EXPLORING THE ASSOCIATIONS BETWEEN SEXISM, PHYSICAL BEHAVIORS, AND PSYCHOSOCIAL CORRELATES OF PHYSICAL ACTIVITY IN YOUNG WOMEN

Melanna Cox

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Exploring the Associations between Sexism, Physical Behaviors, and Psychosocial Correlates of Physical Activity in Young Women

A Dissertation Presented

by

MELANNA F. COX

Submitted to the Graduate School of the University of Massachusetts Amherst in partial fulfilment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

September 2023

Department of Kinesiology
Exploring the Associations between Sexism, Physical Behaviors, and Psychosocial Correlates of Physical Activity in Young Women

A Dissertation Presented

by

MELANNA F. COX

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Department of Kinesiology
DEDICATION

To the children that dream to be in rooms where society has tried to convince them
they do not belong
ACKNOWLEDGMENTS

I want to take the time to acknowledge the people and entities who have supported me as I pursue research that is important to me. I would first like to thank my mentor and one of my biggest supporters, Dr. John R. Sirard. Dr. Sirard welcomed me into his lab as a master's student. I had a different background than many students, but Dr. Sirard took a chance on me. He gave me the opportunities and challenges that have allowed me to become the researcher I am today. Because of Dr. Sirard, I have become confident in my research and professional abilities.

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I want to thank my friends and family. First, my long-distance friends, Erin, Kara, and Micah, have been a support system from afar. Judi, Ann, and Eliza believed in me more
than I believed in myself. I thank them for the laughs and all the love they gave me without wanting anything in return. I want to thank my lab mates for creating a space I looked forward to walking into daily.

Further, I’d like to thank Greg, a lab mate and my best friend. I thank him for being my rock during the most challenging time of my life and making me smile and laugh. Lastly, I thank my parents, Mary and Andrew, for believing in me despite not having an understanding of what my work is about. They reminded me that I could do hard things when I doubted I could. I love you both deeply. I extend my gratitude to those not mentioned but who also were essential to my success. I could never repay any of you for what you have done for me. I hope I continue to make you all proud.
ABSTRACT

EXPLORING THE ASSOCIATIONS BETWEEN SEXISM, PHYSICAL BEHAVIORS, AND PSYCHOSOCIAL CORRELATES OF PHYSICAL ACTIVITY IN YOUNG WOMEN

SEPTEMBER 2023

MELANNA F. COX, B.S., BOWLING GREEN STATE UNIVERSITY

M.S., UNIVERSITY OF MASSACHUSETTS AMHERST

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Directed by: Professor John R. Sirard

Physical behaviors (PB), defined as physical activity (PA) and sedentary behavior (SB), tend to be less favorable in women than in men. Low self-efficacy (SE) and social support (SS), and gender norms hinder women’s PB. Benevolent sexism, a theory on gender norms, could explain the gender disparity. PURPOSE: To 1) assess the associations among benevolent sexism endorsement (BSEN), experiences with benevolent sexism (EBS), PB, SE, and SS, 2) evaluate if BSEN or SE mediate the relationship between EBS and PB, and 3) develop a questionnaire that measures a woman’s sexist experiences in PA. METHODS: Study 1: Women (N=186) completed a survey that measured PB, BSEN, EBS, and SE. Bivariate associations were assessed with Pearson’s correlations. Mediating and direct effects of BSEN and SE on the relationship between EBS and PB were assessed with structural equation modeling.
subsample of participants (N=21) participated in a focus group or interview to inform the
development of the Physical Activity and Sexism Experience Scale (PASES). **Study 2:**
Women (N=427) completed the survey from Study 1 with the addition of a social support
(SS) questionnaire and the PASES. The PASES was validated with Exploratory Factor
Analyses and Cronbach’s alpha. The same analytic methods from Study 1 were
performed. **RESULTS: Study 1:** All associations between sexism outcomes and PB and
SE were weak. BSEN had a negative effect on moderate-vigorous PA (MVPA) (β=-0.23,
p=0.05). SE mediated the relationship between the BSEN and MVPA (β=0.07, p=0.01).
**Study 2:** Weak positive associations were found between BSEN and screen-time
(r=0.27) and between EBS and all PA outcomes and SS (r=0.12 to r=0.22). The PASES
demonstrated internal consistency (α=0.88) and resulted in 14 items. Weak positive
relationships were found between the PASES and screen-time and all PA outcomes,
excluding vigorous PA, and SS (r=0.12 to r=0.15). BSEN and EBS showed negative and
positive effects on MVPA, respectively (β=-0.17, p=0.02; β=0.29, p=0.00).
**CONCLUSION:** Benevolent sexism was observed in women’s experiences but the
relationships between sexism and PB are still unclear. More diverse samples and further
consideration of potential moderating factors should be considered in future research.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>v</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xvii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xviii</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>Study I – Aims and Hypotheses</td>
<td>7</td>
</tr>
<tr>
<td>Purpose:</td>
<td>7</td>
</tr>
<tr>
<td>Aim 1:</td>
<td>7</td>
</tr>
<tr>
<td>Aim 2:</td>
<td>8</td>
</tr>
<tr>
<td>Aim 3:</td>
<td>8</td>
</tr>
<tr>
<td>Study 2 – Aims and Hypotheses</td>
<td>9</td>
</tr>
<tr>
<td>Aim 1:</td>
<td>9</td>
</tr>
<tr>
<td>Aim 2:</td>
<td>9</td>
</tr>
<tr>
<td>Summary</td>
<td>10</td>
</tr>
<tr>
<td>II. REVIEW OF LITERATURE</td>
<td>11</td>
</tr>
<tr>
<td>Topic</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Overview</td>
<td>11</td>
</tr>
<tr>
<td>Physical Behaviors and Health</td>
<td>11</td>
</tr>
<tr>
<td>Physical Activity Levels in Young Adults</td>
<td>12</td>
</tr>
<tr>
<td>Physical Behaviors and Life Transitions</td>
<td>13</td>
</tr>
<tr>
<td>Gender Disparity in Psychosocial Correlates of Physical Behaviors</td>
<td>13</td>
</tr>
<tr>
<td>Other Factors Related to Physical Behaviors in Girls and Young Women</td>
<td>15</td>
</tr>
<tr>
<td>Physical Behaviors in Adolescent Girls</td>
<td>16</td>
</tr>
<tr>
<td>Factors Related to Physical Behaviors in Young Women</td>
<td>18</td>
</tr>
<tr>
<td>Ambivalent Sexism</td>
<td>19</td>
</tr>
<tr>
<td>Hostile Sexism</td>
<td>20</td>
</tr>
<tr>
<td>Benevolent Sexism</td>
<td>21</td>
</tr>
<tr>
<td>Gender Differentiation</td>
<td>22</td>
</tr>
<tr>
<td>Paternalism</td>
<td>24</td>
</tr>
<tr>
<td>Heterosexuality</td>
<td>27</td>
</tr>
<tr>
<td>Ambivalent Sexism and Physical Behaviors</td>
<td>29</td>
</tr>
<tr>
<td>Hostile Sexism and Sports</td>
<td>29</td>
</tr>
<tr>
<td>Benevolent Sexism and Physical Activity Gender Norms</td>
<td>30</td>
</tr>
<tr>
<td>Gender Differentiation and Physical Activity</td>
<td>30</td>
</tr>
<tr>
<td>Paternalism and Physical Activity</td>
<td>31</td>
</tr>
<tr>
<td>Paternalism and Sports</td>
<td>32</td>
</tr>
<tr>
<td>Outdoor Play and Physical Education</td>
<td>32</td>
</tr>
<tr>
<td>Heterosexuality and Physical Activity</td>
<td>34</td>
</tr>
<tr>
<td>Heterosexuality and Physical Activity</td>
<td>35</td>
</tr>
</tbody>
</table>
Associations and Mediations between Benevolent Sexism, PA and Psychosocial Factors

Conclusion

III. METHODS

Methods Overview

Study Designs

Study Population and Recruitment

Demographics and Anthropometrics

Measures

Physical Behaviors

Sedentary Screen Time Behavior

Psychosocial Correlates

Social Support

Self-Efficacy

Sexism

Ambivalent Sexism

Experience with Benevolent Sexism

Survey Procedure

Summary Statistics

Study 1: Methods

Focus Group and Interview Participant Randomization

Focus Group and Interview Procedures
### Transcription

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
</tr>
</tbody>
</table>

### Trustworthiness and Credibility

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

### Development of Physical Activity Sexism Experience Subscale

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
</tr>
</tbody>
</table>

### Study 1: Data Analyses by Aim

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
</tr>
</tbody>
</table>

### Study 2: Methods

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
</tr>
</tbody>
</table>

### Study 2: Data Analyses by Aim

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
</tr>
</tbody>
</table>

### IV. ASSOCIATIONS AND MEDIATING FACTORS AMONG SEXISM AND PHYSICAL BEHAVIORS IN YOUNG WOMEN

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
</tr>
</tbody>
</table>

#### Introduction:

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
</tr>
</tbody>
</table>

#### Methods:

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
</tr>
</tbody>
</table>

- Recruitment and Participants
  | Page |
  | 60   |

- Survey Administration
  | Page |
  | 60   |

#### Survey Measures:

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
</tr>
</tbody>
</table>

- Demographics
  | Page |
  | 61   |

- Physical Behaviors
  | Page |
  | 61   |

- Screen time
  | Page |
  | 61   |

- Self-efficacy
  | Page |
  | 62   |

- Experiences with Benevolent Sexism
  | Page |
  | 63   |

#### Data Analyses

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
</tr>
</tbody>
</table>

- Bivariate Analyses
  | Page |
  | 63   |

- Mediation Analysis
  | Page |
  | 64   |

#### Results

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
</tr>
</tbody>
</table>
Focus Group and Interview Procedures ......................................................... 90
Transcriptions .............................................................................................. 91

Data Analyses ............................................................................................... 91
Descriptive and Summary Statistics ............................................................... 91
Qualitative Analysis ...................................................................................... 92
Physical Activity and Sexism Experience Scale Development ...................... 93
Psychometrics ............................................................................................... 93

Results ........................................................................................................... 94
Focus Group and Interview Participant Demographics ................................. 94
Focus Group and Interview Themes ............................................................... 95
Sample 2 – Summary Statistics ..................................................................... 100
Physical Activity and Sexism Experience Scale Validation .......................... 101

Discussion ..................................................................................................... 104
Strengths and Limitations ............................................................................. 110

VI. ASSOCIATIONS BETWEEN YOUNG WOMEN’S EXPERIENCES WITH SEXISM IN
PHYSICAL ACTIVITY SETTINGS AND PHYSICAL BEHAVIORS, SELF-EFFICACY, AND
SOCIAL SUPPORT .......................................................................................... 112

Introduction .................................................................................................. 112

Methods ......................................................................................................... 115
Participants .................................................................................................... 115

Measures ........................................................................................................ 116
Demographics ............................................................................................... 116
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexism and Self-efficacy</td>
<td>133</td>
</tr>
<tr>
<td>Physical Activity and Sexism Experience Scale</td>
<td>135</td>
</tr>
<tr>
<td>Future Directions</td>
<td>137</td>
</tr>
<tr>
<td><strong>A. SURVEY QUESTIONS</strong></td>
<td>138</td>
</tr>
<tr>
<td><strong>B. FOCUS GROUP AND INTERVIEW QUESTIONS</strong></td>
<td>161</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>164</td>
</tr>
</tbody>
</table>
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Table IV.1: Participant Demographics</td>
<td>64</td>
</tr>
<tr>
<td>2. Table IV.2: Screen Time, Self-efficacy, and Physical Behaviors</td>
<td>65</td>
</tr>
<tr>
<td>3. Table IV.3: Associations between Physical Behaviors, Self-efficacy, and Sexism Outcomes</td>
<td>66</td>
</tr>
<tr>
<td>4. Table V.1: Focus Group and Interview Participant Demographics</td>
<td>91</td>
</tr>
<tr>
<td>5. Table V.2: Focus Group and Interview Participants – Physical Behaviors, Screen Time, and Sexism Outcomes</td>
<td>92</td>
</tr>
<tr>
<td>6. Table V.3: Focus Group and Interview Themes</td>
<td>93</td>
</tr>
<tr>
<td>7. Table V.4: Sample 2 – Physical Behaviors and Sexism Outcomes</td>
<td>97</td>
</tr>
<tr>
<td>8. Table V.5: Exploratory Factor Analyses Loadings for Physical Activity and Sexism Experience Scale</td>
<td>99</td>
</tr>
<tr>
<td>8. Table V.6: Final Physical Activity and Sexism Experience Scale Factor Loadings</td>
<td>100</td>
</tr>
<tr>
<td>9. Table VI.1: Participant Demographics</td>
<td>119</td>
</tr>
<tr>
<td>10. Table VI.2: Physical Behaviors, Self-efficacy, and Sexism Outcomes</td>
<td>119</td>
</tr>
<tr>
<td>11. Table VI.3: Associations between Physical Behaviors, Self-efficacy, and Sexism Outcomes</td>
<td>120</td>
</tr>
</tbody>
</table>
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Figure I.1: Social Cognitive Theory for Physical Behaviors</td>
<td>3</td>
</tr>
<tr>
<td>2. Figure I.2: Social Cognitive Theory for Benevolent Sexism and Physical Behaviors</td>
<td>6</td>
</tr>
<tr>
<td>3. Figure I.3: Conceptual Framework</td>
<td>7</td>
</tr>
<tr>
<td>4. Figure III.1: Study Designs</td>
<td>39</td>
</tr>
<tr>
<td>5. Figure III.2: Survey Flow</td>
<td>45</td>
</tr>
<tr>
<td>6. Figure III.3: Qualitative Methods and Analysis</td>
<td>48</td>
</tr>
<tr>
<td>7. Figure III.4: Structural Equation Model – Direct and indirect relationships between sexism measures, psychosocial measures, and physical behaviors</td>
<td>51</td>
</tr>
<tr>
<td>8. Figure IV.1: Full Mediation Model</td>
<td>63</td>
</tr>
<tr>
<td>9. Figure IV.2: MVPA-Only Mediation Model</td>
<td>63</td>
</tr>
<tr>
<td>10. Figure IV.3: Sitting-Only Mediation Model</td>
<td>63</td>
</tr>
<tr>
<td>11. Figure IV.4: MVPA-Only Mediation Results</td>
<td>68</td>
</tr>
<tr>
<td>12. Figure IV.5: Sitting-Only Mediation Results</td>
<td>69</td>
</tr>
<tr>
<td>13. Figure V.1: Focus Group and Interview Recruitment from Sample</td>
<td>187</td>
</tr>
<tr>
<td>14. Figure VI.1 Full Path Analysis</td>
<td>118</td>
</tr>
</tbody>
</table>
I. INTRODUCTION

Background

Physical behaviors such as physical activity (PA) and sedentary behavior (SB) impact physical, mental, and social health.\textsuperscript{1,2} Inactivity (low PA) throughout the lifetime is related to the development of several chronic diseases, obesity, poor mental health, decreased quality of life, and premature mortality.\textsuperscript{1,2} Sedentary behavior is an independent predictor of adverse health outcomes similar to those associated with low PA. Unfavorable physical behaviors engaged in during young adulthood are likely to continue as individuals age.\textsuperscript{3,4}

Due to the significant causal associations between habitual physical behaviors and health, the World Health Organization (WHO) recommends that adults accumulate 150 minutes of moderate-to-vigorous PA (MVPA) or 75 minutes of vigorous PA (VPA) per week.\textsuperscript{2} Based on self-report estimates from national surveillance data, only half of adults in the United States reach the PA guidelines as of 2018.\textsuperscript{5} However, past objectively measured PA data (hip-worn ActiGraph accelerometer) suggests that only 5% of adults meet these guidelines.\textsuperscript{6} Regardless of the assessment method, women are less active than men across the lifespan.\textsuperscript{1,7} Therefore, it is crucial to understand the decrease in PA that occurs in young adulthood, particularly in women.

Many adult health behaviors are developed soon after adolescence.\textsuperscript{8} Young women’s PA noticeably decreases after high school.\textsuperscript{9} The health behaviors accrued
during this stage of life are likely to continue into adulthood. Young women are less active than young men and participate in less leisure time PA than men. Therefore, understanding why the gender disparity in habitual physical behavior exists during a pivotal life stage is necessary to prevent poor physical behaviors into middle and late adulthood. It is essential to discuss known correlates of physical behaviors before proposing possible unknown factors.

The Social Cognitive Theory (SCT) has frequently been used to explain a variety of health behaviors. The SCT demonstrates how one makes sense of their environment and relates to their behaviors. The triadic SCT outlines the bidirectional relationships between environmental, cognitive, and behavioral factors (Figure 1). For example, a young woman may have grown up in a physically active household (environment) where she developed an interest in sports (cognitive), leading her to participate in adult sports after high school (behavior). Further, because the SCT represents a bidirectional model, she may create a physically active household of her own due to her cognitive factors.

A substantial amount of previous research using the SCT has identified social support and self-efficacy as correlates of physical behaviors. Social support describes the opportunities and encouragement women receive from their social circles and society. Self-efficacy describes an individual's confidence in completing a particular task. Social support appears to impact women’s PA more than it does men’s PA, and self-efficacy tends to be lower in women than men. Most of this research has been
through quantitative association studies using survey instruments for theoretical constructs and surveys or objective measures for physical behaviors. Additional qualitative research suggests that women who try to fit into stereotypical gender norms, such as maintaining feminine traits (e.g., nurturing, soft), will negatively impact their social support and self-efficacy, leading to decreased PA. However, little is known about factors that perpetuate gender norms and how they may negatively impact psychosocial correlates of PA. Identifying and understanding factors that mold the lack of perceived social support and self-efficacy for physical behaviors in young women will inform how to improve physical behaviors [Figure I.1].

Sociology and Gender Studies research has linked stereotypical western gender roles and the various adverse life outcomes of those roles to a specific phenomenon perpetuating gender norms. The Ambivalent Sexism Theory describes two closely correlated forms of sexism; hostile and benevolent sexism. The endorsement of hostile and benevolent sexism can be measured using the Ambivalent Sexism Inventory.
Hostile sexism is the overt and degrading form of sexism widely known by the general population.\textsuperscript{16,19} An example of hostile sexism would be someone saying to a girl, "You throw like a girl," insinuating that a girl cannot correctly throw a ball. Another example is when someone tells a woman that she does not belong in the workplace because she belongs in the home/kitchen. Most people would recognize both examples as sexist and would be inclined to see them in a negative light.\textsuperscript{16} Unlike hostile sexism, benevolent sexism is a covert form of sexism that appears harmless and typically goes unnoticed.\textsuperscript{16}

Benevolent sexism is a multi-dimensional form of sexism that includes three constructs: gender differentiation, paternalism, and heterosexuality.\textsuperscript{16} Gender differentiation suggests behaviors most appropriate for girls and women and those most appropriate for boys and men.\textsuperscript{16} Paternalism is the idea that women are fragile and need to be protected by men.\textsuperscript{16} Heterosexuality, also known as heterosexuality intimacy, posits that men need a woman who appears feminine to fulfill intimate needs.\textsuperscript{16} Research outside the PA domain has suggested that women and girls endorsing and experiencing benevolent sexism harms work, academic and life aspirations, and overall cognitive performance, including memory and problem-solving.\textsuperscript{17,18,20,21} Among these studies, social support for improved life outcomes and self-efficacy to complete tasks, perform well, and reach goals, were negatively associated with the endorsement of and experience with benevolent sexism. For example, one study found that women experience a lack of social support to pursue promotions in the workplace due to employers’ fear that higher positions may be "too much" for the woman to handle.\textsuperscript{22}
Another study observed a decrease in performance for a cognitive task after being exposed to patronizing language due to decreased perceived self-efficacy to complete the tasks.\textsuperscript{18} Benevolent sexism is especially problematic because it covertly perpetuates stereotypical feminine traits that may innately restrict women in multiple facets of life (e.g., fewer promotions).\textsuperscript{17,18,21,23,24} Despite the negative impact of benevolent sexism, women may still revert to, in Western culture, stereotypical womanly roles. Extrapolating to the PA domain, women may choose not to participate in PA as it can threaten their feminine image.\textsuperscript{14,16}

The proposed theory that benevolent sexism plays a role in physical behaviors is apparent when conceptualized within the SCT framework (Figure 2). Social support and self-efficacy impact physical behaviors in young women, but little is known about what causes gender disparities in both psychosocial correlates. Benevolent sexism, deeply rooted in gender roles, impacts social support and self-efficacy in many areas of women’s lives.\textsuperscript{17,18,21,23,25,26} Due to these parallels, it is plausible that the endorsement and experience of benevolent sexism may negatively impact physical behaviors mediated by social support and self-efficacy PA. The role that benevolent sexism plays in physical behavior may also explain why perceived social support and self-efficacy for PA is low in young women and, possibly, what perpetuates gender norms that can be detrimental to young women’s physical behaviors. The association between endorsement and experience of benevolent sexism and physical behaviors could further
explain the unfavorable physical behaviors observed in women and the psychosocial correlates of those behaviors.

Therefore, the overall goal of this research was to identify how young women’s experience with hostile and benevolent sexism is related to their endorsement of both forms of sexism and their physical behaviors and how known psychosocial correlates of PA mediate the relationship [Figure I.3]. A sample of young women (N = 200, age = 18 - 30 years old) completed an online survey that measured perceived social support and self-efficacy for PA, benevolent and hostile sexism, and physical behaviors. Perceived social support and perceived self-efficacy questions were used to assess the potential mediating role these constructs play in the relationships between sexism and physical behaviors. Next, Focus groups (N = 4 focus groups, n = 3-6 participants per focus group), interviews (n = 10), and qualitative analyses were used to develop a PA-specific sexism scale. Lastly, the same online survey with the addition of six gender-related self-efficacy questions and the new PA-specific sexism scale was administered in an
independent sample of young women (N = 500 age = 18-30 years old) to assess if there was a strong relationship between physical behaviors and sexism experience when questions are specifically asking about sexism in a PA context.

**Study I – Aims and Hypotheses**

**Purpose:**

The purpose of Study 1 was to 1) assess relationships between physical behaviors, psychosocial correlates of physical behaviors, and benevolent and hostile sexism.

**Aim 1:**

Identify the associations between physical behaviors (physical activity [PA] and sedentary behavior [SB]) and the endorsement and experience of both hostile and benevolent sexism and physical behaviors and psychosocial correlates in young women (N=200).
H1a: Endorsement and experience of benevolent sexism will be positively associated with one another.

H1b: Endorsement and experience of benevolent sexism will be negatively associated with PA and positively associated with SB.

H1c: Endorsement of hostile sexism will be positively associated with PA and negatively associated with SB.

H1d: Physical activity and sedentary behavior will be positively and negatively associated with psychosocial correlates, respectively.

Aim 2:
Determine the mediating effects of sexism endorsement (hostile and benevolent) and psychosocial variables (social support and self-efficacy for physical behaviors) on the association between sexism experience and physical behaviors.

H2a: Greater perceived self-efficacy and social support for PA will attenuate the associations between the endorsement of both measures of sexism and physical behaviors.

H2b: Greater endorsement of benevolent and hostile sexism will attenuate the direct associations between sexism experience and psychosocial variables and physical behaviors.

Aim 3:
Develop a Physical Activity Sexism Experience sub-scale (PASES) for young women using survey feedback, focus groups, and individual interviews with participants from Study 1 (N = 3 focus groups; N = 10 interviews).

H₃a: Themes from survey feedback, multiple focus groups, and interviews regarding sexist experiences in day-to-day activities, physical activity, and sports contexts will inform the PA-specific sexism questions.

Study 2 – Aims and Hypotheses

Aim 1:
Determine the psychometric properties of the new PASES as a stand-alone scale and incorporate as additional questions in the Experiences with Benevolent Sexism Scale (EBSS-PA) in an independent sample of young women (N = 200).

H₂a: The PASES and the EBSS (EBSS-PA) will have acceptable internal consistency (Cronbach’s alpha ≥ 0.70).

H₂b: Exploratory factor analyses will demonstrate that items on the PASES and EBSS-PA will load onto the three benevolent sexism constructs (paternalism, gender differentiation, and heterosexuality) and a separate hostile sexism construct.

Aim 2:
Use the PASES and EBSS-PA in separate analyses to re-assess the direct and mediation pathways described in the Study 1 aims and represented in Figure 3.
H₃a: Direct associations and mediation effects among benevolent sexism endorsement, psychosocial variables, and physical behaviors will be similar to analyses with the original EBSS.

H₃b: Using the PASES or the EBSS-PA will result in greater direct associations between sexism experience and physical behaviors, reducing previously observed mediating pathways.

H₃c: Greater perceived social support for PA will attenuate the associations between the endorsement of both measures of sexism and physical behaviors.

H₃c: Greater endorsement of benevolent and hostile sexism will attenuate the direct associations between sexism experience and psychosocial variables and physical behaviors.

Summary

In summary, physical behaviors impact overall health, and adverse physical behaviors developed during young adulthood are likely to continue later in life. Young women are typically less active than young men putting women at a higher risk for poor health outcomes. Women tend to report lower perceived PA self-efficacy and social support for PA, which are known correlates of PA. Previous research also shows that endorsement of and experience with benevolent and hostile sexism are related to low social support and self-efficacy in multiple areas of women's and girls' lives. Examples of both forms of sexism can appear within the PA domain. To our knowledge, no research has assessed sexism in the context of habitual physical behaviors. Therefore,
assessment of known correlates of physical behaviors along with assessments of benevolent and hostile sexism could provide a better understanding of the underlying factors that perpetuate the gender disparity in habitual physical behaviors.

