

Can You Persuade Your Parents? A User Study towards Role Playing Theory in Persuasive Agent Design

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Abstract

Persuasive agent interventions are increasingly being used to persuade users, especially senior citizens, to adopt a healthy lifestyle. The agents are supposed to enhance the effectiveness of real person persuasions. In our field study, we found a phenomenon that the senior parents tend to refuse persuasions from their adult children without considerations about their expertise or knowledge. To solve this problem, we conducted a user study to understand the role conflict between the seniors and their adult children. The results demonstrated the potential of our proposed persuasive conversation agent design based on the leader-follower role playing theory. This model aims to guide the persuasive agent to assist the adult children to persuade their aged parents more effectively.

Keyword: Persuasion; intelligent agent; healthy lifestyle; senior population

I. Introduction

Poor dietary habits are associated with multiple health problems among the elderly, including obesity, hyperlipidemia and frailty [1,2]. On one hand, long-term excessive calorie intake results in an increase in adipose tissue and the risk of atherosclerosis. Appropriate dietary restriction has been demonstrated to benefit the functional health of the aged population [3] and increase life-span [4].

On the other hand, the shortage of nutrition intake leads to significantly higher risk of functional impairment and incident disability of the elderly [2, 5]. The loss of skeletal muscle caused by undernutrition is related to lower threshold of muscle functional status and greater anabolic resistance [2,5,6,7]. Considering the negative influence of poor dietary behaviors, it is critical to persuade the aged people to adopt a healthier lifestyle to improve well beings.

Mutually supportive behaviors exist widely in families [23,25]. This fact empowers the adult children to persuade their older parents to adopt a healthier lifestyle. However, in practice, it is not easy for the aged parents to take advices from their children. As the children grow up, the mutual support ability in the family shifts from the parents to their children. The “inertia” of being a leader of the family leads to stubbornness of the older parents.

This phenomenon is defined as the role conflict between the adult children and their aged parents rooted from the power shift from generations [9,10,11,12]. The parents are natural leaders of the family after the birth of the child because of their abilities, responsibilities and the requirements of the infant. This leader-follower role structure will last a long time till the parents become old and the child grows up. This changes the intergenerational contracts. This transition weakens the foundation of the previous family role structure. If either the parent or the child does not want to accept their new role, they will feel Role Conflict [12]. This conflict influences every aspect of the communications and interactions including persuasion within the family.

To solve this problem, psychologists and gerontologists suggested that the family should seek help from a third party, such as a social worker or a nursing staff [10]. As persuasive technologies and intelligent agent intervention are increasingly developed, researchers turned their attention to persuasive agents [13]. We proposed the Role Playing Theory [12] to analyze the acceptable role played by the agent and its effect on the agent’s persuasive effectiveness in behavior changes among older adults.

In this study, we conduct a crowdsourcing based user study to assess the Role Playing Theory through a mixed qualitative and quantitative survey involving 60 participants aged over 65 from

mainland China. By analyzing the results of the questionnaire and text coding of the semi-structured interview answers, we demonstrated Role Playing Theory and revealed the reasons behind this phenomenon as well as the beliefs held by the older parents.

II. Related Work

Persuasive agents are designed to persuade people to change their attitudes or behaviors through conversations [13]. During the past decades, persuasive agents were widely studied and applied in healthy lifestyle intervention with the aim of promoting positive behaviors or attitudes of the individuals in preventing illness and maintaining general wellbeing [14]. Some agents were designed as a coach to develop a behavior change plans and guide the user towards a healthier habit [15, 12, 16, 17,23]. Others provide knowledge to the users to help them overcome barriers of actions [18]. Another category of the persuasive agents motivates the users by providing companionship and subtle influence [19,20]. This technology is a supplement to the face-to-face interventions. Furthermore, a persuasive agent is flexible in role playing around the user. When an individual is restricted by his/her expertise, position or relationship to the target user, the persuasive effectiveness may be weakened. A persuasive agent can overcome these limitations.

According to the literature review, we can find that the majority of the previous studies of persuasive agents separated the research objects as agents, users and their interaction patterns. There is lack of studies connecting the agent and the user by understanding the relationship between them. What roles can/should the agent play? Which role playing is effective in persuasion? Can we design the role playing of the agent to affect the users' behaviors? These open questions remain to be answered.

