

University students' beliefs about sharing knowledge between researchers from rival countries



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Introduction

The problem of knowledge being concealed by researchers from one another for fear of competition is so acute that the authors of the book *On Being a Scientist: Responsible Conduct in Research* suggest that it should be discussed specifically with the students as part of instilling the ethos of science to beginning researchers. The book introduces a case for analysis by university students [On being., 1995, p. 8].

We modified this case and designed a series of cases containing different combinations of variables related to:

- Areas of competition (medical technologies vs. nuclear technologies);
- Social levels of competitive interactions (meso-social level, i.e., competition of organizations, firms, etc. vs. macrosocial level, i.e., rivalry between countries).

Aim: To study university students' beliefs about the necessity of sharing knowledge vs. maintaining secrecy by researchers—competitors in different areas and at different levels of competition.

Participants: 137 Russian students aged 16-20.

Materials: Four cases similar to the following were presented to the participants.

The case that was presented to each participant:

“A scientist conducting a research in the field of **nuclear technologies** is attending an international conference. From a report of another participant s/he gathers that he had just completed work on a method that can greatly advance the research of the speaker, but they come from **different rival states**.”

The questions were asked: “In your opinion, how should the researcher act during the discussion of the report:

- unveil his own method;
- keep quiet about it;
- misinform the speaker to prolong the time that it would take him to understand the method;
- do something else (indicate your answer precisely).

What in your opinion makes this course of action necessary?”



A visual metaphor of “Trojan horse” teaching (redrawn from a picture by F. Craig in: Chandler D.E. et. al. When Mentoring Goes Bad. *The Wall Street Journal*. May 24, 2010).

Procedure: participants of Group A, Group B, and Group C individually received two cases for analysis; the first cases were different in the groups, and the last case was common for all the groups.

Sequences of the cases in Group A, B, and C

	Group A: Medicine & Competing research groups	Group B: Medicine & Rival states	Group C: Nuclear technologies & Competing research groups
The 1 st case	A scientist conducting research in the field of medical technologies ... but s/he and the other researcher belong to competing research groups How should the scientist act..?”	A scientist conducting research in the field of medical technologies ... but they come from different rival states How should the researcher act..?”	A scientist conducting research in the field of nuclear technologies ... but s/he and the other researcher belong to competing research groups How should the researcher act..?”
The 2 nd case (the same for all the groups)	Nuclear technologies & Rival states		
	A scientist conducting research in the field of nuclear technologies ... but s/he and the other researcher come from different rival states How should the researcher act..?”		

Results

Answers (%)	Area of competition and its social level			
	Medical technologies		Nuclear technologies	
	Competing research groups	Rival countries	Competing research groups	Rival countries
Report the method	44	84	27	12
Keep silent	33	13	43	56
Misinform	3	0	0	11
Do something else	17	3	30	11
Don't know	3	0	0	10
Total	100	100	100	100

- (1) The highest percentage of counteraction, including misinformation, and the lowest percentage of cooperation—in the case: “rivalry of states” & “nuclear technologies”.
- (2) The highest percentage of cooperation and the lowest percentage of counteraction--in the case: “rivalry of states” & “medical technologies” (not “competing research groups” & “medical technologies”!).

An important criterion of analysis: change vs. no change in the respondent’s answers in various situations (i.e., in the 1st and the 2nd case).

The results of the survey have revealed the following groups.

- (1) Respondents (15%), who do not change their answers on the mode of action and do not change their arguments in various situations (they write: “similarly”, “the same here”, etc.).
- (2) Respondents (10%), who do not change their answers regarding the mode of action, but do change the argumentation.
- (3) Respondents (68%), who modify their answers towards greater secrecy or misinformation when confronted with a situation of more significant competition.
- (4) Respondents -- *a paradox!* – who change their answers in the direction of greater openness when faced with a situation of more significant and dangerous competition (7%). **They believe that competing medical scientists or nuclear physicists advising various firms may conceal information from one another, but nuclear physicists from competing countries must display openness for the sake of saving humankind; nuclear technologies on a global scale is too dangerous a thing to be played with in the dark.**

The answers “do something else” include various options:

- pro-social (to propose cooperation; not to speak directly about the method, to avoid sanctions, but after presenting the report drop some hints in private meetings, etc.);
- parochial-altruistic (to do damage to a rival to help one’s own group);
- egoistic (to use the rival’s materials to move one’s own research forward, etc.).



Literature

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