II. REVIEW OF LITERATURE

Overview

The following literature review will summarize physical activity behaviors, physical activity behavior psychosocial correlates, gender norms, and ambivalent sexism in adolescent girls and young women. The proposed study population was young women; however, a plethora of data vital to the theoretical nature of the study has been presented in both adolescent girls and young women. Further, it has been shown that physical behaviors developed during adolescence will likely continue into adulthood. Therefore, when appropriate, this literature review will present research in adolescent girls followed by research in young women within each section.

Physical Behaviors and Health

Physical behaviors include physical activity (PA) and sedentary behavior (SB) and impact overall health. Low PA and high SB throughout the lifetime are related to the development of chronic diseases, obesity, poor mental health, decreased quality of life, and premature mortality. Sedentary behavior is an independent predictor of adverse health outcomes similar to those associated with low PA. Due to the
significant impact that physical behaviors have on health, the World Health Organization (WHO) provides PA guidelines for adults and children.\textsuperscript{2}

**Physical Activity Levels in Young Adults**

The WHO recommends that adults accumulate 150 minutes of moderate-to-vigorous PA (MVPA) or 75 minutes of vigorous PA a week.\textsuperscript{2} A few different data sources report the percentage of adults who meet the PA guidelines in the United States. In 2008, objectively measured data from National Health and Nutrition Examination Survey data reported that only 5% of adults met the PA guidelines.\textsuperscript{6} In 2019, according to self-reported data from the Behavioral Risk Factor Surveillance System (BRFSS), 51% of adults are meeting PA guidelines.\textsuperscript{1} The percentage drops from 52% to 49% of adults meeting the guidelines from ages 18-24 to 24-34 years old. A gender disparity is also apparent, with only 50% of women meeting the guidelines while 54% of men meeting the guidelines. The data in women and men, when specifically observing those in the young adult range (18-40 years of age), show that 40% of young women did not meet aerobic guidelines in 2018, while 32% of young men did not meet the guidelines.\textsuperscript{5} Gender differences in sedentary behavior are unclear as studies have yielded mixed results.\textsuperscript{28} Despite the lack of consensus in gender differences in sedentary behavior, it is plausible that there is a difference due to the relationship between sedentary behavior and PA. A 2014 systematic review of 26 studies observed an inverse relationship between sedentary behavior and PA and therefore, sedentary behavior should be considered when discussing gender disparities in PA.\textsuperscript{29} The gender disparity in physical behaviors is
prevalent in young adulthood and continues into adulthood. These differences may be due to life changes.

**Physical Behaviors and Life Transitions**

Life changes experienced during young adulthood, such as starting college, a career, or a family and becoming financially independent from parents can negatively impact anyone’s healthy physical behaviors. However, these life changes seem to impact women more than men because women are more likely to be responsible for household chores and child-care in addition to work obligations. Further, due to this excessive workload, young women’s self-care behaviors, such as accumulating healthy amounts of PA, may be neglected.

One pivotal time for changes in physical behaviors is during the transition from high school to college. One study assessed differences in young women’s (N=69, 18.2±0.4 years old) PA levels between their last year of high school and first year of college. The results showed a significant decrease in weekly moderate PA (MPA), vigorous PA (VPA), and moderate-to-vigorous PA (MVPA). Another study demonstrated a decline in PA as well but assessed gender differences specifically. The year-long prospective study in a sample of last-year high school students (N=244) found that young women’s leisure PA decreased more substantially (43%) than men’s (35%). The changes in physical behaviors have been attributed to psychosocial factors and gender norms.

**Gender Disparity in Psychosocial Correlates of Physical Behaviors**
Social support and self-efficacy are two widely known psychosocial factors that interact with one another, impacting PA. Social support for PA involves encouragement and providing knowledge and opportunities for one to be active. Sources of social support can include family, peers, teachers, and other individuals in a person’s social environment. Self-efficacy for PA is one’s confidence to be active or overcome barriers to being active. Gender norms related to physical appearance, negotiation of gender roles, and heterosexuality also play a role in physical behaviors among women.

A substantial amount of literature demonstrates consistent associations between the psychosocial correlates, social support and self-efficacy, and physical behaviors. Social support for PA and SB includes peers, significant others, and other stakeholders supporting and encouraging PA and discouraging SB. One 16-week intervention study in college students (n=184 women; n=154 men) assessed how mediating variables affected observed changes in PA. In women, social support was a significant factor for change in total activity. Despite the importance of social support for PA, women report receiving less overall social support for PA than men. Further, the association between social support and PA is more substantial in women than in men. For example, one prospective study conducted in 903 college students assessed social support through the Theory of Planned Behavior and found a significant interaction between gender and social support in women but not men.
Self-efficacy, the confidence to be physically active, is also consistently associated with PA participation in adults.\textsuperscript{35,45} For example, one large study found that women (N = 2636, age 20 to 65 yrs) who reported higher levels of self-efficacy were 2-4 times more likely to be in the highest quartile of PA.\textsuperscript{46} Young women have also reported lower levels of self-efficacy than men.\textsuperscript{47,48} Pauline (2013) conducted a study in college students (N = 871, 19.71±1.27 yrs old) assessing PA and self-efficacy to inform future PA interventions.\textsuperscript{47} Women reported less coping and self-efficacy when scheduling for PA than men.\textsuperscript{47} Another study in college students (N = 324, 24.13 ± 0.04) assessed self-efficacy and PA levels.\textsuperscript{48} Men accumulated significantly more PA than women (p=0.016) and reported significantly higher self-efficacy (p=0.032). The gender differences in social support and self-efficacy likely contribute to the gender disparity in overall PA, putting young women at a higher risk for adverse health outcomes. Previous PA research has aimed to deepen our understanding of these psychosocial factors by exploring women's experiences and attitudes with PA.

Other Factors Related to Physical Behaviors in Girls and Young Women

Previous research has identified underlying factors that impact women's physical behaviors from adolescence to adulthood. Adolescence is defined by the World Health Organization as 10-19 years old. Young adult is defined by individuals aging 18-25 years old according to the Society for Adolescent Health and Medicine.\textsuperscript{49} Much of the research is in adolescent girls, therefore, adolescent literature will be reviewed first, followed by studies in young adult samples.\textsuperscript{14,33}
Physical Behaviors in Adolescent Girls

A 2015 scoping review of 28 quantitative and qualitative sources identified three main factors impacting PA in girls and adolescents (10-19 years); 1) physical appearance, 2) the pressure to negotiate gender roles to participate in PA, and 3) heterosexuality.

Physical Appearance in Adolescent Girls

Physical appearance was a common theme observed across studies assessing barriers to PA (e.g., hair, makeup, body). Girls may fear that their hair, makeup, and clothing will be ruined if they participate in PA and sweat. For example, a qualitative study that used focused groups (N = 8) in 14-16-year-old girls revealed that girls feared that they would feel self-conscious if they did not have time to shower and reapply makeup about their appearance. Appearance in clothing is a concern consistently mentioned across the literature. Another study in adolescent girls (N=49; 13-15 years of age) revealed that wearing uniforms in physical education class was a barrier to PA. Participants identified that being overweight deterred them from participating in activities that required tighter clothing (e.g., swimming, volleyball). The restriction that these appearance concerns put on a girls' and a women's decision to be active may also dictate activities in which they participate. They may fear that they will look masculine if they participate in masculine sports that induce high exertion. If they participate in boy-gendered activities (e.g., football, wrestling) or activities requiring
substantial exertion (basketball, soccer), girls may feel pressured to negotiate their gender role.

**Femininity and Negotiation of Gender Roles**

The pressure that adolescent girls feel to negotiate their gender roles can lead to the femininity deficit.\(^{14,33}\) Discovered by Cockburn et al., the femininity deficit is a phenomenon where girls feel that they must “repay” their femininity when choosing to participate in PA.\(^\) Girls who deviate from stereotypical activities create a deficit in their sense of femininity and therefore, must overcompensate. Girls may perceive the burden of the femininity deficit as too high of a price to “pay” and may opt not to participate in PA. For example, qualitative studies have revealed that many girls and women do not enjoy competitive PA, such as sports, or simply feel restricted from participating because they consider them "boy" activities.\(^{14,33,52}\) Girls who choose to be active still experience the femininity deficit.\(^\) In sport settings, girls are still concerned with their appearance and participation in masculine activities. During sports, girls may feel pressured to look athletic, attractive, and feminine while also being competent.\(^\) Therefore, girls may choose not to participate in PA due to the pressure of balancing their femininity with their competency. These factors create a complex relationship between girls and their decisions to be physically active, which is not apparent in boys.\(^{14,33}\) Changes in life as young women transition from adolescence to young adulthood add another layer to the complicated relationship between girls and young women’s physical behaviors and gender roles.
Factors Related to Physical Behaviors in Young Women

Young women can experience substantial change after high school, including starting a family and joining the workforce. The changes experienced lessen the amount of time a woman has to participate in PA.\textsuperscript{53} For example, a recent review found that women with children see a greater decline in their PA than those who do not become parents.\textsuperscript{53} Lack of time to participate in PA is likely due to the time spent caring for the children.\textsuperscript{54} Despite having job responsibilities, employed women take on more of the household responsibilities than men.\textsuperscript{31,55} Research has concluded that despite more women being in the workforce, many women are still responsible for most child-care and household responsibilities.\textsuperscript{31} The impact parenthood has on PA in women speaks to how gender roles impact women’s physical behaviors.

Physical Appearance in Women

Similar to girls, appearance may also impact women’s decision to be physically active. The available research seems to focus on women of color. Culturally, hair is a priority in the black community and physical activity may impact the maintenance of hair. For example, one study aimed to describe how hairstyle maintenance impacts PA participation in African-American women.\textsuperscript{56} Women (N=103, 21-60 years of age) completed a survey that asked how their hair impacted their PA participation. Fifty percent of the women participated in PA by wearing accommodating hairstyles, while 40% avoided PA due to their hairstyles.\textsuperscript{56} Therefore, although some black women style their hair to accommodate physical activity, a large percentage still avoided it to maintain their appearance.
Although there is a plethora of literature on gender differences regarding the correlates of physical behaviors and the role of gender norms has on physical behaviors, the underlying cause of this gender disparity in self-efficacy and social support are not well understood. Current data, mostly qualitative, suggest that appearance, gender-appropriate behavior, and sexuality are underlying causes of this disparity. However, there is no known theory for how these factors interact and appear in PA and SB. Benevolent sexism, a covert form of sexism, encompasses deeper constructs into how these societal gender norms lower perceived self-efficacy, reduce social support, and pressure to maintain femininity due to heterosexuality. It is possible that benevolent sexism also impacts self-efficacy, social support, and heterosexuality in the PA domain. Understanding sexism, particularly benevolent sexism, may explain why we observe gender differences in these psychosocial correlates with physical behaviors and better explain the observed gender differences in these important health behaviors.

**Ambivalent Sexism**

The ambivalent sexism theory, developed by Glick and Fiske (1996), suggests that endorsement of sexism lives on a spectrum. Hostile sexism is the traditional, overt form of sexism in which women are perceived as inferior to men (e.g., women belong in the kitchen). Benevolent sexism is the covert form of sexism that appears kind but hinders the women or girls' ability to participate and demonstrate competency in different activities (e.g., employers provide more challenging tasks to men than women at work). One's endorsement of hostile and benevolent sexism is subjectively measured using the
Ambivalent Sexism Inventory (ASI). The ASI, reliable and valid in adults, is a 22-item questionnaire with a 6-point Likert scale, including 11 items measuring endorsement of hostile sexism and 11 items measuring the endorsement of benevolent sexism.\(^{16}\) For each type of sexism, there are questions related to three primary constructs; gender differentiation, paternalism, and heterosexuality (these constructs will be described below). The ASI only measures endorsement of sexism and does not measure experiences with sexism. Endorsement of sexism refers to the individual's internalized sexism while experiences with benevolent sexism is the exposure to sexist behaviors. Experiences with sexism are important to measure because it can also impact women's and girls' careers, relationships, and cognitive outcomes.\(^{17,18,21}\) More recently, a questionnaire was created to measure experiences with benevolent sexism.\(^{57}\) The Experiences with Benevolent Sexism Scale (EBSS) is a 25-item questionnaire that asks about benevolent sexist experiences.\(^{57}\) The EBSS was designed to measure how often a woman has experienced benevolent sexism. Both scales, mostly the ASI, have been used to assess the relationship between an individual's internal endorsement of hostile and benevolent sexism and several different outcomes. The relationship between exposure to hostile sexism and benevolent sexism has also been explored.

**Hostile Sexism**

Hostile sexism is an overt form of sexism that is outwardly negative. Hostile sexism is the belief that women are weak, inferior, and incompetent relative to men.\(^{16}\) An example of a hostile sexist belief is that women are incompetent and only belong in the
kitchen and not in the workforce. Another example is that women are weak, inferior and strictly meant to be at the disposal of men. Hostile sexism negatively impacts many aspects of a woman's life.\textsuperscript{16}

Exposure to hostile sexism is associated with work dissatisfaction, income inequality, and poor health in women.\textsuperscript{58} Women exposed to hostile sexism in the workplace express decreased interest in their work, a sense of unfulfillment in their careers, and decreased work satisfaction.\textsuperscript{58,59} The turnover rate can lead to fewer women in the workforce and decreased promotion.\textsuperscript{60} There was a positive relationship between the endorsement of hostile sexism and the likelihood to condone the income gender gap.\textsuperscript{16} Exposure to hostile sexism is also related to adverse health outcomes, including acute emotional distress, depression, stress, and risky lifestyle behaviors.\textsuperscript{61} For example, one study assessed the exposure to hostile sexism in college women and observed that women were less likely to combat hostile sexism despite experiencing significant anger and frustration.\textsuperscript{62} Exposure to hostile sexism has also been related to risky behaviors such as increased alcohol consumption and decreased condom use.\textsuperscript{63,64} Endorsement of benevolent sexism also has negative implications in women's lives, although this is often undetected because benevolent sexism seems benign at the surface level.

**Benevolent Sexism**

Benevolent sexism is a covert multi-dimensional form of sexism that appears good but can negatively affect young women in different areas of their lives.\textsuperscript{16,17,21,57}
Benevolent sexism consists of three different constructs: 1) gender differentiation, 2) paternalism, and 3) heterosexuality. Endorsement or exposure to benevolent sexism has been linked to adverse outcomes in various areas of women's lives.\textsuperscript{17,18,60} Gender differentiation, paternalism, and heterosexuality each lends to unique challenges and adverse effects among girls and young women.

**Gender Differentiation**

Gender differentiation suggests behaviors most appropriate for girls and women and those most appropriate for boys and men.\textsuperscript{16} For example, women should cook and clean rather than do yard work, and girls should play with dolls rather than playing with a ball or toy trucks. Some girls and women feel pressure to play the feminine role rather than undermine men's masculinity.\textsuperscript{16} Subsequently, girls and women typically perform traditionally acceptable feminine behaviors such as being a well-behaved, polite girl or a dedicated wife.\textsuperscript{16} Based on the Social Cognitive Theory (SCT) mentioned in the introduction, it is essential to understand the root of the internalization of benevolent sexism (environment), how it was internalized (cognitive), and what behaviors manifested because of the internalization and environment.

There is evidence that the internalization of gender differentiation begins at an early age and has detrimental effects on children. Boy activities have been identified as more physical, self-assertive, exercise-based, while girls participate in more social, imaginative play (e.g., make-believe parenting).\textsuperscript{65,66} A substantial amount of literature has assessed gender-typing activities and toys and the possible impact on children.\textsuperscript{65-67} A
study in 3-5-year-olds and their parents (N = 26 children, n = 26 mother-father dyads) assessed the children and parent’s views on what constitutes a “boy” toy versus a “girl” toy. They showed different toys and asked, “Is this [toy] a good gift for a girl or a boy?”. Researchers asked children to sort the toys into boy toys and girl toys. Girls and boys categorized toys based on gender stereotypes 90-98% of the time, depending on age. Gender-typing became increasingly prevalent in 3-to-5-year-olds. The children were then asked which toys each parent would want them to use. Overall results showed that children believed that the opposite sex parent would be more supportive of cross-gender toy choices than the same sex. The parents completed a Child-Rearing Sex-Role Attitude Scale, a 19-item 5-point Likert questionnaire that assesses parents’ views on gender norms in children. Interestingly, the parents were mostly accepting of all activities regardless of the gender of the child. In the cases in which parents did not approve of cross-gender typing usually occurred when the child was the same sex as the parents. Authors suggested that this may be due to internalized gender stereotyping for their genders with the parents. Overall, this study demonstrated how intrusive thoughts regarding gender norms start at a young age. The internalized gender differentiation can also impact social interactions.

Studies have assessed how children gender-type toys and the negative impact on physical, cognitive, and social development. Research conducted regarding physical development found that boys participate in rough and tumble play and competition, improving their eye-hand orientation preparing them for spatial recognition. Spatial recognition, a cognitive-developmental task, is essential for academic performance in
science and mathematics specifically. The authors concluded that girls are more likely to participate in conversation leading to less physical development.\textsuperscript{65} Further, gender differentiation of activities can impact beliefs surrounding societal gender roles.

A notable study assessed how gender differentiation progresses across childhood.\textsuperscript{69} Children, ages 3-11 years old (N =113), were shown various situations in which one gender required physical help (e.g., injury or hunger) while the others were rescuers to the gender in need. When asked who needed the most help with physical needs the children were more likely to select their own gender. However, boys selected themselves to be the hero. As children aged, both genders began choosing girls as the gender that needed the most help with physical needs. The shift in children’s perspective supports the notion that gender differentiation will be internalized and continue into adulthood.

Glick and Fiske, the creators of the ASI, state that women and men are assigned a specific set of feminine and masculine traits that inform acceptable women and men roles.\textsuperscript{16} For example, women are labeled nurturing, helpful, and gentle, while men are independent, authoritative, and confident.\textsuperscript{16,70} Glick and Fiske describe the traits of a woman to be complimentary to those of a man. The complimentary nature of a woman’s traits creates a dynamic in which men are dominant. The dynamic perpetuated by internalizing these traits can be further explained by paternalism.

\textbf{Paternalism}
Paternalism is the idea that women are fragile and need to be protected by men.\textsuperscript{16} For example, the man should carry bags because the woman is fragile and weaker than the man. Paternalism has been associated with reduced work opportunities, decreased work competency, decreased cognitive performance, lower self-esteem, and decreased psychological well-being in young women.\textsuperscript{18,20,57} No known research regarding paternalism has been conducted in adolescent girls. Internalized paternalistic attitudes may hold women and girls back from pursuing more prestigious or authoritative careers, traditionally seen as masculine.\textsuperscript{71} One study assessed how benevolent sexism endorsement impacts work opportunities for women.\textsuperscript{70} The researchers assessed the relationship between support of employment equity and benevolent sexism through several studies. Undergraduate students (N =115, 47\% women, age; Mean = 20.25 $\pm$ 3.13) completed the ASI and a 6-item questionnaire regarding employment equity policies.\textsuperscript{70} Surprisingly, higher benevolent sexism endorsement was associated with higher support for employment equity policies. However, the authors conducted another study that assessed support for employment equity policies for feminine or masculine positions (N = 90, 63 \% women, age; Mean=20.41).\textsuperscript{70} Masculine jobs were more independent and authoritative, and feminine jobs were more social and personable. The study required participants to read the same benevolent sexist statements from the first study except the statements specified the types of jobs, and then participants recalled the statements. The authors found that the positive relationship between benevolent sexism and support of employment equity for women was only prevalent for feminine jobs and not masculine jobs. Therefore, support for employment equity does not
necessarily translate to more women in higher positions despite the endorsement of benevolent sexism related to support of employment equity. Paternalistic attitudes impact women’s ability to obtain higher positions in the workplace, but these attitudes can also impact perceived self-efficacy to complete a job.

Researchers conducted four studies assessing how sexism impacts performance and intrusive thoughts regarding competency. Study 1 found that women exposed to paternalism during mock job interviews performed worse on nine problem-solving questions than a group exposed to hostile sexism and a control group. (N = 38, age: 25-42 years old). All groups were asked to imagine they were applying for jobs that, in this study, were stereotypically made for women. The job description used stereotypical, feminine traits such as “sensitive to clients” or “attentive to clients.” The delivery of the instructions varied across groups in which one group received benevolent sexist instructions, another group received hostile sexism instructions, and a control group received a neutral direction. For example, researchers told participants in the benevolent sexism group that the women would be working with all men but not worry because the men had agreed to help them. The participants completed a problem-solving task where with a 4 x 4 square that had included a ship. The participants had to estimate the route for the shortest distances for the ship to travel for two different destinations. Study 2 found that the participants exposed to paternalistic sexism had more intrusive thoughts regarding self-competency than the control and hostile sexism groups. The poor performance observed when exposed to paternalism was related to higher intrusive
thoughts of self-efficacy among participants. Overall, paternalism leads to the internalization of stereotypical gender roles. The acceptance of complementary roles may manifest through heterosexuality.

Oswald and colleagues measured experience of benevolent sexism and the self-esteem and well-being in young women. Participants (N = 489, age: 19 ± 1.07) completed the Experiences with Benevolent Sexism Scale (EBSS). The EBSS is a 25-item question that uses a 1-6 scale ranging from “the event never happened” to “the event happened almost all of the time.” Participants also completed a 10-item global self-esteem questionnaire that uses a 1-4 Likert scale and a self-doubt questionnaire. Experiencing paternalism was associated with lower self-esteem and higher self-doubt. Despite the negative impacts gender differentiation and paternalism have on women’s lives, some women still prefer relationships with men who endorse benevolent sexism.

Heterosexuality

Heterosexuality was at the root of original research on benevolent sexism. Little research has been done on individuals who have non-heterosexual sexual preferences. Only recently have researchers began to assess the prevalence of benevolent sexism amongst non-heteronormative relationships. A recent study in hetero- and non-heteronormative relationships assessed the endorsement of benevolent sexism across the groups. There were 18,266 participants (48 ± 14 years old) including heterosexuals (n = 17,015), lesbian/gay (n = 515), bisexuals (n = 736), pansexual/bi-curious/unspecified (n = 636), and asexual participants (n = 84). There were some participant responses that
authors stated were outside of the scope of the study (n=1937). Researchers observed that endorsement of benevolent sexism was most prominent in heterosexual relationships compared to other sexual orientations. The current literature review will focus on heterosexuality due to the lack of research in non-heterosexual relationships and greater endorsement of benevolent sexism in heterosexuals than other sexualities.

Heterosexuality, also known as heterosexuality intimacy, posits that men need a woman who appears feminine to fulfill intimate needs. For example, a man will not want a woman who appears more masculine than he feels or appears. Women typically will accept this role in exchange for protection and chivalry (paternalism), leading to more endorsement of benevolent sexism through romantic relationships. One study assessed the endorsement of benevolent sexism in adolescents. The study found that romantic relationship experience predicts a higher endorsement of benevolent sexism score. Adolescents also tended to be more attracted to their peers who endorsed benevolent sexism. A study in adult heterosexual women revealed similar results. The results suggested that women preferred men who endorsed benevolent sexism, despite being aware of its undermining nature. The study uncovered that women perceived endorsement of benevolent sexism as a man’s way of expressing that he is willing to invest and commit to the relationship. Subsequently, increased romantic relationship experience can foster sexist ideas rather than combat them.

As described above, substantial data demonstrate the negative impact that experience and endorsement of benevolent sexism have on girls and women in various
aspects of their lives.\textsuperscript{17,18,21,26,75,77} Most of the negative impacts directly affect social support (workplace promotions/challenges) and perceived competence (self-efficacy/self-doubt) in careers, school, life aspirations, and cognitive performance.\textsuperscript{17,18,26} However, no studies have explored how the concept of benevolent sexism could apply to the gender disparity in PA and SB. Although no studies have directly studied sexism in habitual PA and SB, researchers have studied sexism in sports.

\textbf{Ambivalent Sexism and Physical Behaviors}

\textbf{Hostile Sexism and Sports}

The relationship between habitual PA and SB and hostile and benevolent sexism has yet to be explored, but research has been conducted in the sports domain. Women in sports experience a lack of leadership positions, poor media coverage, and sexualization.\textsuperscript{78} Despite the importance of diversity in leadership positions, women potentially are not hired as coaches simply because they are women, the reasoning being that "women cannot coach men".\textsuperscript{78} One study in college students (N=116) used the Bem Sex Role Inventory to assess the relationship between endorsement of stereotypical gender norms and gender preference for coaches.\textsuperscript{79} Higher endorsement of sexism was positively related to endorsement of stereotypical gender norms and predicted a preference for a male coach than a female coach.\textsuperscript{79} Another study examined men and women athletic administrators’(N=276) opinions on coaching applicants and their likelihood to hire those applicants. Results showed that men were still more likely to be offered the athletic director position even though men and women applicants were
seen as having the same likelihood of success.\textsuperscript{80} Media coverage in sport also exhibits sexist views through less coverage and coverage less connected to sports performance. Women’s sports only make up 4% of media coverage, which does not cover many topics considered important in discussions about male sports.\textsuperscript{81} For example, a recent review synthesized research regarding the role of media representation of women in sports and how that representation impacts perceptions of women’s sports.\textsuperscript{82} The review found that media coverage tends to focus on other factors than athleticism when representing female athletes. For example, the study found that media typically emphasized women’s physical appearance rather than their athleticism leading to the sexualization of women in sport. The same review mentioned above also found that several studies revealed visual evidence of sexualization of female athletes including the poses selected for press photos and portrayal of the ideal feminine body.\textsuperscript{82} Cranmer et al. (2014) assessed 157 images of male and female athletes from an ESPN magazine to assess quantity of images that de-emphasize athleticism, sexualize athletes, or lacks a sporting context.\textsuperscript{83} The results suggested that gender is associated with de-emphasized athleticism and sexualized athletes and therefore, women’s athleticism is still minimized.\textsuperscript{83} Overt sexism is apparent in sport through lack of women in leadership, media coverage and sexualization however, research has yet to examine the impact of experience with and endorsement of benevolent sexism on habitual physical behaviors.

