

Letter sent to all subjects 6 months after the experiment:

Dear XXX

Last summer you took part in a 'virtual reality' study at the Department of Computer Science, University College London.

This study involved a female virtual character who was attempting to remember word pairs. Your role was to read out the key words and 4 possible associated words, and then administer an 'electric shock' whenever the wrong answer was given.

We have completed the analysis of the results and are writing a scientific paper for publication. If you would like a copy of this, or a summary of the main results, please let me know.

Meanwhile, it would be very helpful to us if you could answer the following questions.

1. As you may know this virtual reality study was a replication of aspects of an experiment that was carried out by Dr Stanley Milgram at Yale University in the 1960s. (See for example, <http://www.stanleymilgram.com/>).

How much did you know about the Milgram Obedience experiments when you came into the virtual reality experiment?

2. How much have you thought about the experiment since you took part? What kinds of thoughts have you had (if any)?

3. What (if any) were the negative aspects of participating in this study?

4. If you were asked to be in such an experiment again would you be willing to take part? Please give the reasons for your answer.

5. Do you have any thoughts about the ethics of carrying out such an experiment in virtual reality (compared to really doing it in physical reality with a real person)?

6. Any other thoughts you wish to add?

As usual, your answers will be treated confidentially. If they are referred to in a publication then they would be referred to anonymously. Once your answers have been put into a file, they are only referenced by your ID number.

Responses

The grey shaded entries are from the 'Visible Condition' and the others (the last 4) are from the 'Hidden Condition'.

	1. As you may know this virtual reality study was a replication of aspects of an experiment that was carried out by Dr Stanley Milgram at Yale University in the 1960s. (See for example, http://www.stanleymilgram.com/). How much did you know about the Milgram Obedience experiments when you came into the virtual reality experiment?	2. How much have you thought about the experiment since you took part? What kinds of thoughts have you had (if any)?	3. What (if any) were the negative aspects of participating in this study?	4. If you were asked to be in such an experiment again would you be willing to take part? Please give the reasons for your answer.	5. Do you have any thoughts about the ethics of carrying out such an experiment in virtual reality (compared to really doing it in physical reality with a real person)?
VC	Lots - I am a Psychology phd student	Not much. I have thought how surprising and interesting it is that people can empathise with a computer image of a person.	None.	Yes. It was easy money and interesting to experience VR.	It is definitely less unethical than the original Milgram studies because it is less likely to cause distress given that the participant knows that nobody was hurt.
VC	Knew of the Milgram-type experiment, but did not directly relate it to the virtual reality study.	I have a general interest (see 4), and hence wondered about other similar studies and unconscious physiological reactions a few times within the month after, but haven't undertaken any further study.	None	Definitely; due to interest in the physiological reaction that occurs from seeing another being in pain, even if the other being is virtual.	I see nothing ethically wrong in the experiment (or, for that matter, in Milgram's original...).
VC	I must have read about or heard a radio programme on the Milgram Experiments - at least, I recognised it	I thought about it for a while later the same day, trying to work out why I responded the	None I think, subject to (5) below	I wouldn't necessarily be unwilling, but I	I have a vague concern that this sort of process may have a desensitising effect. If I

	as soon as your own experiment was explained. I can remember a number of years ago being shocked at Milgram's results.	way did what I did. I've thought about it very Little - if at all - since then.		can't say any enthusiasm for volunteering for this sort of thing was encouraged on this occasion! I Suppose I didn't find it particularly pleasant	were some wannabe-dictator designing a training programme to turn a group of unwilling citizens into a cohort of interrogators, I may well start them off with something much like your experiment.
VC	I did not know anything about that study	Only When I saw something like it on tv and thought I would definitely not participate in something where live people were used and would DEFY the experimenter if they asked me to continue and be annoyed if they pursued it!	None in fact it made me feel sure I am not a go with the crowd type person!	Yes I would as I know they are NOT real people.	It's ok to do it
VC	I made the association straight away. I had studied Milgram for a level Psychology, focusing on ethics.	I thought about it for a few weeks after, partly around where VR might head in the future - will we abuse human stimulations or give them a similar status.	The equipment was rather uncomfortable, it felt like one was strapped in an electric chair.	Yes, I would like to take part in future experiments, partly as I am interested in keeping up-to-date with experiments that go on, and partly due to wanting to assist in the development of this area.	At the moment I have no problem with experiments using VR in the way this did, however, I can imagine this would affect others, and with an increase in sophistication of graphics, the participant could be put in a compromising Situation.
VC	I was familiar with experiments and results.	Haven't thought about it since.	None.	I would prefer not to take part because it wasn't a nice	The subjects knew that the female character is virtual compared to Milgram's subjects who believed that the

