**The Inherence Heuristic as a Source of Essentialist Thought**
**Methodology File**

Below, we present the materials developed or adapted for the studies reported in *The Inherence Heuristic as a Source of Essentialist Thought.* References and instructions for materials from other sources are provided in the article text. Qualtrics study files are available on request.

## Inherence Heuristic Scale

The inherence heuristic scale consists of 15 items, plus 4 "catch" items used to remove inattentive participants. For online participants, scale and catch items were presented in a random order, with 5 items per page. Pen-and-paper participants received a worksheet with the scale items presented in one of four random orders.

Responses to all items were scored on 9-point Likert scales with anchors at 1 ("Disagree strongly"), 5 ("Neither agree nor disagree"), and 9 ("Agree strongly"). All scale points were labeled with numbers.

Participants in Studies 1 and 2 were given the instructions, "Please read the statements on the following pages. Think carefully about how much you agree or disagree with each statement and mark your answer by checking off an item on the 1 to 9 scale." Participants in Studies 3 and 4 were given the instructions, "Please think carefully about how much you agree or disagree with each of the following statements and mark your answer on the scale provided."

Participants were excluded if they responded in the unexpected direction to more than one of the catch items.

The 15 scale items were as follows:

1. It seems natural to use red in a traffic light to mean "stop."
2. It seems natural for parents and children to sleep in separate beds.
3. It seems natural that engagement rings typically have diamonds.
4. There are good reasons why dollar bills are green.
5. There are good reasons why we don't keep chipmunks as pets.
6. There are good reasons why orange juice is typically consumed for breakfast.
7. It seems right that *pink* is the color typically associated with girls.
8. It seems right to use *white* for wedding dresses.
9. It seems right that *black* is the color associated with funerals.
10. It seems ideal that toothpaste is typically flavored with mint.
11. It seems ideal that there are 7 days in a week.
12. It seems ideal that weekends consist of Saturday and Sunday.
13. If intelligent organisms were discovered on another planet, they would probably have 2 arms and 2 legs.
14. If intelligent organisms were discovered on another planet, they would probably have eyes and ears.

15. If intelligent organisms were discovered on another planet, they would probably communicate through sounds.

The four catch items were as follows:

1. It seems right to kill other people for fun.*
2. It seems natural to stand on one's head.*
3. It seems ideal for hotel rooms to have bathrooms.**
4. If intelligent organisms were discovered on another planet, they would probably reproduce.**

* Expected response: below the midpoint (i.e., disagree)
** Expected response: above the midpoint (i.e., agree)

**Essentialism Scale, Adapted from Haslam, Rothschild & Ernst (2000)**

This scale consisted of five prompts, each presented with a number of social categories (see table below for the text of the prompts). Participants rated how well each of the categories was described by each of the prompts. The prompts were presented in a random order. Each prompt appeared at the top of the page (for pen-and-paper participants) or screen (for online participants). Immediately below the prompt, the 1–9 scale labels were written. Below these appeared the category labels (on the left side of the screen/page) and a response grid allowing participants to rate each category (e.g., Catholics) on a 9-point scale. All scale points were labeled with numbers. Anchors appeared above the 1 and 9 points.

For each prompt, participants in Study 1 were asked to rate 12 social categories: Asians, athletes, Catholics, girls, messy people, musicians, optimists, poor people, schizophrenics, shy people, smart people, and vegetarians. Participants in Study 4 were asked to rate only four social categories: Asians, Catholics, girls, and poor people. For online participants, the categories were presented in random order for each prompt. Pen-and-paper participants saw categories in one of four random orders, with the same order across prompts.

The five prompts, along with instructions and scale anchor labels are as follows:

| | *Prompt* | *Anchor 1* | *Anchor 9* |
|---|---|---|---|
| 1. | The following items are about different kinds of **CATEGORIES**. Please read and answer the following question to the best of your ability:<br><br>**Some categories allow people to make many judgments about their members; knowing that an individual belongs to the category tells us a lot about that individual. Other categories only allow a few judgments about their members; knowledge of membership is not very informative.**<br><br>Please rate the following categories on this dimension. Select your answer using the 1 to 9 scale below. | Few judgments, Uninformative | Many judgments, Informative |
| 2. | The following items are about different kinds of **CATEGORIES**. Please read and answer the following question to the best of your ability:<br><br>**Some categories have an underlying reality; although their members have similarities and differences on the surface, underneath they are basically the same. Other categories also have similarities and differences on the surface, but do not correspond to an undelying reality.**<br><br>Please rate the following categories on this dimension. Select your answer using the 1 to 9 scale below. | No underlying reality | Underlying reality |
| 3. | The following items are about different kinds of **CATEGORIES**. Please read and answer the following question to the best of your ability:<br><br>**Some categories contain members that are very similar to one another; they have many things in common. Members of these categories are relatively uniform. Other categories contain members that differ greatly from one another and don't share many characteristics.**<br><br>Please rate the following categories on this dimension. Select your answer using the 1 to 9 scale below. | Diverse, Differing | Uniform, Similar |

