# What do young adults expect from social robots?

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# SOCIAL ROBOT RESEARCH IN ATILIM UNIVERSITY

## Research interests:

- *Design methodology for social robots*
- *Modular social robot design*
- *User-centered/participatory design of social robots*
- *Shopping robots*

## Selected research:

- *Development and implementation of a software platform for personalized and modular social robot design (Supported by TÜBİTAK-Scientific and Technological Research Council of Turkey, Grant No: 123E653, ongoing)*
- *Stakeholder selection framework for participatory design of social robots*
- *Systematic development of social robot product families*

# INTRODUCTION

- Social robots which aim to offer cognitive support and assistance to humans with meaningful interactions are seen as one of the most transformative technologies of the future [1].

- With human-like features such as speech, emotion, face, and object recognition along with other artificial intelligence-related abilities, social robots are increasingly being utilized for therapy, education, and entertainment [2], [3].

# INTRODUCTION

- The recent advances in new technologies such as Generative Artificial Intelligence and the global increase in the aging population have directly affected the interest in social robots with many studies investigating the acceptance and effects of social robots on different user groups.

- The existing literature show that social robots have gained significant attention in recent years, especially in education, healthcare, and elderly care in domestic settings [2]. Yet, the consumer interest and expectations from social robots for the other adult population groups have not been studied extensively.

# INTRODUCTION

- Further research is required to understand the human needs and interests of diverse adult population groups, as social robots are anticipated to integrate into societal frameworks for the near future. These investigations will be important to ensure that the development and deployment of these technologies align with the expectations and requirements of various demographic groups [12].

- To address this gap, the present study aims to explore the requirements and expectations of the younger population in the age range of 18-39. Based on the findings, the main dimensions for designing personalized social robots for young adults are explored along with their key considerations.

# METHODOLOGY

- In this study, data was collected using structured interviews. 83 young-adult people within the age range of 18-39 participated in the study. The interview questions are provided below:

| No | Question |
|---|---|
| 1 | What role(s)do you expect a social robot to play in your daily life? |
| 2 | What are the 3 most important tasks you want the robot to perform? |
| 3 | What are the most important features or capabilities you want the robot to have? |
| 4 | Would you like to have a social robot designed according to your personal preferences and needs? |
| 5 | Do you want the robot to recognize you or your family members? |

- The results of the structured interviews were then quantitatively and qualitatively analyzed leading to the development of a conceptual framework for social robot design dimensions for young adults