III. The Role Theory

According to the Role Theory, a role is a symbol for an individual to communicate with others in a relationship. Roles reflect norms, attitudes, contextual demands, negotiation and the evolving considerations of situations which are all understood by members of a society [27]. The understanding of his/her role can affect the individual's behavioral pattern [27]. This effect happens

through the interaction and compromise among the role requirements of the individual and the role expectation from the community which contains the individual. During this interaction, a temporarily balanced and stable role structure within the organization is formed. Any imbalance in this structure will result in tensions among members of the organization [12].

A family is a small community. When a child is born, the parents become leaders in this community naturally based on their abilities and responsibilities. During this process, the original leader-follower structure and the communication patterns within the family are formed. However, as the children grow and as the parents age, their abilities and responsibilities change gradually. This trend results in the imbalance of the family leader-follower relationship [10,12]. In this study, we apply the Role Theory to study a persuasion scenario between the adult children and their aged parents. We define the key concepts as follow:

- **Role:** a set of characteristic behaviors each player is holding during their interactions.
- **Role Expectation:** the role which other family members would like the individual to take up. It contains a set of behaviors that the family members expect the focal individual to do.
- **Role Awareness:** the role which the individual would like to play during the interaction. It is generated by the individual's perception of his/her ability and self-concept. It is expressed as what the individual believes he/she should do in the relationship.
- **The Role as a Leader:** a leader in a family provides support in financial, emotional, information, and advice to other family members. Leaders also set up goals, guide the followers, and correct wrong behaviors based on his/her judgement.
- **The Role as a Follower:** a follower always follows at least one leader. He/she accepts the support from the leader, follows the leader's guidance, and supports the leader's leadership by asking for help, taking advices, and responding to the leader's call.
- **Role Conflict:** when an individual's role requirement does not match the role expectation towards him/her, he/she will face role conflict. For example, in this case, if the parent would like

to be the leader of the family, but the children refuse to follow his/her leadership, the parent will face role conflict.

Role conflict can be invisible in a family. The children may find it is hard to persuade their parents or even communicate with them but can hardly articulate the reason. To demonstrate the correlation between the role conflict and the persuasive effectiveness between adult children and their aged parents, we conduct a crowdsourcing based user study in this paper.

IV. Crowdsourcing based User Study

Methods

We conducted a survey to understand the older users and the expected roles of the persuasive agents including a questionnaire and a semi-structured interview. The questionnaire was designed to study the roles played by the senior parents and their adult children and the role conflict between them based on the “family role conflict and ambivalence testing scale” [12]. In the interview, we seek to understand the senior persuadees’ ideas during the persuasion process.

Participants

Sixty senior participants were recruited online from mainland China based on a popular Chinese social media tool named WeChat. They are aged between 65 and 88 (mean=70.9, SD=11.3). There are 18 males and 42 females. The average years of education received is around 10 years (mean=10.56, SD=7.07). All the participants passed the wellbeing and cognition test.

Questionnaire design

The survey questionnaire aims to test the participants’ tendency to be a leader in the family as Table 1 is showing. Each question is displayed as a statement. The participants need to answer by choosing from a five-point scale from -2 (strongly disagree) to +2 (strongly agree), with 0 marked as “Neutral”. If the participant has several children, He/she was asked to choose a specific one as a focal subject.

Number	Statement
Role Awareness about Yourself	
1	I am a leader in my family.
2	I can support my child when he/she feel depressed or unhappy.
3	I can solve the conflicts between my family members.
4	I do not need guides or comments from my child.
5	I can help my child when they are making a major decision.
Expectation toward Your Child involving in this Test	
6	I would like my child to follow me in the family.
7	My child cannot live well independently.
8	I do not need support from my child.
9	I need to put an eye on my child to avoid risks.
10	My child should take less responsibilities in the family.
Role Playing	
11	I make plans on major family issues.
12	I guide and support the family members' behaviors.
13	My child always accepts my persuasions.
14	I provide the major financial support to the family.
15	I provide the major knowledge support to the family.
16	I am the one all the family members come to when they meet troubles.

