In this experiment, your task is to categorize everyday objects as fast and accurately as possible. You will see various objects and categorize them either according to their size (as small or large) or according to whether they contain a mechanism or not (as mechanic or non-mechanic).

**size categorization task**

For the size categorization task, please judge the objects real-life size relative to a shoebox (common dimensions are: 37.5 cm x 30 cm x 13.5 cm = 14.8 inch x 11.8 inch x 5.3 inch). An object should be categorized as small when its real-life size is smaller than a shoebox and would fit inside a shoebox. Conversely, an object should be categorized as large when ist real-life size is larger than a shoebox and it would not fit inside a shoebox (see the figure below for a size reference).

PUT FIGURE OF PERSON HOLDING BOX HERE

**Attention!** Please categorize the objects‘ size as they are depicted. That is, do not consider whether you could fold the objects somehow to fit them in the shoebox. Categorize the objects according to whether they would fit into the shoebox exactly as they are depicted. For instance, a long pair of trousers would not fit into the shoebox.

**mechanism categorization task**

When categorizing objects according to whether they are mechanic or not, please decide whether the object contains any kind of mechanism. That also entails simple mechanisms like switches, levers or turning wheels. Furthermore, for easier categorization, any object with electronic parts counts as mechanic. Only objects without any sort of mechanism are to be categorized as non-mechanic.

press SPACE to continue

**How do you categorize objects?**

You will categorize the objects by pressing either the left (S) key or the right (L) key. Please place your left and right index fingers on these keys now to be ready to respond. The experiment will consist of a large number of rather short blocks. Please always make sure that your index fingers rest on the S and L keys before you start the next block.

**How do you know whether to categorize objects according to size or mechanism?**

The categorization task (size or mechanism) you are to perform will be indicated by letters appearing on the left and right side of the screen. When you are to categorize the object according to its size, the letter S (for small) and L (for large) will appear. When you are to categorize the object according to whether it is mechanic or not, the letters M (for mechanic) and N (for non-mechanic) will appear. The categorization task you have to perform can switch after every object you see. Thus, you need to be prepared for both categorization tasks.

**How do you know which response to perform?**

The letter indicating the categorization task (S and L for the size categorization task, M and N for the mechanism categorization task) also tell you which response corresponds to which categorization. That is, S/M can appear either on the left or right of the screen (and conversely, L/N on the right or left).

S L

Press the left key to categorize the object as small and the right key to categorize the object as large.

L S

Press the left key to categorize the object as large and the right key to categorize the object as small.

M N

Press the left key to categorize the object as mechanic and the right key to categorize the object as non-mechanic.

N M

Press the left key to categorize the object as non-mechanic and the right key to categorize the object as mechanic.

press SPACE to continue

Importantly, the letters indicating the classification task (size vs. mechanism) and how your responses are mapped to the respective two options can appear at different times (before, with, or after the object). Your task is to always categorize the object as fast and accurately as possible as soon as you know both the object and your categorization task.

**The letters can appear first before the object is shown.**

When the object appears, categorize it as fast and accurately as you can.

**The letters can appear with the object.**

When both letters and object appear, categorize the object as fast and accurately as you can.

**The letters can appear second after the object is shown.**

When the letters appear, categorize the object you saw before them as fast and accurately as you can.

After responding, you will receive feedback telling you whether your categorization was correct or whether you committed an error. In case you do not respond in time or respond prematurely, you will also receive corresponding feedback.

To help you prepare for when the letters and object will appear, before the beginning of each block you will be informed whether the letters will appear before, with, or after the object in the first and second half of the block. For instance, the information „BEFORE – WITH“ displayed prior to a block indicates that the letters will appear before the object in the first half of the block and with the object in the second half of the block. The end of the first half will be marked by a large X appearing in the middle of the screen. This will indicate to you that the second half will begin.

press SPACE to continue

Let’s first practice the task.

The practice will consist of 4 short blocks.

As stated on Prolific, it is essential to our assessment that all participants perform the task as fast and accurately as they can and give it their full, undivided attention.

Based on our prior studies, we determined that an accuracy score below 70% is very atypical for a person attentively performing the task. A person attentively performing the task should always be able to reach this criterion. An accuracy score below 70% indicates that a person is not attending, is experiencing technical issues with their computer, or has misunderstood the task. As also stated on Prolific, we will therefore only grant credit to participants who reach accuracy scores of at least 70% in the main experiment.

To allow you to test whether you are doing well enough, we will also assess your accuracy score for this practice. If it is below 70%, you will be asked to redo the practice blocks. In case you do not reach an accuracy score of at least 70% when you do the practice the second time, the experiment will automatically be ended to ensure that only persons who can reach the accuracy score will spend more time on the task.

Press SPACE to see a summary and then start the practice

**Summary**

Categorize the object according to its size/mechanism as **fast and accurately** as you can (once you have the necessary information – letters + object)!

S = small L = large

M = mechanic N = non-mechanic

The position of the letter tells you which key to press for the corresponding categorization.

**THIS BLOCK:**

**WITH - BEFORE**

**Place your index fingers on S and L now!**

press SPACE to start

You have successfully completed the practice and will now move on to the main experiment. The main experiment will be exactly as the practice and will consist of 72 short blocks. You will see a summary of the experiment before each block. In case you need to take a break, please do so when you see the summary.

**Please continue to respond as fast and accurately as you can!**

press SPACE to start the main experiment

**block X/72**

X/12 correct

**Please continue to respond as fast and accurately as you can!**

press SPACE to continue to summary

Great!

You have successfully completed the main experiment. In the following, we will ask you a few questions about the experiment.

Please answer these questions and then continue until you are asked to press a button to finish the experiment and register your participation with Prolific. Do not end the experiment prematurely or close the tab before you have clicked on that button. Doing so might render us unable to determine whether you have participated and we would not be able to grant you credit for your participation.

Press SPACE to continue

Qs

Thank you very much for your participation in our study!

This study aims to help us understand how we control our actions based on stimuli/objects we have already encountered. Prior research has shown that when we respond to a stimulus we associate the stimulus with our response. When we then encounter the same stimulus again later on, the associated response is retrieved and helps us respond fast and accurately. That is, prior experience helps us make our responses more efficient. However, the fundamental mechanisms underlying this are still rather poorly understood. For instance, it is unknown whether the temporal overlap or order of stimulus and response plays a role for them to be associated. This is what we tested here. Our findings will help us to further understand how humans control their actions on the basis of stimuli in the environment.

Again, thank you for supporting our research by participating in this study

END STUDY AND RETURN TO PROLIFIC