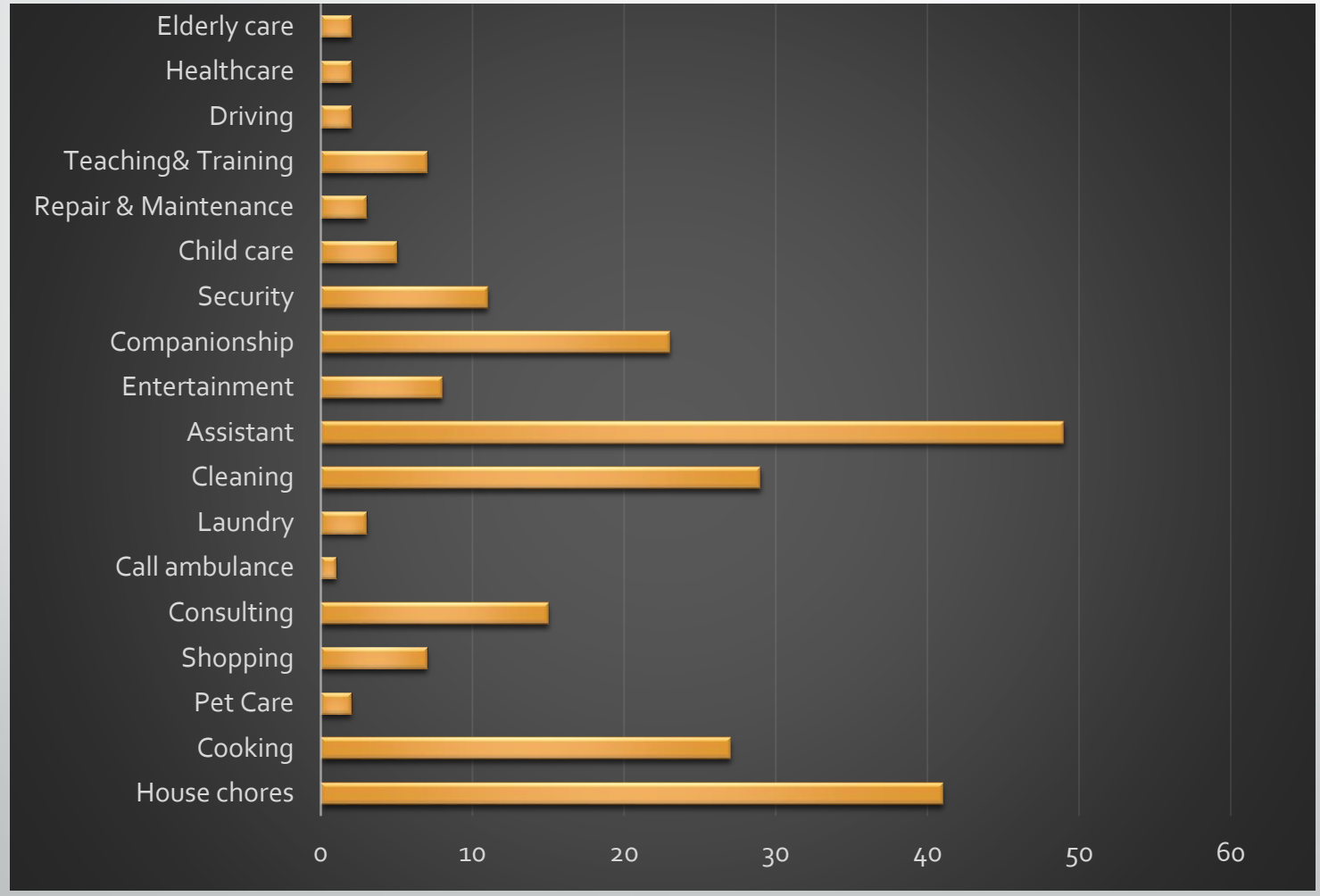
# QUANTITATIVE ANALYSIS

- The gender distribution of the participants:

| Gender | Count | Percentage |
|---|---|---|
| Male | 51 | 61,45% |
| Female | 32 | 38,55% |

# QUANTITATIVE ANALYSIS

- Task preferences of the participants:




The two most preferred tasks were those of assistant and house chores.

