Problems of Artificial Emotions in Mental Therapy

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Abstract

Development of artificial intelligence has enabled us to design software agents and robots having more human-like behaviors. In particular, research focus on emotions in this discipline has contributed to this type of design methods. This research trend leads to application of artificial intelligence to healing for humans, in particular, mental therapy. However, it has sufficiently not been either investigated or discussed how artificial emotions of software agents and robots in the specific contexts of mental therapy can affect mental states of individuals, the societies, and cultures. This paper discusses some problems of artificial emotions in mental therapy from the perspectives of the sociology of emotions, clinical sociology, and the sociology of health and illness, in particular, relating with the concept of double bind.

1 Introduction

1.1 Background

There has recently been some researches on applications of interactive robots having functions of emotions to mental therapy, based on development of design methods in artificial intelligence and robotics, in particular, focus on emotions for realization of human–like behaviors in these agents and robots [4, 6, 21, 19]. Although this trend may be different between countries, in Japan, decreasing of workers populations, increasing of the elderly, and necessity of realization of more sufficient welfare have been referred to as the background of these researches. Thus, it can be imagined that researches on mental therapy using robots having affective behaviors and software agents affectively interacting with users through INTERNET are increasing, at least in Japan.

For realization of therapeutic software agents and robots using functions of emotions, it is important for these agents and robots to react for inputs from users as if they have something emotional. It may be necessary for these agents and robots to make clients construct sympathy with them, required in the context of mental therapy. Then, scientific knowledge on emotions found in psychology and sociology is introduced to the design of them. Emotions of these agents and robots are pseudo–emotions, that is, constructions by partly imitating complex human emotions and do not perfectly implement them. However, important is not whether the agents and robots can have mechanisms of emotions equal to those of humans but whether users facing to the agents and robots feel something emotional in their behaviors. However, the fact that clients regard the agents and robots as emotional objects is different from the fact that the agents and robots have therapeutic effects for the clients, in particular, from some theoretic perspectives in sociology.

1.2 The Previous Research and The Theme in this Paper

Our previous research [15] suggested danger on artificial emotions of robots in the context of mental therapy by referring to the research on social psychological reactions of humans to computers and artificial media by Reeves and Nass [17], the research on the modern culture of emotions by Hochschild [8] and Mori [13], and the research on social change of ways of recognition for computers by Turkle [22]. Moreover, it also proposed research goals to be considered in researches on substitution of therapeutic animals for robots in animal assisted therapy and activity (AAT/AAA), and suggested possibility of appearance and danger of application of robots to narrative therapy [12] based on the sociological criticism for narrative therapy by Asano [1].

This paper discusses influence of artificial emotions of software agents and robots to humans and cultures in the context of mental therapy by reconsidering the perspective in the sociology of emotions, and introducing some perspectives in clinical sociology and the sociology of health and illness [11], in particular, relating them with the concept of double bind [2]. Although this research should be done from cross cultural perspective in principle, this paper focuses on sociological research works in Japan in order to emphasize the situations in Japan.

2 Software and Robotic Therapy under "Psychologism"

As mentioned in the previous work [15], social psychological reactions of humans to machines shown by Reeves and Nass [17], and the trend of humans to regard interactive systems as something intelligent reported by Turkle [22] suggest that interactive software agents and robots, in particular, those having artificial emotions, can affect emotional states of humans. However, it has sufficiently not been investigated what influences these artificial emotions have to clients in mental therapy. It has not been denied yet that artificial emotions in the therapeutic contexts have some evil effects to the clients dependent on the cultural situations where they live.

The cultural trend called "psychologism" suggests possibility of evil effects of artificial emotions to clients in mental therapy. This word means a trend in the modern society that causes of psychiatric symptoms in individuals are reduced to inner problems in the individuals although the causes may be from social structures and cultural customs, and as a result the social and cultural situations to be clarified are concealed.

In this section, we refer to sociological criticism for psychologism and consider implications from it.

