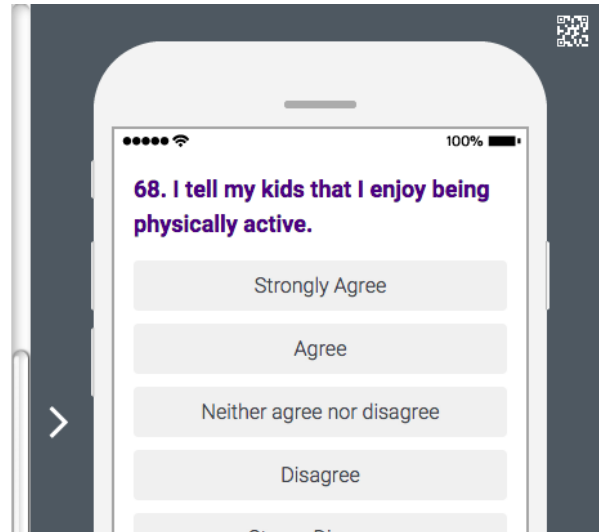
Neither agree nor disagree

☐

Disagree

☐

Strong Disagree

☐


71. I often encourage my child to do something other than play computers, tablets, and smart phones, like play outside.

Strongly Agree Agree Neither agree nor disagree Disagree Strong Disagree

☐ ☐ ☐ ☐ ☐

72. I often make it easy for my child to do something other than watch TV or movies.

Strongly Agree Agree Neither agree nor disagree Disagree Strong Disagree

☐ ☐ ☐ ☐ ☐

73. I often make it easy for my child to do something other than play with computers and smart phones.

Strongly Agree Agree Neither agree nor disagree Disagree Strong Disagree

☐ ☐ ☐ ☐ ☐

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71. I often encourage my child to do something other than play computers, tablets, and smart phones, like play outside.

Strongly Agree

Agree

Neither agree nor disagree

Disagree

Strong Disagree

72. I often make it easy for my child to do something other than watch

How much do you agree with these statements?

74. I like solving complex problems instead of simple problems.

Strongly agree

☐

Agree

☐

Neither agree nor disagree

☐

Disagree

☐

Strongly disagree

☐

75. I like dealing with situations that require a lot of thinking.

Strongly agree

☐

Agree

☐

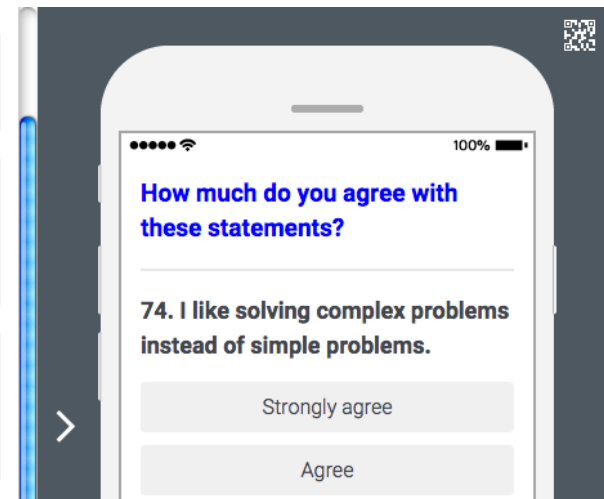
Neither agree nor disagree

☐

Disagree

☐

Strongly disagree

☐

76. Thinking is not my idea of fun.

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐

77. I like doing things that really make me think more than doing things that do not make me have to think.

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐

78. I feel relief instead of satisfaction after finishing a task that required a lot of thinking.

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

☐ ☐ ☐ ☐ ☐

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●●●●● 100%

76. Thinking is not my idea of fun.

Strongly agree

Agree

Neither agree nor disagree

Disagree

Strongly disagree

77. I like doing things that really make me think more than doing things that do not make me have to think.

Think about how you spent your time this past week. This includes time spent at home, with friends, working, and so forth.

79. In the last week, how much time each day did you usually sleep?

Please indicate both hours and minutes

hours

minutes

80. In the last week, how much time each day did you spend watching TV or movies, or playing games on computers or smart phones?

Please indicate both hours and minutes

hours

minutes

81. In the last week, how many days did you walk for at least 10 minutes at a time?

Think about how you spent your time this past week. This includes time spent at home, with friends, working, and so forth.

