Identifying Opportunities for Social Robots in Youth Services: A Case Study of a Youth Guidance Center

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Abstract. Youth guidance services provide information and advice for young people, but often have limited resources and time to address all needs especially related to social interaction. Guided by the principles of Integrative Social Robotics, we conducted a case study of a youth guidance center to recognize central values and needs of clients and staff, based on which to identify possible opportunities for social interactions enabled by robots. The study consisted of a context study and an interview with a staff member, and an online questionnaire for young people (n=8) who had visited the center. The youth's needs included conversational support and alleviation of anxiety; the staff's needs involved getting feedback and provision of conversational support. The central values suggested by the youth were compassion, encouragement, respect, honesty, and safety, with acceptance as the overarching theme. Based on the findings, we discuss possible social robotic concepts and implications on design process and institutional practices. We also propose that values can be formulated as experience goals to guide the design process.

Keywords. Youth services, social robots, value analysis

1. Introduction

Today's teenagers and young adults, the so-called Generation Z, face a more uncertain future than previous generations, and thus have higher potential burden on their mental well-being [1]. Young people are developing their sense of purpose [2] and often struggling with profound decisions such as choosing a field to study, finding work, managing relationships, or simply coping with daily chores. In some countries, public sector or third sector offer guidance services that can provide direct support to young people in their issues or guide them to other appropriate services, e.g., an employment office or mental health services. Such guidance services can ideally support youth's integration and participation in the society. However, successful outcomes heavily depend on the service staff's ability to connect with their young clients and comprehend their individual situations and needs.

In our line of research, we are investigating how social robotics could be utilized to enable and enhance youth's societal participation. We define youth as persons who are in the period of transition from childhood to adulthood, primarily between the ages of 15 and 24 years, the age range stated in the UN's definition for youth [3]. While some prior

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research has been conducted in the domain of societal participation related to children's education [4,5] and adolescents' perceptions of possible uses of social robots in civic participation [6,7], to our knowledge no social robotics studies have been done in the context of support services for youth. The study reported in this paper is a part of an ongoing research collaboration with a youth guidance center that serves as a low-barrier place that provides information and advice for anyone under the age of thirty.

Our research approach is based on Integrative Social Robotics (ISR) [8–10] and Human-Centered Design (HCD) [11]. To ensure a truly value-driven and human-centered design process when working with possibly vulnerable youth, we complemented the general HCD process with the ISR approach, considering especially its Non-Replacement Principle – "social robots may only do what humans should but cannot do" [8,10]. In the early phases of the collaboration with the youth guidance center, we have come to understand that most young people place high value on interaction with humans, be it youth workers or peers, but at the same time many are highly interested in new technologies, especially social robots. As ISR approach has proved beneficial in other contexts by bringing broader societal discussion and ethical considerations in a robot development project [9], we are also interested in examining how it impacts our research process.

The specific aim of this study was to identify opportunities for social interactions that staff members at present cannot provide for youth, e.g., due to limited resources or challenges in communication, and that might be possible to realize through social robotics. Guided by the Process Principle of ISR [8], we aimed to understand whether staff members and clients have unfulfilled needs related to social interactions. Moreover, according to the Values First Principle of ISR [8], we examined central values in the operation of the guidance center, and attempt to use the gained knowledge to identify what social robots could do that humans should but cannot do. In this paper, we report the identified opportunities and outline possible social robot concepts. We also discuss the implications that introducing such robots in youth services could have on institutional practices from both staff members' and youth's perspective.

2. Methodology

The study was conducted during 2021 under COVID-19 restrictions. After initial informal discussions with a staff member, we conducted a needs and value analysis. The analysis consisted of a context study at the guidance center and an online questionnaire for young people who had experience of being the center's clients.

2.1. Context Study and Interview with a Staff Member

The purpose of the context study was to gather understanding of the physical environment and the operation of the guidance center. The first and second author visited the center for one hour outside its opening hours. During the one-hour visit, a staff member first showed us around the center, and we collected observational data with photographs, video clips and written notes. Then, we conducted an open interview with the staff member about the center's operations and young clients' needs and activities at the center. In data analysis, the observational data were organized under themes of physical, social and technological contexts, which were supplemented by the interview

data about the contextual elements. From the interview notes, unmet needs of young clients and staff members were identified.