Table 1 Role Playing and Role Conflict Score in the Parent-Child Relationship

Data collection and analysis

- Role Awareness of the parents: summarizing the scores of the five questions under “role awareness”. If the result is above 0, it means the participant believes he/she should be the leader of this family.
- Role Expectation towards their children: summarizing the score of the five statements under “expectation toward your child involving in this survey”. If the result is above 0, it means the participant would like his/her child to follow his/her leadership.
- Role Playing: this section is supposed to test the real role of the focal participant in his/her family. If the total score is above 0, it means that the subject is really a leading his/her family.
- Role Conflict: a leader and a follower always come in pairs. A leader cannot lead the relationship without the support of the following behaviors. If the parent is aware that him/herself is the leader in the parent-child relationship, he/she should expect his/her child to play the role of a follower and vice versa. Based on this logic, when the results of “self-

awareness” do not match the relevant results of “expectation toward your child”, that means the parent wants to be a leader without the willingness to take the corresponding responsibilities. This situation is defined as a role conflict. Meanwhile, if the self-role awareness matches the role expectation toward the child, the senior participant may also suffer from a role conflict because of the role he/she would like to take is not supported in the family life. Both situations may result in family tension and failure in intergeneration persuasions.

For example, Participant 9 got the score of 4 in “self role awareness”, that means she believes that she should be the leader of her family. At the same time, she ranked her “expectation toward her daughter” as 7 which represented that she would like her daughter to follow her. However, she got - 7 in the “role playing” section which showed that in the practice, she is not the actual supporter of her family. Based on the result, we mark Participant 9 as one suffers from “role conflict”. According to our hypothesis, she may feel offended when her daughter tries to change her behaviors. To test the hypothesis, we conducted a semi-structured interview about the details in the parent-child role conflict and persuasive effectiveness.

Semi-structured Interview:

Firstly, we set up several scenarios for the senior participants to image and ask them whose advice they would take. For example, “*You heard about a new food which is advised to be very nutritious. Who will you go to for more information?*” Some of the participants answered: “*I do not know*”. Then we provide a little cue to let them rank the following social relations from the most likely successful persuader to the least: media and advertisements, doctors or other experts, friends, children, other family members.

Based on the results of the questionnaires, we can get a rough idea about the role conflict status of each participant. A personalized interview targeted the focal participant’s status was conducted by the researcher. The questions include “*does your child often persuade you to adopt healthier lifestyle?*” “*How often do you accept these persuasions?*” “*Can you give us an example of these persuasions?*” “*What will you do after you received the persuasion messages?*” “*What do you feel*

when you are persuaded by your children?” and *“Why do you choose to reject the persuasions from your children?”* To understand the ability of the participant’s child, we also ask them about their children’s education level and expertise. The participants can decline to answer the questions. They were also encouraged to describe a scenario that he/she will adopt the persuasion from their children.

Text Coding and Analysis

The answers related to the participant’s attitude about the persuaders tell us whether they would like to adopt the persuasions from their children. Each participant’s answer will be compared with their results of the “role playing and role conflict scale”. We hold this analysis to find the correlation between the senior participants’ role conflicts and their willingness to be persuaded by their children. To find the reasons of this phenomenon, we analyzed the answers of *“How do you feel when you are persuaded by your children?”* and *“Why do you choose to reject the persuasions from your children?”* The emotional expressions and reasons were analyzed by open coding and Axial coding by 2 researchers independently. The percentage of agreement is 91.88%.

Results

1. Among the 60 participants, 36 of them consider themselves as leaders of the family while 24 believe that they are the followers of their children. Twenty eight of the participants with leader role awareness are suffering from role conflict. The percentage is 77.78% in the “leader” type participants. Eight of the followers are facing role conflict which is 33.33%. The total role conflict rate in the participants is 60%. These results show that role conflict exists in the relationship between adult children and their aged parents in China.
2. We grouped the samples suffering from role conflict together for further analysis. In this group with 36 samples, none of them ranked their children as the first choice as an advice provider. Only 1 of them (2.80%) participants rank their children as the 2nd choice to go for advices. Seventy (47.22%) of the participants reported that children are the last person they would like to take advice from. Meanwhile, in the group of the parents (n=24) who do not show role conflict, sixteen (66.77%) of them rank their children as the most reliable persuasion source while the

other 2 ranked their children as the second persons they would go for help. This result demonstrates that role conflict affects the aged parents' decision making in adopting advices from their adult children.