**Benevolent Sexism and Physical Activity Gender Norms**

Although research has yet to be conducted to explicitly assess the relationship between habitual physical behavior and benevolent sexism, there are several ways
benevolent sexism unknowingly perpetuates harmful gender norms in PA among girls and women. Social support, self-efficacy, and sexuality (key factors impacting PA in girls and women) appear to be influenced by underlying experience with and endorsement of benevolent sexism. Within the habitual physical behavior domain, there are examples of gender norms related to social support, self-efficacy, and sexuality that map onto the three main constructs of benevolent sexism; gender differentiation, paternalism, and heterosexuality.

**Gender Differentiation and Physical Activity**

Gender differentiation in PA is mainly depicted in children and may appear through play and clothing. Gender-play has been well established in the literature. For example, Boyle et al. conducted an observational study in which they observed 67 recesses to better understand how gender impacts play. Two main findings were that girls tended to socialize while boys participated in more physical activities such as ball games. Gender differentiation still existed when girls chose to be active because those girls were still more likely to participate in stereotypical activities such as cheerleading or dance. Similarly, one study used the modified System for Observing Play and Leisure Activity in Youth observation system to directly observe playground behavior and identify what activities the children enjoyed. Although no differences in PA was observed, girls were more likely to participate in sedentary activities, compared with boys. Other research has found similar results in that boys tend to take up larger play spaces and are more likely to participate in ball games and competitive games (e.g., football) while girls preferred using their imagination, sliding,
climbing, and sitting/relaxing.\textsuperscript{87,88} Clothing may also be an example of how gender differentiation dictates activity choice and subsequently, PA. Copeland et al. conducted a qualitative study in childcare providers \((n = 49)\) in different childcare-centers \((n = 34)\) to explored how clothing impacts PA in 3-6 year olds.\textsuperscript{84} Results showed that stereotypical feminine clothing such as flip flops, dresses, and jewelry, was a barrier to PA in child-care settings.\textsuperscript{84} One study observed a similar issue in older children. Parrish et al. observed an issue surrounding clothing in 4-6\textsuperscript{th} \((N = 20)\) grade children. Gendered uniforms were noted as a barrier to PA where girls were required to wear dresses impeding their PA.\textsuperscript{89} Based on the above research, gender differentiation can lead to girls being less active than boys due to gendered behaviors and appearances. Paternalism also limits girls PA but through beliefs of what girls are capable of rather than just the activities they should participate in.

**Paternalism and Physical Activity**

Paternalism may be observed in the PA domain as restrictions on the activities girls can participate in due to the covert belief that girls are incompetent, fragile, inferior, and need to be protected.\textsuperscript{16} No research has been conducted to directly assess if paternalism plays a role in habitual PA, however, some research regarding parenting, coaching dynamics, and patronization in PA contexts may describe how paternalism plays a role in PA among girls and women.

**Outdoor Play and Physical Education**
In children, parenting regarding independent outdoor play has been researched and may present itself as paternalistic. For example, a qualitative meta-analysis of 46 studies conducted to better understand determinants of independent activity in children. Parental restriction of independent outdoor play was a main theme that was observed and more specifically, boys had greater freedom to participate independent play outside than girls. Another example is a study conducted by Atkin et al. where researchers assessed how home factors impacted home PA in 854 children (10.2 ± 0.3 years old). Results showed that an increase in sedentary behavior was greater in girls specifically related to parents’ restriction of outside play. One plausible reason for parents providing less independent play in girls than boys is that parents’ may believe that boys as more capable to physically protect themselves than girls.

Patronization, a core factor of paternalism, has been observed in the PA domain. For example, girls and women may feel patronized when they receive feedback from individuals within certain social environments. A cross-sectional study in high school students (N = 325, 16 ± 0.55 years old) assessed students’ perceptions of PE teachers’ feedback and students’ perceived competence in class. The main forms of feedback included praise, encouragement, technical information, criticism, and teachers’ invested time. Results showed that, first, girls reported lower perceived competence than boys. Secondly, girls reported receiving more encouragement and technical information (directions to do the task) than boys, even when boys made an error. Unfortunately, both encouragement and technical information were negatively associated with perceived competence. Also, boys reported more criticism, negatively associated with
perceived competence, but received more overall attention (criticism, praise, and teacher’s invested time), which were positively associated with competency, allowing them to develop their skills. The perceived interpersonal interactions discovered in this study provide an example of paternalism by perpetuating the idea that girls need more help (encouragement) and are less capable (technical information) compared to boys.

**Paternalism and Sports**

Coaching dynamics is another example to how paternalism is observed in PA. For example, one study interviewed junior (ages 15-16), youth (ages 17-18) and elite boxers (19-40) (N=12) to examine how boxers viewed their female coaches and male coaches. One theme that emerged was the paternalistic dynamics observed between female athletes and males coaches. Boxers in general expressed great respect for their male coaches however, women in particular expressed not questioning the coaches’ orders. Authors concluded that this dynamic makes girl and women athletes vulnerable and susceptible to sexual harassment and sexual exploration because they are less likely to combat unacceptable behavior of male coaches.

In general, the idea that girls or women need more help than boys and men may perpetuate the stereotype that women are more fit for interpersonal behaviors (e.g. nurturing others) rather than more ambitious behaviors (e.g. competing with others) that are typically seen as appropriate for boys and men. Feminine and masculine traits are the basis of the gendered-behaviors which girls/women and boys/men should abide. Despite the patronizing nature of these stereotypes, the dynamic between these typical
feminine traits and masculine traits are seen as necessary in romantic relationships.\textsuperscript{16,73,75}

**Heterosexuality and Physical Activity**

Unlike paternalism that posits the woman needs a man, heterosexuality is the construct in which men need women for the purpose of intimacy. Heterosexuality, explained by the theory of ambivalent sexism, is the motivation for both gender differentiation and paternalism. As discussed earlier, both gender differentiation and paternalism are related to gendered-roles related to more feminine attributes. Therefore, women and girls in later adolescence may present themselves as the stereotypical feminine to attract a man or older adolescent boys. There is research in the area of PA in adolescent girls that observed older adolescent girls maintaining a feminine appearance directly related to heterosexual relationships.\textsuperscript{14,33} For example, a 2015 review paper found that girls across different studies reported being uncomfortable with participating in physical education class due to sweating, sports attire, and not having ample time to regain an acceptable appearance (makeup, hair, etc.) after the class.\textsuperscript{33} One qualitative study (N = 6-9\textsuperscript{th} grade girls) found a direct connection between PA and heterosexuality. The study found that a barrier to PA during physical education class was that girls feared being classified as manly or a lesbian.\textsuperscript{14} Authors of this study and other researchers argue that girls fear being labeled as masculine because it may cause them to appear non-heterosexual which can lessen their chance of attracting a relationship with a boy.\textsuperscript{14,94} Further, girls fear experiencing homophobia and marginalization from their girl and boy peers.\textsuperscript{14,94}
Associations and Mediations between Benevolent Sexism, PA and Psychosocial Factors

Benevolent sexism constructs could possibly be an underlying factor related to the detrimental gender norms in PA that impact social support and self-efficacy. If benevolent sexism can, in fact, be observed in the PA domain then the experience of sexism could lead to intrusive thoughts within women regarding their perceived social support and self-efficacy for PA. Subsequently, accepting these intrusive thoughts can lead to women endorsing benevolent sexism. This transfer of experience to endorsement is similar to what is observed in other areas of research. Further, if benevolent sexism is playing a role in harmful, well-practiced gender norms, it is likely to be endorsed by those in the women's social environments. Therefore, women who endorse benevolent sexism and live in a social environment that abides by the constructs of benevolent sexism, create an environment in which people do not see value in supporting women in PA (social support) and women do not feel competent in PA (self-efficacy). Therefore, it is hypothesized that benevolent sexism endorsement is associated with less PA and that the relationship between the two is mediated by social support and self-efficacy for PA.

It is hypothesized that gender differentiation, paternalism, and heterosexuality are related to social support and self-efficacy. Gender differentiation in the PA domain likely perpetuates societal gender norms that decrease PA self-efficacy and PA social support, similar to work and school domains. Gendered clothing and gendered-activities are both barriers to movement for girls. People surrounding girls may be less
likely to provide support for girls to participate in activities incompatible with clothing or activities unaligned with gendered-activities. Paternalism in the PA domain could decrease the activities available to girls because girls are perceived as (or believe themselves to be) fragile, incompetent, and in need of protection. Heterosexuality, rooted in femininity, is hypothesized to mainly decrease PA social support. Older adolescent girls desire to remain feminine to appear available to heterosexual boys and therefore, limit participation in masculine activities or support one another to do so. The lack of participation in PA by older adolescent girls may present as a dislike for PA and subsequently will discourage others to support girls in PA. All three constructs decrease the number of opportunities women and girls are presented with and therefore, provides them with less opportunities to build self-efficacy for PA.

Conclusion

Only half of the women in the United States meet the PA guidelines putting them at risk for several negative health outcomes. Social support and self-efficacy are known correlates of physical behaviors and are more strongly associated with women’s physical behaviors, compared to men. Little is known about the underlying reasons that social support and self-efficacy are deficient in girls. Appearance, negotiating gender roles, sexuality, and additional time commitments to family and home responsibilities have been observed in qualitative studies as a barrier to PA. Benevolent sexism encompasses constructs directly related to social support, self-efficacy, and sexuality. Benevolent sexism negatively affects women and girls’ social support and self-efficacy in other aspects of life. Despite benevolent sexism encompassing all aspects of detrimental
gender norms in physical behaviors, the relationship between benevolent sexism and habitual physical behaviors has yet to be studied. Benevolent sexism could explain the gender disparity in physical behaviors and provide awareness and practical tools that could improve physical behaviors in girls and women across the lifespan. Therefore, the overall purpose of this study was to assess the relationships between sexism and physical behaviors, and the mediating effects of social support and self-efficacy.
III. METHODS

Methods Overview

The current study used a mixed-methods design to assess how young women’s experience with hostile and benevolent sexism is related to their endorsement of both forms of sexism and their physical behaviors and how known psychosocial correlates mediate the relationship [Chapter 1 - Figure 1.3].

Study Designs

The following procedures include the procedures that were the same between Study 1 and Study 2. The following sections (Study 1: Methods and Study 2: Methods) will highlight the unique procedures of each study. Study 1 was a mixed-method study including an online survey, focus groups, interviews, and the development of the Physical Activity Sexism Experience Subscale (PASES). Study 2 included psychometric analyses of the PASES [developed in Study 1] and an online survey. The online survey for Study 2 was identical to the Study 1 with the addition of the PASES to the Experiences with Benevolent Sexism Scale (EBSS). An overview of the study design
and the elements included in each study and aims addressed is presented in Figure III.1.

**Study Population and Recruitment**

Two hundred participants for two independent samples were recruited across the Western Massachusetts area for Study 1 (N = 200) and in the Boston metropolitan area for Study 2 (N = 580). Each sample was recruited from two different areas to increase diversity and provide an independent validation sample for the new PASES. For the mediation analyses in Study 1 and Study 2, a ratio of 10 participants to each latent variable is considered an acceptable sample for structural equation modeling.95 Participants were recruited via social media and word-of-mouth. All participants were
screened to ensure they are 18 - 30 years old, identify as a woman, reside in the United States, speak English, and have no physical disabilities (e.g., use of an assistive device or wheel chair) that prevent them from participating in PA using their entire body and no cognitive barriers that would prevent them from understanding questions on the survey, or during focus groups or interviews. Participants who completed the survey were entered into a raffle for a $100 Amazon gift card. A separate raffle was available for each study.

**Demographics and Anthropometrics**

All demographics and anthropometrics were collected via self-report on an electronic Qualtrics survey [Appendix A]. Demographics collected included age, race, ethnicity, gender, education level, marital status, household income, employment status, state of residency, and sexuality. Anthropometrics including weight and height were self-reported.

**Measures**

**Physical Behaviors**

Sitting time (used as a proxy for sedentary behavior) and physical activity were measured using the International Physical Activity Questionnaire Short Form (IPAQ-SF).

The IPAQ-SF is a 7-item questionnaire that measures total time spent sitting and walking, and time spent in moderate and vigorous PA, in the past 7 days. In a recent pilot study, the correlation between total MET-minutes from the IPAQ-SF and total MET-minutes from the ActiGraph was r= .50. Total moderate-to-vigorous activity was
calculated by summing time spent walking, and time spent in moderate and vigorous PA. The time spent in each category were presented as a daily average. Metabolic equivalents minutes (MET-minutes) were also be calculated. Average daily moderate, vigorous, and total MET-minutes were calculated by multiplying time spent walking, and in moderate and vigorous PA by assigned MET values (walking= 3.3, moderate = 4, and vigorous=8, respectively) and dividing by seven. Total MET-minutes were calculated by summing walking MET-mins, moderate MET-minutes and vigorous MET-minutes. Final PA outcomes consisted of total daily hours of; SB, and total weekly minutes of moderate PA, vigorous PA, moderate-to-vigorous PA, and MET-minutes.

**Sedentary Screen Time Behavior**

Sedentary screen time behavior was measured using an 8-item questionnaire. Although there is no validity and reliability assessments for the questionnaire, past researchers have used similar questions. The first four questions asked how many hours per weekday participants usually spent sitting or lying down while watching tv, using social media, communicating on the phone, and computer use. The next four questions asked about the same activities but for a usual weekend day. The possible responses included, less than 1 hour a day, 1-3 hours a day, 4-6 hours a day, and 6+ hours a day; operationally defined as 1.0, 1.5, 5.0, and 7.0 hours per day. The total of all the responses was used to calculate a weighted average of daily screen time for a usual week.

**Psychosocial Correlates**
Social Support

Social support was measured using the Physical Activity and Social Support Scale (PASSS). The PASSS is a 20-item questionnaire using a 7-point Likert scale with four responses including never true (1), sometimes true (4), always true (7), or not applicable (0). Each question corresponded to emotional, information, instrumental, validation or companionship support. The questionnaire is significantly correlated with other PA social support questionnaires ($r=0.23$ to $0.61$, $p<0.01$). A total score was calculated by summing all responses and then dividing response by total items with a possible range of 0 to 7.

Self-Efficacy

Self-efficacy was measured using a 5-item questionnaire. The questionnaire asked about participants’ confidence to participate in physical activity in a given situation (e.g. I am confident I can participate in physical activity when I am tired.). Responses were on a 5-point Likert scale and range from Not Confident (1), Slightly Confident (2), Moderately Confident (3), Very Confident (4) to Extremely Confident (5). The score was calculated by summing of all responses (range; 5 to 25) and presented as a continuous variable.

Sexism

Ambivalent Sexism

The Ambivalent Sexism Inventory (ASI) [Appendix A] was used to measure benevolent sexism endorsement. The ASI is a 22-item scale in which 11 items measure
benevolent sexism and 11 items measure hostile sexism. Responses were on a 6-point Likert scale that ranged from Disagree Strongly (0), Disagree Somewhat (1), Disagree Slightly (2), Agree Slightly (3), Agree Somewhat (4), to Agree Strongly (5). Benevolent sexism questions encompassed questions specific to Paternalism (questions 3, 9, 17, and 20), Gender Differentiation (questions 8, 19, and 22), and Heterosexuality (questions 1, 6, 12, and 13). The ASI was found to be reliable across 6 different samples of young adults (α = 0.83 - 0.92). A total score was calculated by first reverse coding questions 3, 6, 7, 13,18, and 21 and then calculating the average of benevolent sexism responses (range; 0 to 5) with a higher score reflecting greater endorsement of the sexism constructs. The total benevolent sexism score was presented as a continuous variable.

**Experience with Benevolent Sexism**

The Experiences with Benevolent Sexism Scale (EBSS) [Appendix A] is a 25-item questionnaire that was used to measure the frequency of experiences women have had with benevolent sexism in the last year or across her lifetime. The scale consisted of three subscales including a subscale for each benevolent sexism construct: Paternalism, Heterosexuality, and Gender Differentiation. The EBSS uses a 6-point Likert scale and the responses included 1 = the event never happened, 2 = the event happened once in a while (less than 10% of the time), 3 = the event happened sometimes (10-25% of the time), 4 = the event happened a lot (26-49% of the time), and 5 = the event happened most of the time (50% - 70% of the time), 6 = the event
happened almost all of the time (more than 70% of the time). A total score was calculated by dividing the sum of responses and dividing the score by number of items (range; 0 to 6). The subscales have been found to be reliable (α; Paternalism=0.85, Heterosexuality=0.82, Gender Differentiation=0.81) in young to middle-aged women (N=216, age=36.38±11.54).57

**Survey Procedure**

The survey was a combination of all questionnaires described above. Qualtrics Survey Suite (Qualtrics, Provo, UT) was used to administer the surveys for both studies [Figure III.2]. Qualtrics Survey Suite is an online survey software that allows users to create surveys, collect data, and manage data on a secure online database, and is approved for behavioral research at the University of Massachusetts Amherst. All participant recruitment (study information), screener (screener survey), informed consent form, and online survey was conducted in sequential Qualtrics surveys. Prospective participants selected a link from recruitment posts on social media platforms or from recruitment emails. The link then directed individuals to a Qualtrics Study Information Survey. The survey asked if they were interested in participating. If they selected “Yes” they were automatically directed to a Qualtrics Screener Survey. After completing the Screener Survey, eligible participants were directed to a Qualtrics Informed Consent. At the end of the informed consent form, participants were provided a link to download the Informed consent and asked if they would like to be contacted to participate in a focus group or interview. The participant was then directed to the Qualtrics Survey if they
decided to participate. The Qualtrics Survey took approximately 15 – 20 minutes to complete. The survey data was uploaded to a secure Qualtrics database in real time. The complete dataset was backed up to a secure folder on Microsoft OneDrive (Microsoft, Redmond, WA) from the Qualtrics cloud after all participants completed the survey. The same procedure was followed for Study 1 and Study 2.

**Summary Statistics**

Data was examined to identify normal and non-normal distributions for each main outcome variable from the conceptual model. Non-normally distributed data was log-transformed and used in subsequent analyses or non-parametric statistics depending on the degree of skewness and kurtosis. Summary statistics were presented for demographics, psychosocial correlates, benevolent sexism and hostile sexism scores,
experiences with benevolent sexism scores, and physical behaviors using data from the online survey. The same process was used for Study 1 and Study 2.

**Study 1: Methods**

Study 1 was a mixed-method study. The survey mentioned above was administered and all outcome variables were scored as described above. Data from the survey was used to address Study 1 Aim 1 and Aim 2. Qualitative methods and analyses were conducted and addressed Study 1 Aim 3. The following section describes the qualitative methods used in Study 1.

**Focus Group and Interview Participant Randomization**

Six participants who agreed to be contacted (Survey Informed Consent Form) were randomized from the full sample (N=200) for each 90-minute focus group (N=3 focus groups, n=6 participants each focus group) and ten separate participants were randomized for a 30-minute interview [Figure 6]. Participants could not participate in the focus groups and interviews. Before randomization, participants were categorized into tertiles based on total daily MET-minutes, benevolent sexism scores, and hostile sexism scores. Two participants from each tertile of the respective outcome variable (Focus Group 1: PA tertiles, Focus Group 2: Benevolent Sexism tertiles and Focus Group 2: Hostile Sexism tertiles) were invited to participate in the focus groups. The interviews were random and independent of any outcome variables. Based on the randomization, participants were invited to participate in a focus group or interview via email. A reminder was sent to the participant at least 48 hours of the first email and a final reminder will be
sent after an additional 24 hours. A new randomized participant was then invited if no response is received within 24 hours of the final reminder. Newly randomized participants came from the same tertile as the participants who refused participation, did not want to participate or never responded. Focus group participants were compensated $25 and interviewees were compensated $40 using Amazon gift cards. Interviewees received a higher compensation than focus group participants based on the vulnerable position interviewees were put in due to the personal questions asked during the interview that were not addressed during the focus group.

Focus Group and Interview Procedures

Semi-structured focus groups and interviews were conducted via Zoom (Zoom Video Communications, San Jose, California). The procedures for the focus groups and interviews were the same, however, the focus groups and interviews included slightly different questions [See Appendix B]. Three researchers for the focus groups and two researchers for the interviews joined the respective Zoom video call. The principal investigator conducted the focus group and interviews. Participants received a Zoom link with a meeting password to maintain confidentiality. The interviewing researcher granted participants access to the video call. Upon access, the participants were asked to provide a pseudonym to which they were referred to for the duration of the focus group or interview. The researcher changed the name visible on the video to the participant’s pseudonym. A script was read to the participant(s) to remind them of the purpose of the study, what they will be asked to do, and their right to stop participating at any given
time. The participants were asked if they had any questions. The researcher began recording the video call once all questions were answered. The participant(s) were asked a series of questions regarding PA, gender norms, and sexism. The focus group and interview questions were adapted from questions used in a prior pilot study. Audio, video, and observation documentation were saved and uploaded to a secure folder in OneDrive.

**Transcription**

The audio from the focus groups and interviews were processed through an automated transcription software (Otter.ai, Los Altos, CA) to produce a raw transcript for each focus group and interview. Two researchers independently read and listen to the audio and corrected any errors in each automated transcript and identified speakers by their pseudonyms. A third researcher listened to the audio and read both transcriptions to assure accuracy. A final transcription was created and uploaded to a secure folder in OneDrive.

Figure III.3: Qualitative Methods and Analysis
was used for all further analyses [Figure III.3].

**Trustworthiness and Credibility**

Trustworthiness and credibility were demonstrated through methodological triangulation. Methodological triangulation (data, investigator, and theoretical) is the use of more than one method to collect or analyze data. Data triangulation was achieved by using qualitative results and quantitative results from the survey. For example, quotes from a specific participant may be supported or refuted by their survey responses. Data triangulation was also achieved by conducting both focus groups and interviews. Implementing both focus groups and interviews can provide two sources of qualitative data that are likely related to one another and therefore, increasing the confidence in results. Investigator triangulation is the use of multiple researchers to compare findings to minimize bias. For the current study, five different researchers analyzed the transcripts and discussed individual findings before finalizing the results. Further, due to the emphasis on gender roles, both male and female researchers were involved with the analyses to reduce potential biases. Theoretical triangulation was achieved because more than one theory was applied to the data. The current study demonstrated theoretical triangulation by using the Social Cognitive Theory (social support and self-efficacy), Ambivalent Sexism Theory, and the connections among these constructs and young women’s physical behaviors to interpret the data.

**Development of Physical Activity Sexism Experience Subscale**
To develop the PASES, focus group and interview were conducted and methods similar to Oswald et al.\textsuperscript{57} were used. First, researchers wrote questions reflecting themes identified from focus groups and interviews. For example, if a participant were to state, “I felt like my P.E teacher did not think I was as capable as the boys,” a reasonable question produced may be “In your lifetime, has anybody given you the impression that they viewed you as incapable of a physical activity?” (Paternalism). Questions were derived from the main themes (n=6) and subthemes (n=2). The respective construct that a question represented was identified prior to the administration of the PASES in Study 2. Next, similarly to how Oswald et al. revisited the ASI by rephrasing endorsement questions, we referred to the EBSS and identified items that could possibly be rephrased to fit a benevolent sexist experience within the PA domain. Lastly, researchers compiled possible questions for the final PASES and selected the questions that best represented the most common themes from the focus groups and interviews and each form of benevolent sexism.

**Study 1: Data Analyses by Aim**

Study 1, Aim 1: Identify the associations between physical behaviors (physical activity [PA] and sedentary behavior [SB]) and the endorsement and experience of both hostile and benevolent sexism in young women (N=200)

\[ H_{1a} + H_{1b} + H_{1c} + H_{1d}. \]  
Data will be tested for skewness. If the data is normally distributed, Pearson’s correlations will be used to assess associations between
benevolent sexism and physical behaviors and hostile sexism and physical behaviors. Spearman’s correlations will be performed if the data is skewed.

Study 1, Aim 2: Determine the mediating effects of sexism endorsement (hostile and benevolent) and psychosocial variables (social support and self-efficacy) on the association between sexism experience and physical behaviors.

H_{2a} + H_{2b}: Confirmatory factor analysis will be performed to test the construct validity of the study measurement tools. Based on standard practice for CFA, if the CFA does not fit the data, an exploratory factor analysis (EFA) will be conducted on half the sample (N=100). Items that do not load on a factor will be removed and a CFA will then be conducted on the second half of the sample (N=100). The process described above is commonly used and is considered an acceptable practice.
Structural equation modeling (SEM) will be used to test direct and indirect relationships between latent variables [Figure 7] for the proposed study, SEM is a preferred method over multiple regression methods because SEM provides efficient modeling of the multiple mediation pathway. The model will be estimated using maximum likelihood (ML) to account for missing data for some latent variables. Model fit will be assessed using a Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA). CFI values range from 0 to 1 with values closer to 1 indicating a better fit and RMSEA values closer to 0 indicate a better fit. 

Study 1, Aim 3: Develop a Physical Activity Sexism Experience Sub-scale (PASES) for young women using the existing EBSS, survey feedback, focus groups, and individual interviews with participants from Study 1 (n=18 focus group participants; n=10 interviews).

H3a: Open-coding will be used to analyze the transcripts. Four trained research assistants (two men, two women) and the principal investigator (woman) will read the transcripts and independently identify meaningful quotes. Researchers will...
organize the quotes into main themes. After independently creating a list of quotes and themes, researchers will compare their quotes and themes. All researchers will reach a consensus on the final themes and respective quotes. Researchers will read through the transcripts a final time to assess if any other quotes support the themes identified. Lastly, researchers will label quotes as Gender Differentiation, Paternalism, Heterosexuality, Hostile, Neutral, Social Support, or Self-efficacy. The researchers will convene to reach a consensus on the labels applied to each quote.