2.2. Online Questionnaire for Youth

The online questionnaire was designed after the context study. The purpose of the questionnaire was to gain insight into youth's experiences and identify the values important to them related to the guidance center and its services. The inclusion of values identification was inspired by the Values First Principle of ISR. The questionnaire (see Table 1) consisted of sentence completions and open-ended questions about the experiences at the guidance center, and multiple-choice and open-ended questions about the values related to the center. The sentence completions [12] consisted of six sentences that would form a story about a client's experience from entering the guidance center, interacting with the staff, and leaving the place. In addition, questions related to societal participation motives were asked. At the end of the questionnaire, participants could opt to receive a movie ticket as a reward for their responses.

Table 1. The structure of the online questionnaire to understand youth's experiences and values.

Section	Questions	Answer options
Background and consent	Age	15–17, 18–24, 25–29, 30 or above
	Consent: I consent to participate in the study	Yes/No
Guidance center	Describe briefly what kind of an experience your first visit to the guidance center was.	Free text
	Imagine the experience of a young person who visits the guidance center for the first time, and describe the experience by completing the sentences below.	Sentence completions (free text) for six sentences, e.g. *"When they visit the center for the first time, they feel…"*; *"While waiting for their turn, they…"*
	Choose all the issues that are important in the operation of the guidance center from youth's perspective.	Multiple choice from 33 values (e.g. freedom, creativity, respect, clarity) and "Other" option
	Describe some of your above choices in more detail. How do they manifest in practice in the guidance center?	Free text
	If you had to choose one thing that should be improved about the guidance center, what would it be and why?	Free text
	Would you like to tell more about the guidance center? You can write freely anything that comes to your mind, tell about your own experiences, feelings, ideas or opinions.	Free text
Societal participation	What kinds of things you want to influence in your own surroundings? What matters the most to you?	Free text
	What was the reason for you to join the group of developer youth?	Free text
	If you wanted to invite other young people to societal participation activities, how would you do it? What is important to communicate to youth who are not sure about joining?	Free text
Reward	Would you like to have a movie ticket as a reward for participation?	Yes/No
	Email address	Free text

Participants were recruited by the guidance center staff. Eight young people between the age 15 and 29 completed the online questionnaire; one was in the 15–17 age range, four were in 18–24, and three were in 25–29. In data analysis, most common values chosen by the participants were calculated, and central themes were inferred from the qualitative descriptions of the chosen values. Typical stories of youth's experiences were constructed based on the sentence completion responses, and the values that the stories reflected were identified.

3. Results

We report the findings focusing on the unmet needs for social interaction that could possibly be addressed by social robotics, and on the values inherent in the operation of the guidance center.

3.1. Staff Perspective: Context Study and Interview

Based on our observations at the guidance center, the physical context was portrayed as an informal, relaxed space. The center consisted of a large open space surrounded by meeting rooms and furnished with colorful, comfortable couches and seats. According to the interviewed staff member, clients are usually greeted at the door by a service advisor who gauges their emotional and physical state and guides them to take a seat either in the open space or in a more private room. Depending on how crowded the center is, the service advisor may be able to serve the client right away, or the client may need to wait for their turn. Employment, education and well-being are the most common reasons for clients' visits, and sometimes the service advisor can directly provide help and advice to the client, but they may also need to schedule an appointment with a specialized expert such as a social counselor or an employment coach.

The results of the interview with a staff member indicated two possibly unmet needs at the guidance center that suggest opportunities for social robotics solutions. First, from the clients' perspective, their *need for conversational support* may remain unfulfilled, since staff members have to limit the time they can spend with one client. The interviewed staff member pointed out that many young people "just need someone who listens" and, being unable to provide this listening ear to everyone, staff members sometimes have feelings of inadequacy. Second, from the staff perspective, *feedback is not systematically collected*, even though there is a device for giving feedback. Thus, the staff do not necessarily know how they should improve the operation of the center.

3.2. Youth Perspective: Online Questionnaire about Values and Experiences

3.2.1. Values

The most common values (n=7) chosen by the eight participants were *compassion, encouragement, respect, honesty, and safety*. Other common values that participants chose to describe also in more detail included friendliness, humor, knowledge, authenticity and openness. *Knowledge* was expressed in the responses as gaining information about other relevant services and being encouraged to approach them (which we can interpret as encouragement towards societal participation). In the written

descriptions of values, an overarching theme we recognized was *acceptance* of all youth regardless of their situation and characteristics; e.g. *"Compassion manifests in that youth are understood and not pushed forcefully to some direction just because they have to be an active and efficient citizens"; "A place where people are friendly and accepting no matter what the situation of the youth is".*

3.2.2. Experiences

We formed two typical stories (presented fully in Table 2) of the youth's experiences at the guidance center based on the sentence completion responses. In the first story, which we labeled **"Relief"**, the young person feels some anxiety but predominantly relief and excitement about visiting the center. They have positive expectations that are fulfilled during their visit: they are greeted with warmth and friendliness, which makes them feel welcome, and they are treated with respect, interest and as an individual person. They leave the center feeling relieved and satisfied, as they have been seen and heard and their issue has been sorted out. This story depicts a highly positive experience, in which values such as *compassion, respect*, and *acceptance* are realized.