| | *Prompt* | *Anchor 1* | *Anchor 9* |
|---|---|---|---|
| 4. | The following items are about **TRAITS**, such as aggressiveness, anxiousness, and friendliness. Please read and answer the following question to the best of your ability:<br><br>**Some traits are biologically predisposed. Genes determine whether or not a person displays a certain trait. Other traits are shaped by the environment. The environment in which a person grows up affects whether or not the person displays a certain trait.**<br><br>Please rate the traits of members of the following categories on this dimension. Select your answer using the 1 to 9 scale below. | Traits are influenced by the environment | Traits are innate or inborn |
| 5. | The following items are about **TRAITS**, such as aggressiveness, anxiousness, and friendliness. Please read and answer the following question to the best of your ability:<br><br>**Some traits are stable over time. They do not change much through a person's life. Other traits are less stable. They change substantially over time.**<br><br>Please rate the traits of members of the following categories on this dimension. Select your answer using the 1 to 9 scale below. | Traits are unstable, Change a lot | Traits are stable, Change little |

**Manipulation, Studies 3 and 4**

The manipulation used in Studies 3 and 4 was presented as a 10-item scale. Scale items were presented in a fixed order. Each scale item appeared on a different screen. Below the item, participants rated their responses to the item on 4-point scales. Each scale point was numbered and labeled as follows: 1 = Disagree, 2 = Agree somewhat, 3 = Agree, 4 = Agree very strongly. Below the response scale, participants were asked, "Please explain why you agree or disagree," and given an open-ended response field into which they could enter their response.

The items in the anti-inherence condition were as follows:

1. There are absolutely no good reasons why we use specific words to represent our thoughts. Any combination of sounds could in principle refer to any idea.
2. The fact that, in the US, we write from left to right, and top to bottom is simply coincidence. There is nothing ideal about that pattern.
3. We store and transfer information largely on digital computers just because they

happened to be invented at the right time. They're certainly not the optimal vehicles for such tasks.
4. The only reason our paper, money, and books are rectangular is historical happenstance.
5. We use the color red to convey feelings of love and passion entirely because of marketing strategies from the past. Green or brown could easily be used to convey the same feelings.
6. Toilets and showers are both placed in bathrooms simply to conserve space. There are no real reasons why they both need to be in the same room.
7. The fact that longer clothing (e.g., pants, gowns) is seen as more formal than shorter clothing (e.g., shorts, miniskirts) is only a convention, and the opposite trend (shorter = more formal) could've been implemented just as easily.
8. The current design of traffic lights, with three different colors reflecting three different speeds, is entirely due to historical factors, and is by no means the most efficient or effective way to manage traffic.
9. There are no meaningful reasons why we divide the calendar year into twelve months. It's simply a historical convention.
10. We give flowers as gifts for a variety of occasions (e.g., Valentine's Day, funerals) because of effective advertising and marketing by florists--not because flowers effectively convey a variety of sentiments.

The items in the control condition were as follows:

1. In most languages, there are specific words or phrases assiged to convey popularly held beliefs or feelings.
2. In the US, we generally write from left to right, and top to bottom.
3. Digital computers tend to be the vehicle most often used for transferring and storing information.
4. Most books, paper, and money are rectangular in shape.
5. Red tends to be the most popular color for conveying feelings of love and passion.
6. In most homes, toilets and showers are both located in bathrooms.
7. Clothing that is longer in length (e.g., pants, gowns) is viewed as more formal than clothing that is shorter in length (e.g., shorts, miniskirts).
8. Modern traffic lights, with three colors signaling three different speeds, is a popular way to direct traffic.
9. The calendar used most often in modern society is divided into twelve months.
10. People often give flowers as gifts on a variety of different occasions (e.g., Valentine's Day, funerals).

**Construct Validity Measures**

Participants in our construct validity study completed two tasks.

First, participants read about two sets of individuals who had different explanations for the patterns used in our items. One set of people believed the patterns were due to inherent facts about the entities involved in the patterns. The other set believed the patterns were due to extrinsic facts about the entities. Each set was presented as a block, with items randomly ordered

with blocks. Each item appeared on a separate page. The order of the blocks was randomlized across participants.

For each person about whose beliefs they were told, participants were asked to make the following prediction about how that person would respond to the relevant item from the Inherence Heuristic Scale, "If [Name] believes what is above, how would [Name] feel about the statement below." Ratings were made on 9-point Likert scales with anchors at 1 ("he would disagree strongly"), 5 ("he would neither agree nor disagree"), and 9 ("he would agree strongly"). All scale points were labeled with numbers.

