

KYSELYLOMAKE: FSD3713 ROBOTTIEN HYVÄKSYMINEN JA SOSIAALISET PROSESSIT: YHDYSVALLAT, HUHTIKUU 2019

QUESTIONNAIRE: FSD3713 ROBOTS US SURVEY: UNITED STATES, APRIL 2019

Tämä kyselylomake on osa yllä mainittua Yhteiskuntatieteelliseen tietoaarkistoon arkistoitua tutkimusaineistoa.

Kyselylomaketta hyödyntävien tulee viitata siihen asianmukaisesti lähdeviitteellä.

This questionnaire forms a part of the above mentioned dataset, archived at the Finnish Social Science Data Archive.

If the questionnaire is used or referred to in any way, the source must be acknowledged by means of an appropriate bibliographic citation.

Detta frågeformulär utgör en del av den ovannämnda datamängden, arkiverad på Finlands samhällsvetenskapliga dataarkiv.

Om frågeformuläret är utnyttjat eller refererat till måste källan anges i form av bibliografisk referens.

Consent/introduction

Dear respondent, welcome to the Robots and Us 2019 survey!

Tampere University in Finland is conducting a study on human-robot interaction and current public opinion on robots.

The survey takes about 10 minutes to complete. At the beginning of the survey you will be asked to provide some background information about yourself. Read each question carefully and choose or type in the most suitable option that reflects your opinion.

Participation is voluntary and you may exit the survey at any time. We do not collect any personal identifiable data. Your responses are treated as confidential. In the end of this research project, the data will be handed over to the Finnish Social Science Data Archive (FSD). By completing the survey, you allow the reuse of this data for further research. If you have any questions about this survey, you may contact the researcher of this project at [ANONYMIZED].

Closing words

Thank you for participating in our study!

After the background information section, you were asked to picture yourself in imaginary situations. Here, the respondents were randomly assigned to different groups, each of which received slightly different scenarios. The purpose of these was to examine if people demonstrate trust or group identification differently when playing against a human or when assigned to a team consisting of only humans, versus when playing against robots or artificial intelligence or when assigned to a team consisting of robots.

If you wish, you may contact the researcher of this project at [ANONYMIZED].

Hidden, response statistic, and transformation variables:

[randomid]: IDs for the test groups (Groups A and X = randomid 1 and 2) and control group (Group C = randomid 3) of the 2. experiment, hidden from respondents.

[grouptg]: IDs for the test groups (Groups 1–4 = grouptg 1–4) and control groups (Groups 5–6 = grouptg 5–6) of the 1. experiment, hidden from respondents.

[grouphr]: IDs for the test groups (Groups A–C = grouphr 1–3) of the 3. experiment, hidden from respondents.

[submitdate]: Date stamp when answers submitted.

[interviewtime]: Response time in seconds.

[agegroup]: Age group of the respondent.

[region]: Living region of the respondent.

PART 1: BACKGROUND QUESTIONS

Background information [BV]

Gender **[bv1; male = M, female = F, no answer = (empty)]**

Is English your native language? **[bv3a, No=0, Yes=1]**

How would you describe where you live? **[bv4]**

1. A large city (over 250,000 inhabitants)
2. A medium-sized city (50,000 – 250,000 inhabitants)
3. A small city or town (under 50,000 inhabitants)
4. A suburb near a city
5. Open country or a rural area

Are you currently **[bv5]**

1. Living alone
2. Married or living with a partner, no children
3. Single parent
4. Married or living with a partner, children
5. I live with my parents
6. Other household type (e.g. living with roommates)

Which is the highest level of education you have achieved? **[bv6]**

1. Less than a High School diploma
2. High School diploma
3. Some college
4. A college degree
5. A master's degree, professional degree, or higher

Do you have a degree from the field of engineering or technology? [bv7; Yes = 1, No = 0]

What is your main occupation? [bv8]

1. I'm in school / I'm a student
2. I'm in a paid, full-time job
3. I'm in a paid, part-time job, and I am not looking for a full-time job
4. I'm in a paid, part-time job, but I am looking for a full-time job
5. I'm unemployed and looking for a job
6. I'm unemployed and not looking for a job

Which field of industry is closest to your work or study? [bv9] (International Standard Industrial Classification of All Economic Activities ISIC)