79. In the last week, how much time each day did you usually sleep?

Please indicate both hours and minutes

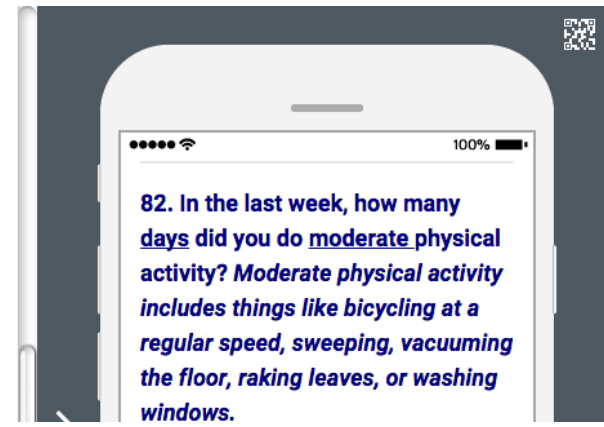
hours

minutes

80. In the last week, how much time each day did you spend watching

82. In the last week, how many days did you do moderate physical activity? *Moderate physical activity includes things like bicycling at a regular speed, sweeping, vacuuming the floor, raking leaves, or washing windows.*

83. In the last week, how many days did you do heavy physical activity? *Heavy physical activity includes things like running, fast bicycling, aerobics, digging, or chopping wood.*



84. When you run errands, how do you usually get there? (only choose one)

☐ Walk

☐ Bike

☐ Motorcycle

☐ Car

☐ Bus

☐ Subway

☐ Train

☐ Other, please specify

Think about your sleeping during the past month.

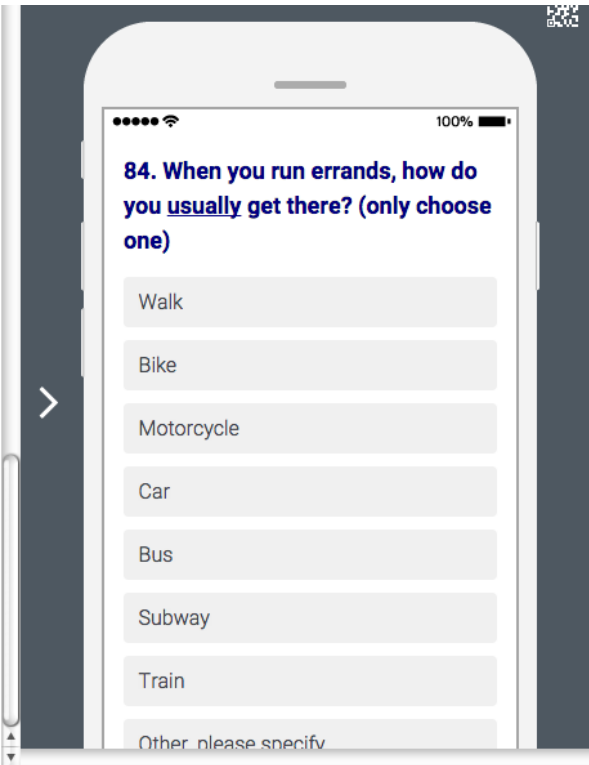
85. How would you rate your sleep quality overall?

Very good Good OK Bad Very bad

☐ ☐ ☐ ☐ ☐

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84. When you run errands, how do you usually get there? (only choose one)

Walk

Bike

Motorcycle

Car

Bus

Subway

Train

Other, please specify

Think about how your preschool-aged child (age 2 to 5 years) spent his or her time this past week.

If you have more than one child between the ages of 2 and 5, please answer these questions for the child who was born closest to noon on June 7.

86. In the past week, how many hours of actual sleep did your child usually get each night? *This may be different than the number of hours spent in bed.*

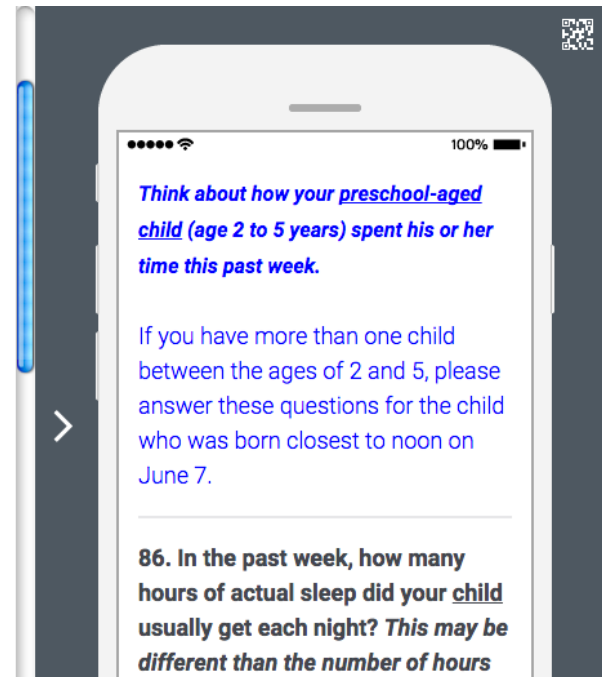
Please indicate both hours and minutes

hours
minutes

87. In the past week, how many hours did your child usually nap each day?

Please indicate both hours and minutes

hours
minutes



88. In the past week, how much time each day did your child spend watching TV or movies, or playing games on a computer or smart phone?

