

Module 1 TRN CULTURAL AWARENESS, Learning Unit

1.3 Misconceptions and stereotypes about robots

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THEORETICAL COMPONENT

Principles and Values

Stereotyping is an important tool to reduce mental load significantly. However, they can lead to wrong assumptions and misconceptions. That might be especially true regarding things we don't know well or are afraid of. For example, typical misconceptions regarding Socially Assistive Robots include the inability of the robot to provide emotional support, a possible replacement of health personnel, etc. Therefore, it is very important to reflect on your own stereotypes and keep the following values in mind:

- Acceptance
- Being non-judgemental
- Encouragement
- Flexibility
- Innovation
- Learning
- Open-mindedness

Aims

This tool aims to develop the understanding of misconceptions and stereotypes that exist regarding the use of SARs in caring for patients/clients.

Learning outcomes

At the end of this training, the participants

- Define what are SARs, misconceptions, and stereotypes
- Identify the main misconceptions and stereotypes about SARs providing care to the patient/client
- Identify the main misconceptions and stereotypes about SARs being deployed in health and social care settings
- Discuss ways to overcome these misconceptions and stereotypes towards SARs' caring for patients/clients
- Reflect on own previous professional or personal practice/behaviour and how to integrate SARs in the own professional way of caring

Relevant definitions and terms

Humanoid robot. A robot which appearance resembles a human and can often carry out tasks like a human ([Ting et al., 2014](#)). Also referred to as an anthropomorphic robot, with a higher emphasis on emulating human structure, sensorimotor and cognitive skills.

Misconception: According to the Merriam Webster dictionary a misconception is a view or opinion that is incorrect because it is based on faulty thinking or understanding ([definition of misconception, n.d.](#)). As an example, you can think of the fortune cookies you often get in a Chinese restaurant. Many people believe they belong to the Chinese cuisine, but you will only rarely find them in China. They are most likely invented by Japanese immigrants in the US ([Jing & Yoshitaka, 2008](#)).

Robot. Giving an exact definition to the term 'robot' is difficult. According to the [Cambridge English Dictionary](#) (n.d), a robot is a machine controlled by a computer that is used to perform jobs automatically. Although 'performing jobs automatically' is a key element in robotics, that element also exists in other simpler machines (i.e, dishwasher), which can make distinguishing robots based only on this criterion difficult - it is also noted that one important factor of robots that often is not mentioned in the definition, is the use of sensors ([Ben-Ari and Mondada, 2018](#)). Another definition is offered by the [International Organization for Standardization](#) (2012), stating that a robot is an actuated mechanism with a degree of autonomy, moving within its environment, to perform intended tasks.

Robots can be classified using different criteria, for example, based on their application field, environment, and mechanism of interaction ([Ben-Ari and Mondada, 2018; Dobra 2014](#)), control systems, size, design, etc. ([Dobra, 2014](#)). Whatever their application field and capabilities, robots are typically used for replacing the human component to complete a specific task ([Syriopoulou-Delli & Gkiolnta, 2020](#)). The origin of the word robot comes from the Czech word "robota" meaning forced labor ([Murphy, 2000](#)).

The concept of "robot" may be visualized differently in different cultures. According to ([Haring et al. 2014](#)), "A preliminary study through a Google image search revealed that for all countries, the term robot is mostly associated with humanoid robots, but with a different frequency of occurrence. Arabic and African countries show a high percentage of robot-related images like comics, toys, and others (e.g. United Arab Emirates 58%, Egypt 70%) whereas countries associated as technological highly developed countries like the US, Japan or Germany not only show more "real" robots (Japan and US 71% humanoid robots) but also a wider diversity of robots. Robots that look almost exactly like human beings are mainly particular for Japan, although they exist and are also developed in other countries."

Socially assistive robot (SAR). The combination of Assistive Robots and Social Robots is called a Socially Assistive Robot (SAR). SAR is a type of robot whose primary goal is to create close and effective interaction with a human user for the purpose of providing company, fostering independent living, giving assistance, and achieving measurable progress in convalescence, rehabilitation, learning, etc. alongside or instead of physical aid ([Winkle et al., 2020](#)).

SARs share with Assistive Robots the goal to provide assistance to human users but put the emphasis on assistance through social interaction.

SARs are complex types of robots since they need to mimic human behaviour as much as possible to create the image of a personality and human-like interaction. These two objectives allow the platform to generate empathy with the users and develop more efficient communication with them. Also, by adequately reacting not only to the person but the environment as well, the robot may be capable of performing multiple tasks.

Stereotype. The term stereotype comes from the Greek words "στερεός" (stereos), "firm, solid" and "τύπος" (typos), "impression" or "a model" ([Schneider, 2004](#)). A stereotype is often defined as a generalization about a group of individuals ([Kanahara, 2006](#)). We could start a discussion about using the term "stereotypes" in the context of robots even knowing that robots are not humans. But leaving this aside, it can be said that stereotypes create a misconception of how people/ robots are and how those individuals are in their social lives.

What the research says

- **Chuan, C., Cindy, J., Wend, M. (2020) Health Professional and Workers Attitudes Towards the Use of Social Robots for Older Adults in Long-Term Care. *International Journal of Social Robotics*. 12, 1135-1147.** Most health personnel had positive attitudes towards using social robots in long-term care facilities as they viewed social robots as beneficial and practical in psychosocial care for older adults. Positive attitudes towards using social robots can increase the acceptance of social robots. This study strives to support nursing work by providing insights into health personnel's perceptions of social robots, to integrate social robots into the care and lives of older adults. Available [here](#).

