The overall goal of my research is to understand the biobehavioral mechanisms that underlie the development of childhood obesity. In recent years, the scientific field has been gaining greater appreciation for the role of the intrauterine environment in modifying risk for obesity. Children who are born to women who were obese, diabetic, or had relatively high glucose concentrations during pregnancy have greater risk for obesity. The exact mechanisms that underlie this phenomenon are not known but likely involve some interaction between underlying physiology, behavior, and environmental influences. I am particularly interested in whether children who are born from an obesogenic intrauterine environment have differences in their feeding behavior that might increase their susceptibility to obesity. However, one of the limitations to studying feeding behavior, particularly of infants, is the lack of objective and cost effective methods with which to assess feeding. To begin to address this limitation, I was fortunate to receive a NORC Pilot and Feasibility Award that supported a study to explore the feasibility of using a jaw motion sensor to detect infant sucking during meals.

The pilot study was conducted in collaboration with Dr. Edward Sazonov (Department of Computer and Electrical Engineering, University of Alabama), who had originally developed the jaw motion sensor to detect chewing in adults, and Dr. Maria Hernandez-Reif (Department of Human Development and Family Studies, University of Alabama), to provide expertise in the coding of infant oral behaviors. To assess the validity of the jaw motion sensor to detect feeding behavior, breast- or bottle-fed infants wore the sensor during a typical meal, and the meal was video-recorded. The image below shows a bottle-fed infant wearing the jaw motion sensor during a meal. Analyses of the data are ongoing; however, preliminary findings suggest that the number of sucks detected by the jaw motion sensor during breast-fed or bottle-fed meals corresponds well with the number of sucks counted when the videos were coded by human observers. Work is continuing to examine whether other aspects of feeding behavior, such as meal duration or overall volume of intake, can be quantified by the jaw motion sensor, and whether the infant feeding behaviors are predictive of subsequent body weight or body fat change. If our hypotheses are supported, we hope to continue our collaboration in the future to investigate whether we can modify the sensor to assess feeding behavior in the home environment.