Study 2: Methods

Study 2 was conducted in an independent validation sample (N = 427) recruited from the Boston Metropolitan area. The same survey from Study 1 was administered with the addition of the gender-related self-efficacy questions (n=6), PASES and EBSS-PA developed in Study 1. All outcome variables from the survey were summarized and analyzed as they were in Study 1.

Study 2: Data Analyses by Aim

Study 2, Aim 1: Determine the psychometric properties of the new PASES as a stand-alone scale and incorporated as additional questions in the Experiences with the Benevolent Sexism Scale (EBSS-PA) in an independent sample of young women (N=200).
H$_{1a}$: Cronbach’s alpha will be independently calculated for the PASES and the EBSS-PA to assess internal consistency (Cronbach’s alpha ≥ 0.70 is acceptable) of survey results.

H$_{1b}$: Exploratory factor analyses will be conducted for the PASES and EBSS-PA with a promax rotation. Items that cross-load onto two or more factors or load onto a factor with a loading less than |0.30| will be removed. A second exploratory factor analyses will be conducted after removing items.

Study 2, Aim 2: Use the PASES and EBSS-PA in separate analyses, to re-assess the direct and mediation pathways described in the Study 1 aims [Figure 3].

H$_{2a}$ + H$_{2b}$: Bivariate correlations and structural equation modeling will be used to test direct and mediation pathways among variables analyzed in Study 1 Aim 2 with the addition of PASES and EBSS-PA scores, in separate models.
IV. ASSOCIATIONS AND MEDIATING FACTORS AMONG SEXISM AND PHYSICAL BEHAVIORS IN YOUNG WOMEN

Introduction:

Insufficient physical activity (PA) and excess sedentary behavior (SB) are related to the development of chronic diseases, obesity, decreased quality of life, and premature mortality. A plethora of data has demonstrated that women are consistently less active than men across all age groups and, therefore, are at a greater risk for poor health outcomes. Further, PA self-efficacy, one's confidence to be physically active, is a consistently strong determinant of PA and is lower in women than men. It is well established that the gender disparity in PA and self-efficacy exists, yet the contributing factors are not well understood. A further understanding of what drives the gender disparity in PA and self-efficacy is necessary to identify ways in which future researchers can intervene and effectively improve PA and SB in women.

Perceived gender norms have been the focus of understanding the gender disparity in PA. The American Psychological Association describes gender norms related to health behaviors as the roles and activities considered acceptable in a given population. A substantial amount of research has identified stereotypical gender norms as a likely contributor to inactivity in women as early as childhood and adolescence. Spencer et al. (2015) conducted a systematic review across quantitative and qualitative studies focused on gender norms in health behaviors. The study provided a set of major themes that impact a girl's physical behaviors, and one
central theme was outward appearance. The research identified that adolescent girls feel pressure to present as feminine, affecting their outward appearance and behaviors. Interestingly, adolescent girls who wanted to appear athletic still expressed the need to balance physical competence and their femininity. The Spencer et al. systematic review provides strong evidence that stereotypical gender norms can directly impact a girl's choice to be active.

Underlying stereotypical gender roles and gender discrimination may contribute to the gender norms that negatively impact women's PA. First, gender roles suggest that men are more physically able while women are nurturing and possess proficient interpersonal skills. From an early age, guardians encourage males to participate in physically demanding activities while girls are encouraged to participate in activities to develop interpersonal and verbal skills. Secondly, referred to as paternalism, gender roles may perpetuate the idea that men are protectors and leaders while women are fragile and need the protection and guidance of a man. A study conducted by Atkin et al. demonstrated that sedentary behavior was related to parents’ restriction of outside play in girls but not boys. Although the authors did not discuss why there may be this gender difference, one plausible explanation is that parents worry more about their daughters’ safety than their sons, demonstrating paternalism. Third, gender roles traditionally function through heteronormative relationships in which men need women to provide intimacy. Past studies have identified that active women are more likely to have their heterosexuality questioned and, subsequently, some women
avoid PA for fear of being portrayed as a lesbian. To our knowledge, no studies have directly assessed young women’s likelihood of being active while attempting to attract a male partner, but the studies discussed above demonstrate the possibility that a woman will avoid PA, particularly around men, while she tries to attract a partner. Lastly, gender discrimination, including physical safety and sexual objectification, plays a role in women’s ability to be active. For example, women are more likely to be harassed or assaulted in public. Subsequently, women are less likely than men to be physically active in public (e.g., cycling, walking, and running). The adverse outcomes caused by gender roles and discrimination are well-known in the PA and health literature, but the underlying driver of these phenomena is not well understood. The Ambivalent Sexism Theory concisely conceptualizes the complex relationship between gender roles and life outcomes, aside from PA. Therefore, the Ambivalent Sexism Theory may provide insight into how gender norms impact women’s PA.

The Ambivalent Sexism Theory, developed by Glick and Fiske, argues that sexism lives on a spectrum and can be benevolent or hostile. Benevolent sexism is covert sexism that presents as kind or flattering but perpetuates harmful gender norms. Benevolent sexism encompasses three constructs: gender differentiation, paternalism, and heterosexuality. Gender differentiation is the presumption that females and males possess specific gendered behaviors and traits. Paternalism describes a protector and subordinate relationship in that men are protectors, and women are fragile and need protection. Heterosexuality, in the context of benevolent sexism, demonstrates how
women fulfill men's need for intimacy and is the only case in which men need women. Hostile sexism is an overt form of sexism in which an individual blatantly resents women, particularly those who do not conform to traditional gender roles.\textsuperscript{57,62,77} After proposing the Ambivalent Sexism Theory, Glick and Fiske developed the Ambivalent Sexism Inventory (ASI) to measure the endorsement, or acceptance, of sexist attitudes and beliefs. Recently, the Experiences with Benevolent Sexism Scale (EBSS) was developed and provides a way to measure experiences of benevolent sexism independent of endorsement.

Another robust body of literature indicates that women report less self-efficacy than men and may partly explain the gender disparity in PA.\textsuperscript{35,48,109} For example, a study in college students (N = 324, 24.13 ± 0.04) assessed self-efficacy and PA levels and men accumulated significantly more PA than women and reported significantly higher self-efficacy. Due to this well-established gender disparity in self-efficacy, theoretically based physical activity interventions in women and other populations frequently target self-efficacy to elicit an increase in self-efficacy.\textsuperscript{110} However, these interventions typically do not address gender norms, despite the strong possibility of a relationship. Interventions may elicit more significant improvements in PA if the relationship between gender norms and self-efficacy is better understood. Therefore, this study aimed to 1) identify the associations among the endorsement of and experiences with sexism, self-efficacy, and physical behaviors and 2) determine the mediating effects of self-efficacy
on the association between sexism experience and endorsement and physical behaviors.

**Methods:**

**Recruitment and Participants**

Two hundred women were recruited via word-of-mouth and social media advertisements that briefly described the study. Most participants were in the Western Massachusetts area. Prospective participants had to be 18 - 30 years old, identify as a woman, reside in the United States, speak English, have no physical disabilities (e.g., use of an assistive device or wheelchair) that prevent them from participating in PA, and no cognitive barriers that would prevent them from understanding questions on the survey. All procedures were pre-approved by the [Institutional Review Board](#).

**Survey Administration**

All screening, informed consent completion, and survey responses were obtained via Qualtrics Survey Suite (Qualtrics, Provo, UT). All social media recruitment posts provided a link that directed prospective participants to a screener Qualtrics questionnaire that explained the study further and assessed eligibility based on the inclusion criteria mentioned above. Eligible participants were then directed to the informed consent document. After providing their electronic signature, participants were given an electronic copy of the informed consent and then directed to the survey. All Qualtrics screening, informed consent, and survey responses were automatically
uploaded to a secure Qualtrics database and subsequently uploaded to secure cloud-based storage approved by the university. Participants who completed the survey were entered into a raffle for a $100 gift card.

**Survey Measures:**

**Demographics**
Participants reported their age, height and weight, ethnicity/race, education level, household income, employment status, and sexual orientation. Gender identity was asked to identify participants who identify as women but are biologically transwomen.

**Physical Behaviors**
Sitting time (used as a proxy for sedentary behavior) and physical activity were measured using the International Physical Activity Questionnaire Short Form (IPAQ-SF). The IPAQ-SF has been found to be reliable (p=0.80) and has demonstrated criterion validity similar to other self-report tools (median p=0.30)\(^1\). Total moderate-to-vigorous physical activity (MVPA) was calculated by summing time spent walking, and time spent in non-walking MVPA. The times spent in each category were presented as a daily average. Metabolic equivalents minutes (MET-minutes) were also calculated to create an intensity-weighted measure of PA volume. Total MET-minutes were calculated by summing walking MET-mins, moderate MET-minutes and vigorous MET-minutes. Final PA outcomes consisted of average daily minutes of: SB, moderate PA, vigorous PA, MVPA, and total daily MET-minutes.

**Screen time**
Sedentary screen time behavior was measured using an 8-item questionnaire that has been used in previous studies. No validity and reliability data are available for this measure. The first four questions asked how many hours per weekday participants usually spent sitting or lying down while watching tv, using social media, communicating on the phone, and using the computer not for school or work. The next four questions asked about the same activities but for a usual weekend day. The possible responses included less than 1 hour a day, 1-3 hours a day, 4-6 hours a day, and 6+ hours a day, operationally defined as 1.0, 1.5, 5.0, and 7.0 hours per day. The total of all the responses was used to calculate a weighted average of daily screen time for a usual week.

Self-efficacy

Self-efficacy was measured using a 5-item questionnaire. The questionnaire asked about participants' confidence to participate in physical activity in a given situation (e.g. I am confident I can participate in physical activity when I am tired.). The score was calculated by summing all responses (range; 5 – 25) and presented as a continuous variable. The questionnaire demonstrated high internal consistency (α = 0.85).

Endorsement of Benevolent and Hostile Sexism

The Ambivalent Sexism Inventory (ASI) was used to measure benevolent and hostile sexism endorsement. The ASI is a 22-item scale in which 11 items measure benevolent sexism and 11 items measure hostile sexism. The averages of benevolent sexism and hostile sexism responses (range; 0 to 5) were calculated separately, with a
higher score reflecting greater endorsement of benevolent or hostile sexism, respectively. An individual score was also calculated for the individual benevolent sexism constructs: gender differentiation, paternalism, and heterosexuality. The total benevolent sexism and hostile sexism scores are presented as continuous variables.

**Experiences with Benevolent Sexism**

Experiences with benevolent sexism were measured using the Experiences with Benevolent Sexism Scale (EBSS). The EBSS is a 25-item questionnaire that was used to measure the frequency of experiences women have had with benevolent sexism in the last year or across their lifetime. Four different scores were calculated. An overall score was calculated by dividing the sum of all responses by the number of items (range; 0 to 6). A separate score was calculated for each benevolent sexism construct by dividing the sum of responses by the number of items assigned to each construct (gender differentiation, paternalism, and heterosexuality).

**Data Analyses**

**Bivariate Analyses**

Pearson correlations were used to assess the associations between the endorsement of and experiences with each form of sexism and 1) PA, 2) SB, 3) screen time, and 4) self-efficacy. Pearson correlations were also used to assess associations between all physical behaviors and self-efficacy. Physical behavior outcomes were skewed and, therefore, log-transformed for analyses. Due to the fact, that heterosexuality is a construct of benevolent sexism, independent associations were
calculated separately for heterosexual and bisexual participants. Separate analyses were not completed for the remaining sexualities due to small sample sizes. Participants who preferred not to report their sexuality were not included in the sexuality-specific bivariate analyses.

**Mediation Analysis**

Confirmatory factor analyses were performed to assess the internal validity of the ASI and EBSS. Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMSR) were used to assess the model fit of each confirmatory factor analysis. CFI values (range 0 – 1) closer to 1 and RMSEA and SRMSR values < 0.08 indicate a better fit. The model controlled for age, income, body mass index, and sexuality. Cronbach’s alpha was also performed on both measures.

Structural equation modeling (SEM) was used to test direct and indirect relationships between latent and observed variables. Structural equation modeling was a preferred method over multiple regression methods because SEM provides efficient modeling of multiple mediation pathways. Three separate structural models were tested. The full model included benevolent sexism experience, hostile sexism endorsement, and benevolent sexism endorsement as latent variables and self-efficacy, total weekly minutes of MVPA, and daily hours of sitting as observed variables [Figure IV.1]. The second model assessed effects among experiences with benevolent sexism, benevolent sexism endorsement and hostile sexism endorsement as latent
variables, and self-efficacy and total weekly minutes of MVPA as the two observed variables [Figure IV.2]. The third model assessed effects among the same latent variables, but with self-efficacy and hours per day of sitting as the observed variables [Figure IV.3].

![Figure IV.2: MVPA-Only Mediation Model](image)

![Figure IV.1: Full Mediation Model](image)
Table IV.1: Participant Demographics (N = 180)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (Mean ± SD)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 ± 3.6 years old</td>
</tr>
<tr>
<td><strong>BMI (Mean ± SD)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27.3 ± 7.7</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>66.0</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>11.1</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>8.8</td>
</tr>
<tr>
<td>Black/African American</td>
<td>5.0</td>
</tr>
<tr>
<td>Native American/American Indian</td>
<td>1.6</td>
</tr>
<tr>
<td>Multiple Race/Ethnicity</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>8.3</td>
</tr>
<tr>
<td>Single</td>
<td>89.4</td>
</tr>
<tr>
<td>Other</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>15.3</td>
</tr>
<tr>
<td>$10,000 - $29,000</td>
<td>22.0</td>
</tr>
<tr>
<td>$30,000 - $49,000</td>
<td>20.4</td>
</tr>
<tr>
<td>$50,000 - $79,000</td>
<td>19.1</td>
</tr>
<tr>
<td>$80,000 or more</td>
<td>22.3</td>
</tr>
<tr>
<td><strong>Sexuality</strong></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>49.4</td>
</tr>
<tr>
<td>Bisexual</td>
<td>27.2</td>
</tr>
<tr>
<td>Lesbian</td>
<td>6.6</td>
</tr>
</tbody>
</table>

Figure IV.3: Sitting-Only Mediation Model
Results

Descriptive Statistics

Twenty participants were removed from the analyses due to missing data. The participants (N=180; age=24 ± 3.6 years old) were healthy weight to obese, mostly white, heterosexual, single, and reported a wide range of income brackets (Table IV.1). The screen time scores, and PA outcomes were highly variable (Table IV.2). Benevolent and hostile sexism endorsement scores were moderate and low, respectively. For the benevolent sexism constructs, endorsement of gender differentiation scores was low but paternalism, and heterosexuality were moderate. Benevolent sexism experience scores and each individual construct were low.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Time (weighted hours/weekday)</td>
<td>2.2 ± 1.2</td>
</tr>
<tr>
<td>Screen Time (weighted hours/weekend day)</td>
<td>5.2 ± 2.9</td>
</tr>
<tr>
<td>Self-efficacy (range: 5 - 25)</td>
<td>12.8 ± 4.9</td>
</tr>
<tr>
<td>Benevolent Sexism Endorsement (range: 0 – 5)</td>
<td>1.5 ± 0.9</td>
</tr>
<tr>
<td>Gender Differentiation</td>
<td>1.8 ± 1.3</td>
</tr>
<tr>
<td>Paternalism</td>
<td>1.6 ± 1</td>
</tr>
<tr>
<td>Heterosexuality</td>
<td>0.9 ± 1</td>
</tr>
<tr>
<td>Hostile Sexism Endorsement (range: 0 – 5)</td>
<td>0.7 ± 0.8</td>
</tr>
<tr>
<td>Benevolent Sexism Experience (range: 0 – 6)</td>
<td>1.7 ± 0.9</td>
</tr>
<tr>
<td>Gender Differentiation</td>
<td>0.9 ± 1</td>
</tr>
<tr>
<td>Paternalism</td>
<td>1.8 ± 1</td>
</tr>
</tbody>
</table>
Bivariate Analyses

The associations in the full sample (n=180) were weak (r< |0.30|) except the associations between self-efficacy and total MET-minutes (r=0.31) and VPA (r=0.48; Table 3.1). Weak positive and negative associations were found between benevolent sexism endorsement and screen time, and MPA, respectively. Hostile sexism was not significantly associated with any physical behaviors or self-efficacy. Weak positive associations were found between benevolent sexism experience screen time and self-efficacy. Self-efficacy was positively and negatively associated with all PA outcomes and sitting, respectively. No association was found between self-efficacy and screen time.

Heterosexual Subsample

The associations in the heterosexual subsample (n=98) were weak (r< |0.30|) except the associations between self-efficacy and VPA (r= 0.40) and total MET-minutes (r= 0.32; Table 3.1). Weak positive and negative associations were found between benevolent sexism endorsement and screen time (r= 0.24) and MPA (r= -0.14), respectively. No significant associations were found between hostile sexism and physical behaviors or self-efficacy. A weak positive association was found between benevolent sexism experience and screen time (r=0.28). Moderate positive associations were found between self-efficacy and VPA (r=0.43) and total MET-minutes (r=0.40).

Bisexual Subsample
The associations in the bisexual subsample (n=98) were weak (r< |0.30|) except the associations between self-efficacy and VPA (r= 0.43) and total MET-minutes (r= 0.40; Table IV.3). Weak positive and negative associations were found between benevolent sexism endorsement and screen time (r=0.22) and MPA (r=-0.33), respectively. No significant associations were found between hostile sexism and physical behaviors or self-efficacy. A weak positive association was found between benevolent sexism experience and screen time (r=0.28).

<table>
<thead>
<tr>
<th>Table IV.3: Associations between Physical Behaviors, Self-efficacy, and Sexism Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full Sample (n=180)</strong></td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>BS</td>
</tr>
<tr>
<td>HS</td>
</tr>
<tr>
<td>BSE</td>
</tr>
<tr>
<td>Self-efficacy</td>
</tr>
<tr>
<td><strong>Heterosexual (n=98)</strong></td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>BS</td>
</tr>
<tr>
<td>HS</td>
</tr>
<tr>
<td>BSE</td>
</tr>
<tr>
<td>Self-efficacy</td>
</tr>
<tr>
<td><strong>Bisexual (n=49)</strong></td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>BS</td>
</tr>
<tr>
<td>HS</td>
</tr>
<tr>
<td>BSE</td>
</tr>
<tr>
<td>Self-efficacy</td>
</tr>
</tbody>
</table>

MPA= moderate physical activity; VPA = vigorous physical activity; MVPA = moderate physical activity; BS = benevolent sexism; HS = hostile sexism; BSE = benevolent sexism experience
bold values=significant correlation (p<0.05)

Confirmatory Factor Analyses
The model from the confirmatory factor analysis for the ASI resulted in an acceptable fit (CFI=0.86, RMSEA=0.07, SRMR=0.07). All items for hostile sexism and the respective benevolent sexism constructs loaded on the expected latent variable. The model for the confirmatory factor analysis for the EBSS (CFI=0.87, RMSEA=0.08, SRMR=0.06) resulted in an acceptable fit. All items for all three benevolent sexism constructs loaded on the expected latent variable. Cronbach’s alpha was excellent for both the ASI (α=0.96) and the EBSS (α =0.96).

**Mediation Analyses**

The mediation analyses resulted in three separate models. The full model included benevolent sexism experience, hostile sexism endorsement, and benevolent sexism endorsement as latent variables and self-efficacy, total weekly minutes of MVPA and daily hours of sitting as observed variables. Benevolent sexism and self-efficacy were tested as mediators. Significant positive direct effects were observed between benevolent sexism experience and benevolent sexism endorsement (β=0.24, p=0.009), benevolent sexism experience and PA self-efficacy (β=0.24, p=0.02), and hostile sexism endorsement and benevolent sexism endorsement (β=0.21, p=0.009). A significant negative direct effect was observed between benevolent sexism endorsement and total MVPA (β=-0.28, p=0.05). No significant mediation was observed. Due to the model’s below acceptable fit (CFI=0.78, RMSEA=0.06, SRMR=0.07), two separate subsequent models were tested; a MVPA-only model (MVPA as the only observed variable) and a sitting-only model (sitting time as the only observed variable) to improve the model fit.
The MVPA-only model [Figure IV.4] improved the model fit from the original full model (CFI=0.8, RMSEA=0.05, SRMR=0.07). Positive direct effects were found between benevolent sexism experiences and benevolent sexism endorsement (β=0.28, p=0.01), benevolent sexism experiences and self-efficacy (β=0.26, p=0.04), hostile sexism and benevolent sexism endorsement (β=0.56, p=0.00), and self-efficacy and MVPA (β=0.26, p=0.00). A negative direct effect was found between benevolent sexism endorsement and MVPA (β=-0.23, p=0.05). Self-efficacy positively mediated the relationship between benevolent sexism experience and MVPA (β=0.07, p=0.00).

The Sitting-Only model [Figure IV.5] improved the model fit from the original full model (CFI=0.79, RMSEA=0.05, SRMR=0.07). Positive direct effects were found between benevolent sexism experiences and benevolent sexism endorsement (β=0.24, p=0.01), hostile sexism and benevolent sexism endorsement (β=0.60, p=0.001), and benevolent sexism experience and PA self-efficacy (β=0.20, p=0.03). A negative direct
was found between self-efficacy and sitting ($\beta=-0.20$, $p=0.00$). No significant mediation was found.

Discussion

The purpose of this study was to assess relationships between the endorsement of benevolent and hostile sexism, experiences with benevolent sexism, physical behaviors, and PA self-efficacy. First, we hypothesized that endorsement of and experiences with benevolent sexism would be negatively associated with physical activity and PA self-efficacy, and positively associated with sedentary behavior (sitting and screen time). Secondly, we hypothesized that self-efficacy would significantly mediate the relationships between sexism outcomes and physical behaviors. Most of the associations were weak, and similarly, the effects observed in the mediation analyses were mostly non-significant.
The associations between sexism outcomes (benevolent sexism endorsement, hostile sexism endorsement, and experiences with benevolent sexism) and physical behaviors (sitting, screen time, MPA, VPA, MVPA, and total-MET-minutes) and self-efficacy were negligible to weak (r=-0.04 to r=0.27). Despite sexuality being a construct of the Ambivalent Sexism Theory, the associations examined in heterosexual and bisexual subsamples did not present any notable differences in associations or overall scores. A recent study conducted in New Zealand by Cowie et al. (2019) is the first study, to our knowledge, that assessed prevalence of benevolent sexism endorsement outside of heterosexual participants and found that heterosexual individuals have higher levels of endorsement of sexism than those who do not identify as heterosexual.\textsuperscript{74} The absence of differences between the heterosexual and bisexual subsamples in our study could be due to cultural differences between the United States and New Zealand such as a larger European-identifying population. Further, both heterosexual and bisexual participants can put the heteronormative language from the questionnaire into a similar context and therefore, provide similar answers.

Interestingly, some results contradicted the original hypotheses regarding benevolent sexism experiences in both bivariate associations and mediation. We observed a positive association between benevolent sexism experiences and self-efficacy (MVPA-only Model; $\beta=0.26$, $p=0.04$) and found that self-efficacy positively mediated the relationship between benevolent sexism experiences and MVPA ($\beta=0.07$, $p=0.00$). A possible explanation for the positive relationships found between benevolent
sexism experiences and self-efficacy is that the self-efficacy for physical activity questionnaire asks about barriers that are not innately related to being a woman and the benevolent sexism experiences questions are not related to physical activity. Therefore, the questions may not be specific enough to detect the proposed relationships between benevolent sexism experiences and physical activity. Unlike the current study, previous studies that have seen negative associations between experiences with benevolent sexism and self-efficacy have assessed self-efficacy related to situations that can be explained by the fact that the participant is a woman. For example, Dardenne et al., conducted a study in which women read job descriptions prior to taking a problem-solving assessment for the job.18 One form of the job descriptions used benevolent sexism undertones such as, “Industry is now restricted to choose women instead of men in case of equal performance. You’ll work with men only, but don’t worry, they will cooperate and help you to get used to the job. They know that the new employee could be a woman, and they agreed to give you time and help.” Women who received the benevolent sexism instructions did significantly poorer than those who had hostile sexist or neutral job descriptions. The researchers directly targeted a woman’s self-efficacy related to gender norms rather than non-gender related barriers such as those asked in the PA self-efficacy measure. Researchers should consider creating questions to measure self-efficacy in the face of gender-specific barriers and experiences with benevolent sexism in physical activity contexts. For example, researchers could assess a women’s self-efficacy when someone is treating her as incompetent during physical activity.
activity rather than her self-efficacy to be physically active due to weather or other non-gender specific barriers.

The results also showed that self-efficacy mediates the positive relationship between benevolent sexism experiences and MVPA, but that benevolent sexism endorsement negatively impacts MVPA. These results suggest that a woman’s actions after experiencing benevolent sexism predicts their PA rather than the experience alone. For example, if two women experience benevolent sexism one may internalize those experiences while the other may decide to combat the implicit messages in those experiences. It is also possible that the ability to combat those experiences is reliant on the magnitude of those experiences and as previously mentioned, the participants in the current study reported relatively less frequent experiences with benevolent sexism.

The current study had strengths including the novelty of the research question and strong statistical analyses. The current study provided a new perspective and approach to further exploring the gender disparity in physical behaviors. First, although decades of research show the strong impact gender norms have on women’s physical behaviors, the impact of those experiences and attitudes have yet to be conceptualized and quantified. This study demonstrates a less abstract way to assess qualitative data regarding women’s sexist experiences in physical behavior contexts. Also, although qualitative data is vital to understanding women’s unique barriers to healthy physical behaviors, having a way to quantify these experiences can create a strong mixed-methods approach or give non-qualitative researchers a way to explore or control for
sexist experiences. Secondly, the application of SEM provides an assessment of causal relationships between variables and allows multiple relationships to be assessed in one model while controlling for error. The use of SEM has been identified as especially important for behavioral variables and exploratory research questions.