1. Agriculture, forestry and fishing
2. Mining and quarrying
3. Manufacturing
4. Electricity, gas, steam and air conditioning supply
5. Water supply; sewerage, waste management and remediation activities
6. Construction
7. Wholesale and retail trade; repair of motor vehicles and motorcycles
8. Transportation and storage
9. Accommodation and food service activities
10. Information and communication
11. Financial and insurance activities
12. Real estate activities
13. Professional, scientific and technical activities
14. Administrative and support service activities
15. Public administration and defense; compulsory social security
16. Education
17. Human health and social work activities
18. Arts, entertainment and recreation
19. Other service activities
20. Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
21. Activities of extraterritorial organizations and bodies

What is your household's gross annual income (before taxes)? [bv10]

1. Under \$15,000
2. \$15,000–\$34,999
3. \$35,000–\$74,999
4. \$75,000–\$154,999
5. \$155,000–\$499,999
6. \$500,000 and over

Big Five Inventory [BF]

BFI-S (Lang, John, Lüdtke, Schupp, & Wagner 2011)

Please answer to what degree you agree with the following statements (Strongly disagree 1 – 7 Strongly agree):

I see myself as someone who:

- Worries a lot [bf1]
- Gets nervous easily [bf2]
- Is relaxed, handles stress well [bf3]
- Is talkative [bf4]
- Is outgoing, sociable [bf5]
- Is reserved [bf6]
- Is original, comes up with new ideas [bf7]
- Values artistic, aesthetic experiences [bf8]
- Has an active imagination [bf9]
- Is sometimes rude to others [bf10]
- Has a forgiving nature [bf11]
- Is considerate and kind to almost everyone [bf12]
- Does a thorough job [bf13]
- Tends to be lazy [bf14]
- Does things efficiently [bf15]

PART 2: EXPERIMENTS 1 & 2

1. TRUST GAME Experiment [TG]

Participants are asked to imagine interacting with another unknown person (5–6), a robot (3–4), or AI (1–2) for real money. The opponent is given either a common human name (Michael) or a nickname (jdrx894). Participants are aware about the hypothetical nature of the game. Open field can be filled with a numerical value from 0 to 1000.

We now invite you to participate in an imaginary game. In the game you play against another player and you will make decisions about how to distribute a sum of money between the two of you.

At the beginning of the game, you receive 1000 dollars. You can decide whether you keep this whole sum to yourself or whether you share a part or all of it with the player that you are playing against. If you give money to the other player, we will triple the sum that you give. So, if you give 500 dollars, the other player receives 1500. Then, it is up to the other player to decide how much money to return to you. As an example, if the person returns half, you will end up with $500 + 750 = 1250$ dollars at the end of the game. The other player may also choose not to return anything, which would mean that you win only the 500 dollars that you kept to yourself from the beginning.

The more money you obtain, the more successful you will be!

Fill in amount in this box (between 0–1000 dollars) _____

GROUP 1: Name of the opponent: Michael, an artificial intelligence [tg1] (grouptg = 1)

GROUP 2: Name of the opponent: jdrx894, an artificial intelligence [tg2] (grouptg = 2)

GROUP 3: Name of the opponent: Michael, a robot [tg3] (grouptg = 3)

GROUP 4: Name of the opponent: jdrx894, a robot [tg4] (grouptg = 4)

GROUP 5: Name of the opponent: Michael [tg5] (grouptg = 5)

GROUP 6: Name of the opponent: jdrx894 [tg6] (grouptg = 6)

2. WORK-TEAM Experiments [IGI] [W]

The respondents are split into three groups by manipulating the group composition in the scenario.

GROUP A: randomid = 1 (4 robots)

GROUP X: randomid = 2 (3 robots, 1 human)

GROUP C: randomid = 3 (no robots = control group)

GROUP A: *Imagine that you have just been assigned to a new team in your new job. Based on merit, you and four robots have been chosen to this new work team.*

GROUP X: *Imagine that you have just been assigned to a new team in your new job. Based on merit, you, another person, and three robots have been chosen to this new work team.*

GROUP C: *Imagine that you have just been assigned to a new team in your new job. Based on merit, you and four other people have been chosen to this new work team.*

In-group identification [IGI]

A survey experiment utilizing an in-group identification survey measure: **Group-level self-definition and self-investment in-group identification model (Leach et al. 2008).**

Please answer to what degree you agree with the following statements (Strongly disagree 1 – 7 Strongly agree):

I feel a bond with our team. [igi1]

I feel solidarity with our team. [igi2]

I feel committed to our team. [igi3]