Before beginning the ratings, participants were given instructions and four practice items to orient them to the task. The instructions were as follows: "In this task, you will told about a belief that someone holds and then be asked to predict how much they would agree with a statement. For example, you might be told that Bill believes that almonds are healthy and then be asked to estimate how much he agrees with the statement, 'People should eat almonds.' Before you begin the actual task, we'd like you to get started on some practice items to get used to the format."

The practice items were as follows:

| | *Belief* | *Statement about which prediction is made* |
|---|---|---|
| 1. | **Jon believes that bicycling is good for the environment.** | Cities should install more bike lanes. |
| 2. | **Andy believes that car seats protect children.** | Parents should use carseats for their children. |
| 3. | **Mike believes that too many people are going to college.** | We should expand access to college. |
| 4. | **Eric believes that high fructose corn syrup is unhealthy.** | Companies should use high fructose corn syrup in foods. |

The inherent items were as follows:

| | *Inherent Belief* | *Statement about which prediction is made* |
|---|---|---|
| 1. | **Dan believes that we use red in traffic lights to mean "stop" because of something about the color red or about stop lights—maybe the color red inherently acts as a warning.** | It seems natural to use red in a traffic light to mean "stop." |

| | *Inherent Belief* | *Statement about which prediction is made* |
|---|---|---|
| 2. | **Brett believes that parents and children sleep in different beds because of something about the parent-child relationship or about the act of sleeping in separate beds—maybe one of the critical components of the parent-child relationship is teaching children independence.** | It seems natural for parents and children to sleep in separate beds. |
| 3. | **Albert believes that engagement rings typically have diamonds because of something about engagement rings or about diamonds—maybe diamonds' rarity and value is a match for the value of romantic love** | It seems natural that engagement rings typically have diamonds. |
| 4. | **Gary believes that dollar bills are green because of something about dollar bills or about the color green—maybe since green is the color of trees it symbolizes endurance and trust and thus was chosen for money.** | There are good reasons why dollar bills are green. |
| 5. | **Ryan believes that we don't keep chipmunks as pets because of something about chipmunks or about pets—maybe because chipmunks don't like to be picked up or held.** | There are good reasons why we don't keep chipmunks as pets. |
| 6. | **Ken believes that we drink orange juice for breakfast because of something about orange juice or about breakfast—maybe the citrus aroma is refreshing and helps us to wake up.** | There are good reasons why orange juice is typically consumed for breakfast. |
| 7. | **Noam believes that pink is the color associated with girls because of something about the color pink or about girls—maybe because pink's flower-like appearance matches girls' dainty nature.** | It seems right that *pink* is the color typically associated with girls. |
| 8. | **Seth believes that wedding dresses are white because of something about the color white or about wedding dresses—maybe because the untainted nature of white reminds people of pure love.** | It seems right to use *white* for wedding dresses. |
| 9. | **Matt believes that black is associated with funerals because of something about the color black or about funerals—maybe because the darkness of black conveys how people feel at funerals.** | It seems right that *black* is the color associated with funerals. |

| *Inherent Belief* | *Statement about which prediction is made* |
|---|---|
| 10. **Joe believes that toothpaste is flavored with mint because of something about toothpaste or about mint—maybe the tingling sensation of mint makes one's teeth feel extra clean.** | It seems ideal that toothpaste is typically flavored with mint. |
| 11. **Carl believes that there are 7 days in a week because of something about the quantity of 7 days or about the week as a marker of time—maybe the week is meant to represent the phases of the moon, which are about 7 days long.** | It seems ideal that there are 7 days in a week. |
| 12. **Chris believes that weekends consist of Saturday and Sunday because of something about weekends or about Saturday and Sunday—maybe Saturday and Sunday are holy days for many people, and so people wouldn't be able to work.** | It seems ideal that weekends consist of Saturday and Sunday. |
| 13. **Jim believes that intelligent organisms on Earth have 2 arms and 2 legs because of something about intelligent organisms or about having 2 arms and 2 legs—maybe having 2 arms and 2 legs is the perfect balance between tool use and locomotion for intelligent organisms.** | If intelligent organisms were discovered on another planet, they would probably have 2 arms and 2 legs. |
| 14. **Steve believes that intelligent organisms on Earth have eyes and ears because of something about intelligent organisms or about eyes and ears—maybe eyes and ears are optimal for perceiving the world.** | If intelligent organisms were discovered on another planet, they would probably have eyes and ears. |
| 15. **Bob believes that intelligent organisms on Earth communicate through sound because of something about intelligent organisms or about communicating through sounds—maybe communicating through sound allows intelligent organisms to communicate over longer distances or while engaged in other activities.** | If intelligent organisms were discovered on another planet, they would probably communicate through sounds. |