The current study also had several limitations. First, the sample was not very diverse in sexism scores and race/ethnicity. Compared to other studies in similar samples, our participants reported relatively low benevolent sexism experience scores.\textsuperscript{57,74} This could be because the current study used “In the past year...” wording option as the timeframe in the Experiences with Benevolent Sexism Scale rather than the “In your lifetime...” option. Participants may have reported higher scores if the questions were not limited to the past year. Notably, some participants directly stated at the end of the survey in a “Comments” section that they have not dated in the past year or longer, and subsequently, did not have experiences to report. It is plausible that low, homogenous scores are insufficient when assessing associations between sexism scores and physical behaviors and self-efficacy. The lack of diversity in race and ethnicity is particularly important because research has found that the endorsement and experiences with benevolent sexism differs across races and ethnicities.\textsuperscript{113} A recent study conducted by Davis et al. (2022) assessed differences in the endorsement of benevolent sexism between white and black undergraduate students and found that black women and men endorse benevolent sexism significantly more than both white women and men.\textsuperscript{113} Further, aligned with past studies, black men expressed a
significantly higher endorsement of benevolent sexism than both white women and men.\textsuperscript{113,114} This is important because it is likely that black women have various interpersonal relationships with black men increasing their likelihood of experiencing benevolent sexism.\textsuperscript{113} Therefore, the current study design would benefit from including a substantially more diverse sample. Secondly, at the end of the survey participants were given the opportunity to express any additional thoughts they may have had. A notable comment identified how the heteronormative nature of the questions may impede a participant's ability to answer for their own personal views to provide what they perceive as a more inclusive answer. For example, one comment read, \textit{``The only thing that made me doubt my responses to some of the general questions in the first part of the survey is that the "man" "woman" wording kind of excludes people who aren't straight, so I wasn't inclined to respond that "a man is incomplete without a woman" for example because people might have different sexual orientations. I do not know if that affects the outcome, but that's what I was thinking.''} Based on this comment, the participant’s benevolent sexism endorsement score may be lower than their actual endorsement. Another concern expressed by two participants was the wording of the questions. One stated, \textit{``These questions were worded very strangely,''} and another said, \textit{``The validated instrument questions seemed awkward and outdated...''}. The ASI was developed in the early 1990s, therefore, it is more likely than not that the wording no longer reflects how benevolent sexism presents itself in today's society. For example, Fiske et al. (2010) conducted a study where undergraduate college women (N=78) were asked to write essays describing what it is like to be a woman.\textsuperscript{115} The researchers qualitatively
analyzed the essays by coding statements with the appropriate benevolent sexism construct. Results showed that 99% of essays showed that benevolent sexism is relevant to their lives. This speaks to the possibility that even though the wording of the ASI may be outdated, benevolent sexism is still significant in women’s lives. Therefore, the ASI may be unable to capture modern day endorsement of benevolent sexism. Future studies may benefit from validating an updated version of the ASI.

**Conclusion**

The current study explored the relationships between sexism outcomes, physical behavior, and self-efficacy for physical activity. Although many associations were small, several significant indirect and direct effects were observed. Future research should continue to explore these relationships with more diverse samples, more gender-specific measures of self-efficacy, PA-specific measures of experiences of benevolent and hostile sexism, and a modernized questionnaire to measure the endorsement of benevolent sexism.
V. DEVELOPMENT OF THE PHYSICAL ACTIVITY AND SEXISM EXPERIENCE SCALE

Introduction

Physical behaviors, described as physical activity and sedentary behavior, substantially impact an individual's health. Less than 50% of all adults in the United States are sufficiently active, but an even lower percentage of women are adequately active compared to their male counterparts. The gender disparity in PA puts women at a greater risk for adverse health outcomes than men. A large body of literature suggests that stereotypical gender norms play a substantial role in young women's inactivity as early as adolescence.

Across many aspects of life, young women are exposed to stereotypical gender norms as early as childhood. The acceptance of gender norms strengthens as girls enter adolescence when a significant decrease in physical activity is observed. A 2015 systematic review found that some adolescent girls feel pressured to maintain a feminine appearance which they find more difficult when participating in physical activity and sports. Further, previous studies have found that some young women who participate in PA, typically sports, feel pressure to compensate for their participation in “masculine” activities. The review concluded that adolescent girls have a complex relationship with physical activity due to the continuous negotiation between physical activity participation and presenting as feminine. The complex dynamic between activity
and femininity creates a unique barrier not observed in boys. Traditional gender norms become even more salient when adolescent girls transition to young adulthood, particularly due to life changes such as marriage and parenthood.\textsuperscript{31}

A large amount of literature supports that gender norms are a substantial barrier to physical activity in girls and young women but most studies have been conducted with older adolescent girls. Although physical behaviors in adolescence will likely continue into adulthood, young women may have even more barriers to PA. A 2023 systematic review synthesized the studies solely completed in young women highlighted how societal beliefs around feminine appearance and traditional gender roles in families are common barriers to their physical activity.\textsuperscript{121} For example, the women in the studies associated thinness with being the ideal feminine body in Western societies. They subsequently felt uncomfortable being active if they did not perceive themselves meeting those standards. A common life change in women, experienced soon after adolescence, is creating a family, which can further solidify traditional gender norms.\textsuperscript{31,32} Despite the progression to gender equality, recent research demonstrates that women, even those employed outside the home, still have more household responsibilities than men.\textsuperscript{31} Household responsibilities (e.g., cleaning, cooking, and childcare) are considered more appropriate tasks for women leading to the disproportion of household duties and less time for leisure-time PA.\textsuperscript{53} The underpinning factors perpetuating these gender norms, particularly in physical activity, are not fully understood; however, sexism has frequently been the focus in other areas of gender disparities research.
Sexism, the prejudice or discrimination against an individual of a specific gender, typically women, perpetuates the negative implications of gender norms, including those that impact physical activity.\textsuperscript{16,18,74,122} The Ambivalent Sexism Theory, developed by Glick and Fiske, states that sexist attitudes are hostile and benevolent and reside on a spectrum.\textsuperscript{16} Hostile sexism is an overt form of sexism that stems from prejudice against women, especially women who do not abide by stereotypical gender roles.\textsuperscript{16,71,115} A woman who participates in a male-dominated sport may experience hostile sexism from sexist men or women because the woman is actively combatting the stereotype. Benevolent sexism, however, is a covert form that can lead to several adverse outcomes such as poor cognitive performance, less opportunity to advance in the workplace, and experiencing cardiovascular stress.\textsuperscript{17,18,20,57} Unlike hostile sexism, benevolent sexism is multidimensional and comprised of three constructs: gender differentiation, paternalism, and heterosexuality. Gender differentiation is the belief that there are behaviors, activities, and personality traits that are only appropriate for a woman and those that are only appropriate for a man. Gender differentiation in physical activity can be observed as early as childhood when individuals start to guide girls toward more stereotypical girl activities that tend to be light intensity or sedentary.\textsuperscript{87,88} Paternalism suggests that women are fragile and incompetent and, therefore, need a man's protection and leadership. Physical activity research has shown that girls receive more assistance than boys during physical activity, which is associated with lower physical performance in girls. The research suggests that the decrease in performance is likely due to the implicit
message that girls are incapable and need more help than boys. Heterosexuality in the context of benevolent sexism describes how men only need women for intimacy. Although the role of heterosexuality is not discussed much in physical activity, one study found that some young women fear being mislabeled as non-heterosexual if they participate in "masculine" activities diminishing their chances of attracting a male partner. The connection between benevolent sexism and the barriers to physical activity in young women is theoretically sound. Still, there are no tools to measure how and the extent to which benevolent sexism is experienced in a physical activity context.

The Experiences with Benevolent Sexism Scale is a 25-item questionnaire developed to measure how frequently women experience benevolent sexism in the past year or across a lifetime. Although less studied, experiences with sexism measured by the EBSS have been linked to self-doubt but the negative relationships between experiences with benevolent sexism and life outcomes is less clear than the relationships between benevolent sexism endorsement and life outcomes. The EBSS could be used to quantify the relationship between general sexist experiences and physical activity. Still, the lack of questions regarding physical activity could deflate any relationship between sexist experiences and physical activity. Therefore, the aims of this study were to 1) use qualitative analyses to develop a questionnaire that quantifies young women’s sexist experiences in the physical activity domain and 2) in an independent sample, evaluate the validity of the questionnaire as a standalone scale and as a subscale of the EBSS.
Methods

Study Design

This study used a mixed-methods design including online surveys, focus groups, and one-on-one interviews using two independent samples. Sample 1 (N=200) responded to an online survey and a randomly selected subsample, stratified by physical activity, benevolent sexism and hostile sexism scores, completed focus groups (n=4 groups) and interviews (n=10). Focus groups and interviews were used because focus groups can elicit discussion and interviews can provide an opportunity for participants to be more open about their experiences and attitudes. Qualitative analyses were completed to develop the first draft of the Physical Activity Sexism Experience Scale (PASES). Sample 2 (N=544) responded to another online survey and was used to assess the psychometrics of the PASES.

Recruitment and Participant Demographics

Sample 1 required participants to be between 18 – 30 years old, identify as a woman, reside in the United States, speak English, and have no physical or cognitive disabilities that may prevent them from habitual physical activity or understanding questions on the survey, or during focus groups and interviews. Sample 1 participants (N=180; 20 lost due to missing data; age=24 ± 3.6), were mostly white (66%), heterosexual (49%), unmarried (89.4%), and reported a range of income brackets. Participants were recruited via social media and word-of-mouth. Participants who completed the survey were put in a raffle for a $100 gift card incentive.
Sample 2 was recruited with the same inclusion criteria in the Boston Metropolitan area. A total of 584 surveys were received but 157 survey responses were removed from the dataset due to incompletion or missing data. The participants (N=427; age=25 ± 3 years old) mostly white, heterosexual, unmarried, and reported a wide range of income brackets.

To select participants from Sample 1 for the focus groups and interview subsample (N=24), the full sample was stratified by tertiles for physical activity level, benevolent sexism scores, and hostile sexism scores. Two participants were randomly selected from each tertile for each stratification variable to balance focus groups. Next, ten participants were randomly selected from the full sample but, unlike the focus groups, they were not selected based on an outcome due the size of the remaining sample. Focus group participants and interview participants received a $25 and $40 gift card, respectively. The interviewees received higher compensation because interviews are designed to elicit a deeper, more vulnerable narrative from the participant than in focus groups. All participants electronically signed an informed consent before beginning the online survey. The Institutional Review Board at the University of Massachusetts Amherst approved this study and all its methods and material used.

Survey Measures

Participant Characteristics
The participants in Sample 1 and Sample 2 completed similar versions of the online survey. Both surveys asked participants to report their age, race/ethnicity, gender, height and weight, sexuality, education level, marital status, household income, employment status, state of residency, self-efficacy for PA, physical behaviors, sexism endorsement and sexism experience. However, the survey completed by participants in Sample 2 had additional questions that asked about self-efficacy when faced with sexism in a PA context, perceived social support for PA, and the PASES questions. Although identifying as a woman was an inclusion criterion, the survey still asked about gender to identify transwomen or gender-fluid individuals, not to exclude them, but to recognize that their experiences may be different from cis and feminine presenting women.

Physical Activity and Sitting Time

The International Physical Activity Questionnaire – Short Form (IPAQ-SF) measured physical behaviors, including PA levels and sitting time. The IPAQ-SF is a 7-item questionnaire that measures total time spent sitting and walking and time spent in moderate and vigorous PA in the past 7 days (e.g., During the last 7 days, how many days did you walk for at least 10 minutes at a time?). The total walking time and time spent in moderate and vigorous physical activity were used to calculate the total moderate-to-vigorous activity. The average daily time spent walking, and in moderate, vigorous, and moderate-to-vigorous PA were used to calculate metabolic equivalents minutes (MET-minutes). MET-minutes were calculated by multiplying the time spent
walking, in moderate and vigorous PA by assigned MET values (walking= 3.3, moderate = 4, and vigorous=8, respectively). The results from the IPAQ-SF yielded five outcome variables; total weekly minutes in moderate PA, vigorous PA, and moderate-vigorous PA, total weekly MET-minutes, and daily hours of sitting.

**Sedentary Screen Time**

Screen time, a surrogate for total sedentary time, was measured using an 8-item questionnaire that has been used previously. The questionnaire includes four questions about typical screen time during weekdays and the same four questions but for a typical weekend day (e.g., During a regular weekend, how many hours each day did you spend sitting/lying down while on social media?). The response options were less than 1 hour a day, 1-3 hours a day, 4-6 hours a day, and 6+ hours a day; operationally defined as 1.0, 1.5, 5.0, and 7.0 hours per day. The sum of the responses was used to calculate a weighted average of daily screen time for a typical week.

**Benevolent Sexism and Hostile Sexism Endorsement**

The Ambivalent Sexism Inventory (ASI) was used to measure benevolent and hostile sexism endorsement. The ASI is a 22-item scale in which 11 items measure benevolent sexism, and 11 items measure hostile sexism. Responses were on a 6-point Likert scale that ranged from Disagree Strongly (0) to Agree Strongly (5). The eleven benevolent sexism questions include questions specific to the constructs, paternalism (4 questions), gender differentiation (3 questions), and heterosexuality (4 questions). The ASI has demonstrated reliability across six samples of young adults ($\alpha = 0.83 - 0.92$).
The average of benevolent sexism responses and hostile sexism responses were used to calculate separate scores, with a higher score reflecting a greater endorsement of each form of sexism.

**Benevolent Sexism Experiences**

The Experiences with Benevolent Sexism Scale (EBSS) is a 25-item questionnaire used to measure the frequency of experiences women have had with benevolent sexism in the last year or across their lifetime. The scale consisted of three subscales for each benevolent sexism construct. The EBSS is on a 6-point Likert scale. The responses included 1 = the event never happened, 2 = the event happened once in a while (less than 10% of the time), 3 = the event happened sometimes (10-25% of the time), 4 = the event happened a lot (26-49% of the time), and 5 = the event happened most of the time (50% - 70% of the time), 6 = the event happened almost all of the time (more than 70% of the time). An average score was calculated by dividing the sum of responses by the number of items (range; 0 to 6). The subscales have been found to be reliable (α; Paternalism=0.85, Heterosexuality=0.82, Gender Differentiation=0.81) in young to middle-aged women (N=216, age=36.38±11.54).

**Experiences with Sexism in Physical Activity Settings**

Experiences with benevolent sexism in the context of physical activity settings was measured using the Physical Activity Sexism Experience Scale (PASES). The PASES is a 16-item questionnaire that asks participants to report the frequency of
different sexist experiences related to physical activity. The same 6-point Likert scale and responses that are used in the EBSS were used for the PASES.

An exploratory factor analysis was performed to assess the construct validity of the PASES. Items that cross-loaded or did not have a loading factor greater than |0.30| were removed from the questionnaire. A second exploratory analysis was conducted after removing those items to assure no cross-loading or lack of loading existed across constructs. The factor loadings are presented for each item within gender differentiation, paternalism, heterosexual intimacy, and hostile sexism.

**PASES and EBSS-PA Validity**

A separate exploratory factor analysis was performed to assess a modified version of the EBSS, the EBSS-Physical Activity (EBSS-PA). The EBSS-PA was the original EBSS with the addition of the final PASES questions. The analysis was conducted to provide another measure of benevolent sexism experiences that includes both general and physical activity benevolent sexism experiences to potentially improve the assessment of relationships between sexism and physical activity behaviors and self-efficacy.

**Survey Administration**

The Qualtrics Survey Suite (Qualtrics, Provo, UT) was used to create sequential online surveys for study information, screener questions, Informed Consent, and primary survey. Qualtrics is a secure online survey software approved for behavioral research at the University of Massachusetts Amherst. Prospective participants selected a link from a
social media recruitment post or through word-of-mouth email message, which directed them to a Qualtrics Study Information Survey. Following a description of the study, the survey asked if they were interested in participating and were automatically directed to a Qualtrics Screener Survey if they selected “Yes.” After completing the Screener Survey, ineligible participants were directed to an end screen explaining their ineligibility, and eligible participants were directed to a Qualtrics Informed Consent. The participants that agreed to participate in the study were provided a link to download a PDF copy of the Informed Consent before being directed to the primary Qualtrics Survey. Each Qualtrics Survey took approximately 15 – 30 minutes (15 ± 13 minutes) to complete. The survey data was automatically uploaded to a secure Qualtrics database in real-time. Most responses (62%) were recorded within four weeks of recruitment initiation and the survey closed after six weeks following the successful recruitment of the target sample participants (N=200). The complete dataset in the Qualtrics database was backed up to a secure university-supported cloud storage.

Focus Groups and Interviews:

Four 90-minute focus groups (n=14 participants total, 3-4 participants per group) and ten 30-minute interviews (n=10) were conducted. Prior to random selection for focus group or interview, all participants from Sample 1 (N=200) were stratified into tertiles based on scores from three main outcomes; benevolent sexism scores, hostile sexism scores, and total MET-minutes. A random number generator was used to select participants from each tertile by participant id. The participants were only invited to
participate in a focus group or interview if they indicated such interest on the informed consent. Participants who were randomly selected but did not check that they were interested or were already selected to participate in a focus group or interview were not contacted; another participant was randomly selected until an eligible participant was identified. Stratified randomization was used to create balanced focus groups for each stratification variable with two participants for each tertile (n=6 per focus group; Figure 2.1). Due to scheduling difficulties, the focus group based on benevolent sexism tertiles was broken into two focus groups, creating a total of four separate focus groups rather than three. The randomization by outcome tertiles was more restricted for interviews due to a smaller remaining sample.

Figure V.1: Focus Group and Interview Recruitment from Sample 1

Focus Group and Interview Procedures
The remote, semi-structured focus groups and interviews were video- and audio-recorded on Zoom (Zoom Video Communications, San Jose, California). The participants were sent a private Zoom link via email before the session. All procedures for the focus groups and interviews were the same, except the questions were slightly reworded for the interviews to refer to one person rather than a group. The lead author moderated all focus groups and interviews. The participants’ names on Zoom were changed to a pseudonym of their choice once they were given access to the Zoom session. The moderator began recording once names were changed and all participant questions were answered. After completing the sessions, the video and audio recordings were uploaded to secure cloud-based storage.

Transcriptions

Each audio file was processed through Otter.ai (Los Altos, CA) to automatically produce a raw transcription for each focus group and interview. Two researchers independently listened to the audio and edited any errors observed in the automatic transcript. A separate researcher assessed both files in tandem to address any differences and then saved the final transcription used for the subsequent qualitative analysis.

Data Analyses

Descriptive and Summary Statistics
Means and standard deviations for the combined focus group and interview participants (n=24) were calculated for age, physical behavior outcomes, and sexism endorsement and experience scores. The physical activity data, screen time scores, and sexism scores were evaluated for normality using skewness and kurtosis. Non-normally distributed data were log-transformed and were used in subsequent parametric analyses.

Qualitative Analysis

Four trained research assistants (two men and two women) and the principal investigator (woman) used open-coding to identify themes throughout the transcripts. The analysis was completed in a five-step process. In Step 1, each research assistant was randomly assigned to analyze two focus group transcripts and 2-3 interview transcripts, and the principal investigator analyzed all focus groups and interview transcripts. Three researchers were assigned to each focus group transcript, and two researchers were assigned to each interview. The researchers independently analyzed assigned transcripts to identify overarching themes and categorize each theme as Gender Differentiation, Paternalism, Heterosexuality, Hostile Sexism, or Neutral. The researchers added themes and individual quotes to a spreadsheet specifying the focus group or interview they extracted the theme from, the participant’s pseudonym, and the time stamp in the transcript. In Step 2, each pair of researchers that coded the same session discussed their independent results and agreed on which themes and quotes to include in the results. After deliberation, each pair of researchers created a second
spreadsheet with their combined themes. In Step 3, the principal investigator created a
new file to compile the themes and quotes from the two files created by each pair of
research assistants. In Step 4, a fifth researcher who was not involved in conducting the
sessions or in the initial analyses assessed the compilation of themes produced by the
principal investigator. In Step 4, the entire research team reviewed the themes and
reached a final consensus as to which themes would be included in the results.

Physical Activity and Sexism Experience Scale Development

The results from the qualitative analysis and the questions on the ASI and EBSS
were used to inform the development of the PASES. The themes and their respective
quotes were reviewed, and prospective questions were drafted. The ASI questions were
reviewed, and the appropriate questions were reworded to fit into a physical activity
context and to reflect an experience rather than the endorsement of sexism. Similarly,
the EBSS was reviewed, and appropriate questions were reworded to fit into a PA
context. After a group consensus, the first version of the PASES yielded a 16-item
questionnaire with the same six response options that are used on the EBSS.

Psychometrics

Sample 2, an independent sample (N=427) of women, primarily recruited by
targeted social media posts in the Boston Metropolitan area was recruited using the
same methods in the first study (Sample 1). The data from Sample 2 was used to
assess the psychometrics of the ASI, EBSS, and PASES. Confirmatory analyses for the
ASI and EBSS were repeated for Sample 2. An exploratory factor analysis with a Promax rotation was performed for the PASES questionnaire. Per standard practices, items that cross-loaded onto two or more factors or loaded onto a factor with a loading value less than |0.30| were removed and a second EFA was performed. Items that did not meet the previously described criteria were removed and the remaining items were used for the final version of the PASES questionnaire. The number of eigenvalues greater than one was used as the number of factors in the EFA. Cronbach’s alpha was used to assess the internal consistency of the final version of the PASES.

Results

Focus Group and Interview Participant Demographics

The focus group and interview participants (n=21, age=22.8 ± 6.1 years old) were mostly unmarried, white, and heterosexual. (Table V.1). Most of the participants held at least a bachelor’s degree (59%) but income brackets varied. The separate demographics for interviewees and focus group participants were similar in age, education status, income, marital status and sexuality. Participants reported low to moderate endorsement of benevolent sexism. Averages were similar across the total benevolent sexism scores (2.6 ± 0.7) and gender differentiation (2.3 ± 0.9), paternalism (2.8 ± 1) and heterosexuality scores (2.5 ± 0.9) (Table 2.2). Similarly, the average benevolent sexism experience scores for gender differentiation (1.7 ± 0.9), paternalism (2.0 ± 0.9), and heterosexuality (1.8 ± 0.8) were lower than those of benevolent sexism endorsement. The endorsement of hostile sexism was low (0.9 ± 0.7).
Focus Group and Interview Themes

The results from the focus group and interview analyses yielded six main themes and two sub-themes (Table V.3). All the themes included quotes that were coded as paternalism or gender differentiation except the quotes under Sexualization which were
coded as heterosexual intimacy or hostile sexism. Parental Influences on Physical Activity was the only theme that did not include quotes directly related to any of the sexism constructs and therefore, were labeled as not applicable. All of the themes included quotes from both focus group and interview participants demonstrating saturation.