I am glad to be a member of this team. [igi4]

I think that this team has a lot to be proud of. [igi5]

It is pleasant to be a member of this team. [igi6]

Being a member of this team gives me a good feeling. [igi7]

I often think about the fact that I am a member of this team. [igi8]

The fact that I am a member of this team is an important part of my identity. [igi9]

Being a member of this team is an important part of how I see myself. [igi10]

I have a lot in common with the average member of this team. [igi11]

I am similar to the average member of this team. [igi12]

Members of this team have a lot in common with each other. [igi13]

Members of this team are very similar to each other. [igi14]

GROUP A [aigi1–aigi14]

GROUP B [xigi1–xigi14]

GROUP C [cigi1–cigi14]

Write a post on social media [W]

A roleplay survey experiment.

GROUP A: Imagine that you have just had your first day at your new job. There are four robots in your team and you are the only human. Please write a post to your favorite social media site about your first day (max. 160 characters). [aw, ____]

GROUP X: Imagine that you have just had your first day at your new job. There are three robots and one other person in your team. Please write a post to your favorite social media site about your first day (max. 160 characters). [xw, ____]

GROUP C: Imagine that you have just had your first day at your new job. There are five people in your team. Please write a post to your favorite social media site about your first day (max. 160 characters). [cw, ____]

PART 3: ROBOT QUESTIONS

Exposure to robots [RE]

Have you ever used a robot or been in an interaction with a robot? [re1a; No = 0, Yes = 1, Don't know = 2]

If re1a = 1 or 2, ask: Where have you used a robot or been in an interaction with a robot? [re1b1–re1b3; No = 0, Yes = 1, multiple choices possible]

At work [re1b1]

At home [re1b2]

Somewhere else [re1b3]

Have you heard, read or seen anything about robots in any of the following? [re2–re10; No = 0, Yes = 1, multiple choices possible]

Movies [re2]

Tv-shows [re3]

Games [re4]

Fiction literature (novels etc.) [re5]

Non-fiction literature (textbooks etc.) [re6]

Newspapers or news websites [re7]

Non-fiction movies or tv-shows (documentaries etc.) [re8]

Research, exhibition or promotional event [re9]

Social media, internet forums, or blogs [re11]

Other: ____ [re10, ____]

Views on robots and technology [RT] [RS]

(rt13–rt15 & rt16–rt18 social influence; rt3 technology self-efficacy; rs1–rs3 robot-use self-efficacy RUSH-3; rt10–rt12 & rt19–rt21 attitude multicomponent -theory)

How positive or negative is [Very negative 1 – 7 Very positive]

... your view on robots in general? [rt1]

... the view on robots in general of the people that are close to you? [rt16]

... the view on robots in general of other people you know? [rt17]

... the view on robots in general of the people that you respect? [rt18]

... your view on robots if you think about your gut feeling? [rt19]

... your view on robots if you think about the facts you know about robots? [rt20]

... your view on robots if you think about using or interacting with a robot? [rt21]

Please answer to what degree you agree with the following statements [rt2–9; Strongly disagree 1 – 7 Strongly agree]

I am interested in technology and its development. [rt2]

I think I can learn to use new technology easily. [rt3]

I'm confident in my ability to learn how to use robots. [rs1]

I'm confident in my ability to learn simple programming of robots if I were provided the necessary training. [rs2]

I'm confident in my ability to learn how to use robots in order to guide others to do the same. [rs3]

Robots are a good thing for society, because they help people do their jobs or carry out daily tasks at home. [rt4]

Robots are necessary as they can do jobs that are too hard or too dangerous for people. [rt5]

Robots steal people's jobs. [rt6]

My current job could be done by a robot in the future. [rt7]

Due to the use of robots, more jobs will disappear than new jobs will be created. [rt8]

Robots suit my occupational field well. [rt9]

I would interact with a robot, if given the opportunity. [rt10]

I feel excited when I think about robots of the future. [rt11]

Based on my knowledge about robots, I think they are a necessary part of the future. [rt12]

I know a lot of people who have a positive view on robots. [rt13]

Most of the people who are close to me have a positive view on robots. [rt14]

Most of the people I respect have a positive view on robots. [rt15]

PART 4: EXPERIMENT 3

3. HR Experiment [HR] [RT] [RS]

The respondents are split into three groups by manipulating the level of autonomy of the robot (the target robot type of the interaction).