2.1 Criticism for Psychologism from the Sociology of Emotions and Clinical Sociology

The Japanese sociologist, S. Mori focused on psychologism on discussing the extreme self–control of people in the modern society [13]. His theory is based on the theory of feeling rules by Hochschild [8] and the theory of McDonaldozation of Society (rationalization) by Ritzer [18], and is summarized as follows:

- In the modern society we are always forced to pay attention to our and others' emotions in order not to hurt our emotions each other (cult of personality). Moreover, this cult of personality and psychologism has been complementing each other.
- Furthermore, psychologism and rationalization in the modern society has also been complementing each other, and as a result we are required to have a high degree of self–control for our emotions.
- Persons executing a high degree of emotion management cannot permit others' deviation from feeling rules they observe even if it is only a little. This strict observance of feeling rules and difference of the rules between individuals cause disagreement in the modern society (e.g., increasing child abuse in Japan).

In addition, Mori claimed based on analysis of increasing psychological manuals for self–helping that psychological knowledge strengthens the social trend of self–control for emotions.

Psychologism has also been criticized in the research field of clinical sociology. The Japanese theorist of clinical psychology, M. Ozawa, criticized the trend that people in the modern societies are dependent on counseling due to psychologism and the extreme emotion management [16].

2.2 Implications for Artificial Emotions

The above statements from the sociology of emotions and clinical sociology imply that people in the Japanese modern society are always required to execute emotion management and dependent on mental therapy for it. In addition, rationalism as Ritzer pointed out [18] may also encourage reduction of man power in mental therapy, and as a result software and robotic therapy using artificial emotion systems may be encouraged.

On the other hand, these people are sensitive for others' emotion management and there is difference of feeling rules between individuals. Thus, these people are also sensitive for emotional behaviors in the software and robots and there is possibility that the emotional behaviors of the systems are not suitable for feeling rules of the clients. As mentioned in the previous research [15], reactions of humans for these software and robotics are unpredictable, and thus the artificial emotion systems may give the clients mental burden of emotion management in interaction between them and the systems, and influence therapeutic effects even if they are exactly implemented along theories on therapy.

3 Perspectives from the Sociology of Health and Illness

According to K. Nomura [14], the sociological research called "the sociology of health and illness" has recently been done. This is one of reflective sociological research actions that analyze and criticize discourses on health, dominant in the modern societies, and its theory is based on social constructionism [11]. The research subjects in the sociology of health and illness are relations between cultures and ways of using the concept of "health", mutual interaction between medical staffs and clients, powers that the concept of "health" can have in the societies.

In this section, we refer to one of these researches and consider implications from it.

3.1 Social Pressure for Health in Life–Style Related Disease

As one of sociological researches of health and illness, S. Ukigaya analyzed the social situation on life–style related disease, focusing on diabetes [23]. In her research it was clarified that advertisement of the concept of life–style related disease by the government extremely requires individuals' accountability for health, relations between appearance of the illness and the social situations are concealed as a result, and clients of diabetes are socially and mentally pressed under requirement of self–accountability for their health.

Moreover, it was reported that some clients of diabetes develop their original interpretation of medical knowledge on the illness, and distort it. For examples, some clients are not perfectly ruled by medical indication, such as on meals and sports, but have their original meals and sports according to their bodily and mental states.

3.2 Implications for Software and Robotic Therapy

The above statements by Ukigaya have some important implications.

The concept of life–style related disease and psychologism have the common social power in the sense that both of them press people with some symptoms under self–control of individuals and conceals social situations related with sources of the illness. As a result of it, clients of mental therapy, in particular, software and robotic therapy may develop their original interpretation of psychological knowledge that is presupposition in implementation of these systems, and sometimes distort it.

This fact suggests problems in cases that therapeutic software and robots are supplied as popular products, not via medical organizations. People having their original interpretation of psychological knowledge with distortion may tend to prefer popular systems suitable for their interpretation of psychological knowledge to systems that are scientifically investigated and selected via medical markets.

In the previous research [15], we pointed out based on the theory of the Japanese sociologist T. Asano [1] that a new type of mental therapy called narrative therapy [12] has a factor to become popular in the modern societies and there is possibility that narrative therapeutic robots using emotional systems appear. Narrative therapy does not mean a concrete therapeutic technique but just an attitude that therapists should have for clients,

and thus it has rooms for clients' original interpretation for it. Accordingly, there is possibility that clients' original interpretation of narrative therapy encourages appearance of narrative therapeutic software and robots using artificial emotions.