Table V.3: Focus Group and Interview Themes

| Theme                              | Definition                                                                                                                                                                                                                                                                                                                                                      | Quotes                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| **Perceived Masculine Intimidation** | The perception of not belonging in male-dominated exercise spaces in the absence of experiencing negative interactions with males in the space                                                                                                                                                                                                                                                                             | “I’ve never really come across men who’ve been overtly disrespectful or creeped me out in the gym. Although, that’s always a potential. So there’s always that, kind of underlying fear, but also just like, Hm. I feel like kind of men at the gym always kind of put up this impression that, oh, we know what we’re doing.” – Serena (Interview) (P) |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | “I think as a woman going into a gym that is still very male dominated. And it’s just, you know, it’s hard to take up space in that way. So it’s a lot of just having to encourage yourself each day and like, force that confidence when you’re not feeling it.” Kylie (Interview) (GD) |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | I went with playing a sport that was male dominant, it was almost like I needed to keep up. I was always only female in the gym, it was almost like I needed to keep up or I’m going to lose my place. - Sophia (Focus Group) (P, GD) |
| **Physical Activity Incompetence Paradox** | The experience of being treated as incapable or less competent than males while also accepting the idea that women are innately less competent or physically capable to perform physical activities                                                                                                                                                                                                                                            | “Just like some more male geared activity that takes more masculine strength than like, you know, whatever. So during that, they’d be like, ‘Oh, you don’t have to do that.’ Or they’d say, you know, ‘oh, you can modify that’ or you know certain lifting techniques. Oh, if you can’t do a regular pushup, you can modify like it, you know, a girl pushup, and then I’m like, Okay, first off, we [women] strong out here. Don’t tell me what to do. We’re gonna try it out. And if it doesn’t work, then maybe I might try the other way, but at least give me like the opportunity to try instead just be like, Oh, but there’s a girl way to do it. Like, okay, I didn’t ask for that.” – Kourtnie (Interview) (GD) |
“that’s how I think my husband would be like, he’s, by giving me time saying like, ‘Oh, I’ll take this, you go do this.’ That’s kind of how I get supported. And then, like she said, being told, like what to do, like we used to go to the gym together. And so that was a lot easier to be like, Okay, you’re doing that. I’ll just do my modified version, because I can’t quite do that yet. But at least being told like this is a good workout plan.” - Elenor (Focus Group) (P)

“I’ll go on a run with a guy and they just, like forced me at a pace that’s uncomfortable, or I’ll be like, trying to lift and just feels like a lot of unnecessary pressure, or just like a lot of like, trying to push more on me than what’s comfortable, or just also like a feeling of insecurity, because they’ll have to be like, Oh, well look at like how much I can do, like, you know, like, it’s definitely been a way that’s been like, purposefully kind of like, oh, like, you know, you shouldn't be stronger” [than men] – Kylie (Interview) (P, GD)

“I think back to high school. Just because like obviously like there's boy meets and girl meets in track. So like when you run together like the coach is kind of always like I don’t know, expected the guys to go faster. So like you let the girls go first because the guys will end up lapping the girls”. “Yeah. Which like there wasn't really a problem. But like, it's just something that I noticed.” - Drew (Interview) (GD, P)

Unsolicited Social Support for Physical Activity

Incidents where males or others provide unsolicited support or guidance to women in physical activity settings

“I definitely have gotten the unsolicited advice, just like, oh, like, Are you sure you're using, you know, like, assuming that I'm using something wrong, or like, you know, trying to give pointers. And like, you know, I think there are a few of those people who maybe genuinely do like, to just be friendly, or they do that to other men too. But I think it's like, I think it's rare that a lot of those do that prompted to like another man at the gym, or like, at their athletics, you know?” Phoebe (Focus Group) (P)

“I can remember one in particular, where I was using the heavyweight bag, and I was like, practicing some boxing in the gym, and like a man came up to me and is like, Hey, can I give you some pointers, just like the very like, like, totally mansplaining this thing to me that I feel like I'd had, like, a good amount of like experience and knowledge with and that kind of, I think sums up like what most of those interactions have been, it's like, let me show you
<table>
<thead>
<tr>
<th>Choice of Physical Activity Type</th>
<th>The decision to choose or avoid a physical activity based on perceived self-efficacy or gender differentiation</th>
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<td></td>
<td>&quot;Because I think that I tend to shy away from things that I, like I perceive myself as not good at. Because I mean, I like to succeed, because you are human. Yeah. So like, if I know that I'm not going to be good at something, I just shy away from it in general. So and that's true across the board, but like, specifically for physical activity as well, if I if I know that I'm not going to be good at it, or it's going to be challenging, I tend to shy away from it.&quot;– Kathleen (Interview) (NA)</td>
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<td>&quot;Definitely, like there's certain sports I've strayed from, because I feel like they're, you know, more for guys or like even CrossFit, certain things like that, that are interesting. To me. I just feel like I don't know. I feel like that's why I haven't but I don't know my some of that might be my own perception&quot;– Kylie (Interview) (GD)</td>
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<td>&quot;Alot of the sports I did were gendered like the softball, it was all girls so there was like that sort of space. Yoga honestly, mostly all women so it's interesting. And like, I have chose these spaces that with people who share my gender identity.&quot;– Sarah (Interview) (GD)</td>
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<table>
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<tr>
<th>Paternal Influences on Physical Activity</th>
<th>The encouragement from paternal figures to participate in physical activity typically familiar to the paternal figure</th>
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<td>&quot;And then I played soccer for a couple of years, because my dad loves soccer. And so, like, he kind of like he would help me with that.&quot;– Beth (Focus Group) (NA)</td>
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<td>&quot;In high school, I did track. My dad's like, he loves track. He loves sports. So he pushed me to do that for sure.&quot;– Kylie (Interview) (NA)</td>
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<td></td>
<td>&quot;So my dad is a runner, like in high school, he's always been one he still is. So that's definitely what I was encouraged to do just because it's why he does. And also, I never really was good at any other sports like catching and throwing. So like running was the best thing for me to do.&quot;– Ann (Focus Group) (NA)</td>
</tr>
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</table>
Main Theme:
The consistent occurrences of actions or thoughts to avoid being perceived and/or sexualized by males

Sub-themes:

Anger towards Sexualization
The anger experienced due to being sexualized and/or harassed in physical activity settings

Early-Age Sexualization
The experience of being sexualized in physical activity settings in childhood or adolescence

Sexualization:
"But I was standing with her, and he's just looking her body up and down. And I'm just like, I think there's a lot of sexual harassment in the gym. And when I've worked at gyms, like, you know, as an instructor, there's been a lot of like, harassment, like a lot of sexual harassment in gym settings, especially when you work there. So I think there's a lot of issues of that." – Kylie (Interview) (H)

"Because like [describing why she has to wear certain clothing during exercise], I know I'm gonna get sexualized, like, I don't sexualize my boobs as much, but that I know that like other people do. So then I feel like I have to be aware of like, cleavage and stuff." Drew (Interview) (HI)

Anger towards Sexualization:
"The reason I kind of went outdoors in the first place was because I was always not comfortable going to the gym whatsoever. I mean, I would even like get catcalled in the gym and I'm like Dude, I'm just trying to exercise! Get out! So I felt like that would prevent me a lot." – Lizzie (Focus Group) (H)

"No. It's the same amount of anger and disgust. Like 'Go mind your business, like let people mind their business. Like go away.'" – Drew (Interview) (H)

"I feel wearing tight clothing [clothing she feels she cannot wear] and feeling like you kind of have to hide your body in a sense, so they won't look like it's just like, I'm gonna wear what I want but I definitely know that like I just kind of have to ignore it at this point or just be blatant. When someone's like coming up to me and being creepy. I'll just be like, Get out of my face bye." – Kylie (Interview) (H)

Early-Age Sexualization:
"I was also told, like, make sure you know, your shorts aren't as tight as they normally are, even though again, it was our regular soccer uniform. Which for me, you know, I guess now that I, you know, grown to realize that, you know, This shouldn't have happened for me was very normalized, to think this way and think that I have to present myself even if it was very innocent, you know, I'm not showing, you know, my body out, I'm just wearing a simple uniform that, quite frankly, was sexualized from a young age." Lizzie (Interview) (HI)

"So like, pretty much my whole high school experience was, like, you know, just having enormous boobs and like, all of the anxiety that"
Sample 2 — Summary Statistics

Sample 2 participants reported variable hours sitting and screen time per day and total weekly minutes of MPA, VPA, MVPA, and total MET-minutes (Table V.4). Participants reported low to moderate benevolent sexism endorsement scores, low hostile sexism endorsement scores, moderate benevolent sexism experience scores, and moderate to high physical activity sexism experience scores. The physical activity sexism experience scores were significantly higher than benevolent sexism experience scores (CI= -0.50 to -0.36, p< 0.000). The lowest benevolent sexism endorsement score was the paternalism score (1.8 ± 1) while the endorsement of gender differentiation and heterosexuality were the same (2.0 ± 1.1). The experiences with benevolent sexism scores were similar across the total score, gender differentiation, paternalism, and heterosexuality (mean range: 2.4 – 2.5; standard deviation range: 0.8 – 0.9).
Physical Activity and Sexism Experience Scale Validation

The initial PASES had 16-items including those specific to gender differentiation (5 questions), paternalism (4 questions), heterosexual intimacy (3 questions), and hostile sexism (3 questions). Four factors were identified from eigenvalues. The first EFA resulted in the item, “You have been discouraged to participate in a stereotypical “boy” sport by a maternal/female guardian,” cross-loading onto Factors 1 (0.33), and 4 (0.59). A second EFA was performed with the remaining 15-items and the item, “People offered to “go easy” on you while participating in physical activity,” cross-loaded onto Factors 2 (0.36) and 3 (0.32) and was therefore, removed from the final questionnaire (Table V.5).
The final 14-item PASES demonstrated excellent internal consistency ($\alpha=0.88$) [Appendix A].

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have been told you should not participate in a physical activity because it is dangerous (P)</td>
<td>0.55</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You have been encouraged to participate in stereotypical “girl” activities as a child and/or adult (dance/cheerleading/gymnastics/etc.) (GD)</td>
<td>0.49</td>
<td>0.16</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>People offered to help you do something physical (carry bags/yard work/etc.) when you did not ask (P)</td>
<td>0.58</td>
<td>-</td>
<td>-</td>
<td>-0.13</td>
</tr>
<tr>
<td>You have been told that certain types of physical activities will make you look manly and/or bulky (GD)</td>
<td>0.98</td>
<td>-0.25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You have been told that participating in certain types of physical activities will make you less attractive to men (H)</td>
<td>0.90</td>
<td>-0.17</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>People offered to “go easy” on you while participating in physical activity (P)</td>
<td>0.60</td>
<td>0.10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You felt the need to look feminine (hair, makeup, feminine clothing) when participating in physical activity (GD)</td>
<td>0.19</td>
<td>0.35</td>
<td>0.10</td>
<td>-</td>
</tr>
<tr>
<td>You have been discouraged to participate in a stereotypical “boy” sport by a paternal/male guardian (GD)</td>
<td>0.33</td>
<td>-0.11</td>
<td>-</td>
<td>0.59</td>
</tr>
<tr>
<td>You have been discouraged to participate in a stereotypical “boy” sport by a maternal/female guardian (GD)</td>
<td>-</td>
<td>0.11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You observed other women being sexualized in a physical activity setting (H)</td>
<td>-</td>
<td>0.17</td>
<td>0.63</td>
<td>-</td>
</tr>
<tr>
<td>You felt like you were being sexualized during a physical activity (HI)</td>
<td>-</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>You feared being judged or stared at while being physically active (H)</td>
<td>-0.19</td>
<td>0.75</td>
<td>0.25</td>
<td>-</td>
</tr>
<tr>
<td>You feared being perceived as incompetent in a physical activity setting (P)</td>
<td>-0.23</td>
<td>1.01</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You exercised to achieve a body type/shape that you believe men are attracted to (HI)</td>
<td>0.15</td>
<td>0.33</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You avoided exercise due to your body size or shape (HI)</td>
<td>-</td>
<td>0.65</td>
<td>0.19</td>
<td>-</td>
</tr>
<tr>
<td>You perceived that others assumed you were incapable of a sport, exercise or physical task (P)</td>
<td>-</td>
<td>0.66</td>
<td>-0.13</td>
<td>-</td>
</tr>
</tbody>
</table>

GD = Gender differentiation, P= Paternalism, HI= Heterosexual Intimacy, H= Hostile Sexism

The remaining 14-items loaded onto one of the four factors, but the factors were not related to the hypothesized benevolent sexism constructs or hostile sexism (Table V.5). Factor 1 included items that were originally labeled as Paternalism, Gender Differentiation, Heterosexual Intimacy, and Hostile Sexism. The items from Factor 1 all related to perception rather than a specific sexism construct. Factor 2 included items that were originally labeled as Paternalism, Gender Differentiation, and Hostile Sexism but
were all related to the discouragement of different activities. Factor 3 included two items that were originally labeled Gender Differentiation and Paternalism and used positive language to address undermining and patronizing behaviors. Factor 4 included a Hostile Sexism and Heterosexual Intimacy item, and both asked about sexualization.

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>You felt the need to look feminine (hair, makeup, feminine clothing) when participating in physical activity (HI)</td>
<td>0.35</td>
<td>-</td>
<td>0.11</td>
<td>0.13</td>
</tr>
<tr>
<td>You feared being judged or stared at while being physically active (H)</td>
<td>0.73</td>
<td>- 0.16</td>
<td>-</td>
<td>0.26</td>
</tr>
<tr>
<td>You feared being perceived as incompetent in a physical activity setting (P)</td>
<td>1.06</td>
<td>-</td>
<td>- 0.16</td>
<td>-</td>
</tr>
<tr>
<td>You exercised to achieve a body type/shape that you believe men are attracted to (HI)</td>
<td>0.33</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You avoided exercise due to your body size or shape (HI)</td>
<td>0.65</td>
<td>-</td>
<td>-</td>
<td>0.20</td>
</tr>
<tr>
<td>You perceived that others assumed you were incapable of a sport, exercise, or physical task (P)</td>
<td>0.64</td>
<td>-</td>
<td>0.11</td>
<td>0.13</td>
</tr>
<tr>
<td>You have been told you should not participate in a physical activity because it is dangerous (P)</td>
<td>-</td>
<td>0.33</td>
<td>0.28</td>
<td>-</td>
</tr>
<tr>
<td>You have been told that certain types of physical activities will make you look manly and/or bulky (GD)</td>
<td>- 0.14</td>
<td>0.96</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>You have been told that participating in certain types of physical activities will make you less attractive to men (H)</td>
<td>-</td>
<td>1.00</td>
<td>-</td>
<td>0.14</td>
</tr>
<tr>
<td>You have been discouraged to participate in a stereotypical “boy” sport by a paternal/male guardian (GD)</td>
<td>-</td>
<td>0.56</td>
<td>- 0.15</td>
<td>-</td>
</tr>
<tr>
<td>You have been encouraged to participate in stereotypical “girl” activities as a child and/or adult (dance/cheerleading/gymnastics/etc.) (GD)</td>
<td>-</td>
<td>0.12</td>
<td>0.50</td>
<td>-</td>
</tr>
<tr>
<td>People offered to help you do something physical (carry bags/yard work/etc.) when you did not ask (P)</td>
<td>- 0.19</td>
<td>-0.19</td>
<td>1.11</td>
<td>-</td>
</tr>
<tr>
<td>You observed other women being sexualized in a physical activity setting (H)</td>
<td>0.15</td>
<td>-</td>
<td>-</td>
<td>0.66</td>
</tr>
<tr>
<td>You felt like you were being sexualized during a physical activity (HI)</td>
<td>- 0.12</td>
<td>-</td>
<td>-</td>
<td>0.97</td>
</tr>
</tbody>
</table>

GD = Gender differentiation, P= Paternalism, HI= Heterosexual Intimacy, H=Hostile

Experiences with Benevolent Sexism - Physical Activity Sexism Experiences Subscale Validation

The Experiences with Benevolent Sexism Scale with the addition of the PASES questions as a subscale (EBBS-PA) included a total of 39 items (EBBS=25 items; PASES=14 items). Nine potential factors were identified from eigenvalues, but four
factors were used to represent each of the three benevolent sexism constructs and hostile sexism. After the initial EFA, four items were removed due to insufficient loading factors (<|0.03|) and cross-loading. Questions 10 (Romantic Partners expected you to please them through physical intimacy? - Heterosexual Intimacy) and 24 (Others provided you with financial support? – Heterosexual Intimacy) from the EBSS were removed from the EBSS-PA due to insufficient loadings. Questions 4 (You have been told that certain types of physical activities will make you look manly and/or bulky?) and 5 (You have been told that participating in certain types of physical activities will make you less attractive to men?) from the PASES both cross-loaded onto Factor 2 and Factor 4, and therefore, were removed from the EBSS-PA. After the second EFA, question 18 on the EBSS (You've been on a date and your date makes the decision where to go for dinner?) and question 13 from the PASES (You feared being perceived as incompetent in a physical activity setting?) from the PASES did not load onto any factor and were therefore, removed. The final EBSS-PA included 33 items and resulted in poor internal consistency (α=0.02).

Discussion

The aim of this mixed-methods study was to use results from focus groups and interviews in young women who participated in an online survey to develop a questionnaire to quantify physical activity-related sexist experiences by assessing the validity of the PASES as a stand-alone questionnaire as well as a subscale for the EBSS. The final PASES included 14 items and were found to be valid, however, the
combination of the EBSS and PASES showed poor internal validity. Further, although
the questions from the PASES did load onto 4 different factors, the questions did not
load onto hypothesized factors including hostile or benevolent sexism constructs.

The qualitative analyses presented themes observed in previous studies but also
resulted in three key themes that, to our knowledge, have yet to be presented in other
studies. First, Perceived Masculine Intimidation demonstrated that women do not need
to experience direct intimidation from men to feel intimidated or uncomfortable in PA
settings. Serena, an interviewee, stated that, "I've never really come across men who've
been overtly disrespectful or creeped me out in the gym. Although, that's always a
potential. So there's always that like, kind of underlying fear, but also just like, Hm. I feel
like kind of men at the gym always kind of put up this impression that, oh, we know what
we're doing. And like, we have the right to judge how you use the gym" – Serena.
Another participant expanded on this by explaining her concern when participating in
male-dominant sports despite not experiencing negative interactions when men: “I went
with playing a sport that was male dominant, it was almost like I needed to keep up. I
was always, like, only female in the gym, it was almost like I needed to keep up or I'm
going to lose my place. - Sophia The fact that women feel intimidated without directly
experiencing intimidation suggests that internalization of gender norms has an effect
independent of intimidating experiences on women’s PA participation. Another notable
theme was the Physical Activity Incompetence Paradox which describes women’s overt
objection to paternalistic views on women’s physical abilities while also covertly
accepting these views. Kourtnie, an interviewee, expressed this phenomenon best when

105
she stated, "Just like some more male geared activity that takes more masculine
strength. So during that, they'd be like, 'Oh, you don't have to do that.' Or they'd say, 'Oh
you can modify that.' Or for even certain lifting techniques. 'Oh, if you can't do a regular
pushup, you can modify like it, you know, a girl pushup.' and then I'm like, 'Okay, first off,
we [women] strong out here. Don't tell me what to do. We're gonna try it out. And if it
doesn't work, and then maybe I might try the other way, but at least give me like the
opportunity to try instead just be like, Oh, but there's a girl way to do it.' Like, okay, I
didn't ask for that." Although she demonstrates strong views on women being capable of
activities, she begins her statement by identifying certain activities as needing masculine
strength implying that men innately have strength that women do not. A similar
phenomenon was observed in a previous study conducted by Gul and Kuper (2019) in
which they found that women were more attracted to men who endorsed benevolent
sexism despite also identifying men who endorse benevolent sexism as undermining
and patronizing.\textsuperscript{73} The study identified that women perceived a man’s endorsement of
benevolent sexism as a sign of the man’s willingness to invest in a romantic relationship.
However, despite the similar paradox observed in the current study, the data are not
sufficient to identify the source of the phenomenon. It has, however, been shown in PA
and gender norms research that girls and young women frequently negotiate maintaining
their gender identity and femininity while also attempting to be active.\textsuperscript{33} Therefore, it is
possible that the participants in our study felt pressure to covertly state that women may
be less competent in physical activities than men to avoid appearing less feminine.
Lastly, Paternal Influences on Physical Activity, the paternal support for PA participation,
demonstrated how father-figures encourage their daughters to participate in physical activities that the father-figures have participated in currently or in the past. For example, one focus group participant stated, “And then I played soccer for a couple of years, because my dad loves soccer. And so, like, he kind of like he would help me with that.” - Beth. Similarly, Kylie, and interviewee, stated, “In high school, I did track. My dad like, he loves track. He loves sports. So he pushed me to do that for sure.” These results align with results from a previous (unpublished) pilot study conducted by the authors of the current study. The pilot study was a mixed-methods design in which participants’ physical activity, and ambivalent sexism endorsement was measured followed by a focus group from a subsample of the participants. The results of the study showed that the participants who had paternal figures in their lives encouraged physical activity that they themselves had previously participated in. Importantly, those women with a paternal influence were more active than the women without. Further, this theme was the only one that did not include quotes coded as a sexism construct. These results suggest that the barriers to PA due to gender identity are complex and likely are not solely explained by sexism constructs.

The PASES questionnaire was found to be valid and did load onto four separate factors, however, the questions originally coded for each sexism construct (gender differentiation, paternalism, heterosexuality, and hostile sexism) did not load on the predicted construct. Instead, items appeared to correlate mostly based on the language of the question rather than underlying constructs. First, Factor 1 related to how a woman
feels she is being perceived. For example, one question that loaded onto Factor 1 was meant to represent paternalism (“You feared being perceived as incompetent in a physical activity setting?”) and another question was meant to represent heterosexual intimacy (You exercised to achieve a body type/shape that you believe men are attracted to?). Although the items were meant to measure two different constructs, the underlying theme of perception was captured more so than paternalism and gender differentiation. The impact of language was more apparent with Factors 2 and 3 because the items in each factor used negative and positive language, respectively. The items from Factor 2 were related to women being discouraged to participate in activities due to safety and appearing manly or unattractive to men. In contrast, the items from Factor 3 all included positive language related to the way in which people provide support to women. Despite both factors including items related to paternalism and gender differentiation, the items defaulted to items with similar language. The similarity in language may hinder the scale from measuring experiences with specific benevolent sexism constructs. For example, the Experiences with Benevolent Sexism Scale shows more variety in the way questions are asked. For example, the EBSS has a paternalistic question that asks, “People question your ability to handle yourself in different situations?” and another that asks, “You have been prohibited from doing something because others (such as parents or romantic partners) thought that you might get hurt?” The analogous questions from the PASES include, “You perceived that others assumed you were incapable of a sport, exercise, or physical task?”, and “You have been told you should not participate in a physical activity because it is dangerous? Due
to the similarities between the questions from both scales, it was expected that both of
the paternalistic questions would load onto the same factor. However, unlike the EBSS,
there were three other questions on the PASES that began with, “You have been told...”.
Further, as mentioned previously, many of the quotes from the qualitative analysis
presented as more than one benevolent sexism construct. Factor 4 included the
questions that used the term “sexualization”. One of the questions was originally
expected to relate to heterosexual intimacy (You felt like you were being sexualized
during a physical activity?) while the other was labeled as hostile (You observed other
women being sexualized in a physical activity setting?). The observed likeness between
the heterosexual intimacy question and the hostile sexism question may be because,
although heterosexual intimacy from the man’s perspective is driven by sexual attraction
and appearance, the woman may perceive it as hostile. For example, gender studies
research has long stressed the difference between sexualization, attention given solely
based on how someone looks, and sexual objectification which is the act of treating or
perceiving someone as a sexual object. The complexity of sexism in PA settings
observed in the qualitative analysis suggests that the PASES could be a more robust
measure if questions had more variation and asked about more specific situations.
Lastly, the EBSS-PA was found to have poor internal reliability which further supports
the likelihood that, unlike general sexist experiences, sexism in PA settings rarely
present as a single sexism construct. For example, a woman may experience
paternalism if she is told that she needs to be supported financially and a woman may
experience paternalism in a PA setting if she is told she should not participate in a
“masculine” physical activity. The difference, however, is that the main source of the paternalistic experience in a PA setting may be less about the danger of the activity but more about participating in a masculine activity. Unlike a woman financially providing for herself, a woman participating in a physical activity can be physically observed. Therefore, paternalism and gender differentiation are likely to coexist, especially in PA settings. Further work is needed to create or modify questions that load onto the correct factor or to identify what the unique factors are if not benevolent or hostile sexism constructs.

**Strengths and Limitations**

The strengths of this study included its mixed-method design, strong focus on trustworthiness in qualitative analyses, and the inclusion of focus groups and interviews. The mixed-methods design of this study provided the researchers with an empirical template while designing questions for the PASES. For example, the questions were created using the direct words from the sample and using the questions from the valid, and widely used existing questionnaires. Further, although this population is not generalizable to all young women, using themes from this sample rather than using past data from other studies provided more confidence that the study captures modern experiences of sexism. Another strength of the study was the rigorous qualitative methods. The principal investigator is a woman asking other women their thoughts on sexism which creates bias. However, the research assistants who were not involved with facilitating the focus groups or interviews did the initial analyses and checked the
principal investigator’s analyses before finalizing the themes. Further, there were two men who were a part of the analysis. It is important to note that although having men analyze topics related to women can help with bias, researchers should assure that beliefs do not make them blind to experiences only women have encountered. The last strength of this study was the use of both focus groups and interviews. Focus groups and interviews can elicit different results due to group dynamics or comfortability. However, we were able to demonstrate consistency in themes across both focus groups and interviews, improving the reliability of our results. The study also had limitations. First, the sample severely lacked diversity, particularly in race and ethnicity. Although important in all research, this is especially problematic in this study because past studies have shown that views on sexism significantly vary across race, ethnicities, and cultures. The implications may be that our sample did not provide as much information relating to sexism due to the lack of personal experiences, therefore, this area of work could greatly benefit from exploring the topic in a more diverse sample.

Conclusion

Gender norms in PA has been widely accepted as the major factor in the gender disparity in PA, however, much is still not understood. The novel approach of the current mixed-methods study explored how benevolent sexism and hostile sexism manifest in PA settings and found that women’s experiences in PA settings did reflect benevolent and hostile sexism. The results from the qualitative analyses informed the new PASES,
which was shown to be valid. Future research should further explore the PASES as a measurement tool for sexism experiences in PA by investigating the relationships between the scores from the PASES and PA outcomes and psychosocial correlates of PA. Also, secondary qualitative analyses on the language of the PASES could greatly improve researchers' ability to quantify sexism in PA settings. The PASES questionnaire appears to be a promising measure to further explore this relationship, but more work is needed to refine the questionnaire and assess validity in a more diverse sample.

VI. ASSOCIATIONS BETWEEN YOUNG WOMEN’S EXPERIENCES WITH SEXISM IN PHYSICAL ACTIVITY SETTINGS AND PHYSICAL BEHAVIORS, SELF-EFFICACY, AND SOCIAL SUPPORT

Introduction

Physical activity (PA) and sedentary behaviors are determinants of overall health; therefore, it is especially important to recognize disparities between various groups of individuals. A consistent gender disparity is observed in which women are consistently less active than men, putting them at a risk of adverse health outcomes. Decades of qualitative research in girls and women has identified the internalization of traditional gender roles and the pressure to abide by those gender roles as a major contributor to the PA gender disparity. Secondly, self-efficacy, an individual’s confidence to be physically active in the face of barriers, is a well-established determinant of PA. Unfortunately, girls and women consistently report less perceived self-efficacy for PA compared to boys and men, respectively. Similarly, social
support for PA is another commonly identified determinant of PA, however, women and girls report less social support for PA than men and boys, respectively.\textsuperscript{13,92,125} Although research has demonstrated that gender norms, lack of self-efficacy and lack of social support are significant barriers to PA in girls and women, there is little understanding to how these factors connect and, subsequently, negatively impact women’s and girl’s PA.