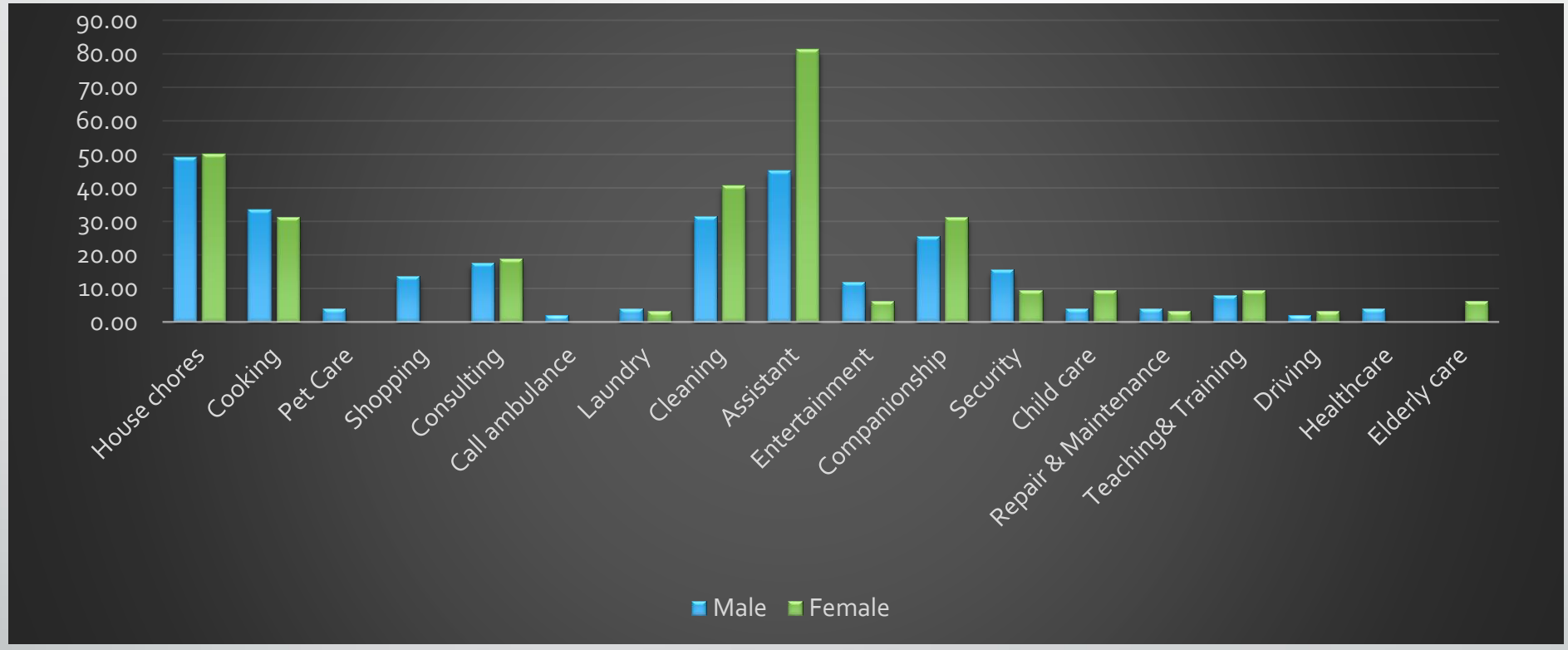
# QUANTITATIVE ANALYSIS

- Constituents of the tasks

| Elements | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Wash dishes | Reminding | Recommendation | Diet coaching | Make coffee | Play games | Check oven |
| | Make bed | Alarm | Answer questions | Sports coaching | Make break-fast | Play music | Check risky places |
