Social learning is an effective mechanism to reduce uncertainty about environmental knowledge, helping individuals adopt an adaptive behavior in the environment at small cost. Although this is evident for learning about temporally stable targets (e.g., acquiring avoidance of toxic foods culturally), the functional value of social learning in a temporally unstable environment is less clear; knowledge acquired by social learning may be outdated. This paper addressed adaptive values of social learning in a non-stationary environment empirically.

When individual learning about the non-stationary environment is costly, a hawk-dove-game-like equilibrium is expected to emerge in the population, where members who engage in costly individual learning and members who skip the information search and free-ride on other members' search efforts coexist at a stable ratio. Such a "producer-scrounger" structure should qualify effectiveness of social/cultural learning severely, especially "conformity bias" when using social information (Boyd & Richerson, 1985). We tested these predictions by an experiment implementing a non-stationary uncertain environment in a laboratory. The results supported our thesis. Implications of these findings and some future directions were discussed.

Key Words: social learning, cultural transmission, conformity, producer-scrounger equilibrium