Table 2. Typical stories of the youth's experiences of the first visit at the guidance center.

Label	Story
Relief	When the young person visits the guidance center for the first time, they feel anxious, but at the same time relieved and excited. They expect to get sympathetic and professional help as well as warm-hearted support and advice. They are welcomed with a smile and a cheerful greeting. The atmosphere at the center feels warm and welcoming. While waiting for their turn, the young person sits down on the sofa with a cup of coffee to relax, reading brochures or listening to music. They feel at home and can gather their thoughts in peace. In the appointment with a staff member, it feeld good that they are genuinely interested in what the young person has to say, consider them as an individual person and do not impose anything. The only thing that feels bad is that time runs out and there's not enough time to find help in every matter. When the young person leaves the center, they are relieved, excited and satisfied that they managed to get their affairs in order. They feel that they have been seen, heard and understood.
Anxiety	When the young person visits the guidance center for the first time, they feel anxious, uncertain and depressed. They expect to get answers and support to solve the challenges in their own life. While waiting for their turn, they scroll through their phone, wondering if they are too much trouble, if they should just leave and forget the whole thing. There are also other clients present and the young person has a hard time thinking straight. The person thinks that maybe they are taking up staff members' time unnecessarily, maybe other clients have more important things to deal with. In the appointment with a staff member, however, it feels good that they are calm, listen and do not treat the young person like a baby. What feels bad is that there is not enough time to resolve the issue completely and the young person does not have time to tell everything because the center closes so early and time runs out. When the young person leaves the center, they feel slightly more relieved because the promise of contact later in the week gives hope, but they miss the company of people.

In the second story, **"Anxiety"**, the young person experiences negative emotions such as anxiety, uncertainty and depression when coming to the guidance center. They expect to get help and support, but while waiting for their appointment, they are wondering if they are too much of a bother and should they just leave and forget about the whole thing. There are also other clients at the center who might have more important issues than the young person. (Notably, in comparison to the first story, the warm greeting is not present, and thus the values of *acceptance*, *safety, respect* and *compassion* do not seem to be manifested during the first phase of the visit.) However, in the meeting with an advisor, it feels good that the advisor is calm, listens, and treats the young person as an adult.

Unfortunately, there is not enough time to sort out the issue because the time runs out. The young person leaves the center with a slightly hopeful feeling but longs for more human contact. This story depicts a mixed experience with both positive and negative aspects, and supports the context study finding related to the sometimes unmet *need for conversational support*. Additionally, it indicates that clients may feel a lot of *anxiety* about the visit.

4. Discussion

The findings suggest two possible opportunities for social interactions that social robots could enable at the guidance center. These opportunities (summarized in Table 3) are related to alleviating anxiety, which serves the need of young clients, and enabling youth's societal participation by providing information and feedback, which serves both staff's and clients' needs. Although our focus was on a specific guidance center, the opportunities are likely to be present also in other places that provide services for youth.

4.1. Opportunities for Social Robots in Youth Services

The first opportunity, alleviating anxiety, is based on the finding that when the youth arrive to the center, they may feel highly anxious and it is important that there is an actual person welcoming the youth in a manner that reflects *acceptance, respect, compassion* and *safety*. Due to limited staff resources this accepting welcome is not guaranteed to happen at all times. Youth sometimes also need to wait for their appointment, some of them feeling anxious and fearing they are burdening the services. Anxiety may be due to visiting a new and unfamiliar place, or because of the issues the client is personally dealing with. This is a possible opportunity to design for a valuable social interaction of an emotional nature: could a social robot serve as an entity that facilitates a safe and accepting atmosphere, alleviating anxiety and encouraging people to stay and relax? Although this might be seen as a robot taking over tasks belonging to humans, it is clear that in this case the robot would only do what humans cannot do for practical and economical reasons, and thus ISR's non-replacement maxim would not be violated (cf. a professional care use case presented by Fischer and colleagues [9]). Moreover, a robot could in theory have an anxiety-alleviating role that a human could not fulfill – two studies suggest that people with social anxiety may feel more relaxed about interacting with a social robot than a human [13,14]. Prior research has found that only a minority of young people with depression or anxiety seek professional help, while social support and encouragement from others appear to facilitate help-seeking [15]. Considering this, could it be possible to design a robot that conveys acceptance and emotional support and simultaneously encourages youth to seek help also for their mental health issues? Or, in the context of youth services, could a robot simply be used in an "ice-breaking" role to facilitate socializing around it, as observed in other contexts [16,17]? In either case, continuing the research and design process would necessitate the involvement of psychological expertise and acquiring a more nuanced understanding of the nature of anxiety and social interactions among the guidance center clients; involving all relevant disciplines and thus complying with ISR's Quality Principle [8,10] more fully.

