

Replication of Williams et al., 2016
“Ecology-driven stereotypes override race stereotypes”
PNAS, 2016, 113 (2) 310-315.

<http://www.pnas.org/content/113/2/310>

The original paper includes several studies. We randomly chose study 3. In this between-subject experiment, participants make judgements related to ecology stereotypes of a pictured target (a 24 year old man). The target description is randomized in a 3 (wealth: high, low, no information) × 2 (ecology: hopeful, desperate) design. We focus on what the authors call “the critical test of our prediction”: are ecology stereotypes still used to make inferences about target individuals within each level of wealth? We focus on the comparison between the hopeful and desperate ecology within the high wealth condition for the five ecology stereotype constructs combined (i.e., sexual unrestrictedness, impulsivity, opportunistic behavior, investment in own education, and investment in children). High-wealth individuals from desperate ecologies are stereotyped as possessing faster life history strategies than high-wealth individuals from hopeful ecologies.

Hypothesis to replicate and bet on: High-wealth individuals from desperate ecologies are stereotyped as possessing faster life history strategies (e.g., act impulsively, have more children than can be financially supported) than high-wealth individuals from hopeful ecologies. To evaluate this hypothesis, the authors perform independent samples *t*-tests for each of five life history strategy-relevant suites separately: sexual unrestrictedness, impulsivity, opportunistic behavior, investment in own education, and investment in children. We instead create a composite score of all five life history strategies using the original data and perform an independent samples Student’s *t*-test ($t(94) = 4.66, p < .001$). This test statistic has been re-estimated based on the original data. The high wealth condition was randomly chosen.

[Note: in the original paper, the ecology effect is tested for all five life history strategy-relevant suites separately between a desperate or a hopeful ecology. The differences were statistically significant $p < 0.05$, with effect sizes ranging from 0.42–1.21 (the test used was not reported, but we assume an independent samples *t*-test was used); p. 6 in SI.]

Criteria for replication: The criteria for replication are an effect in the same direction as the original study and a *p*-value < 0.05 in a two-sided independent samples *t*-test.

Power analysis: The original study had 96 participants for the two conditions. The standardized effect size (Cohen’s *d*) was $d = 0.951$. To have 90% power to detect 67% of the original effect size, a sample size of $n = 105$ is required.

Sample: The original paper mentions no restrictions on who could participate. We will make sure that participants can only participate once from the same account in this specific study, and we will only recruit participants with a HIT approval rate of 95% or above. We will also check all IP addresses via <https://www.ipqualityscore.com/>; and we will remove any participants where one or more of the following is true: fraud score ≥ 85 ; TOR = True; VPN = True; Bot = True; abuse velocity = high. The replication sample size is the sample size after any exclusions of participants.

Materials: We will use the same material as in the original study. The photographs used to manipulate the ecology condition were kindly provided by the original authors. All additional

details about the materials are mentioned in the original article, which allowed us to create the survey ourselves.

Procedure: We will closely follow the procedure of the original experiment. The following summary of the experimental procedure is therefore largely based on the description of the experiment in the article (pp. 315) and the section “SI Study 3: Ecology Stereotypes Are Applied Within Wealth” (pp. 1–2) in the Supplementary Information.

Participants will first be shown a Captcha, and will thereafter provide informed consent. After this we will include an attention check that participants will need to pass to continue to the study. This attention check is in addition to any other potential attention check(s) used in the original study. Participants are randomly assigned to a desperate or hopeful ecology condition. Participants will be asked to think about a 24-y-old man “who has lived since birth in the neighborhood pictured below and still lives there.” Participants in the desperate ecology condition will be randomly shown one of two desperate ecology photographs; participants in the hopeful ecology condition are shown one of the two hopeful ecology photographs. Participants are informed that the target made \$150,000 last year (high wealth condition).

Participants will then be asked to rate the individual on a series of traits capturing five life history theory-relevant suites of behavior: sexual unrestrictedness (e.g., “have sex at a young age”), impulsivity (e.g., “plan in advance”), opportunistic behavior (e.g., “resort quickly to violence”), investment in own education (e.g., “be educated”), and investment in children (e.g., “have more children than can be financially supported”). Responses are reported on seven-point scales (1 = very unlikely; 7 = very likely). Items will be reverse-coded where appropriate, such that higher scores reflect a faster life history strategy stereotype. Multiple items within each attribute are averaged to form composites. The order of the items will be randomized between participants. After averaging per suite of behavior, we will combine the 5 averages to create a composite fast life history strategy score.

Analysis: In consultation with the original authors we decided on the following analysis plan. We will first assess the reliability of the combined 18-item scale for life history strategies. A threshold of Cronbach’s $\alpha \geq 0.7$ will be used to validate the internal consistency of the scale. If $\alpha < 0.7$, we will check if removal of one or more items will improve the scale to meet the threshold. However, each of the five attributes should consist of at least 2 items. If this is not the case, we conclude that we are not justified in combining the attributes and will only look at the randomly selected attribute ‘investment in children’ (2 items). In case the overall scale is sufficiently reliable, we will create the composite score by first averaging within the attributes and subsequently averaging over the 5 averages. This strategy is chosen to account for the fact that some attributes consist of 6 items and others of only 2. This way, all five attributes contribute equally to the overall life history strategy score. Finally, we will conduct a two-sided independent samples t-test to test if targets in the desperate ecology condition are judged to possess faster life history strategies than targets in the hopeful ecology condition.

Subject payment: We are standardizing payments across all replications so that studies have a certain show-up fee depending on the expected length of the study, with an hourly wage from the show-up fee of \$8 and a minimum payment of \$1 (for studies with incentive payment we use the same incentive payment as in the original study; and this payment is paid in addition to the show-up fee). If we have problems recruiting, we will increase the show-up fee.