Please indicate both hours and minutes

hours

minutes

89. In the past week, how many days did your child walk continuously for at least 10 minutes at a time to do things like go for a walk, walk the dog, or walk to school?

90. In the past week, how many days did your child run, jump, or do other things that made him or her sweat or breathe a little harder than usual?

91. In the past week, how many days did your child run, jump, or do other things that made him or her sweat or breathe a lot harder than usual?

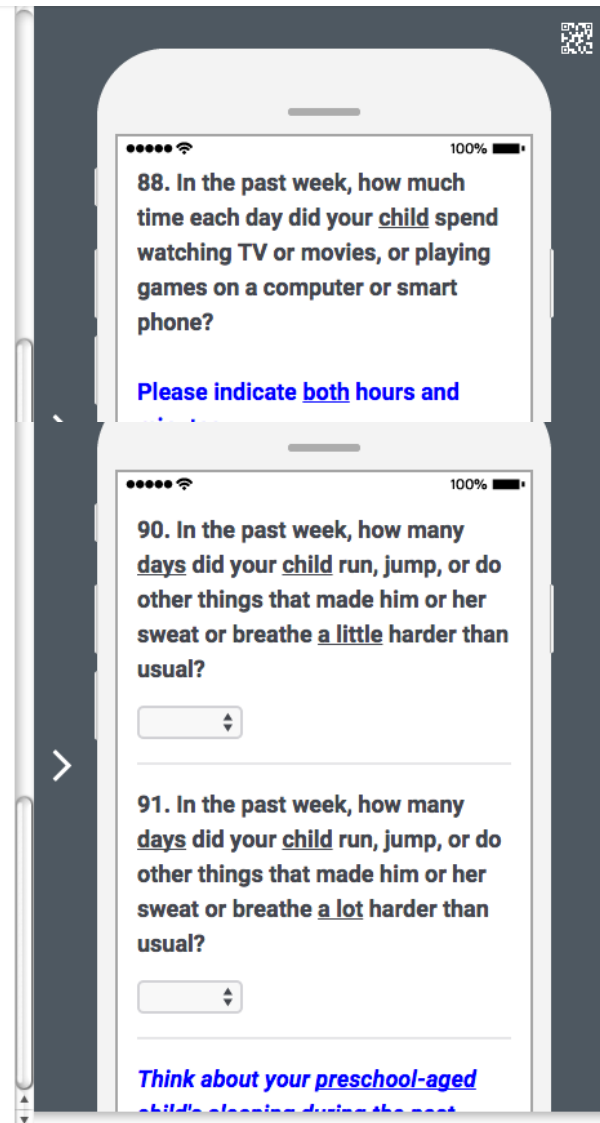
Think about your preschool-aged child's sleeping during the past month.

92. How would you rate your child's sleep quality overall?

☐ Very good ☐ Good ☐ OK ☐ Bad ☐ Very bad

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93. What is your height?

Feet

Inches

94. What is your weight?

Pounds

95. What is your highest level of education?

- ☐ Less than high school
- ☐ High school graduate
- ☐ Some college
- ☐ Associates degree/technical school graduate
- ☐ Baccalaureate degree
- ☐ Advanced college degree
- ☐ Other

96. What is your ethnicity/race? (choose as many as apply)

- ☐ Hispanic, Latino, or Spanish
- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaskan Native
- ☐ Asian Indian
- ☐ Asian (e.g., Japanese, Chinese, Korean)
- ☐ Pacific Islander
- ☐ Other, please specify

93. What is your height?

Feet

Inches

94. What is your weight?

Pounds

95. What is your highest level of education?

☐ Less than high school

☐ High school graduate

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☐ Advanced college degree

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96. What is your ethnicity/race? (choose as many as apply)

☐ Hispanic, Latino, or Spanish

☐ White

☐ Black or African American

☐ American Indian or Alaskan Native

☐ Asian Indian

☐ Asian (e.g., Japanese, Chinese, Korean)

☐ Pacific Islander

☐ Other, please specify

97. What is your occupation?

98. What is your partner or spouse's highest level of education?

☐ Less than high school

☐ High school graduate

☐ Some college

☐ Associates degree/technical school graduate

☐ Baccalaureate degree

☐ Advanced college degree

☐ Other

☐ Do not have a partner or spouse

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97. What is your occupation?

98. What is your partner or spouse's highest level of education?

Less than high school

High school graduate

Some college

Associates degree/technical school graduate

Baccalaureate degree

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99. What is your partner or spouse's occupation?

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99. What is your partner or spouse's occupation?

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☐ \$30 Amazon.com eGift Card

☐ \$30 Toys "R" Us eGift Card

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\$30 Toys "R" Us eGift Card

\$30 check mailed to my home

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Zipcode	

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