Ruth Sylvia
Zaid Haque

Application 1 - Overconfidence

Overconfidence Occurrence

We interviewed two experienced professionals on topics related to their field as well as topics unrelated to their field. One was expert in healthcare IT and the other was a journalist and in both cases the experts demonstrated overconfidence.

Overconfidence in this context can be understood as providing an overly narrow range when asked for a 90% confidence interval for a given question. One would expect that if an expert were to answer 10 questions at a 90% confidence interval their answer would fall within their range for 9 of the 10 questions in the interview.

In our interviews instead of achieving the expected 9 out of 10 questions correct both of our experts answered significantly fewer questions correct (Healthcare Specialist 5, Journalist, 3). This made their failure rate not 10% but 50% and 70% respectively.

These results can not be taken entirely at face value as they are also influenced by our ability to correctly predict the type of questions that they are an expert on given their field. After asking each participant the 10 questions related to their job then 10 questions unrelated to their job they were also asked to rate the questions related to their job on a 1 to 7 relevance score. In the healthcare IT consultants interview 2 of the missed questions were rated 5 for relevancy (1 being least relevant and 7 being most relevant). This may have impacted the overall overconfidence score. However, the other 2 missed questions were rated highly relevant. The journalist missed more questions, and seemed to have a slightly inverse relationship between question relevance and correctness score. There were four questions she rated as highly relevant, with relevance scores between 6 and 7, and all four of them were wrong. However, the three that she did get correct had a relevance score of 4 or 5.

Overconfidence Job Related vs. Unrelated

Through interviewing each expert not only on their area of expertise but also on the other's focus area we were able to identify a difference in behavior on questions related to one's area of expertise versus questions that were unrelated. Both professionals demonstrated more overconfidence when answering related questions. The healthcare specialist answered 50% of job related questions correctly but answered 60% of unrelated questions correctly. Similarly the journalist answered 30% of job related questions correctly and 70% of unrelated questions correctly.

These results were very interesting as neither professional demonstrated through their discussion that they knew about the unrelated topic. Instead it appeared to be more through

their acknowledgement that they were not experts and the willingness to set larger ranges that lead to the higher number of correct answers.

It appears that when the professionals did not feel that they should know the answer to a given set of questions they were more able to accurately set a 90% confidence interval. Even their behavior while answering the questions were different when answering related versus unrelated questions. They answered the job related questions very quickly versus the extensive deliberation and mumblings of "i have no idea" that were part of the unrelated answers. The journalist specifically felt that the Healthcare related questions were very difficult to answer (and rightly so, given that it was not her field of expertise) and took longer to answer the questions, but gave a larger range which happened to encapsulate the correct answer 70% of the time.

Feedback
After completing the interviews and sharing the job related and unrelated scores with the participants they had mixed reactions. The consistent theme in reviewing the misses on job related questions was a feeling of regret, with phrases like "I should probably know that" coming up on questions that were answered incorrectly.

In contrast there was a theme of surprise in seeing how the larger ranges set on job unrelated questions actually resulted in higher success rates overall. The participants had expressed so much unawareness of the topics as they answered the questions they seemed surprised that their acknowledgement of this lack of knowledge through larger ranges actually resulted in a "positive" outcome. The journalist was interviewed after the healthcare IT professional and so we were able to share the results of the first professional's with the seconds. She was even more surprised when she found that she did better than the healthcare professional on health care questions, and worse on the journalism questions.

In confronting the overall concept of overconfidence both participants were reflective on their quick jump to answers on questions related to their field. One participant raised the concern that potentially she should have taken more time to think through her answers more completely. She shared that given the personal nature of our relationship the stakes of "getting the answer right" seemed lower than in a "real" setting and that this may have influenced her behavior.

Even, with this consideration both participants found the experience eye opening as they had never seen themselves as overconfident before. After having the experience they expressed that they would now think twice about their knowledge assumptions.

Appendix - Credentials

Marta Sylvia - Healthcare IT Consultant
1955 S Springbrook Lane, Boise ID 83706
208-949-7394
Years Experience: 7
Specialties: Implementation EHR systems and updates particularly in response to new regulations from ACA. Panel expert on MACRA (part of ACA) legislation and SME for all consultancy clients.
Undergraduate Degree: Information Systems
Graduate: Starting Harvard T.H. Chan School of Public Health Fall 2017

Priyanka Tilve - Journalist at Al Jazeera
Doha, Qatar | West Windsor, NJ
+974 6698 4804
Years Experience: 4
Specialties: Radio + TV Journalism. Topics ranging from US to International Politics
Undergraduate Degree: Journalism & Media Studies at Northwestern University

Appendix - Healthcare IT Questions

Question	Answer	Source	Expert			Non-Expert	
			Low	High	Relvance	Low	High
How many Americans have signed up for coverage using ACA?	24 million	Wikipedia	20 M	60 M	7	120 million	200 million
What year was the Affordable Care Act passed?	2010	Wikipedia	2008	2012	7	2009	
At what salary % above the poverty level are you eligable for a subsidy with the ACA?	400%	Wikipedia	15	25	6	5	15
What were the average subsidies recieved by Americans using ACA?	4,240	Wikipedia	1500	5000	6	2000	9000
How many states participated in medicaid expansion (as of Dec 2016)?	31	Wikipedia	25	35	6	0	50
How many hospitals are there in the US?	5,564	AHA Fact Sheet	20K	50K	6	4000	10000
What % of providers are covered by top 5 EHR systems (Epic Systems, Allscripts, eClinicalWorks, athenahealth, NextGen)?	60%	Vendors-of-EHRs	70%	85%	7	40	80
How many Americans are on medicare?	55.3 million	NCPSSM.org	80M	100M	5	20 million	40 million
What percent of the federal budget is on medicare?	14%	KFF.org	20%	40%	5	2	10
What percent of the federal budget is on medicaid?	9%	KFF.org	5%	20%	5	2	10

Appendix - Politics Questions

Question	Answer	Source	Expert			Non-Expert	
			Low	High	Relvance	Low	High
How many homicides occurred from firearms in 2013 in USA?	11,208	[Wikipedia - Gun Violence](#)	10,000	15,000	4	1	200k
How many homicides occurred from firearms in 2015 in USA?	13,286	[Wikipedia - Gun Violence](#)	10,000	17,000	5	1	200k
How much money did gun violence cause taxpayers in 2015?	$516 million	[Wikipedia - Gun Violence](#)	1million	2million	5	5M	10M
How many people have been killed using firearms in the last 50 years?	1.4 million	[Wikipedia - Gun Violence](#)	500,000	700,000	4	1M	5M
How many presidential assassination attempts have been made with firearms?	11	[Wikipedia - Gun Violence](#)	3	10	4	1	300
How many presidential elections have taken place to date?	58	[Wikipedia - US Elections](#)	50	60	5	40	50
How many major Republicans entered the 2016 Presidential race?	17	[Wikipedia - US Elections](#)	10	14	6	15	30
How many major Democrats entered the 2016 Presidential race?	6	[Wikipedia - US Elections](#)	2	4	6	1	10

How much money did Clinton raise during her campaign?	$497,808,791	Wikipedia - US Elections	40	80	7	50M	100M
How much money did Trump raise during his campaign?	$247,541,449	Wikipedia - US Elections	50	90	7	20M	100M