				experience.	character was real. Therefore, I feel that this experiment is ethically less risky than Milgram's Experiment.
VC	I was fairly familiar with Milgram's classical Obedience Experiment, first Carried out by him in Yale University in the mid-1960s, and subsequently in Several other countries, as we studied it in detail for A-level Psychology (and mentioned it briefly in the first year of my bsc in Psychology at UCL).	Not a lot.	I have been wondering if the fact that I don't have television and very Rarely see it (I do see dvds occasionally, and like the big screen) means That I am less inured to violence and aggression being depicted than the Average person. I deliberately avoid such images - I would not see an Overtly violent film - and I understand that it has long been established By social psychology experiments that watching any television at all makes A person more aggressive - even if it is not depicting violent Behaviour. Obviously I 'knew' that the 'lady' was not a flesh-and-blood Person with a National Insurance number. However, I hated to see a Depiction of a person suffering, especially needlessly, and especially Caused by me.	Yes, I'd do it again as I am always prepared to help push the frontiers of Knowledge forward by one nanometre if possible.	None, really, as one had control over one's participation.
VC	Nothing	Quite a lot. I enjoyed doing it. I was still kind of worried about my feelings when I gave	None really	Definitely. It's always very interesting to put	I didn't feel I had any ethics in virtual reality. I always felt she wasn't real and it was

		the woman the shock. I was so cruel when I pressed the button. I feel sure I wouldn't do that to a real person		yourself in an unpredictable situation and see how you react	a bit like a shoot-em-up game.
VC	Nothing.	Rarely. Will I conduct such an experiment with real persons?	No negative aspects seen so far.	Yes. So as to test myself again.	Not at the moment.
HC	I didn't know anything re. this particular experiment at the time of the virtual reality experiment.	I haven't thought much about the experiment (only have looked at the original experiment's details)	There were no negative aspects of participating in this study.	Yes, I found it interesting and I learned something new.	If a person knows (s)he is participating in a virtual reality study, I think the ethical requirements should be completely different than the ones in a physical reality study. (I'm not saying that there shouldn't be any though.)
HC	Nothing at all.	I have thought about it periodically, especially when the Milgram Experiments have been mentioned or portrayed, which coincidentally has happened several times (e.g. Derren Brown's "Heist" programme) , . I Have also described the experiment to friends (none of whom were at UCL or likely in any way to affect the results of the study). I have not had any particularly strong feelings towards it except strong curiosity relating to the outcome.	None.	Yes, provided the time were available. Unfortunately this is much less likely than at the time of participation!	The moral issues concern the subject of the experiment in both the original and the virtual experiment. The question of whether the moral correctness of the experiment is different in the virtual case is essentially the question under research - unless the simulation approaches the "presence" of a real person in the mind of the subject there is little likelihood of the subject experiencing adverse effects from the stress of the situation. Assuming that we do have some subconscious reaction to the suggestion of a conscious entity on the other end of the simulated "shocks" then the issues reduce to

					those of the original experiment - the majority of subjects are unlikely to experience any long-term effects of the study and those who are can presumably be safely be identified on a case-by-case basis.
HC	I had just read the Milgram book.	Thought a bit about it as I am very interested in this subject area, as I work [deleted for anonymity]. It was nice to have been through the same experimental set-up as a classic experiment.	None	No problem, interesting study about politically significant phenomenon.	Possible in virtual reality - impossible ethically nowadays in reality. Potential for unpleasant manipulation of subjects' emotions even though do not have to face having tortured a living creature as in experiments with actors.
HC	I'd heard something about the experiments although I didn't know their name or the details.	I've thought about it when hearing about the original experiments on documentaries etc.	None - although it wasn't cutting edge VR as I'd been led to believe - rather playstation quality graphics.	No objections.	Doesn't bother me whether it's a virtual or real person we're pretending is getting shocks. I'd only object to someone really being hurt.