

Classroom set Activity 5: Design a scientist

Aim of Activity: To explore stereotypes, role models and possible occupations

Activity Instruction: Draw a scientist, it can be any kind of scientist, try to include as much detail as you can, age, ethnicity, gender, family life, hobbies, where they live, etc.

Facilitator Approach: Tease out the discussion, the judgement and choices you make, ask people whether they are going with assumptions or “fighting” them. Look at the source of those assumptions, think about how they make you feel. Introduce the idea of ‘unconscious bias’ to pupils. You may find it useful to show [this new video](#) from the Royal Society explaining unconscious bias or this one called Inspiring the Future which was also a suggested resource for classroom activity in the previous session

What do scientists look like?

Ask children to type the word ‘scientist’ into google, to find the type of images that appear. Discuss the results.

- More men than women. Predominantly white. Why?
- Where are the middle-aged women scientists?

Education Questions:

- Can you imagine doing this in the classroom?
- What sort of issues will it surface and how will you deal with them?
- What kind of support do you need?

Classroom Activity 6: Exploring a case study: Hurricanes - it's all in the name ...

A study published in the *Proceedings of the National Academy of Sciences of the USA in 2014* found that the death toll for severe hurricanes with more feminine names was higher than that for hurricanes with masculine names. (This held true even after leaving out the statistical outliers of Hurricanes Katrina and Audrey, which killed far more people than the average hurricane.)

The researchers did a historical analysis of 92 actual hurricanes that made landfall in the US from 1950 to 2012. They took the storm's names and gave them to a group of participants (who didn't know that they were hurricane names) and asked them how masculine or feminine each one was.

Analysing the historical data, the authors found an intriguing correlation: among more damaging hurricanes the more feminine the hurricane's name, the higher the death toll.

In order to see if there was a causal link between a hurricane's name and people's attitudes about it, the researchers then asked another group of participants to read hypothetical scenarios about a hurricane while varying its name (for example, half of them read about "Hurricane Victor" and half read about "Hurricane Victoria").

The participants who read about storms with male names, on average, ranked those storms as more intense and riskier. And they said that they were more likely to evacuate than those who read identical scenarios with female names. The researchers concluded that unconscious bias was leading participants to equate masculine names with strength and aggression and feminine names with warmth and gentleness.

While there has been some debate about the validity of the study it does suggest how unconscious attitudes about gender play out in our lives — with potentially serious consequences.

Education Questions:

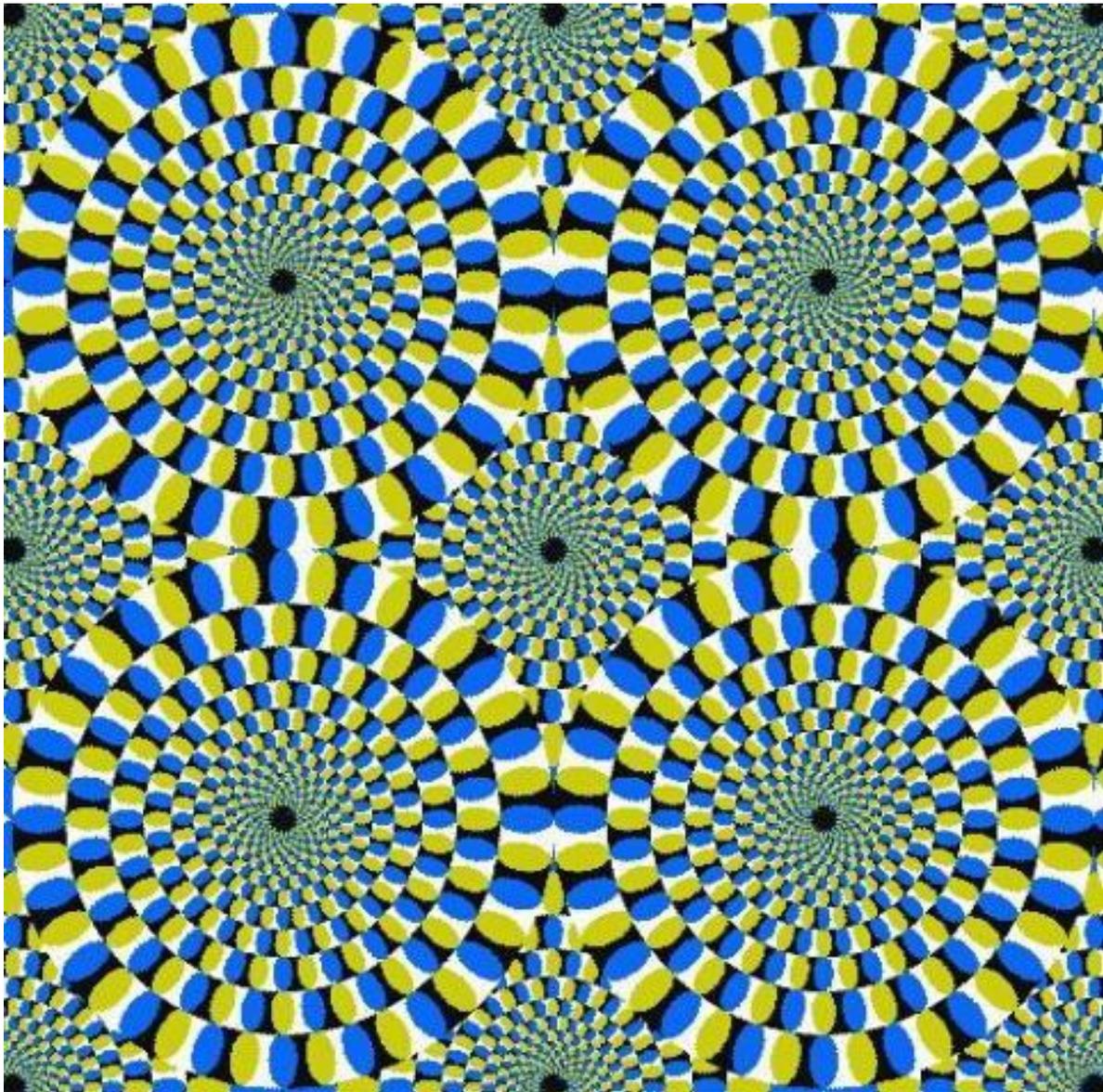
What questions would you ask pupils to help them consider the impact of unconscious bias in the study? For example: What assumptions might people make about the storm if it was given a female name? What about a male name? What characteristics do we associate with being female or male? Do you think people were consciously considering gender when they made assumptions about the type of storm it was?