Most of the research that has explored the role of gender norms in girl’s and women’s PA participation has been through qualitative studies. In 2015, Spencer et al., conducted a systematic review summarizing the decades of literature regarding gender norms and PA in girls and women and found that maintaining a traditional feminine appearance and participating in traditionally appropriate feminine behaviors as major barriers to their PA participation.\textsuperscript{33,121} For example, hair, make-up, and body image are common themes in past research in which girls report avoiding PA if it threatens the quality of their appearance or if their body does not look as they perceive girls should look.\textsuperscript{33} A more recent qualitative study in men and women gym-goers found that women avoid more masculine activity, despite their interest in those activities. Even more interestingly, results of from the study found that some women perceive other women who participate in more masculine activities as attention seeking because women rarely do those activities. Overall, this research shows that women and girls prioritize feminine appearances over PA participation, internalize gender norms by avoiding traditionally masculine activities, thus perpetuating the impact of gender norms by abiding by and judging women who do not follow those traditional gender roles. The lack of PA
participation leaves women and girls with less opportunities for PA which leads to less opportunities to build self-efficacy for PA and less social support for PA participation.

Benevolent sexism is a covert form of sexism that depicts women as innately less competent than men and that they should abide by traditional feminine behaviors to attract a man.\textsuperscript{16,74,122} More importantly, a large body of literature has demonstrated the negative impact of endorsing and experiencing benevolent sexism on women’s cognitive performance, workplace success, academic performance, and self-esteem.\textsuperscript{17,18,20,57,126} Due to the similarities between the gender-related barriers that exist in PA, the premise of benevolent sexism could be applied to the negative impact that traditional gender norms have on women’s PA.

Unlike hostile sexism, the overt and more familiar form of sexism, benevolent sexism appears positive or flattering in nature despite its negative impact on women. Benevolent sexism is comprised of 3 different constructs including gender differentiation, paternalism, and heterosexuality. Gender differentiation suggests that there are behaviors that are only appropriate for women and only appropriate for men. The pressure women feel to avoid masculine physical activities is an exemplary example of gender differentiation. Paternalism suggests that women are fragile and incompetent and therefore, need the guidance of a man. A study in adolescent children assessed the forms of social support they were receiving in physical education class. The results showed that girls perceived that the teachers were instructing them more than the boys, which was related to less PA.\textsuperscript{125} Although the instruction was a form of social support,
the difference in how much assistance the girls perceived they were receiving versus the boys could have sent a message of incompetence which could explain the negative association between social support and PA in girls. Lastly, heterosexuality intimacy argues that men need a woman for intimacy which is the only context in which they need a woman. The concept of heterosexuality in PA research is less evident than gender differentiation and paternalism, however, some research suggests that women who participate in traditionally masculine PA may be viewed as non-heterosexual which puts them at risks of not attracting a male partner.14

Based on the current knowledge, it appears that women experience benevolent sexism and begin to internalize benevolent sexism, which leads to further perpetuation of gender norms that negatively impact women’s well-being. It is plausible that relationships exist among known barriers to PA including gender norms, low self-efficacy, and lack of social support and benevolent sexism but these relationships have yet to be explored. Therefore, the aim of this study is to assess the direct and indirect relationships between the endorsement of and experiences with benevolent sexism in general and PA settings, social support for PA, PA self-efficacy, and physical behaviors.

Methods

Participants

Women (N=580) ages 18 – 30 years old in the Boston Metropolitan area were recruited via social media ads. Participants had to identify as a woman, be within the specified age range, and have no physical or cognitive disabilities that impact their
habitual physical activity (PA) or their ability to understand the survey, respectively.
Study was approved by the University’s Institutional Review Board and all participants provided written informed consent prior to participation.

**Measures**

The participants completed an online survey where they reported demographics, physical behaviors, perceived PA self-efficacy, perceived PA self-efficacy against gender-related barriers, PA social support, endorsement of benevolent and hostile sexism, and experiences with benevolent sexism. Participants also completed a newly developed questionnaire that is designed to measure women’s experiences with sexism within physical activity settings.

**Demographics**

The survey asked participants to report their age, race/ethnicity, marital status, education level, household income, gender identify, and sexuality. The inclusion criteria stated that eligible participants had to identify as a woman, but it is possible that prospective participants identified as a woman but also identified as transgendered, non-binary or otherwise. Therefore, participants were asked again to report their gender identity in the survey, including non-binary options and “other”.

**Physical Behaviors**

Physical behaviors, including physical activity and sedentary behavior, were presented as total weekly minutes of moderate PA, total weekly minutes of moderate-to-vigorous PA, average daily hours of sitting, and sedentary screen time. The International
Physical Activity Questionnaire – Short-Form (IPAQ-SF) was used to measure all physical behavior outcomes except average daily screen time. The IPAQ-SF physical behavior outcomes were calculated using the recommended calculations. Screen time was calculated using a widely used questionnaire that asks about daily screen time across different platforms (e.g. social media versus computer use). The responses range from less than 1 hour a day, 1-3 hours a day, 4-6 hours a day, and 6+ hours a day; operationally defined as 1.0, 1.5, 5.0, and 7.0 hours per day.

**Self-efficacy for Physical Activity**

Self-efficacy was measured using a 5-item questionnaire. The questionnaire asked about participants’ confidence to participate in physical activity when faced with different barriers (e.g. I am confident I can participate in physical activity when I am tired.). The score was calculated by summing all responses (range; 5 to 25).

**Self-efficacy for Combatting Gender-related Barriers to Physical Activity**

An additional 6 questions were added to assess self-efficacy related to combatting gender-related barriers. For example, “I am confident I can participate in physical activity when I’m in a male dominated space.” The questions were added after a previous qualitative study identified gender-related barriers to PA outside of those mentioned in the original self-efficacy questions (See Manuscript 2). The questions were formatted the same as the general self-efficacy questions (range; 5 – 25). Cronbach’s alpha showed acceptable internal validity ($\alpha=0.82$).

**Social Support**
Social support was measured using the Physical Activity and Social Support Scale (PASSS). The PASSS is a 20-item questionnaire with response options on a 7-point Likert scale. A final mean score was calculated by summing all responses and then dividing by the total number of items with a possible range of 0 to 7.

**Endorsement of Benevolent and Hostile Sexism**

The Ambivalent Sexism Inventory (ASI) was used to measure participants’ endorsement of benevolent sexism, including endorsement of each benevolent sexism construct (gender differentiation, paternalism, and heterosexuality) and hostile sexism. The ASI is a 22-item Likert scale questionnaire (range; 0-5) composed of 11 questions measuring endorsement of benevolent sexism and 11 questions measuring endorsement of hostile sexism. The total score for benevolent sexism, gender differentiation, paternalism, heterosexuality, and hostile sexism was calculated by dividing the total score for each construct, independently, and dividing that sum by the number of questions for that given construct.

**Experiences with Benevolent Sexism**

Experiences with benevolent sexism was measured using the Experiences with Benevolent Sexism Scale (EBSS). The EBSS is a 25-item questionnaire that was used to measure the frequency of experiences women have had with benevolent sexism in the last year or across her lifetime. A total score was calculated by dividing the sum of responses and dividing the score by number of items (range; 0 to 6). Similar to
endorsement of benevolent sexism, separate construct scores were calculated for experiences with gender differentiation, paternalism, and heterosexuality.

**Experiences with Sexism in Physical Activity Settings**

Experiences with benevolent and hostile sexism in the context of PA settings was measured using the Physical Activity Sexism Experience Scale (PASES). The PASES is a 14-item questionnaire that asks participants to report the frequency of different sexist experiences related to physical activity. The questionnaire was developed by evaluating questions from the previously described ASI and EBSS and conducting interviews and focus groups to gather narratives surrounding PA and sexism. A full description of the development of the PASES is explained elsewhere (See Manuscript 2).

**Experiences with Sexism in General and Physical Activity Settings**

The scores from the PASES were combined with EBSS scores to create a score that reflects a modified version of the EBSS that includes PA-related questions (EBSS-PA). The PASES and EBSS were presented separately in the online survey, therefore, the scores from the PASES and EBSS were also combined to simulate a full questionnaire (EBSS-PA).

**Data Analyses**

**Descriptive statistics**

A mean and standard deviation was reported for the age of the sample. The presence of each race/ethnicity, marital status, education level, household income, gender identity, and sexuality are presented as percentages. All physical behavior
outcomes are presented as medians and interquartile ranges due to skewness. Self-efficacy, social support, ASI scores, EBSS scores and PASES scores are presented as means and standard deviations.

**Bivariate Analyses**

Pearson correlations were used to assess bivariate relationships between ASI scores, EBSS scores, and PASES scores and all physical behavior outcomes including average daily MVPA, average daily MPA, average daily VPA, average hours sitting per day, and hours per week of screentime. The physical behavior outcomes were skewed and therefore, log-transformed for all analyses.

**Meditation Analyses**

Direct and indirect effects between latent variables and observed variables were assessed through structural equation models (SEM). First, two confirmatory factor analyses were performed for the ASI and EBSS. Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used to assess the model fit of each confirmatory factor analysis. CFI values (0 – 1) closer to 1 and RMSEA and SRMR values < 0.08 indicate a better fit. First, the same two models assessed in Manuscript 1 [MVPA-Only – Figure IV.2; Sitting-Only – Figure IV.3] to compare results between samples.

First, a full model that included benevolent sexism experience, experiences with sexism in PA-settings (PASES), hostile sexism endorsement, benevolent sexism endorsement as latent variables and self-efficacy, self-efficacy related to gender
barriers, social support, total weekly minutes of MVPA as observed variables. Benevolent sexism endorsement, self-efficacy, and social support were tested as mediators [Figure VI.1]. The same model was repeated but MVPA was replaced with hours of sitting. All the models controlled for age, income, body mass index, and sexuality. The model effects were presented as standardized coefficients with a significance level of $p < 0.05$. Cronbach’s alphas were calculated for the ASI, EBSS, and PASES. The EBSS-PA ($\alpha=0.02$) showed poor internal consistency and was removed from subsequent models.

![Figure VI.1: Full Path Analysis](image_url)

NOTE: The sitting path analysis is a replicate of the above model whereas “Sitting” is in place of “Total MVPA”

### Results

#### Descriptive Statistics

A total of 584 surveys were self-administered but 157 survey responses were removed from the dataset due to incompletion or missing data. The participants ($N=427$; age=$25 \pm 3$ years old) mostly white, heterosexual (56%) and bisexual (26.9%), unmarried, and reported a wide range of income brackets (Table VI.1). The screen time scores, and PA outcomes were highly variable (Table VI.2). Benevolent and hostile
sexism endorsement scores were relatively low. For the benevolent sexism constructs, endorsement of gender differentiation scores were generally lower than paternalism and heterosexual intimacy scores. Benevolent sexism experience scores were relatively low and similar across constructs.

Table VI.1 Participant Demographics (N = 427)

<table>
<thead>
<tr>
<th>Age (Mean ± SD)</th>
<th>25 ± 3 years old</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (Mean ± SD)</td>
<td>25.7 ± 6.5</td>
</tr>
<tr>
<td>Race</td>
<td>(n)</td>
</tr>
<tr>
<td>White</td>
<td>330</td>
</tr>
<tr>
<td>Hispanic or Latinx</td>
<td>11</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>38</td>
</tr>
<tr>
<td>Black/African American</td>
<td>7</td>
</tr>
<tr>
<td>Native American/American Indian</td>
<td>1</td>
</tr>
<tr>
<td>Multiple Race/Ethnicity/Other</td>
<td>22</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>8</td>
</tr>
<tr>
<td>Marital Status</td>
<td>(n)</td>
</tr>
<tr>
<td>Married</td>
<td>53</td>
</tr>
<tr>
<td>Single</td>
<td>356</td>
</tr>
<tr>
<td>Other</td>
<td>18</td>
</tr>
<tr>
<td>Income (%)</td>
<td></td>
</tr>
<tr>
<td>Less than $10,000</td>
<td>&lt;1 %</td>
</tr>
<tr>
<td>$10,000 - $29,000</td>
<td>&lt;1 %</td>
</tr>
<tr>
<td>$30,000 - $49,000</td>
<td>15 %</td>
</tr>
<tr>
<td>$50,000 - $79,000</td>
<td>29 %</td>
</tr>
<tr>
<td>&gt; $80,000</td>
<td>38 %</td>
</tr>
<tr>
<td>Sexuality (%)</td>
<td></td>
</tr>
<tr>
<td>Heterosexual (n=241)</td>
<td>56.0</td>
</tr>
<tr>
<td>Bisexual (n=115)</td>
<td>26.9</td>
</tr>
<tr>
<td>Lesbian, Pansexual, Gay, Other (n=58)</td>
<td>12.0</td>
</tr>
<tr>
<td>Prefer not to say (n=8)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Table VI.2: Physical Behaviors, Self-efficacy, and Sexism Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen Time (weighted hours/weekday)</td>
<td>5.2 ± 2.9</td>
</tr>
<tr>
<td>Screen Time (weighted hours/weekend day)</td>
<td>9.3 ± 4.3</td>
</tr>
<tr>
<td>Self-efficacy (range; 5 - 25)</td>
<td>14.8 ± 4.6</td>
</tr>
<tr>
<td>Self-efficacy - Gender Barriers (range; 5 - 35)</td>
<td>15.6 ± 5.4</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Benevolent Sexism Endorsement (range; 0 – 5)</td>
<td>1.6 ± 0.8</td>
</tr>
<tr>
<td>Gender Differentiation</td>
<td>2.0 ± 1.1</td>
</tr>
<tr>
<td>Paternalism</td>
<td>1.8 ± 1.0</td>
</tr>
<tr>
<td>Heterosexuality</td>
<td>1.0 ± 0.9</td>
</tr>
<tr>
<td>Hostile Sexism Endorsement (range; 0 – 5)</td>
<td>0.8 ± 0.7</td>
</tr>
<tr>
<td>Benevolent Sexism Experience (range; 0 – 6)</td>
<td>2.4 ± 0.7</td>
</tr>
<tr>
<td>Gender Differentiation</td>
<td>2.3 ± 0.8</td>
</tr>
<tr>
<td>Paternalism</td>
<td>2.5 ± 0.8</td>
</tr>
<tr>
<td>Heterosexuality</td>
<td>2.4 ± 0.8</td>
</tr>
<tr>
<td>Physical Activity Sexism Experience Scale</td>
<td>2.9 ± 0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting (hours/day)</td>
</tr>
<tr>
<td>MPA (total minutes/week)</td>
</tr>
<tr>
<td>VPA (total minutes/week)</td>
</tr>
<tr>
<td>MVPA (total minutes/week)</td>
</tr>
<tr>
<td>MET-mins (total MET-minutes/week)</td>
</tr>
</tbody>
</table>

**Bivariate Analyses**

The associations in the full sample (n=427) were weak (r< |0.30|) except the associations between self-efficacy and VPA (r= 0.39; Table VI.3). A weak positive association was found between benevolent sexism endorsement and screen time. Hostile sexism was positively associated with screen time, VPA, MVPA, and total MET-minutes. Weak positive associations were found between benevolent sexism experience and all PA outcomes. Weak positive associations were also found between PASES scores and screen time, MPA, MVPA and total MET-minutes. Self-efficacy was positively and negatively associated with all PA outcomes and sitting and screen time, respectively.
### Table VI.3: Associations between Physical Activity, Self-efficacy, and Sexism Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Sitting</th>
<th>Screen Time</th>
<th>MPA</th>
<th>VPA</th>
<th>MVPA</th>
<th>Total MET- minutes</th>
<th>Self-efficacy</th>
<th>Social Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>0.0</td>
<td>0.21</td>
<td>-0.05</td>
<td>0.05</td>
<td>0.0</td>
<td>0.03</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>HS</td>
<td>-0.06</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.11</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>BSE</td>
<td>-0.04</td>
<td>0.20</td>
<td>0.19</td>
<td>0.12</td>
<td>0.22</td>
<td>0.22</td>
<td>0.0</td>
<td>0.19</td>
</tr>
<tr>
<td>PASES</td>
<td>-0.02</td>
<td>0.14</td>
<td>0.12</td>
<td>0.07</td>
<td>0.14</td>
<td>0.14</td>
<td>-0.08</td>
<td>0.15</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.10</td>
<td>-0.15</td>
<td>0.09</td>
<td>0.39</td>
<td>0.24</td>
<td>0.28</td>
<td>-</td>
<td>0.19</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.03</td>
<td>0.10</td>
<td>0.19</td>
<td>0.17</td>
<td>0.25</td>
<td>0.25</td>
<td>0.19</td>
<td>-</td>
</tr>
</tbody>
</table>

MPA= moderate physical activity; VPA= vigorous physical activity; MVPA= moderate physical activity; BS= benevolent sexism; HS= hostile sexism; BSE= benevolent sexism experience; PASES= Physical Activity Sexism Experiences

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Sitting</th>
<th>Screen Time</th>
<th>MPA</th>
<th>VPA</th>
<th>MVPA</th>
<th>Total MET- minutes</th>
<th>Self-efficacy</th>
<th>Social Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>0.0</td>
<td>0.21</td>
<td>-0.05</td>
<td>0.05</td>
<td>0.0</td>
<td>0.03</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>HS</td>
<td>-0.06</td>
<td>0.10</td>
<td>0.07</td>
<td>0.10</td>
<td>0.11</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>BSE</td>
<td>-0.04</td>
<td>0.20</td>
<td>0.19</td>
<td>0.12</td>
<td>0.22</td>
<td>0.22</td>
<td>0.0</td>
<td>0.19</td>
</tr>
<tr>
<td>PASES</td>
<td>-0.02</td>
<td>0.14</td>
<td>0.12</td>
<td>0.07</td>
<td>0.14</td>
<td>0.14</td>
<td>-0.08</td>
<td>0.15</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.10</td>
<td>-0.15</td>
<td>0.09</td>
<td>0.39</td>
<td>0.24</td>
<td>0.28</td>
<td>-</td>
<td>0.19</td>
</tr>
<tr>
<td>Social Support</td>
<td>-0.03</td>
<td>0.10</td>
<td>0.19</td>
<td>0.17</td>
<td>0.25</td>
<td>0.25</td>
<td>0.19</td>
<td>-</td>
</tr>
</tbody>
</table>

Mediation Analyses

The MVPA-Only model had a less than acceptable CFI (0.74) but, otherwise, had acceptable fit (RMSEA=0.05 and SRMR=0.06). Self-efficacy ($\beta=0.21$, p=0.00), hostile sexism ($\beta=0.16$, p=0.02), and experiences with benevolent sexism ($\beta=0.29$, p=0.00) showed positive direct effects on MVPA and benevolent sexism endorsement showed a negative direct effect on MVPA ($\beta=-0.17$, p=0.02). No other direct or indirect effects were found. The addition of the PASES to the MVPA-Only model produced a poor CFI=0.69 but the RMSEA and the SRMR (0.06; 0.07) maintained a good fit. Benevolent sexism experience ($\beta=0.26$, p=0.00) and hostile sexism ($\beta=0.17$, p=0.01) showed positive direct effects on benevolent sexism endorsement. Self-efficacy ($\beta=0.24$, p=0.00) and benevolent sexism experience ($\beta=0.29$, p=0.00). showed a positive direct effect on MVPA. Benevolent sexism endorsement showed a negative direct effect on MVPA ($\beta=-0.16$, p=0.03). No significant indirect effects were found.
The Sitting-Only model showed similar fit to the MVPA-Only model (CFI=0.74, RMSEA=0.05, and SRMR=0.06). Self-efficacy showed a negative direct effect on sitting time, but no other direct or indirect effects were found. The addition of the PASES to the Sitting-Only model produced a poor CFI (0.68) but the RMSEA and the SRMR (0.06; 0.07) maintained a good fit. Benevolent sexism experience ($\beta$=0.32, $p=0.02$) and hostile sexism ($\beta$=0.48, $p=0.00$) showed positive direct effects on benevolent sexism endorsement. No significant indirect effects were found.

Both the full MVPA-Only and full Sitting-Only path analysis models resulted in a low CFI (0.68) but acceptable RMSEA and SRMR (0.05; 0.06). Benevolent sexism experience ($\beta$=0.34, $p=0.01$) and hostile sexism ($\beta$=0.48, $p=0.00$) had positive direct effects on benevolent sexism endorsement in both the MVPA and Sitting model. Hostile sexism had a small positive direct effect on self-efficacy related to gender barriers ($\beta$=0.02, $p=0.00$) in both the MVPA and Sitting model. In the MVPA model, self-efficacy ($\beta$=0.18, $p=0.0$), social support ($\beta$=0.16, $p=0.0$) and hostile sexism ($\beta$=0.18, $p=0.0$), and benevolent sexism endorsement ($\beta$=-0.18, $p=0.0$) had positive and negative effects, respectively. No other direct or indirect effects were found in either model.

**Discussion**

The aim of this study was to assess the direct and indirect relationships between the endorsement of and experiences with benevolent sexism in general and PA settings, social support for PA, PA self-efficacy, and PA outcomes. We hypothesized that endorsement of and experiences with benevolent sexism would be negatively
associated with physical activity and PA self-efficacy, and positively associated with sedentary behavior (sitting and screen time). Secondly, we hypothesized that experiences with benevolent sexism in PA-settings would be negatively associated with physical activity and PA self-efficacy, and positively associated with sedentary behavior (sitting and screen time). Lastly, we hypothesized that self-efficacy, self-efficacy related to gender barriers, and social support would mediate the relationships between all benevolent sexism experience measures and physical behavior outcomes.

Most of the associations were \( r < 0.30 \) but similarly to Manuscript 1, benevolent sexism experience and PA benevolent sexism experience were both positively associated with all PA outcomes and screen time. The positive associations seen between general benevolent sexism experience could be due to the lack of connection between the patronizing context of those experiences and how it may translate to PA. For example, the past several studies have assessed the relationship between benevolent sexism and different performance based outcomes by using terminology with sexist undertones while providing directions for that given task and have found that there is a negative relationship between various performance outcomes and benevolent sexism experience.\(^{17,18,20}\) However, the EBSS was not designed to ask about specific-PA sexism experiences and therefore, those general experiences may not impact PA. Despite this possibility, there were still positive associations between the PASES and PA outcomes which does include PA-specific questions. One reason for this could be because the PASES has shown internal consistency but the factors that are being
measure have yet to be identified. For example, Study 2, showed that the questions from the PASES loaded on four factors as predicted but items with different benevolent or hostile sexism constructs loaded together. Therefore, more work is needed to improve the PASES before these results can be interpreted fully. In line with bivariate results, the results from the mediation models showed that benevolent sexism experience and PA have a positive association. Benevolent sexism experience directly effects PA outcomes but is not mediated by benevolent sexism endorsement even though benevolent sexism endorsement negatively effects MVPA as hypothesized. Interestingly, the associations and effects between benevolent sexism experience and sedentary was in the hypothesized direction. This suggests that if benevolent sexism experience does not negatively impact PA it can still increase sedentary behavior.

**Strengths and Limitations**

The current study also had several limitations. First, the sample was not very diverse in sexism scores, race/ethnicity, or income. The lack of diversity in race and ethnicity is particularly important because research has found that the endorsement and experiences with benevolent sexism differs across races and ethnicities. Also, as noted in Manuscript 2, paternal influences on physical behaviors was a saturated theme in the current sample. Although the current study did not take the participants’ childhood family dynamics into consideration, this finding suggests that the relationships observed in this study may not exist in individuals with a paternal figure or two guardians in the home. For example, if most participants were raised with a paternal figure that influence
may attenuate any effects experience of benevolent sexism has on self-efficacy, social support or physical behaviors. Further, the ~70% of the sample reported an income of $50,000/year while almost 40% reported an income of $80,000/year or more which is unlike samples in our prior studies (Manuscript 1, Manuscript 2). These demographics are important to note because the sample used to develop the PASES was slightly more diverse in race/ethnicity and much more diverse in income brackets despite being similar in other demographics. Therefore, some of the results may be difficult to fully interpret because the PASES was based on data from a more diverse group. Secondly, the heteronormative nature of the questions may have elicited a response based on what a participant sees as inclusive rather than what they experience. For example, one participant left a comment in a comment field at the end of the survey that read, “The only thing that made me doubt my responses to some of the general questions in the first part of the survey is that the "man" "woman" wording kind of excludes people who aren't straight, so I wasn't inclined to respond that "a man is incomplete without a woman" for example because people might have different sexual orientations. I do not know if that affects the outcome, but that's what I was thinking.” Based on this comment, the participant’s benevolent sexism endorsement score may be lower than their actual endorsement. Also, the language of the ASI may be outdated and more likely than not that the wording no longer reflects how benevolent sexism presents itself in today’s society. For example, Fiske et al. (2010) conducted a study where undergraduate college women (N=78) were asked to write essays describing what it is like to be a woman and 99% of the essays expressed themes around benevolent sexism.115
Therefore, the wording of the ASI may need updated to capture modern displays of benevolent sexism.

**Conclusion**

To further understand the well-known gender disparity in physical behaviors, the current study explored how measuring a woman’s experiences with benevolent sexism in general and PA-settings could inform physical behaviors. There appears to be a positive relationship between benevolent sexism experience and PA but due to the overwhelming amount of literature demonstrating the negative impact of benevolent sexism experience on other outcomes, it is important to explore these relationships with this new approach in more diverse populations. Further, future research to improve the PASES may provide a way to better explore the relationships if general benevolent sexism experiences are not in fact negatively impacting physical behaviors.
VII. OVERALL DISCUSSION

The current study aimed to better understand why women tend to have less favorable PB than men by 1) assessing the relationships between sexism and PB in young women and 2) developing a questionnaire to measure women’s experiences of benevolent sexism in PA-settings to further evaluate relationships between sexism and PB. The main findings of the study were: 1) benevolent sexism endorsement has a small but negative association with moderate-to-vigorous PA (MVPA) and a small but positive association with sedentary behavior (sitting and screen time), 2) benevolent sexism experience also had a positive relationship with sedentary behavior but, contrary to the hypothesis, had a positive relationship with MVPA, 3) benevolent sexism experience had a small positive relationship with self-efficacy, and 4) women do express themes related to sexism in PA-settings but further work is needed to improve the preliminary Physical Activity and Sexism Experience Scale (PASES) that was developed based on these themes. This chapter discusses the main findings, implications, and future directions of this work.

