When an Investigator Recruits Himself for a Study

I had decided to submit my first abstract ever for a neuroscience conference that I very much wanted to attend. My research consisted of running human subjects through an fMRI scan so as to collect brain activation data in response to simple visual stimuli. My data and analyses appeared solid as the time drew near for me to write the abstract, so I was excited and eager to proceed. My postdoc slowed me down, however, with a suggestion that I include a few more subjects in the study. I agreed but voiced a concern that the submission deadline was coming up. "Maybe you can use yourself in your study," he said. "I mean, it's only an abstract that you're submitting, and you can recruit more subjects between now and the conference and make corrections accordingly."

I was uneasy about using myself as a subject. I felt it was somehow unethical even though I knew there was no way I could bias the results of the study due to the simplicity of the paradigm I was using. Luckily, I was spared the problem: The next day my postdoc recruited some subjects for the study so I avoided having to use myself. However, I still wonder what would have happened if new subjects were not recruited. It was such a simple experiment that I couldn't have affected the results. But would recruiting myself be considered a conflict of interest or be somehow unethical?

Expert Opinion

In reflecting on this scenario, we were reminded of Hans Jonas's famous essay "Philosophical Reflections on Experimenting with Human Subjects," which was originally published in 1969 and represented one of the early attempts to perform bioethical analysis from a secular rather than religious or theological perspective.[1]

According to that essay, Jonas would very much approve of our young investigator's self-recruitment. Jonas asserted that investigators themselves are ***ideal*** research participants because:

> If it is full, autonomous identification of the subject with the purpose that is required for the dignifying of his serving as a subject—here it is; if strongest motivation—here it is; if fullest understanding—here it is; if freest decision—here it is; if greatest integration with the person's total, chosen pursuit—here it is…By himself the scientist is free to obey his obsession, to play his hunch, to wager on chance, to follow the lure of ambition. It is all part of the "divine madness" that somehow animates the ceaseless pressing against frontiers.

So, Jonas is arguing that nonmanipulation, motivation, and acute understanding of and identification with the research goals are best exhibited by the investigators themselves. Furthermore, if we worry about whether an individual's participation in research is justified given the risks, then the investigator's passion and commitment to scientific discovery should remove that anxiety and recommend his or her qualifications for participation in the strongest terms possible.

Complimenting Jonas's argument, the history of scientific discovery is replete with instances where investigators recruited themselves in their experiments. Perhaps the most remarkable example is Barry Marshall, an Australian gastroenterologist who proved that most stomach ulcers are caused by the bacterium *Helicobacter pylori* by drinking a solution that contained the microbe in 1982.[2] He and his colleague Robin Warren shared the Nobel Prize for Medicine in 2005 in recognition of their discovery. After successful inoculation with monkeys, Jonas Salk tested the polio vaccine on himself, his wife and his children. Werner Forssman was awarded the 1956 Nobel Prize in medicine for his work on heart catheterization. He inserted a catheter into his vein until it reached the right atrium of his heart and then took an X-ray of the placement to prove it could work. Kevin Warwick, a British robotics researcher, implanted electrodes in his body (and later in his wife's) that could send signals to a robotic arm. His discovery that impulses could be sent from the human nervous system to an artificial one spurred the "transhumanist" movement, which is interested in the ethical use of electronic augmentation or enhancement of the natural human body.[3]

Unfortunately, not all such self-recruitment in scientific history ended as well as these. In the early nineteenth century, Humphry Davy and Horace Wells became addicted to nitrous oxide and chloroform respectively, as they investigated their anesthesiological properties. (Davy's chronic use incapacitated him for the last 20 years of his life, while Wells committed suicide.)[2] Daniel Alcides Carrion died in 1885 at the age of 28 when he had a friend inject him with blood drawn from the wart of a 14-year old suffering from what was then called Oroya fever. Carrion developed the disease and died. In his honor, Oroya fever—which was at epidemic levels in Peru when Carrion studied it—was renamed Carrion Disease and the Peruvian government recognizes October 5, the day of Carrion's death, as Peruvian Medicine Day.[3]

And then there are Elizabeth Ascheim Woolf, Marie Curie and Rosalind Franklin who all died of radiation exposure from their use of X-ray technology. Ascheim and her husband set up for the first X-ray laboratory in San Francisco and experimented with the technology unaware of its dangers.[3] Rosalind Franklin would surely have shared the Nobel Prize with Watson, Crick and Wilkins in 1962 for the discovery of DNA. But Franklin died from ovarian cancer in 1958, almost certainly as a result of her using X-ray crystallography to decipher the B form of the helical structure of the DNA molecule.[4]

