

On Vaccines & Irrationality:

LEVERAGING EMOTION FOR THE GREATER GOOD

MOHSIN ALI

Bachelor of Health Sciences (Honours) Continuing Student, Class of 2012

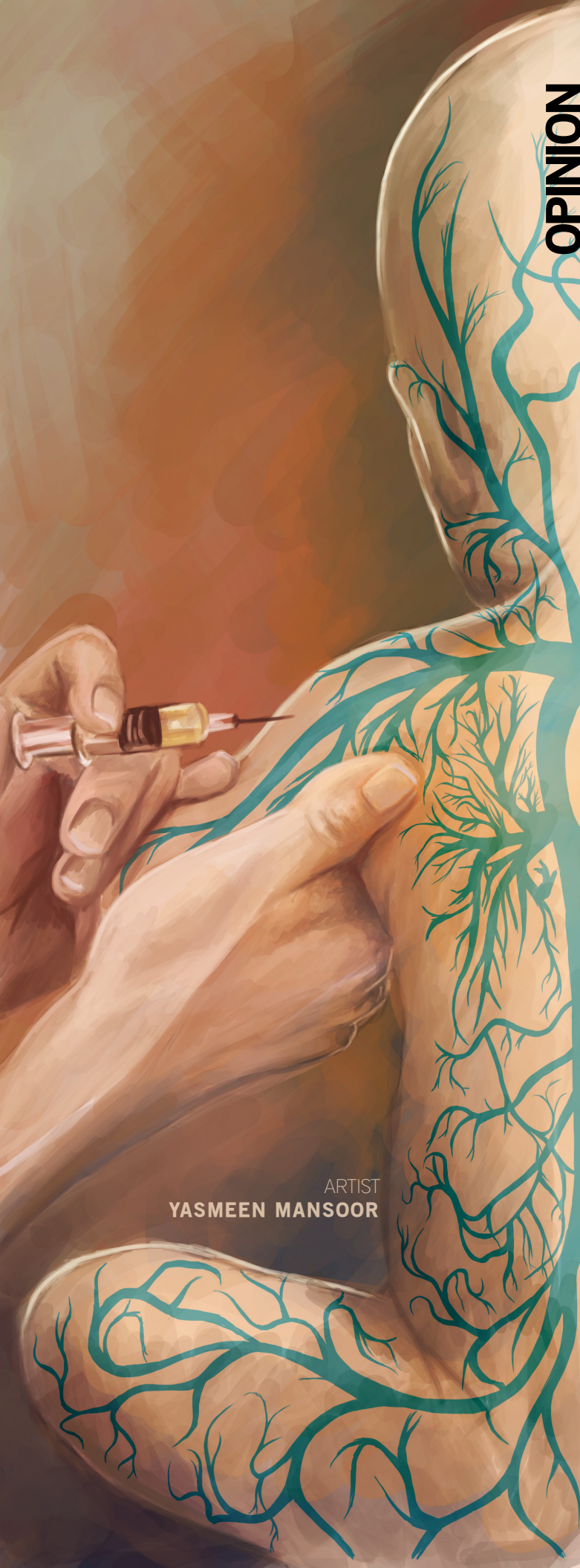
BRANAVAN MANORANJAN

Bachelor of Health Sciences (Honours) Alumni, Class of 2011
M.D./Ph.D. Candidate, Michael G. DeGroot School of Medicine

Consider the rhetorical difference between two camps: those for and against vaccinations. The pro-vaccination group, backed by much of the scientific community, argue that vaccinations are safe and save lives.¹ They often couch their assertions in the facts.² For example, in biologist Steven Salzberg's July 2012 *Forbes* article, entitled "Anti-vaccine movement causes the worst whooping cough epidemic in 70 years," he warns that the U.S. has already had 17,000 cases of whooping cough that year.³ Of these cases, ten died, mostly infants too young to be vaccinated. Contrast this with celebrity Jenny McCarthy, of the anti-vaccination group, who asserts the MMR vaccine causes autism.⁴ She made the following statement on *Oprah* in 2007 about her son receiving the vaccine: "and soon [after he got the shot]—boom—the soul's gone from his eyes."⁵

University of Pennsylvania paediatrician Paul Offit recognizes the power of the latter rhetoric. "Anecdote trumps epidemiology every time," he says.² He describes, for instance, the struggle to vaccinate the workers of his hospital against influenza.² In 2002, the year when two five-year-old girls contracted the flu in the hospital and died, the voluntary vaccination rate among the 10,000 staff of the Children's Hospital of Philadelphia was 35%. For several years afterward, the hospital's senior administrators pushed for 100% staff vaccination. They offered the vaccine free of charge, an approach complemented by an extensive effort to educate the healthcare workers. While the rate doubled, still one in three staff chose not to get vaccinated. Seven years later, the hospital made the vaccine compulsory. Nine workers still refused. They were fired. Dr. Offit notes: "It is very easy to scare people; it is much harder to unscare them."²

ARTIST
YASMEEN MANSOOR



Some vaccine proponents—Dr. Offit included—blame the media. He describes the media as paralyzed by the mantra of balance, despite only one side of the story being supported by science.² The media do influence vaccination rates, apparent in the 2003–04 flu season, when more than one in four parents vaccinated their children following media coverage or recommendation from a friend.⁶ However, the media are not at fault—they may feel obligated to present both sides of the story. The onus is on the reader, who decides with whom she will side.

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Such an approach is not unscientific. Nobel Laureate Daniel Kahneman describes in his best-selling book, *Thinking, Fast and Slow*, the two modes of thinking that govern decision-making:⁷ System 1 is automatic, emotional, and subconscious; System 2 is effortful, logical, and conscious. Consider this classic question posed by Kahneman and his fellow psychologist Amos Tversky from the early 1980s:⁸

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations. Which is more probable?

- A. Linda is a bank teller.
- B. Linda is a bank teller and is active in the feminist movement.

About 85 percent of respondents—142 undergraduate students at the University of British Columbia—chose the latter, falling prey to the conjunctive fallacy. The correct answer is A, which you would have arrived at through System 2. However, for many people, option B seems intuitively right—a consequence of

System 1. Kahneman’s book highlights how humans are surprisingly susceptible to many fallacies, and he emphasizes that, “In the picture that emerges from recent research, the intuitive System 1 is more influential than your experience tells you, and it is the secret author of many of the choices and judgments you make.”⁷

It is clear that vaccine proponents opt for the System 2 approach. This is likely because in science we are taught to abhor anecdotal evidence. While such an approach helps to design and interpret studies and communicate results with scientific

colleagues, story telling—because it appeals to System 1—needs to be employed more by the pro-vaccine camp. Dr. Salzberg, for instance, could have chronicled one of those 10 deaths he mentions in his whooping cough article, depicting the tragic death of a child and the unnecessary suffering of the family.

The BBC understands the importance of stories. Their *News Styleguide* has a section on numbers and measures, in which they caution journalists about using large and many numbers:⁹

The brain struggles to take in millions and thousands. They are difficult to visualise. Even smaller numbers are a problem if there are too many of them. . . . A story with too many figures numbs the listener. Simplify wherever you can, round up or down, and try to tell the story without getting bogged down in numbers.

It is clear that the anti-vaccination camp understands this message. Stories work, echoed in the apocryphal quote attributed to Joseph Stalin: “A single death is a tragedy; a million deaths is a statistic.”

Vaccine proponents, therefore, should not shy away from inciting emotions—whether it is sorrow, anger, or fear—to bolster their arguments. They should weave strands of facts into the fabric of stories. Not doing so would be irrational.

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