Benevolent and Hostile Sexism Endorsement and Physical Behaviors

The results of this study in both Sample 1 and Sample 2 demonstrated a significant negative relationship between benevolent sexism endorsement and PA and a significant positive relationship between benevolent sexism and sedentary behavior. To our knowledge no previous work has assessed relationships between sexism endorsement and PB. Many studies evaluated relationships between benevolent sexism
endorsement and outcomes in educational and occupational domains by using experimental designs that exposed women to sexism or path models predicting relationships rather than bivariate analyses. However, a study conducted by Montanes et al. presented bivariate associations of mothers’ and daughters’ endorsement of benevolent and hostile sexism with education, occupation, school subjects passed, traditional goals, and goal to get a degree. The significant correlations found between benevolent sexism and outcomes of interest ranged from $r = |0.17|$ to $r = |0.48|$, mostly in the hypothesized direction. These correlations are larger than the correlations observed in Sample 1 ($r = |0.17|$ to $r = |0.28|$) and Sample 2 ($r = 0.21$) of the current study, however, similarly to this study, most of the significant correlations observed in the previous study were weak ($r < |0.40|$). Due to the lack of bivariate data outside of this study, it is difficult to conclude if the magnitude of the results from this study are any different than what would be expected in other studies. Hostile sexism was not a main variable of interest for this study, but it is important to note the relationships that were observed and the implications of those relationships. Weak but positive relationships were found between hostile sexism and MPA, VPA, and MVPA in Sample 2. It is possible that women who do not identify with what they would perceive as a “traditional” woman may be less likely to see a hostile sexist interaction as sexist.

**Benevolent Sexism Experiences and Physical Behaviors**

In contrast to our hypothesis, positive associations between benevolent sexism experiences and MVPA were consistent in both Sample 1 and Sample 2 but a direct
effect on MVPA was only observed in Sample 2. Three possible reasons for these results include 1) the sample’s relatively low scores from the Experiences with Benevolent Sexism Scale (EBSS), and 2) potential unknown moderators. To our knowledge, Oswald et al., (2019) is the only previous study that assessed the relationships between benevolent sexism experiences and any outcomes using the Experiences with Benevolent Sexism Scale. The mean scores of sexism experience observed in the study conducted by Oswald et al. were higher (3.25 ± 0.81) than both Sample 1 (1.7 ± 0.9) and Sample 2 (2.4 ± 0.7) of this study. A floor effect may be present, particularly in Sample 1, that impacts the ability to accurately observe the relationships of interest.

Another explanation for the relationships between benevolent sexism experiences and PB observed in this study is a potential moderator. Traditional femininity is a substantial factor in the Ambivalent Sexism theory this study was based on. Therefore, the extent to which a woman identifies with traditional femininity may moderate the relationship between experiences of benevolent sexism and PB. A similar study done by Kuchynka et al. demonstrated how one’s identity can play a role in the relationships between sexism and STEM academic outcomes. The researchers used the Experiences with Ambivalent Sexism Inventory to assess the relationships between women’s experiences with benevolent and hostile sexism and three STEM outcomes including intention to pursue a STEM major, STEM self-efficacy, and STEM GPA. The results showed that the relationships between experiences with paternalism and all three
STEM outcomes was moderated by their STEM identity, in that the negative relationships observed only existed in women who did not strongly identify as a STEM major. Based on these findings, the hypothesized negative relationship between benevolent sexism experience and PA may be attenuated by women who do not strongly identify with traditional ideas of femininity or who identify as an exerciser. Therefore, future work in sexism and PB should consider measuring moderators related to how women identify with femininity or PA.

**Sexism and Self-efficacy**

Interestingly, a positive relationship was found between benevolent sexism experiences and self-efficacy in Sample 1 ($r=0.22$). However, this could be due to positive responses to experiencing types of benevolent sexism and how self-efficacy is being measured. First, in the study by Oswald et al., results showed that only paternalism had a negative effect on self-esteem and self-doubt. However, results also showed that gender differentiation had positive and negative effects on self-esteem and self-doubt, respectively. The authors argue that the results are likely due to women experiencing positive feedback in their lives to abide by gender roles which can improve their self-esteem and decrease their self-doubt. Although self-doubt and self-esteem are not the same as self-efficacy, all three are self-concepts and therefore, the conclusion from the above study can be explored in the context of the current study. For example, women who fit into “acceptable” gender roles may be more comfortable being in PA settings because they are confident that, overall, they meet the
basic standards of traditional gender norms. For example, the femininity deficit is described as a woman overcompensating by being as feminine as possible during physical activities to avoid appearing masculine.\textsuperscript{14} Therefore, women who are perceived as feminine may feel as though they embody adequate femininity to participate in less feminine activities. Like the section above, these results show future research studies need to be designed to include moderators and assess the Ambivalent Sexism constructs separately.

The second possible explanation for the positive relationship seen between benevolent sexism experiences and self-efficacy is how participants are interpreting the self-efficacy questions. Research has emerged showing that self-efficacy tools in PA research may extend to motivation for PA rather than self-efficacy alone.\textsuperscript{129,130} Rhodes and Courneya (2003, 2004) were the first to provide evidence that self-efficacy tools may not be internally valid.\textsuperscript{129} Rhodes and Blanchard (2007) extended this work by conducting a study that asked participants why they answered self-efficacy questions in the way they did and assessed if holding motivation constant in questions better improved the self-efficacy measures.\textsuperscript{130} The results showed that 1) questions with motivation held constant loaded onto one factor as hypothesized, and 2) three of the seven reported reasons for why participants chose an answer were outside of the self-efficacy domain.\textsuperscript{130} Further, the correlation found between motivation-constant self-efficacy questions and exercise was stronger than the correlation between traditional self-efficacy questions and exercise. Importantly, a substantial part of the theoretical
framework of this study was that the undermining nature of benevolent sexism could send implicit messages of incompetence causing lower self-efficacy. The participants in the current study may be reporting based on motivation which was not included in the theoretical framework or asked about in the survey. Therefore, future work should consider using self-efficacy questionnaires that take motivation into consideration and exploring the role motivation may play in the relationships between sexism and self-efficacy and PB.

**Physical Activity and Sexism Experience Scale**

The PASES was developed and assessed for internal and construct validity. The questionnaire showed excellent internal validity and 14 of the 16 items loaded onto one of four constructs. The first version of the PASES was designed for questions to load onto either gender differentiation, paternalism, heterosexual intimacy, or hostile sexism. However, several items did not load onto the intended factor which resulted in factors comprised of items from different theoretical constructs. Based on these results, it is important to note why items may have loaded together and next steps to improve the PASES.

The PASES questions were developed using qualitative analyses and the past work done to develop the Ambivalent Sexism Inventory (ASI) and the EBSS as a template. Despite best efforts to use a rigorous approach in the development of the PASES, results suggest that experiences with benevolent and hostile sexism in PA settings are more complicated than those measured by the EBSS. Therefore, a further assessment
of the questions and what they may have in common may shed light on how to better
categorize the questions. For example, Factor 1 included six items and at least one item
from each construct. Two of the questions were “You felt the need to look feminine (hair,
makeup, feminine clothing) when participating in physical activity? (Gender
Differentiation) and “You exercised to achieve a body type/shape that you believe men
are attracted to?” (Heterosexual Intimacy). It is possible that the latter question is
preceded with the assumption that the body men are attracted to is feminine which could
relate more strongly to gender differentiation than heterosexual intimacy. Similarly, two
factors from Factor 2 included, “You have been discouraged to participate in a
stereotypical “boy” sport by paternal/male guardian? (Gender Differentiation) and
“People offered to help you do something physical (carry bags/yard work/etc.) when you
did not ask?” (Paternalism). The first question assumes that the only reason a women
would be discouraged to participate in an activity is because it is not appropriate for a
woman (Gender Differentiation) when it could be because it is perceived as too
dangerous for a woman (Paternalism). Further qualitative analyses could address the
discrepancies observed in these data. For example, none of the questions asked in the
focus groups and interviews were directly related to sexism. The decision to reframe
from using the term “sexism” was made to avoid leading participants. The limitation to
this approach was that the participants were not provided the opportunity to express
their thoughts on sexism in PA specifically. Future research may benefit from asking
more direct questions to get women’s perception of sexism in PA rather than developing
questions only based on their experiences.
Future Directions

The current study was the first to explore the relationships between sexism endorsement and experiences and PB which calls for the need to 1) explore these relationships in other samples, 2) develop a better theoretical understanding of sexism and PB to improve the PASES, and 3) explore how understanding sexism in PA can inform PA interventions.

First, the samples of this study were large but were not diverse in race/ethnicity or residency. As mentioned in previous chapters, culture and race/ethnicity are important when studying sexism. Due to the strong evidence that significant differences in the endorsement of benevolent and hostile sexism exists across different groups, the relationships in other samples may be substantially different than the results observed in the current study. Further, experiences and internalization of sexism start early in life and should be explored in children and adolescent samples as well.66

Secondly, the current study, to our knowledge, was the first attempt to view women’s experiences in PA through the lens of sexism. Based on the results of the PASES psychometrics, it is likely that the current theory does not include all the important factors that link sexism to PB. Future studies should aim to gather women’s explicit experiences with sexism in PA settings and receive feedback on new versions of the PASES through cognitive interviews.

Lastly, this area of research is in its infancy, but it has the potential to inform innovative PA interventions in girls and women in the future. The most successful interventions are
based on theories such as Social Cognitive Theory (SCT) which include factors such as self-efficacy, social support and social norms which are all relevant to the current work. Further, the theory suggests that if an individual develops intention to change a behavior, they have the agency to do so and will subsequently change their behavior.  

However, some researchers argue that the SCT is limited due the theory’s assumption of complete agency. For example, a recent study by O'Reilly, Talbot & Harrington (2023) aimed to assess adolescent girls’ views on a female-focused intervention (Girls Active). The researchers conducted 16 focus groups across 8 different schools and found that the girls were receptive to and enjoyed the intervention. However, the authors also recognized that gender-focused intervention can create a false sense of agency because negative social norms exist beyond the confines of the intervention. Further, the separation of females and males can further perpetuate negative gender norms. The current study has assessed the complex relationship between, gender and PB, but also the outside factors that impact a woman’s or girl’s sense of agency. Therefore, extending this work could inform a theoretical framework that accounts for a false sense of complete agency to inform the development and implementation of gender-focused interventions.

A. SURVEY QUESTIONS

Demographics
1. How old are you? __________

2. What race/ethnicity do you identify as? (check all that apply)
   - White
   - Hispanic or Latino
   - Black or African American
   - Native American or American Indian
   - Asian / Pacific Islander
   - Other: __________

3. What is your gender identity?
   - Man
   - Woman
   - Trans Male/Trans Man
   - Trans Female/Trans Woman
   - Genderqueer/Gender Non-Conforming
   - Other: __________
4. What level of education do you have?

- High School diploma or GED

- Associate degree

- Bachelor’s degree

- Master’s degree

- Professional or Doctoral degree (MD, DPT, PhD, EdD)

5. What is your marital status?

- Single

- Married/Committed relationship

6. What is your current household income?

- Less than $10,000

- $10,000 - $29,000

- $30,000 - $49,000

- $50,000 – 79,000
7. Are you currently employed?

☐ Full-time

☐ Part-time

☐ Unemployed

8. What is your sexual orientation?

☐ Heterosexual

☐ Gay

☐ Lesbian

☐ Bisexual

☐ Asexual

☐ Pansexual

☐ Other

☐ Prefer not to answer
9. How tall are you?

_________ feet _________ inches

10. How much do you weigh?

_________ lbs.

INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out about the kinds of physical activities people do as part of their everyday lives. The questions will ask you about the time you spent being physically activity in the last 7 days. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your house and yard work, to get from place to place, and in your spare time for recreation, exercise and sport.

Think about all the vigorous activities that you did the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe
much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

   ____ days per week

   ☐ No vigorous physical activities ☐ Skip to question 3

2. How much time did you usually spend doing vigorous physical activities on one of those days?

   ____ hours per day
   ____ minutes per day

   ☐ Don’t know/not sure

Think about all the moderate activities that you did the last 7 days. Moderate physical activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

3. During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace or doubles tennis? Do not include walking.
____ days per week

☐ No moderate physical activities ☐ Skip to question 5

4. How much time did you usually spend doing moderate physical activities on one of those days?

____ hours per day

____ minutes per day

☐ Don’t know/not sure
Think about all the walking in the last 7 days. This includes at work and at home, walking to travel from place to place, and any other walking that you have done solely for recreation, sport, exercise, or leisure.

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

____ days per week

[ ] No walking [ ] Skip to question 7

6. How much time did you usually spend walking on one of those days?

____ hours per day

____ minutes per day

[ ] Don’t know/not sure

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

7. How much time did you usually spend sitting on a week day?

____ hours per day
____ minutes per day

☐ Don’t know/not sure

Social Support for Physical Activity

1. I have someone who can provide reassurance in the activity/activities.
2. There is someone that provides me with positive feedback in the activity/activities.
3. There is someone who understands my problems/worries about the activity/activities.
4. I have someone with whom I can relate to in the activity/activities.
5. I set expectations based on the performance of others in the activity/activities.
6. I want to know competition results (i.e., race results), times, duration, weights, or actions of others in the activity/activities.
7. I compare myself to others in the activity/activities.
8. I use social media to find other people’s performance in the activity/activities to compare to my own.
9. I read articles about the activity/activities.
10. I seek out information from others to get better at the activity/activities.
11. I talk to people for assistance or to improve technique in the activity/activities.
12. I attend clinics, classes, and workshops to learn about the activity/activities.
13. I am part of a core group of people who do the activity/activities.
14. When not engaging in the activity/activities, I still spend time with people that I met while in the activity/activities.
15. I feel a sense of belonging to a group that also does the activity/activities I do.
16. I can find someone to do the activity/activities with, even outside of my friends.

17. I can get help traveling if needed to perform the activity/activities.

18. I have someone that could loan or give me something to help carry out the activity/activities I do.

19. I have someone who would watch my child(ren) or pets if needed for me to engage in the activity/activities.

20. I can find someone to help on a short notice so that I can engage in the activity/activities.

**Self-Efficacy for Physical Activity**

**Finish the following statements:**

I am confident I can participate in regular exercise when:

<table>
<thead>
<tr>
<th></th>
<th>Not Confident</th>
<th>Slightly Confident</th>
<th>Moderately Confident</th>
<th>Very Confident</th>
<th>Extremely Confident</th>
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</thead>
<tbody>
<tr>
<td>I am tired.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>I am in a bad mood.</td>
<td>O</td>
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</table>
I feel like I don't have time. | O | O | O | O | O
I am on vacation. | O | O | O | O | O
It is raining or snowing. | O | O | O | O | O

Screen Time

The next questions are about times you spent sitting/lying down while using your phone, tablet, computer, or gaming console.

During a regular WEEKDAY (Monday-Friday), how many hours each day did you spend sitting/lying down while...
During a regular WEEKEND (Saturday & Sunday), how many hours each day did you spend sitting/lying down while...

<table>
<thead>
<tr>
<th>Activity</th>
<th>Less than 1 hr a day</th>
<th>1-3 hrs a day</th>
<th>4-6 hrs a day</th>
<th>6+ hrs a day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watching TV, Streaming Videos (Hulu, Netflix, YouTube, Amazon, cable)</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Social media (Facebook, Instagram, etc.)</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Phone Communication (FaceTime, text, calls)</td>
<td>O</td>
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<tr>
<td>Computer Use (excluding watching videos/social media)</td>
<td>O</td>
<td>O</td>
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</table>
Ambivalent Sexism Inventory

The statements on this page concern women, men, and their relationships in contemporary society. Please indicate the degree to which you agree or disagree with each statement by clicking the numbered buttons below.

1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.

<table>
<thead>
<tr>
<th>Disagree Strongly O</th>
<th>Disagree Somewhat O</th>
<th>Disagree Slightly O</th>
<th>Agree Slightly O</th>
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<th>Agree Strongly O</th>
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2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality".

<table>
<thead>
<tr>
<th>Disagree Strongly O</th>
<th>Disagree Somewhat O</th>
<th>Disagree Slightly O</th>
<th>Agree Slightly O</th>
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3. In a disaster, women ought not necessarily to be rescued before men.

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<th>Disagree Slightly O</th>
<th>Agree Slightly O</th>
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<th>Agree Strongly O</th>
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4. Most women interpret innocent remarks or acts as being sexist.

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5. Women are too easily offended.

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6. People are often truly happy in life without being romantically involved with a member of the other sex.

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7. Feminists are not seeking for women to have more power than men.

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<th>Agree Slightly O</th>
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8. Many women have a quality of purity that few men possess.

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<th>Disagree Strongly O</th>
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<th>Disagree Slightly O</th>
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9. Women should be cherished and protected by men.

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<th>Disagree Strongly</th>
<th>Disagree Somewhat</th>
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<th>Agree Slightly</th>
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10. Most women fail to appreciate fully all that men do for them.

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<th>Disagree Strongly</th>
<th>Disagree Somewhat</th>
<th>Disagree Slightly</th>
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11. Women seek to gain power by getting control over men.

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<th>Disagree Strongly</th>
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<th>Agree Slightly</th>
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12. Every man ought to have a woman who he adores.

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<tr>
<th>Disagree Strongly</th>
<th>Disagree Somewhat</th>
<th>Disagree Slightly</th>
<th>Agree Slightly</th>
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<th>Agree Strongly</th>
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13. Men are complete without women.
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<tr>
<th>14. Women exaggerate problems they have at work.</th>
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<tr>
<td>Disagree</td>
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<td>Strongly O</td>
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<table>
<thead>
<tr>
<th>15. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.</th>
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<tbody>
<tr>
<td>Disagree</td>
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<table>
<thead>
<tr>
<th>16. When women lose to men in a fair competition, they typically complain about being discriminated against.</th>
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<tbody>
<tr>
<td>Disagree</td>
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<td>Strongly O</td>
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<tr>
<th>17. A good woman should be set on a pedestal by her man.</th>
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<td>Disagree</td>
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</table>
18. There are actually very few women who get a kick out of teasing me by seeming sexually available and then refusing male advances.

<table>
<thead>
<tr>
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19. Women, compared to men, tend to have a superior moral sensibility.

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20. Men should be willing to sacrifice their own wellbeing in order to provide financially for the women in their lives.

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<th>Disagree Strongly O</th>
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<th>Agree Slightly O</th>
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</tbody>
</table>

21. Feminists are making entirely reasonable demands of men.

<table>
<thead>
<tr>
<th>Disagree Strongly O</th>
<th>Disagree Somewhat O</th>
<th>Disagree Slightly O</th>
<th>Agree Slightly O</th>
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22. Women, as compared to men, tend to have a more refined sense of culture and good taste.

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Experiencing Benevolent Sexism Scale

For each of the following items please indicate how frequently it has happened to you because you are a woman. Use the following scale:

1 = the event never happened
2 = the event happened once in a while (less than 10% of the time)
3 = the event happened the event happened sometimes (10-25% of the time)
4 = the event happened a lot (26-49%) of the time
5 = the event happened most of the time (50% - 70% of the time)
6 = the event happened almost all of the time (more than 70%) of the time

How frequently in your lifetime have:

1. You been put on a pedestal by your romantic partner?

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2. People assumed that you will interrupt your career or educational plans to take care of family needs (such as a sick family member or provide childcare)?

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3. People questioned your ability to handle situations by yourself?

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4. You been told that your love “completes” your partner?

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5. You been told that you are (or will be) a good mother because you are so caring?

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6. Men felt the need to explain a topic to you that you were already very knowledgeable about?
7. Romantic partners praised your ability to take care of their emotional needs?

8. You been advised to consider a career or job that allows the time to also be a good mother?

9. Men felt the need to tell you how you should run your life, do your job, etc?

10. Romantic partners expected you to please them through physical intimacy?

11. You been praised for performing domestic tasks, such as cooking, cleaning, and taking care of small children?

12. You been prohibited from doing something because others (such as parents or romantic partners) thought that you might get hurt?

13. You been made to feel that you “owed” a date something after being taken out to an expensive restaurant or event?

14. People expected you to display “purity” in your behaviors?
15. Men insisted on lifting or carrying heavy things for you, even when you didn’t ask or need the help?

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16. You experienced your date act in a way that protected you from being harassed by other people?

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17. People assumed that you have strong “morals” simply because you are a woman?

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18. You been on a date and your date makes the decision where to go for dinner?

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19. People reminded you to look for a romantic partner who can provide financially?

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20. Other assumed that you will sacrifice your needs if it benefits your romantic partner in some way?

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21. You been informed that as a woman, you have a more refine sense of culture and tastes than do men?

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22. Your date asked you out, rather than you asking out your date?

|   | 1 | 2 | 3 | 4 | 5 | 6 |
23. People said that you need to be protected or have a “protector” in your life?

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24. Others provided you with financial support (e.g., assist with bills, pay for vacation, buy drinks, pay for dates, etc.)?

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25. You been offered an escort, even though you didn’t feel it was necessary, when walking alone at night?

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Physical Activity Sexism Experience Scale

Instructions:
For each of the following items please indicate how frequently it has happened to you because you are a woman. Use the following scale:

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3 = the event happened sometimes (10-25% of the time)
4 = the event happened a lot (26-49%) of the time
5 = the event happened most of the time (50%-70% of the time)
6 = the event happened almost all of the time (more than 70%) of the time

Questions:

How frequently in your lifetime...

1. You have been told you should not participate in a physical activity because it is dangerous (P)
2. You been encouraged to participate in stereotypical “girl” activities as a child and/or adult (dance/cheerleading/gymnastics/etc.) (GD)

3. People offered to help you do something physical (carry bags/yard work/etc.) when you did not ask (P)

4. You have been told that certain types of physical activities will make you look manly and/or bulky (GD)

5. You been told that participating in certain types of physical activities will make you less attractive to men (H)

6. People offered to “go easy” on you while participating in physical activity (P)

7. You felt the need to look feminine (hair, makeup, feminine clothing) when participating in physical activity (GD)

8. You been discouraged to participate in a stereotypical “boy” sport by a maternal/female guardian (GD)

9. You been discouraged to participate in a stereotypical “boy” sport by a paternal/male guardian (GD)

10. You observed other women being sexualized in a physical activity setting (H)

11. You felt like you were being sexualized during a physical activity (HI)

12. You feared being judged or stared at while being physically active (H)

13. You feared being perceived as incompetent in a physical activity setting (P)

14. Have you exercised to achieve a body type/shape that you believe men are attracted to (HI)

15. You avoided exercise due to your body size or shape (HI)
16. You perceived that others assumed you were incapable of a sport, exercise or physical task (P)

B. FOCUS GROUP AND INTERVIEW QUESTIONS

Introduction: Thank you so much for joining us today, it is greatly appreciated. As we’ve mentioned before this focus group is for us to hear your views on physical activity as a woman. Your privacy is very important to us. Before we begin recording this session, we will have you choose a pseudonym. We will then change your name that appears on your individual Zoom video. We will be recording this Zoom meeting so we will ask that you do not use your real names or anyone else’s. We also ask that you do not share the names of those who are also in the focus group. The recordings will only be seen and heard by trained research assistants. You do not have to answer anything you do not want to or feel uncomfortable discussing, and you can leave the focus group at any time.

It is very important to us that we hear everyone’s thoughts and opinions, so we ask that you do your best to not talk over one another. We will try our very best to make sure that everyone gets an opportunity to express themselves. Before we begin, are there any questions?

Feedback for Survey

Introduction to Survey Questions: I’m going to start by asking you a few questions about the questionnaire.

Were there any questions that did not make sense?

Did you find the questionnaire to be inclusive?
Any other thoughts/questions/concerns?

**Past and Current Physical Activity Experiences**

1. What kind of activities did your parents/guardians encourage you to do?

2. What was your experience in physical education classes?

   a. What kinds of activities were offered to you?

   b. What did you do or like doing?

   c. Did you have school/gym uniforms?

3. Did you play sports?

   a. What sports did you play AND/OR did you want to play?

4. What activities do you do now?

5. What stops you from being active?

6. Are there things that make you uncomfortable to be active?

**Benevolent Sexism**

1. Have you ever felt like you shouldn’t participate in a certain activity?

   a. What was the activity?

   b. Why do you think that is?
2. Have you ever felt like you were being treated differently than boy/men during an activity?
   a. Why do you think that is?

3. What is the biggest reason you’ve ever avoided an activity?

4. What does support for physical activity mean to you?
   a. Have you ever felt like you were supported differently for physical activity than others around you?

5. Have you ever avoided an activity due to safety concerns?
   a. Have others around you discouraged activity because of your safety?

6. How have your interactions with men/boys been in physical activity settings?

7. How has your physical appearance impacted your physical activity?
   a. When did you begin feeling this way?
   b. Why do you think physical appearance impacts your physical activity?
   c. Were you ever concerned with being attractive during physical activity?

8. If you’ve dated or been in a romantic relationship in the past, how does/did dating impact your physical activity?
REFERENCES


32. Molina-García J, Queralt A, Castillo I, Sallis JF. Changes in Physical Activity Domains During the Transition Out of High School: Psychosocial and


52. Azzarito L, Solmon MA, Harrison L, Jr. "...If I had a choice, I would..." a feminist poststructuralist perspective on girls in physical education. Res Q Exerc Sport. 2006;77(2):222-239.


86. Anne Kerstin R, Stephanie S, Yolanda D, Guido K. Physical Activity and Outdoor Play of Children in Public Playgrounds—Do Gender and Social


103. Association AP. Answers to your questions about transgender people, gender identity, and gender expression2014.


113. Davis TM, Settles IH, Jones MK. Standpoints and Situatedness: Examining the Perception of Benevolent Sexism in Black and White Undergraduate Women and Men. PSYCHOLOGY OF WOMEN QUARTERLY. 2022.