Per the above scenario and pace Hans Jonas, contemporary ethics would probably recommend a very conservative course as to whether or not an investigator should recruit him or herself for an experiment. One fear is that if the investigator doesn't suffer from the disease being studied, he or she may feel a need to acquire it in order to test his or her hypothesis, as Barry Marshall did. But an investigator's intentionally introducing a disease into his or her body can be strikingly antithetical to the utilitarian goal of achieving net utility. If the investigator takes significant risks with his or her welfare, the promise of the research deliverable, i.e., the end for which these efforts are being sought, is frankly imperiled. Had Jonas Salk's injection of the polio vaccine resulted in his being permanently incapacitated from the disease (or from something related), the world would have to await another discoverer, which could have taken years. One is reminded of the airline safety precaution to parents traveling with family if oxygen in the cabin is discontinued: When the safety masks drop down, first place one on

yourself and then help others. Inordinate altruism may result in a self-sacrifice that can ultimately produce a significant net disutility.

Arguing from a deontological perspective, research participants largely serve as a means to the end of hypothesis confirmation or the aggregation of beneficial, generalizable knowledge. Nevertheless, we try to treat research participants as ends in themselves both through the informed consent process as well as insisting on IRB protections, such that participants are not subjected to more than minimal risk (save in exceptional cases that might favorably and directly impact their welfare). Consequently, the investigator who first enrolls himself in his own trial—which is a trial of 1, of course—before going through an IRB approval process can be assuming too much risk and should be protected from his or her risky behavior.

Furthermore, and contrary to Jonas's assertion that the investigator is the one best able to give informed consent, one might argue that some researchers are so blinded by ambition or the opportunity for prestige that they are unable to offer a truly voluntary and thoughtful consent to participation in an experiment where the risks might be unreasonably high.

Of course and from a purely methodological perspective, an N of 1 is just that: a single data point that can hardly count as generalizable knowledge. While some might find Salk's injecting himself with the polio vaccine admirable—less so, his injecting his wife and especially less so his children—all it would have confirmed is that it was safe for him and his family but possibly not safe for the family next door.

In the above scenario, however, safety does not appear to be a significant concern as indicated by the millions of persons who have had MRIs without incident. We worry instead about our young investigator's participation from another angle: Might the findings on his brain function be skewed by his familiarity with the research and its purpose?

On the one hand, if the investigator's research goal is *purely* descriptive, i.e, motivated by an interest in discerning the neural activation patterns of a particular visual stimulus such that nothing beyond that descriptive aim is desired, then his participation is probably acceptable. On the other hand, if a research hypothesis has been forwarded, e.g., "visual stimuli of this or that sort will activate brain regions X, Y and Z," then it might be the case that the investigator's foreknowledge of that hypothesis can bias his neural responses to the stimuli in favor of the hypothesis.

This argument is hardly idle. Commentators discussing the substitution of fMRI for polygraphy in lie detection have commented that the current state of the technology in no way argues for such (assuming it even argues for the merits of polygraphy). Just as individuals have learned to fool polygraphy, e.g., by biting their tongues or pressing their toes to the floor, they might just as well fool an MRI by concentrating on feelings, thoughts or images that, with enough know-how on their part, might produce findings that "prove" their testimony.[5]

Consequently, it appears that we should be very cautious, even hesitant, about the idea of researchers recruiting themselves for experiments. If the research posed minimal risks and there is no compelling reason to think that the investigator could skew or bias his or her test results in the direction of some research hypothesis, then his or her participation is probably acceptable. If, however, the risks are considerable and/or a biased result from the investigator's participation is indeed possible, then that researcher's participation would be morally problematic and so should be disallowed. Ultimately, a researcher who enrolls him or herself in an experiment before any other subjects are enrolled and especially before a

sufficient amount of data collection among animals has occurred is acting rashly and is not furthering the cause of science.

References:

1. Jonas H. Philosophical reflections on experimenting with human subjects. *Daedalus*, 1969;98:219-247.

2. Moore W. Doctors who had a taste of their own medicine. *TimesonLine*, June 10, 2006. Available at http://www.timesonline.co.uk/tol/life_and_style/health/features/article672977.ece?print=y.

3. Toptenz. Top 10 researchers who experimented on themselves. Available at http://www.toptenz.net/top-10-researchers-who-experimented-on-themselves.php.

4. Rosalind Franklin. Available at http://en.wikipedia.org/wiki/Rosalind_Franklin.

5. Wolpe PR, Foster KR, Langleben DD. Emergin neurotechnologies for lie-detection: Promises and perils. *The American Journal of Bioethics*, 2005;5(2):39-49.