Instructions

Pain and Learning V

Summary

The task you are about to complete takes approximately 1 hour and 20 minutes. Your goal is to **learn relationships between different images and outcomes**. On each trial you will be asked to indicate your subjective probability that the image you see will be followed by pain or that it will not. 100% means that pain with certainly follow, 0% means that there will be no pain after this image. Following your response, electrical stimulation will follow or it will be omitted. This gives you an opportunity to learn the probability that a certain image is followed by pain or not. The probability of any image being followed by pain **can be stable or it can change**, you therefore need to keep paying attention to the recent history of outcomes and indicate your subjective probability adequately. Please try to be as accurate as possible.

The task is divided into three **independent** blocks. This means that each block is almost a separate experiment and you have to start learning anew. To make the blocks more distinguishable, the set of images used in each will be different, as demonstrated on the figure below:

Before we start with the task we will conduct a calibration of the stimulator. This will ensure that during the task we will only use a level that you are happy with. The **same strength** of the stimulation will be used throughout the task on all trials. In between the experimental blocks a recalibration will be performed to ensure that the stimulation intensity is stable across the entire session.

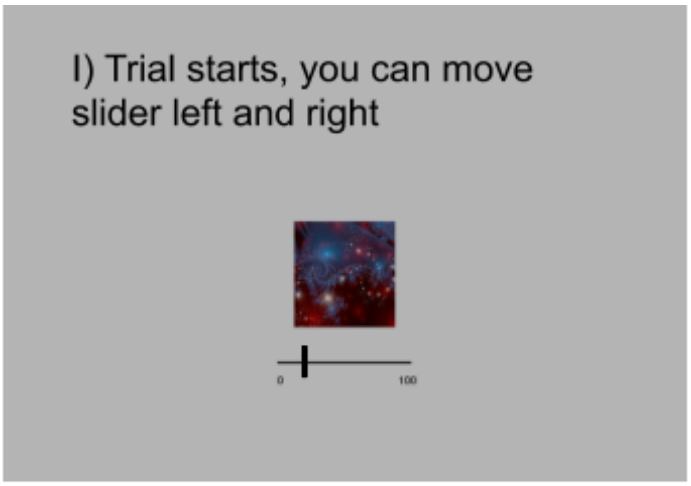
Calibration

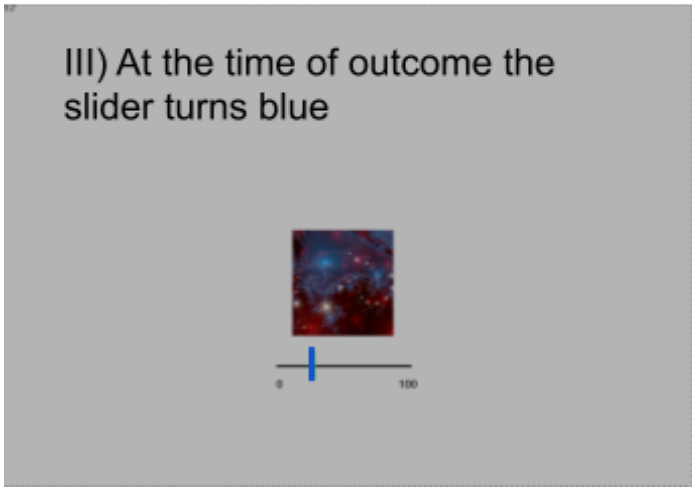
The goal of the calibration is to identify your personal 8/10 pain level that will be used throughout the task. It may be difficult to numerically estimate pain intensity which is why for the purpose of this experiment 8/10 pain level is defined as a **painful** sensation that, however, isn't too painful and you are **still willing to experience it approximately 100 times during each block.** The stimuli should be painful but just enough for you to be willing to receive them the above mentioned amounts of time. Importantly, if the stimulations become too strong or too weak you will have the opportunity to adjust their strength in between blocks. If you perceive them as too **strong** or too **weak** at any point during the task please tell the experimenter. It is possible to make small adjustments during the actual experiment. They should always remain at your personal 8/10 level during the task.

The calibration itself involves receiving a series of stimuli and rating them on a scale from 1 to 10 where 0 is 'not painful at all' and 10 is 'very painful'. The stimuli vary in intensity, so you should try to be as accurate as possible. Once a stable 8/10 level is found we will use a validation procedure to inform the computer of your ratings. At this stage, nothing will change for you. You will keep rating the sensations as before, the only difference is that you will see the experimenter inputting the numbers into a computer. This procedure will be repeated before the start of each block.

