| Student 3: Low Merit |
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| NZQA Intended for teacher use only |

I found this article online about anchoring effects:
http://www.overcomingbias.com/2007/09/anchoring-and-a.html

Paragraphs from the article:

- Suppose I spin a Wheel of Fortune device as you watch, and it comes up pointing to 65. Then I ask: Do you think the percentage of African countries in the UN is above or below this number? What do you think is the percentage of African countries in the UN?
- Tversky and Kahneman (1974) recorded the estimates of subjects who saw the Wheel of Fortune showing various numbers. The median estimate of subjects who saw the wheel show 65 was 45%; the median estimate of subjects who saw 10 was 25%.
- The current theory for this and similar experiments is that subjects take the initial, uninformative number as their starting point or anchor; and then they adjust upward or downward from their starting estimate until they reached an answer that "sounded plausible"; and then they stopped adjusting. This typically results in under-adjustment from the anchor - more distant numbers could also be "plausible", but one stops at the first satisfying-sounding answer. 1

I decided to investigate student's knowledge about the school and whether I can use an anchoring question to influence answers. My question was "Will having a high anchor first influence estimates for the proportion of students who walk to school be higher?"

Because I don't think people will know what the actual proportion of students who walk to school is, I think I should be able to trick them into giving higher estimates when I use a high number for the anchor, as it says in the article.

2

For my experiment I had to choose a response variable that students would not know the exact answer for (they may have an idea about its value but I would still expect variation in the estimates given). I asked students to estimate the proportion of people who walk to school. I made up a short survey about the school, and asked questions like "What year level are you in?" and "How many students are there at the school?" and other questions that looked like the survey was about finding out what they knew about the school.

For the anchors I chose the two numbers 30% and 60%, because around 30% of students walk to school, 60% is double the actual proportion.

Below is part of the survey I used:

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| You have been randomly assigned a number between 1 and 100.<br>Your number is ______.<br>Do you think the proportion of students at our school who walk to school is above or below this number?<br>Estimate the proportion of students at our school who walk to school. _________ |

I took this idea from the article, and I hand wrote either 30% or 60% on each survey sheet, to make it look even more like it was a random number (even though I only used 30% or 60%). 3
I made up equal numbers of each version of the survey (with either 30% or 60%).

I went to two different classes (both Year 9 classes). I had a bag with an equal number of red and white balls in it. The students picked a ball out. If it was red they had the high anchor survey, if it was white they had the low anchor survey. This made sure the experimental units (the students) were randomly allocated to the survey.

I made sure that the students do not look at each other's surveys. I also told them it was a personal survey and that I was interested in their response and how much they knew about the school. My experiment was a comparison of two independent groups design, so students only completed one version of the survey. 4
Some students might know the proportion of students who walk to school (if they are involved with travel wise or the school council) but they should be in both of the groups because I randomly mixed up the different surveys before handing out.

The difference between the median estimates from the high anchor and the low anchor was 18.41%.

This could happen by chance just by randomly allocating the people to two different groups, so I need to do the randomisation test to see how many times a difference of 18.41% comes up when the estimates people gave are re-randomised to the two groups (30% and 60% anchor) and the differences of the means of the two groups are calculated.

The difference of 18.41% or higher came up 8 times in 1000.

The design of my experiment was good and I carried it out well, so I am happy that there are no other explanations for what I see in the data (that the 60% anchor group has estimates which tend to be higher than the 30% group, with a difference of 18.41%) apart from chance and the anchor questions I used.

The randomisation test gives me very strong evidence as it shows me that in this experiment it would be very unlikely that a difference as large as 18.41% could happen by chance alone. This means I can claim that the use of the anchoring question had an effect on the estimates 5
for the proportion of students at our school who walk to school, in particular that the higher anchor of 60% caused estimates that tended to be higher than the estimates from the anchor of 30%. I can only claim this for the group of students in the experiment, but it seems reasonable to expect that it would be true for any group of people.