- How does this case study demonstrate unconscious bias about gender?

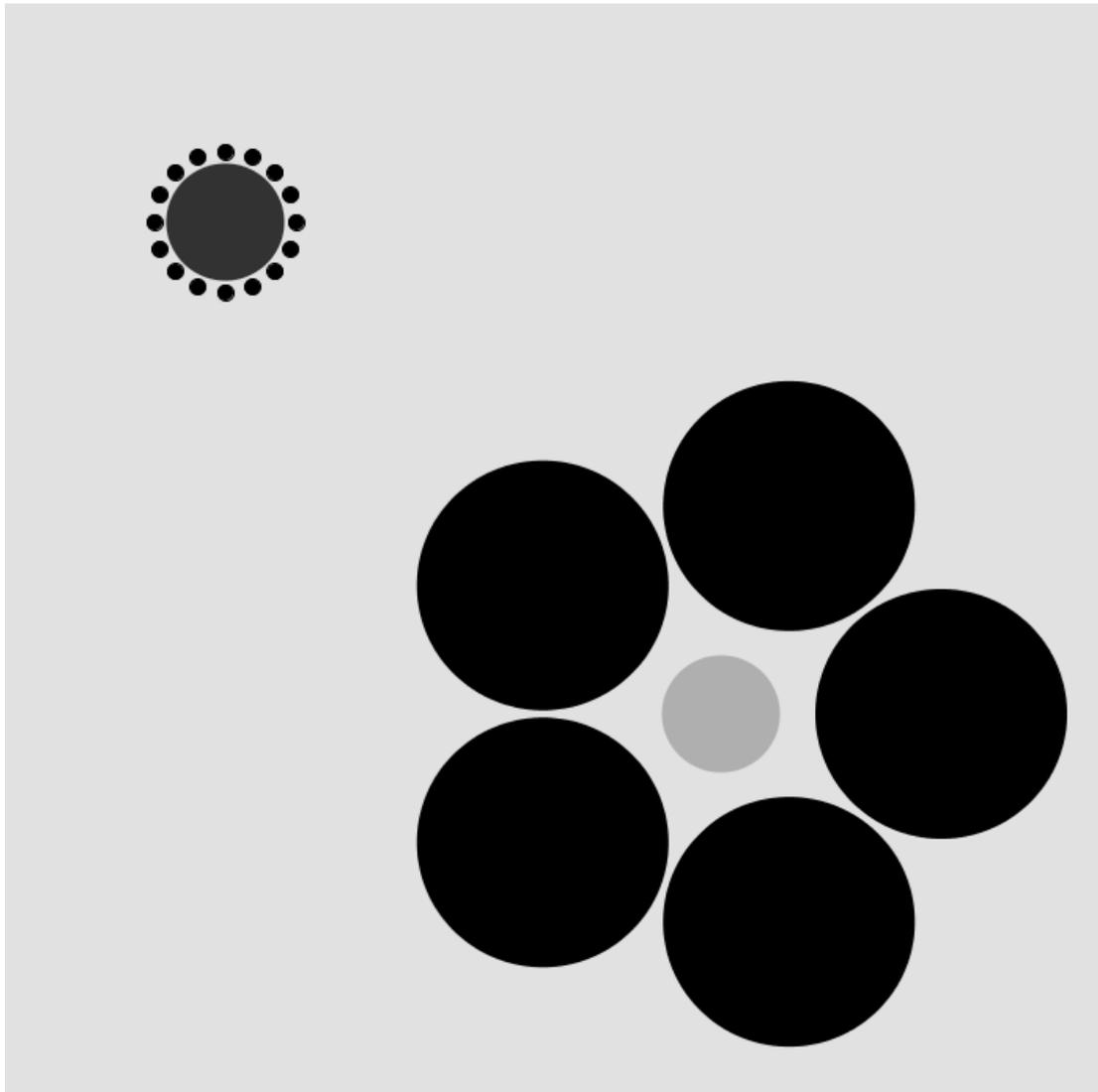
Can the pupils think of other examples in day to day life about assumptions we make because of someone's gender?