Task description

Each of the 3 blocks of the task will involve going through a few hundred trials. In the beginning of each trial you will be presented with **an image** and asked to indicate how likely it is to be followed by pain on this particular trial. To submit your answer you will use left and right arrows to move the black slider between 0% and 100% into your final answer position. Once you are at the desired position you will press the down arrow to submit your response. The slider will then turn green to indicate that you have responded. A short waiting period will follow after which you will either receive the pain or nothing will happen. At this point, the slider will turn blue to indicate that the outcome has already happened - if you haven't received a stimulation and the slider turned blue it means that this image was not followed by pain on this trial. See the screenshots of the task below.





There will be several images, not just one, in the entire task, however, only one on a particular trial. In the beginning of the task you will of course have no information about the relationship of the images and how likely they are to be followed by pain or not, however, as you go through more and more trials you should be able to identify the current likelihood of a particular image being followed by pain. The probability of

pain for a particular image **might change at any point**, so you need to keep paying attention all through the task. Try to be as fast and as accurate as possible.

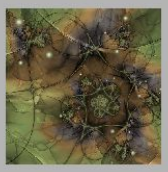
Biding trials

On rare occasions you will be presented with the image that is about to appear on the next trial. You will then be asked the amount you would be willing to pay to have a guarantee that you won't receive the stimulation on the next trial. The minimum bid is £0 and the maximum is £5. To decide how much you would be willing to pay you should consider how likely the image is to be followed by pain (i.e. image that's rarely followed by pain might not be worth investing as much into). Once you indicate your bid a random value between £0 and £5 will be generated as the 'market value'. If your bid is higher than the market value then you are guaranteed that you will not receive the stimulation on the next trial. If your bid is lower than the market value then the task will proceed without any future guarantees. This means that the higher you bid the more likely you are to be successful.

[add the auction example to instructions]
Note that **if** you are successful and you are guaranteed no stimulation on the next trial you will still be informed of what the outcome would have been. On the next trial, even if you were guaranteed no stimulation please indicate your belief in the probability of painful outcome as usual. You will be informed about the outcome: the screen will say either 'STIMULATION AVOIDED' or 'NO STIMULATION AVOIDED' which means that you can still learn about the given image's probability of pain.

At the end of the task ONE of the biding trials will be selected and the amount you bid will be deducted from your earnings.

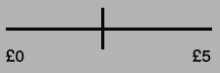
THIS IMAGE WILL COME UP ON THE NEXT TRIAL:



KEEPING IN MIND THAT YOUR OVERALL REIMBURSEMENT IS £25,

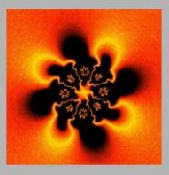
HOW MUCH WOULD YOU BE WILLING TO PAY TO BE CERTAIN THAT

YOU WILL NOT RECEIVE THE STIMULATION ON THE NEXT TRIAL?



£2.3

THIS IMAGE WILL COME UP ON THE NEXT TRIAL:



KEEPING IN MIND THAT YOUR OVERALL REIMBURSEMENT IS £25,

HOW MUCH WOULD YOU BE WILLING TO PAY TO BE CERTAIN THAT

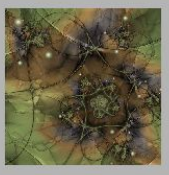
YOU WILL NOT RECEIVE THE STIMULATION ON THE NEXT TRIAL?

£0.6

THE MARKET VALUE WAS: £2.1

YOUR BID WAS NOT SUCCESSFUL, THE TASK WILL FOLLOW

THIS IMAGE WILL COME UP ON THE NEXT TRIAL:



KEEPING IN MIND THAT YOUR OVERALL REIMBURSEMENT IS £25,

HOW MUCH WOULD YOU BE WILLING TO PAY TO BE CERTAIN THAT

YOU WILL NOT RECEIVE THE STIMULATION ON THE NEXT TRIAL?

£2.7

THE MARKET VALUE WAS: £0

YOUR BID WAS SUCCESSFUL, YOU WILL NOT RECEIVE STIMULATION ON THE NEXT TRIAL