The second opportunity we identified is related to encouragement towards societal participation. Our findings indicate that when leaving the guidance center, part of the youth have the need for more information and conversational support, and in parallel the

staff have the need for more systematically collected feedback. A social robotic solution could possibly serve these needs by providing information about other services and encouragement to take the next steps, e.g., by locating or listing activities for youth based on their personal interests. This way the robot might be able to help youth increase their knowledge about and interest in participation options, lack of which have been identified as obstacles for participation in a previous study [18]. While it can be argued that a simple tablet interface could address the functional needs for information and feedback, it might be possible to also compensate for lacking conversational support through a robot in whose design the values of *encouragement*, *respect* and *safety* are emphasized.

Table 3. Identified opportunities for social robots at the guidance center.

Opportunity	Description	Implications for design process
Alleviating anxiety	Creating a welcoming, safe atmosphere especially for first-time visitors. Evoking experiences (values) of acceptance, respect, compassion and safety.	Main aim is an immediate positive emotional impact on youth. Involvement of psychological expertise is required. Involvement of most vulnerable youth considering various forms of anxiety.
Enabling participation	Providing information about participation opportunities based on youth's personal interests. Evoking experiences (values) of encouragement, respect and safety.	Main aim is the behavioral activation of youth, beyond the guidance center. Involvement of various stakeholders, such as third-sector organizations, that offer activities for youth.

How do we then choose which opportunity to focus on, if not both, and move from the identified needs and values to concrete design requirements? Our tentative hypothesis is that *enabling participation* has potential for a larger societal impact due to a possible ripple effect of youth taking initiative to participate in activities offered by other organizations and communities, or even being inspired to organize grassroots activities themselves. Nevertheless, how to realize a social robotic solution that enables participation in practice will require a thorough co-design process with youth, guidance center staff and various other stakeholders.

Regarding design requirements, ISR proposes that values are manifested in interactions, at the same time guiding people's decisions and being realized in actions, but it does not provide a clear process for designing interactions between humans and social robots based on values [9]. Values can be conceptualized as context-dependent experiences that manifest in interaction and dialogue. Hence, in designer terms, we propose that values can be formulated into *experience goals* to guide the iterative design and evaluation and help in communicating with different stakeholders [19]. Moreover, integration of ISR and the non-replacement maxim in the design process is a constant reminder that a social robotic technology may not be the right solution – or a cost-efficient one – to address the unmet needs at the guidance center.

4.2. Conclusions and Future Work

The aim of this paper was to examine the youth services context through a case study in which we identified unmet needs and opportunities for social robots at a youth guidance center. The research approach combined Integrative Social Robotics and Human-Centered Design to conduct a needs and value analysis of staff and youth perspectives. The first principle of ISR, the Process Principle, was particularly useful in the research

design, as it guided us to focus on interactions a robot could afford instead of a robot's functionality and features. We were thus able to identify meaningful needs related to social interactions: alleviating anxiety and enabling participation of clients. Notably, the identified opportunities appear generalizable beyond the specific guidance center in the case study.

In the next steps of the research and design process at the youth guidance center, we intend to carry out a Research through Design [20] process with youth and staff, guided by the ISR principles [8,9] and the participatory design principles outlined by Björling & Rose [21]. This initial study has demonstrated that applying the Values First principle of ISR [8,9] helps us identify the central values that must not be undermined, but rather enhanced, by the introduction of new technology in the service. In the further design process, one way to ensure that the design recognizes the values inherent in the practices at the institution (namely compassion, encouragement, respect, honesty and safety) could be setting the values as experience goals and evaluating whether they are evoked in the interaction between youth and the robot. We must also carefully consider the implications that placing a robot in the physical location of the guidance center would entail beyond the research study. The institutional practices and processes would have to be adapted to involve e.g. the operation and maintenance of the robot and procedures for handling possible technical and social problems. Moreover, a central challenge is how we could involve the most vulnerable youth in the design process and ensure that we fully comprehend and respect their values.

Acknowledgements

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