| | Tidy the house | Daily plans | Decide what to wear | Language tutoring | | | |
| | Turn off lights | Time management | | | | | |
| | Bring drinks | Personal care (hair, makeup) | | | | | |
| | Ironing | Research | | | | | |
| | Fold laundry | Grade homeworks | | | | | |
| | Carry items | | | | | | |

# QUANTITATIVE ANALYSIS

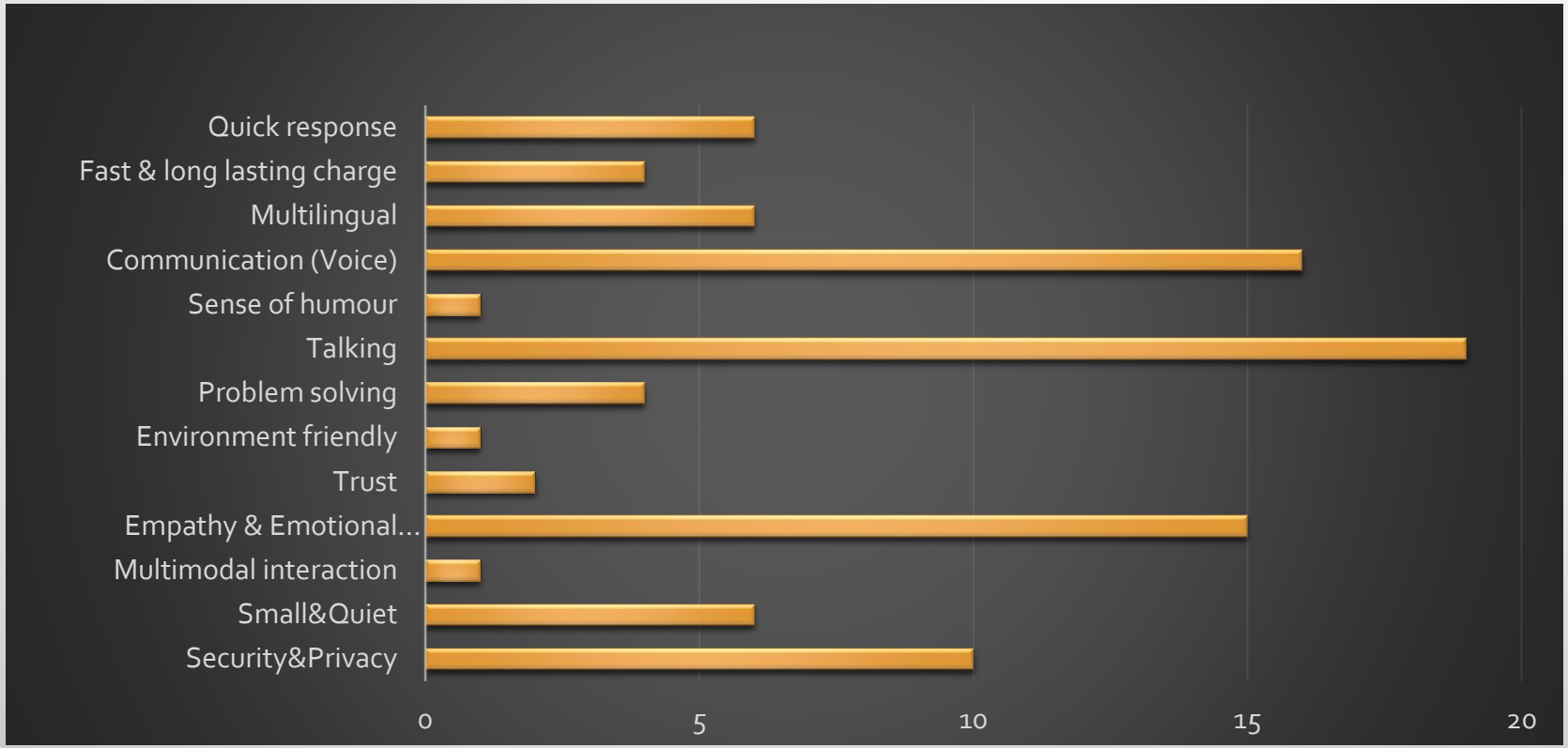
- Task preferences according to gender:




The assistant task is preferred by the female participants by a wide margin. Male participants showed a greater interest in tasks related to shopping, entertainment, security, and healthcare, whereas female participants demonstrated a stronger preference for tasks involving, household chores, companionship, and the care of the elderly and children.

# QUANTITATIVE ANALYSIS

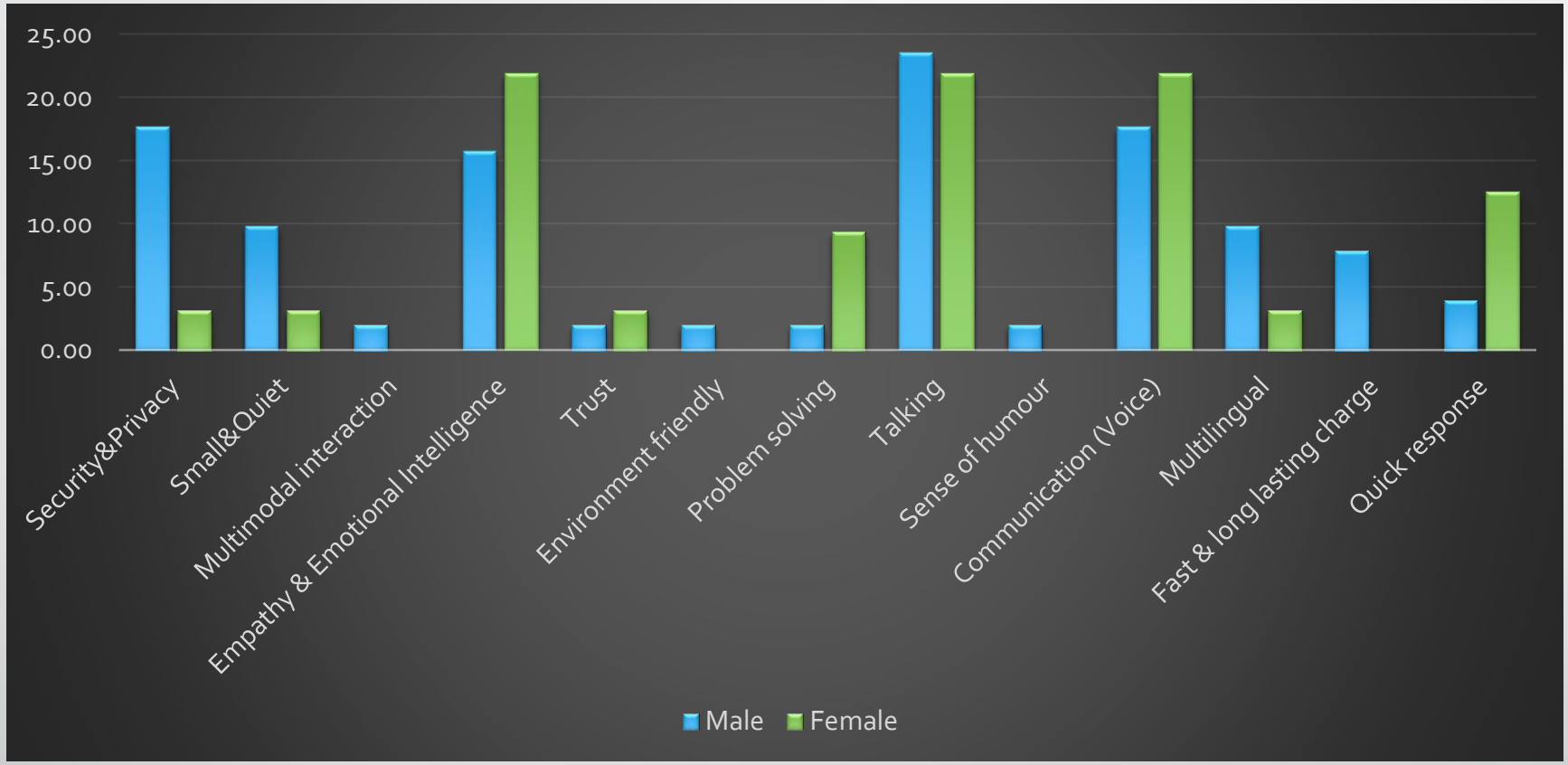
Feature preferences of the participants




The most requested features were for the social robot to talk and communicate through speech, to exhibit empathy and emotional intelligence and possess security and privacy features.

# QUANTITATIVE ANALYSIS

Feature preferences according to gender




Male participants were more interested in a small and quiet social robot prioritizing security and privacy, having fast and long-lasting charge, capable of multimodal interaction. On the other hand, female contributors focus more on the social robot displaying empathy and emotional intelligence with problem solving skills and quick response features.

# QUALITATIVE ANALYSIS

The interview results revealed that young adults have expectations from social robots in 3 main themes:

- making life easier,
- emotional and mental support,
- physical and behavioral features.

# QUALITATIVE ANALYSIS

***A. Support for easy life***

Young people expect social robots to make their lives easier and save them time by performing monotonous and routine tasks that they need to do.

e.g. “Doing routine tasks for me and saving me time”
“Being able to do monotonous, periodically required tasks and meetings”

The expectations stated in this group also revealed the need for social robots to learn habits or routines and act accordingly.

e.g. “Following personal routines”
“Learning my habits”

# QUALITATIVE ANALYSIS

***B. Emotional and mental support***

Participants stated their expectations regarding the request for mental support.

e.g. “Let it be a second brain, like my clone”
“Plan and remember instead of me”

In this category, it is observed that there are differences in the expectations of male and female participants regarding emotional support.

e.g. “Providing morale and motivation” (Female participant)

Social robot should be "unemotional and have no empathy ” (Male participant)

# QUALITATIVE ANALYSIS

***C. Behavioural features***

The most requested behavioural feature is that social robots work in integration and cooperation with other systems.

e.g. “Home management integrated with smart home systems”
“Working in harmony with other electronic devices”

Another behavioural feature expected is the social robots to be intelligent and able to learn.

e.g. “Recognizing guests”
“Being able to think”

# QUALITATIVE ANALYSIS

Participants are also sensitive about the environmental friendliness of social robots.