GROUP A: group_{hr} = 1 (fully teleoperated robots)

GROUP B: group_{hr} = 2 (semi-autonomous robots)

GROUP C: group_{hr} = 3 (fully autonomous robots)

Views on human-robot-interaction [HR] [RT] [RS]

[hr1–hr14; Totally uncomfortable 1 – 7 Totally comfortable]

GROUP A: When thinking about **fully teleoperated robots** (robots fully operated by a human), how comfortable would you be about

GROUP B: When thinking about **semi-autonomous robots** (robots which partly share control with a human), how comfortable would you be about

GROUP C: When thinking about **fully autonomous robots** (robots acting independently without human intervention), how comfortable would you be about

... using a robot as equipment at work? [hr1]

... having a robot as your co-worker? [hr2]

- ... completing a task together with a robot? [hr13]
- ... shaking hands with a robot? [hr3]
- ... hugging a robot? [hr4]
- ... robot giving you a pat on the back? [hr5]
- ... giving a robot a pat on the back? [hr6]
- ... robot's surface being hard when touching it? [hr7]
- ... robot's surface being soft when touching it? [hr8]
- ... having a conversation with a robot? [hr9]
- ... asking robot a question? [hr10]
- ... responding to robot's question? [hr11]
- ... robot looking at you? [hr14]
- ... robot following your movements with its gaze? [hr12]
- ... having an eye contact with a robot? [hr15]

GROUP A [ahr1–ahr15]

GROUP B [bhr1–bhr15]

GROUP C [chr1–chr15]

Next, also for the same GROUPS A–C:

[rt1 (robot attitude in general), rs1–rs3 (RUSH-3 robot-use self-efficacy) & hr16–17 (intention to interact or buy / obtain)]

GROUP A:

Generally speaking, how positive or negative is your view on **fully teleoperated robots** (robots fully operated by a human)? [art1; **Very negative 1 – 7 Very positive**]

Please answer to what degree you agree with the following statements [ars1–ars3; Strongly disagree 1 – 7 Strongly agree]

I'm confident in my ability to learn how to use **fully teleoperated robots** (robots fully operated by a human). [ars1]

I'm confident in my ability to learn simple programming of **fully teleoperated robots** (robots fully operated by a human) if I were provided the necessary training. [ars2]

I'm confident in my ability to learn how to use **fully teleoperated robots** (robots fully operated by a human) in order to guide others to do the same. [ars3]

I would interact with a **fully teleoperated robot** (robots fully operated by a human), if given the opportunity. [ahr16]

I will most likely obtain a **fully teleoperated robot** (robots fully operated by a human) for myself, if I can afford it. [ahr17]

GROUP B:

Generally speaking, how positive or negative is your view on **semi-autonomous robots** (robots which partly share control with a human)? [brt1; **Very negative 1 – 7 Very positive**]

Please answer to what degree you agree with the following statements [brs1–brs3; Strongly disagree 1 – 7 Strongly agree]

I'm confident in my ability to learn how to use **semi-autonomous robots** (robots which partly share control with a human). [brs1]

I'm confident in my ability to learn simple programming of **semi-autonomous robots** (robots which partly share control with a human) if I were provided the necessary training. [brs2]

I'm confident in my ability to learn how to use **semi-autonomous robots** (robots which partly share control with a human) in order to guide others to do the same. [brs3]

I would interact with **a semi-autonomous robot** (robots which partly share control with a human), if given the opportunity. [bhr16]

I will most likely obtain **a semi-autonomous robot** (robots which partly share control with a human) for myself, if I can afford it. [bhr17]

GROUP C:

Generally speaking, how positive or negative is your view on **fully autonomous robots** (robots acting independently without human intervention)? [crt1; Very negative 1 – 7 Very positive]

Please answer to what degree you agree with the following statements [crs1–crs3; Strongly disagree 1 – 7 Strongly agree]

I'm confident in my ability to learn how to use **fully autonomous robots** (robots acting independently without human intervention). [crs1]

I'm confident in my ability to learn simple programming of **fully autonomous robots** (robots acting independently without human intervention) if I were provided the necessary training. [crs2]

I'm confident in my ability to learn how to use **fully autonomous robots** (robots acting independently without human intervention) in order to guide others to do the same. [crs3]

I would interact with **a fully autonomous robot** (robots acting independently without human intervention), if given the opportunity. [chr16]

I will most likely obtain **a fully autonomous robot** (robots acting independently without human intervention) for myself, if I can afford it. [chr17]

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