

THE GRADUATE COLLEGE OF THE  
UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER

ANNOUNCES THE FINAL EXAMINATION OF

# Chelsea L. Smith

FOR THE DEFENSE OF THE DOCTOR OF PHILOSOPHY DEGREE

---

GRADUATE COLLEGE  
Department of Allied Health Sciences

Wednesday, June 27, 2018, 10:00 a.m.  
College of Allied Health Building, Room 1117



## *Sibling's Influence on Subsiding Behaviors Related to Obesity (SIS-BRO)*

COMMITTEE IN CHARGE: Susan B. Sisson, PhD; Sandra H. Arnold, PhD; Jennifer L. Graef PhD; Laura Hubbs-Tait, PhD; Allen W. Kneehans PhD

ABSTRACT: **BACKGROUND:** Children without siblings (singletons) have higher rates of obesity compared to non-singletons. The purpose of this dissertation was to identify 1) the difference in objectively measured physical activity and family physical activity behaviors 2) the difference in child eating patterns and family eating behaviors and 3) identify parts of the sibling relationship that influence behavior and abdominal obesity. **METHODS:** This dissertation includes one systematic review and meta-analysis, and results from one cross sectional study. The systematic review and meta-analysis assessed the influence of siblings on objectively measured physical activity, including sedentary behavior (SB), light physical activity (LPA), and moderate-to-vigorous physical activity (MVPA). The final three manuscripts were all based off a cross sectional study, Sibling's Influence on Subsiding Behaviors Relation to Obesity (SISBRO), which evaluated children ages 5.0-7.9 years old with a sibling ages 2.0-4.9 years old or no siblings on demographics, anthropometric, family, and child behavior outcomes. The first SISBRO manuscript evaluated the sibling's influence on child anthropometrics, along with child and family physical activity behaviors. The second SISBRO manuscript evaluated differences in family and child eating behaviors. The third SISBRO manuscript investigated the sibling relationship on the child's behaviors, and abdominal obesity. **RESULTS:** In the meta-analysis, singletons had lower MVPA minutes/day compared to non-singletons, though there were mixed results for LPA and SB. In the cross sectional study, singletons had a higher BMI and WC percentile, exhibited more SB and fewer LPA minutes/day compared to non-singletons. Singletons had less healthy family and child eating behaviors compared to non-singletons. A younger male sibling (ages 2.0-4.9 years old), a smaller age difference, and a compassionate relationship were associated with child physical activity; while time playing with sibling was associated with a lower WC percentile. **CONCLUSION:** Singletons have a less active pattern compared to non-singletons, though the exact intensity difference requires additional exploration. Singletons had less healthy eating patterns and behaviors compared to non-singletons. Siblings may influence family practices related to eating patterns, but not physical activity at this age. A smaller age difference and a compassionate sibling relationship may lead to more activity and healthier weight in non-singletons.