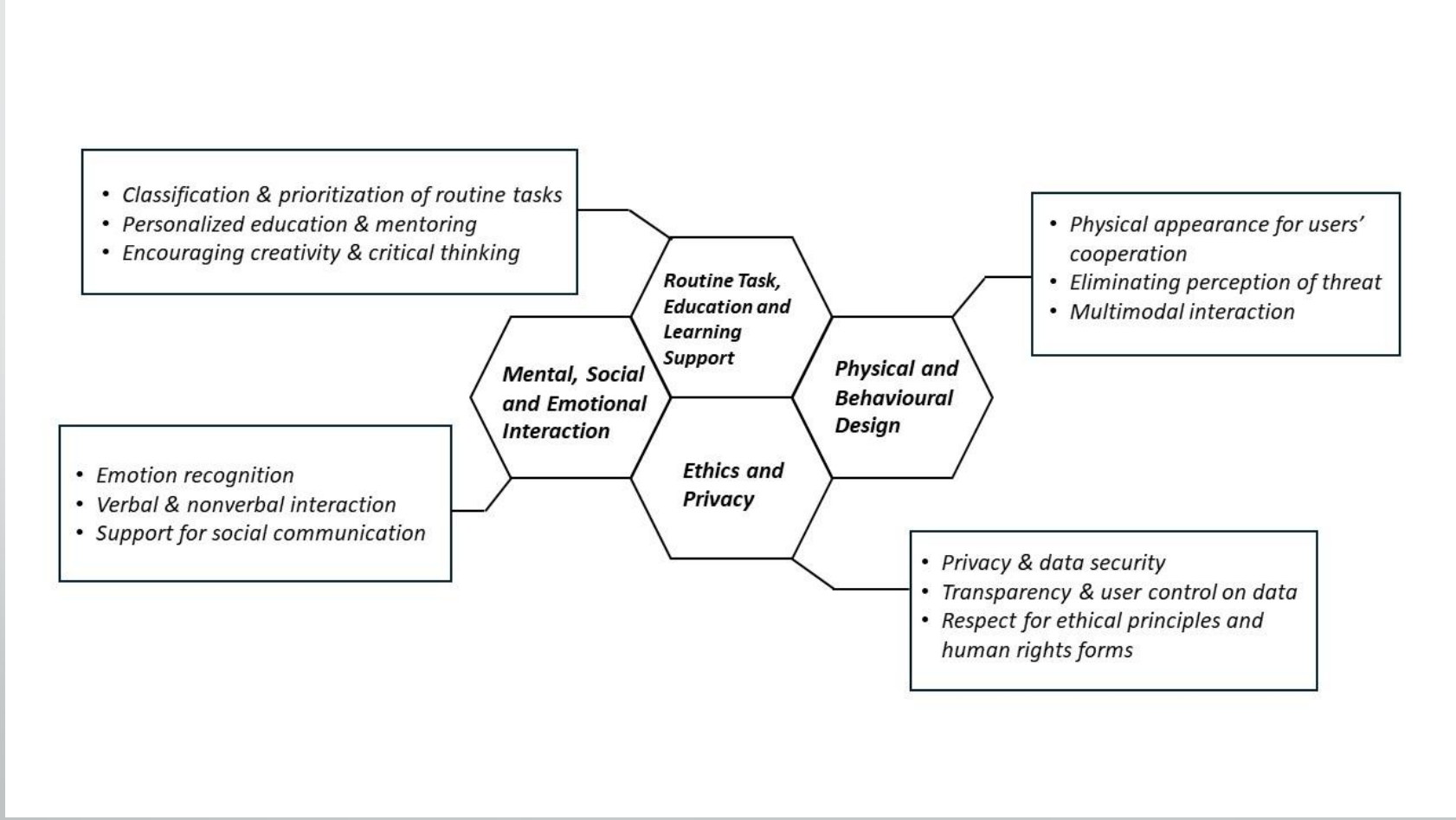
e.g. “Empathy, trust, and being environmentally friendly.”
“It completes business processes in an environmentally friendly manner,”

Young participants also expressed the need for witty, and skillful social robots

e.g. “It should be quick-witted, fast, and agile,”
“It should be humorous”

# CONCEPTUAL STRUCTURING OF SOCIAL ROBOT DESIGN DIMENSIONS FOR YOUNG ADULTS

The data obtained from the present research reveals four main dimensions to design personalized social robots for young adults.




Dimensions and key considerations to designing social robots for young adults

# CONCLUSIONS

- In this study, the requirements and expectations of the younger population from social robots are explored.
- Based on the findings, the main dimensions for designing personalized social robots for young adults are identified along with their key considerations.
- The results will hopefully provide insight to social robot designers and developers to reach the expectations of the young adults.

# CONCLUSIONS

- Besides technical aspects, social expectations have strong potential in developing social robots in the foreseeable future. From this perspective, we will need to develop function-, behaviour- and emotion-based responses into the design of these systems.

- It will not be surprising that social robot design will evolve in such a way that user- and context-specific approaches and behaviors will appear.

- Young adults are an important user group who have the ability to integrate social robots into their daily lives and collaborate with them.

# LIMITATIONS

- Data from a larger number of participants can be collected and analyzed yielding more accurate results.

# FUTURE WORK

- The expectations of various age groups such as the elderly and children can also be investigated and compared against the findings to achieve a more personalized social robot design for all age groups.

# Selected References

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Thank you…

Any questions/comments are welcome☺