Classroom Activity 7: Exploring how our brains jump to conclusions and unconscious bias

Show pupils the following two optical illusions and ask them what they see. Most should be able to see the circles spinning (the image is static) and think that the inside circles are different sizes (they are the same size). Explain the illusions to them. Ask them if have seen anything like this before (some probably will have) and if they know why it happens.



Optical Illusions 1, www.flickr.com, CC BY NC 2.0



Optical illusion: The inside circles are the same size by Robson#, Flickr.com, CC by 2.0

You can explain the illusions by adapting the following script to suit the age range of your class, which introduces how our brains work and then extends this to the idea of unconscious bias.

Our brains are bombarded with so much information that they use short-cuts to maintain processing speed, they put things in pre-prepared boxes to try and make sense of them. However, in trying to be quick and efficient, our brains make mistakes and we see the optical illusion on the screen.

Our brains assess people in a very similar way; we routinely and rapidly sort people into groups. Those groups are based on stereotypes, the cultural environment around us and our personal experiences.

We do this because when we meet someone, the information available to us is cognitively overwhelming and we can't process it fast enough. This allows us to save time and effort and to give our attention to other tasks or to more novel information. It is

useful as it provides us with a handy script for what to expect from others which means we don't feel the need to establish the role and expectations of the other person.

The disadvantage is that this categorisation can then guide our actions towards others on the unconscious assumption that the individual possesses traits included in the stereotype associated with the group we put them in. Clearly this has implications for the accuracy and fairness of our decision making.

Unconscious biases have evolved as a way of distinguishing friend from foe and as a way of keeping ourselves safe from danger. This process has been and may on occasion still be useful - but the categories we use to sort people are not logical. In fact these biases often are not even legal, relevant or appropriate in a school context.

Our unconscious is quicker and bypasses our normal, rational and logical thinking. Typically unconscious thoughts take place about 250 milliseconds before our conscious processes engage.

It's important to note that this is a common characteristic. It's not the behavior of 'bad' or racist or sexist people, but of everyone, including you and I.

Our unconscious biases can be balanced by bias control mechanisms which turn instinctive responses into ones which are more socially acceptable. However what is socially acceptable varies and our bias control mechanisms are not independent moral guides.

So what's the impact of unconscious bias?

Unconscious bias affects us in two key ways:

- It influences how we view and engage with other people and our relationships with other people.
- It affects our perceptions of ourselves, our own actions and our decisions.

If we hold or are aware of a stereotype, for instance that scientists are men, then we are more likely to focus on evidence that supports this stereotype and ignore evidence that contradicts it. If we were hiring someone to work as a scientist, this would lead us to be more likely to hire a man over a woman.

We also internalise stereotypes, and change our own behaviour and actions. Research shows that exposing women to TV adverts that use stereotypes of women (think of adverts for cleaning or cooking products) decreased the interest they expressed in pursuing leadership roles or careers involving quantitative skills. Or if you remind women about stereotypes of female drivers before a driving test, they do worse. Men are affected as well as being reminded of male stereotypes affects childcare skills.

Ask pupils how they think unconscious bias and gender stereotypes might affect subject choices or career aspirations. Remind them of their results from the 'draw a scientist' exercise.

Classroom Activity 8: Email to a friend

Have pupils write a short email to a friend who wants to study a particular subject but doesn't feel like it is appropriate for their gender, and that their friends and family might not agree with their choice.

Ask pupils to draw on what they have learned in relation to gender equality, stereotypes and unconscious bias.

To help pupils put together their thoughts you could create a writing frame for them to use first with prompts such as "Who are you writing to? What does your friend want to study? What challenges does your friend have about their subject choice? What advice do they have for them?" etc.