4 Possibility of Double Bind in Software and Robotic Therapy

In this section, we discuss possibility of mental influence of clients in software and robotic therapy considering the statements in sections 2 and 3. The key concept that we discuss in this section is "double bind" [2].

4.1 Double Bind

Double Bind Theory was proposed as a source of schizophrenia from the viewpoint of social interactions in the 1950s. This theory argues that sources of schizophrenia are on not only mental level of individuals such as trauma but also inconsistency in human communication. As shown in humor, human communication is done across several logical types. Although normal people can partition messages from others into the appropriate modes, a person in double bind situations is always given messages inconsistent in lower and higher levels and is prohibited from running away from this inconsistency. As a result, the person becomes be unable to partition messages into the appropriate modes and schizophrenic symptoms happen as a defensive response. The conditions for double bind are formalized as follows:

1. The existence of one victim (a child in many cases) and some assailants (the mother in many cases).
2. The customization of cognition for double bind structures through the repeated experiences.
3. The first prohibition message with punishment.
4. The second prohibition message inconsistent to the first one at another level (inconsistent situations).
5. The third message that prohibits the victim from stepping out of the inconsistent situation (prohibition of the victim's movement to a meta level of communication).

Although double bind theory has been applied to a clinical field as one of basic concepts of family system theory [5], it is pointed out that it has largely not developed in the theoretical sense since 1970s [3] and there has not been enough empirical evidence showing that double bind situations are a source of schizophrenia [10]. Moreover, in family therapy there has been a movement from system theories based on double bind to narrative approach based on social constructionism [12]. Even if not a source of schizophrenia, however, it is said that double bind situations frequently exist in daily lives and has been one of basic theories in family therapy.

4.2 Double Bind in Software and Robotic Therapy by the Social Situations

The social trend of psychologism and possibility of distortion of psychological knowledge by clients in mental therapy suggests double bind situations in software and robotic therapy using artificial emotions.

Many people are forced to face to these therapeutic software and robots by social pressure of self–control of their emotions and mental health, and rationalism. If their symptoms come from extreme emotion management due to psychologism, rationalism, and social pressure for health themselves, however, as mentioned in section 2.2, these software and robots may not have enough therapeutic effects. This situation means inconsistent situations in double bind. Moreover, if these software and robots are recognized as products of scientific and engineering rationalism by these clients, it is also a contradiction to make them, those who are hurt by rationalism, face to the software and robots. In addition, these people cannot step out of these inconsistent situations since it means that they reject their duty of self–control that are required in the modern societies. Punishment for this rejection may be much in cases that therapeutic software and robots are introduced in organic rules for mental health, for examples, in corporations and schools. This means prohibition of stepping out of the inconsistent situation. Thus, some clients of software and robotic therapy with artificial emotions may be in double bind situations, that is, they may be given more burden mentally.

5 Summary and Future Problems

This paper discussed some problems of artificial emotions in mental therapy from the perspectives of the sociology of emotions, clinical sociology, and the sociology of health and illness. As a result, it was suggested that artificial emotions have possibility to influence to evil effects for some clients in the therapeutic contexts due to some trends at the social level. Moreover, it was suggested that there is possibility that some clients of software and robotic therapy using artificial emotions are forced to be in double bind situations, and as a result they are given more burden mentally.

Finally, we should raise some future problems.

The statements in this paper and previous research [15] remind at suggestions based on some sociological researches. Thus, we should investigate them by providing with concrete data. As the first step for it, we should clarify whether people are actually influenced at their emotional level by software agents and robots, and what type personal characteristics people influenced by these software and robots have.

For this aim, we should use and develop a variety of psychological scales for measurement of individuals' images and emotions such as anxiety for software agents and robots having artificial emotions. Some psychological scales for computer anxiety have been proposed (e.g., Aikyodai's Computer Anxiety Scale [7]). Moreover, there are some researches on measurement of psychological impression of individuals for robots [9, 20]. According to these conventional researches, we are also planning to create a scale for robot anxiety as an analogy of computer anxiety scales. These scales will contribute not only to investigation of types of individuals' personality related to success/failure in software and robotic therapy, but also to clarification of difference between countries on social images for software agents and robots, and historical change of it.

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