The extrinsic items were as follows:

| | *Extrinsic Belief* | *Statement about which prediction is made* |
|---|---|---|
| 1. | **Pat believes that we use red in traffic lights to mean "stop" because of some historical or contextual reason—maybe the color was chosen at a meeting of traffic safety officers a long time ago and we have simply continued using it since.** | It seems natural to use red in a traffic light to mean "stop." |
| 2. | **Zach believes that parents and children sleep in different beds because of some historical or contextual reason—maybe it became popular to sleep in separate beds when wealthy people began to have nannies who would watch children at night and people just began copying that practice.** | It seems natural for parents and children to sleep in separate beds. |
| 3. | **Dave believes that engagement rings typically have diamonds because of some historical or contextual reason—maybe a major marketing campaign is responsible for the association of diamonds with romantic love.** | It seems natural that engagement rings typically have diamonds. |
| 4. | **Don believes that dollar bills are green because of some historical or contextual reason—maybe green dyes were plentiful and cheap when dollar bills were first made and dollars are still made with them out of tradition.** | There are good reasons why dollar bills are green. |
| 5. | **Will believes that we don't keep chipmunks as pets because of some historical or contextual reason—maybe because they happened to be absent from the geographical areas where humans started to domesticate animals thousands of years ago.** | There are good reasons why we don't keep chipmunks as pets. |
| 6. | **Pete believes that orange juice is typically consumed for breakfast because of some historical or contextual reason—maybe because orange growers have promoted orange juice for breakfast in an effort to sell more oranges.** | There are good reasons why orange juice is typically consumed for breakfast. |
| 7. | **Paul believes that the color pink is typically associated with girls because of some historical or contextual reason—maybe because marketers have promoted pink products for girls.** | It seems right that *pink* is the color typically associated with girls. |

| | *Extrinsic Belief* | *Statement about which prediction is made* |
|---|---|---|
| 8. | **Jack believes that wedding dresses are white because of some historical or contextual reason—maybe because someone famous was photographed in a white wedding dress, which started a trend that continues to this day.** | It seems right to use *white* for wedding dresses. |
| 9. | **Tim believes that black is the color associated with funerals because of some historical or contextual reason—maybe because the Romans originated and then spread the practice and many cultures have just been doing it since.** | It seems right that *black* is the color associated with funerals. |
| 10. | **Tom believes that toothpaste is flavored with mint because of some historical or contextual reason—maybe because mint was cheap and readily available in the US at the time modern toothpaste began being made.** | It seems ideal that toothpaste is typically flavored with mint. |
| 11. | **Ted believes that there are 7 days in a week because of some historical or contextual reason—maybe because ancient calendar-makers chose 7 days and we simply haven't bothered to change it.** | It seems ideal that there are 7 days in a week. |
| 12. | **Sam believes that weekends consist of Saturday and Sunday because of some historical or contextual reason—maybe because the labor movement of the early 20th century made a push for more free time for workers.** | It seems ideal that weekends consist of Saturday and Sunday. |
| 13. | **Sean believes that intelligent organisms on Earth have 2 arms and 2 legs because of some historical or contextual reason—maybe because the animals they evolved from just happened to have 2 arms and 2 legs** | If intelligent organisms were discovered on another planet, they would probably have 2 arms and 2 legs. |
| 14. | **Rick believes that there intelligent organisms on Earth have eyes and ears because of some historical or contextual reason—maybe because the creatures they evolved from just happened to have eyes and ears.** | If intelligent organisms were discovered on another planet, they would probably have eyes and ears. |

| | *Extrinsic Belief* | *Statement about which prediction is made* |
|---|---|---|
| 15. | **Alex believes that intelligent organisms on Earth communicate through sounds because of some historical or contextual reason—maybe the Earth's atmosphere just happened to support rapid and far-reaching sound transmission.** | If intelligent organisms were discovered on another planet, they would probably communicate through sounds. |

After making belief predictions for all 30 items plus the four practice items, participants were asked whether they agree or disagree with each of the items from the Inherence Heuristic Scale. They were given the instructions, "**Your Opinion:** Next, we'd like you to tell us whether you yourself agree or disagree with the statements you've been reading. You will be presented with each of the statements and asked whether you agree or disagree. You will also be asked to explain why you agree or disagree." After this, they were presented with each of the items from the Inherence Heuristic scale, one at a time (randomly ordered). Below the item, they were asked to select one of two options (*agree* or *disagree*) and to answer the question, "Why do you agree or disagree with this statement?" in an open-ended response box.