- Papadopoulos, I., Koulouglioti, C., Lazzarino, R., Ali, S. (2019) Enablers and barriers to the implementation of socially assistive humanoid robots in health and social care: a systematic review. *BMJ Open*. 10 (1). The enablers found were enjoyment, usability, personalisation, and familiarisation. Barriers were previous experience with technology and views of formal and informal carers related to technical problems, the robot's limited capabilities, and the negative preconceptions towards using robots in healthcare. Factors that produced mixed results were the robot's human-like attributes, limited capabilities, and the negative preconceptions towards the use of robots in healthcare. Available [here](#).
- Tuisku, O., Pekkarinen, S., Hennala, L. and Melkas, H. (2019) "Robots do not replace a nurse with a beating heart" The publicity around a robotic innovation in elderly care. *Information Technology & People*. 32 (1), 47-67. The results show that public opinion is mainly negative but that the commentators apparently have little information about the robot and its tasks. On the other hand, the personnel had more positive views; they saw it as a recreational tool, not a replacement for their own roles. Available [here](#).
- Vänni, J.K., Sirpa E. and Salin, E.S. (2019) Attitudes of Professionals Toward the Need for Assistive and Social Robots in the Healthcare Sector. In: Korn, O. (eds.) *Social Robots: Technological, Societal and Ethical Aspects of Human-Robot Interaction*, Springer, pp. 205-236. Both professional care workers and healthcare educators perceived that robots could increase productivity. The results also showed that robots can reduce workers' mental workload and increase the diversity of work. Robots were also considered good devices for activating the patients' motor and cognitive skills and making them happy. Even if the attitudes were positive and people were not afraid that robots may take over workplaces, the ecosystem of social robotics is still fragmented, and the number of intervention studies among professional care workers is small. Available [here](#) *.
- C. Bartneck, T. Kanda, O. Mubin, and A. Al Mahmud (2009). Does the design of a robot influence its animacy and perceived intelligence? *International Journal of Social Robotics*, 1(2):195-204. Research has found that perceptions of animacy and intelligence are closely related and simply making a robot more human-like in its appearance and behaviour increases perceptions of intelligence. Available [here](#).
- Stylianou, N., Nurse, T., Fletcher, G., Fewster, A., Bangay, R., Walton, J. (2015) Will a robot take your job? *BBC News*. Researchers at Oxford University have come up with a calculation to determine how realistic it will be that a specific job is done by a robot. This calculation is based on nine key skills necessary for each job. The website allows one to search for any job and determine the likelihood that a person performing that profession is replaced by a robot. Available [here](#).

What do national legislation and international/European treaties and conventions say on the topic?

- Cabral, T.S., 2018. Robotics and AI in the European Union: opportunities and challenges. *UNIO - EU Law Journal* 4, 135-146. This article describes robotics and AI in the European Union in general, but it also discusses and mentions typical stereotypes like "robots will replace humans." It highlights how important it is for the EU to balance debunking the prevalent fear of robots and taking precautions of possible dangers based on Artificial Intelligence. Available [here](#).

PRACTICAL COMPONENT

Learning Activities

Activity 1: Put misconceptions in order based on your own beliefs.

- The more people know, the less they are afraid of new things. Please read the statements on the following [webpage](#) and put them into order. The one you are highly believing in on top, the one you don't think is true at the end. Please upload the screenshot on our social platform for collaborative learning. It might be very interesting to come back to your screenshot after the whole study programme and see what has changed.
- Resources needed: [Drag'n'survey](#), a tool for creating online surveys; social platform for collaborative learning.
- Duration of activity: 3 minutes.

Activity 2: Therapeutic robots

- Therapeutic robots, e.g., robotic pets like PARO have shown a lot of positive effects in different research trials ([Kelly et. al 2021](#), [Wada & Shibata 2007](#), [Wada et al. 2010](#), etc.). However, some differences, misconceptions, and open (sometimes ethical) questions concerning PARO and similar robots might still exist.

Watch a video about how robotic pets help dementia patients (available [here](#)). Then, write your answers down, upload them and keep them aside. After you have finished the whole IENE course, read again through your reflections report. Did anything change?

- What are your ideas about using robots in healthcare? Does this lead to worse outcomes because the human element of care is left out?
 - How have the robotic pets been used in the nursing home?
 - How did people react to the robotic pets?
 - Which feelings did the senior nurse have when introducing the robotic pets?
 - How was the process formed concerning offering the robotic pets to the inhabitants?
 - Which reactions did the inhabitants show?
 - If you now think about your possible misconceptions, e.g., from activity 1, did they change? If yes, why? If not, which other information might you need to get a better picture of the robotic pets?
- Resources: [YouTube video](#); Word or similar software for writing.
 - Duration of activity: 4 minutes video, 20 minutes reflection.

ASSESSMENT COMPONENT

Assessment Activities

Activity 1: Crossword Puzzle

- Try to fill out the crossword puzzle containing terms and sentences concerning SAR misconceptions and stereotypes (available [here](#)). Please upload a screenshot or pdf file of the solved puzzle on the social platform for collaborative learning.
- Resource: [CrosswordLabs](#), a tool for creating online crosswords; social platform for collaborative learning.
- Duration of activity: 20 minutes.

EVALUATION COMPONENT

Participants to evaluation

The online evaluation questionnaire of each Learning unit is completed by the MOOC participants (students and student/facilitators) on Survey Monkey

What to evaluate

The Learning Unit's evaluation criteria are: coverage of the identified learning needs, innovation, quality of the content and training materials, intuitive and friendly presentation, relevance of learning activities, and efficiency for achieving established learning outputs.

Please, complete this online evaluation of the learning unit by clicking on this link:

<https://www.surveymonkey.com/r/L2BT8R8>