

***“Study Designs and Analytic Strategies for Environmental and Policy Research on Obesity, Physical Activity, and Diet”***

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***Research status and gaps related to environment, policy, and physical activity***

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The environment should be conceptualized as much broader than just the physical environment and include social structures, media and access to consumer goods.

**Gap 1. Conceptualization of Human Beings.** Research in the area of automaticity, behavioral economics, marketing and neurophysiology show that people respond automatically to their environments, and their responses are colored by hardwired default behaviors and biases that are often below awareness and beyond individual control. People have a limited cognitive capacity and lack insight as to the reasons for their behaviors and decisions. These characteristics of human beings must be considered in future research and interventions. Default human behaviors are to conserve energy; people favor resting, shortcuts, and reducing labor. To overcome these default behaviors, environmental cues must be either structured or appeal to other hardwired preferences, i.e., novelty, salience, and favorable social interactions. Having a realistic perspective on the abilities and limitations of people is necessary to design appropriate interventions at appropriate scales.

**Gap 2. Environment and Exposures.** Current measures of the environment do not typically account for actual travel patterns and exposures. The resulting studies are quite crude and the high level of “noise” due to imprecise measures could be a reason why we see very modest, if any, associations between the environment and physical activity. Studies that use GPS to be more precise about exposures and PA are needed.

**Gap 3. Understanding Cues that Lead to PA.** Why do people move at all? Beyond getting the needs of daily life (searching, working for food), people are typically active in search of novelty and stimulation. They flock to exhibits, shopping malls, events, and are willing to be physically active if that is required to experience novelty. Research is needed to identify which environmental factors and cues attract people to engage in more PA, and whether these cues can be expanded, optimized, and sustained to increase population PA.

**Gap 4. Interaction of Social and Physical Environments.** As less work is required in daily life, physical activity is increasingly relegated to leisure time. People are physically active in groups, in sports, competitions, dances, classes, and clubs. There is a large infrastructure to support these types of activities, yet there is large variation across localities. The marketing of leisure activities is very limited and has not been systematically explored. Studies to understand the variance in opportunities for PA are needed.

**Gap 5. Structuring PA through Policy and Infrastructure.** Given that the default behavior of humans is to conserve energy, for most people, PA will need to be structured into their daily routines. This can be done at school through daily PE for youth, but could also be structured into workdays so that adults can get daily PA. Research is needed to determine how PA breaks can be institutionalized, and what type and level of incentives are needed to maximize participation. For those who are not in the workplace, neighborhood environments can be optimized to increase PA and incentives can be provided to other organizations and institutions to increase PA.