3. Based on the coding of the interview materials, we categorize the reasons of the unwillingness to adopt the persuasion from their children of the aged parents:

(1) Do not believe in the children's knowledge level or ability. One of the signs of this idea is that the aged parents always "forget" that their children have grown up. They call them "*my baby*" or "*my silly girl/boy*". When we ask about "*why won't you take your children's advice?*", one participant answered: "*that is my little girl. She is just a bookworm. How can she have a solution?*" even though her daughter is actually a 39 years old successful neurosurgeon. The original image of the children as a baby takes hold in the parents' mind deeply which weakened the authority of the adult children. Another participant used half an hour to tell us about his son's childhood stupid stories to demonstrate that his son with a PhD has no basic knowledge to distinguish unhealthy food. This concept also affects the second-hand information adoption. Some participants reported that they will be persuaded by the famous experts. However, when we let them imagine that their children are sharing a piece of knowledge from an expert, the first thought in their mind is doubting their children's judgement. They will suspect the authenticity of the information because they doubt that their children may "be fooled".

(2) Feel offended to be guided by their children. The most common answer about "*why won't you take your children's advice?*" is "*Here is no reason. I am the father/mother.*" The parents want authority over their children. Being persuaded is not one part of the role awareness of a father/mother in the parent's opinion. Some of the reported feedbacks to the persuasions from the children are very fierce: "*You forgot who am I? Forgot who taught you everything?*" "*You'd like to be my boss? No way!*" "*Don't use your attitude at work to treat me!*".

- (3) Afraid of losing control. Some of the participants show anxiety instead of anger in the leadership transition. They use words like “*useless*”, “*weak*”, “*know nothing*” to describe their feelings about themselves when they are persuaded often by their children. One participant said: “*I am glad that my daughter can support me in the family. But that means I am old at the same time. This is scary and sad. What I can do is only acting as a teenager and refusing to follow her.*”

Discussions:

The role conflict phenomenon expresses differently in leader type and the follower type participants. The major reason of role conflict in the group with role awareness as a leader is that the parents cannot accept the growth of both the ability and the authority of their children. They do not want to transit the leadership to the next generation. To reject the persuasion from the children is one way for them to resist this leadership transition. The main problem in front of the follower parents is that they cannot get enough support from their children. The follower parent needs help in making plans and seeking information in their life. When their children cannot provide enough help because of ability or willingness, the parents will suffer role conflict.

Chinese culture may affect the role conflict and the parent-child relationship. The Chinese parents show much closer relationship with their children in communication frequency, financial entanglement, family planning, and emotional closeness comparing with the western ones. The parents believe that their children are a part of them. They never want to be separated even as the children get married or move far away from the parents. The ideas of “integrity family” and “changeless family structure” reinforce the parents’ perception of authority towards to their children. Another reason behind the different results may step from the bias of the participants. We need further studies involving participants with different culture background to demonstrate our proposed model.

When the role expectations are satisfied, the parent will be more inclined to be persuaded. Can we train the children to play the appropriate role? It is not a practical path. The child has his/her own

role awareness and expectations toward his/her parents based on his/her ability, self-concept, and other social role structure. It is hard for an individual to change his/her role playing in daily life. The child may be able to act like somebody else for sometimes for their parents' healthy benefit or emotional satisfaction, but they can hardly to play it continually. In this situation, a persuasive agent may assist the persuasive communication between the parent and child. The results of the user study provide us some basic ideas in the agent design.

V. Conclusions

This study proposed a Role Playing Theory model to guide persuasive agent design, especially for senior citizens. This theory provides an innovative path to solve the practical problem for the adult children to persuade their aged parents by understanding the latent role conflict within the parents' mind. The concepts of role awareness and role expectations help us understand the causes of failures in intergeneration persuasions. This user study demonstrated the existing of role conflict and the reasons behind the phenomenon. Role Playing Theory will improve the context rule designs by enriching the understanding of the older adults as persuasive message recipients. It is not only applicable in dietary behavior persuasions but a diversity of scenarios.

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