Video Games and the Training of Sociality:

A Survey of Video Game Players

Yumi Matsuo, Sachi Tajima, Seiko Nohara, & Akira Sakamoto
Ochanomizu University
2-1-1 Ohtsuka, Bunkyo-ku, Tokyo 112-8610
yu.matsuo@gmail.com
+81-5978-2560

ABSTRACT
In the academic research field, attempts to use video games to enhance diverse characteristics of sociality have just started. Therefore it is expected that consumer games would also enhance the sociality. The purpose of this study is to investigate whether any features or devices, which enhance sociality, are included in the commercially circulated video games. We conducted a series of web survey for Japanese game players. Participants were asked what kind of features and devices in the video game enhance sociality. Results suggested that 1) video games have potentiality to be able to enhance any characteristics of sociality, 2) it is possible to enhance sociality by actually experiencing or practicing the behaviors with sociality in games, 3) motivation to learn such sociality yields from actually "practic(ing)/ experienc(ing)" the behaviors with sociality in games.

Author Keywords
Video game, sociality, Web survey

INTRODUCTION
Sociality is a concept that comprises several features which are necessary for one to adjust to and live in the society, and is especially in Japan defined diversely by researchers. Some definitions are, for example, "variety of character-istics that an individual lives with to conform to the human society, while establishing self[4]," "variety of characteristics that an individual needs to live harmoniously and flexibly with others in the society where he lives, including creating human relationships and learning social rules and behavioral patterns, while establishing self[6]." In sum, sociality is a variety of features (including attitudes, motivations, values, skills, behaviors, etc.) necessary to live in the society. However, the concept of sociality is broad and vague in previous studies. In this article, we refined the concept of sociality based on the previous studies. We assumed that sociality was composed of 12 features, which were classified into four perspectives- the self, others, society, and the sublime such as human and animal life and nature (see Table1).

Table 1: The features of sociality

Per-spectives	Features
Self	Confidence about oneself
	Skill or attitude to control oneself
	Skill or attitude to make one's own decision for one's own matter
	Skill or attitude to prevent problems arising in one's daily life
	Skill to cope with important situation in one's life
	Skill or attitude to create and devise
Others	Skill or attitude to trust or understand others
	Skill or attitude to get along with others surrounding them
Social	Willingness to comply with the social manners and rules
	Willingness to be useful in the society
	Sense of being a member of the world
Sublime	Heart to take good care of living things and nature

Following the rapid changes of the environment that surround children, some studies argue, it is getting harder to make children learn sociality, and which has resulted in their lack of sociality. For instance, Sato[7] points out that it is difficult to nurture sociality only in school, and that cooperation with home, local community, and school is essential in order to nurture sociality. Conventionally, sociality was naturally learned through experiencing diverse interpersonal relations in the relationships with others; however, because the experiences of interpersonal relations have decreased, it is a difficult situation to nurture sociality in either at home or school. For this reason, we consider, some special education is necessary to nurture sociality.

In the academic research field, attempts to use video games to enhance diverse characteristics of sociality have just started, and its validity has been positively demonstrated[9]. In this study, focusing on the commercial video games, which ordinary people can readily play, we are discussing a possibility of video games in terms of their effects on training sociality, and of features which should be included in the games in order to enhance sociality?

The features of video games which are effective to enhance sociality

The social skill training, which is conducted to nurture sociality based on the common learning principles, mainly includes four principles, a modeling theory, verbal instructions (coaching), operant conditioning, and rehearsal[5]. Considering the features of video games, these four learning principles can be easily applied to the games. We are discussing the possibility to adopt the four principles in video games as shown below.

Modeling and video game

In a video game, it is easy to present a character other than the one over which the player has a control, and the character's behaviors can be set up in advance. By making such a character act with a proper sociality, presenting it to the learner as a role model, it is possible to instruct what kind of behaviors the player should take.

Verbal instructions (coaching) and video game

Because quick feedback is available in a video game, proper verbal instructions can be given, depending on the learner's progress in the subject. For example, it is easy to provide the learner with questions, rules, and instructions, which would be helpful for him/ her to make a decision. When the learner selects a wrong action, it is also easy to provide him/ her with questions, instructions, and right rules, which would encourage the learner to reconsider it.

Operant conditioning and video game

Because quick feedback is available in a video game, it is easy to give the learner positive feedback for his/ her right behavior, and negative feedback for wrong behavior. Also, these feedbacks will be easily recognizable for the learner, since such rewards as points and items are given to the player in a visible form in a game, while subtracting the points to punish the player. Different from those in a face-to-face meeting of conventional social skill training in which negative feedbacks are directly given to the learner, they are indirectly given to the player through a character, an alter ego, in a game. Thus, we consider, the learner may experience less psychological impact of negative feedback in a game. In other words, it is expected that negative feedback in a game can be easily recognizable, yet, they give the learner less stress.

Rehearsal and video game

Because video game can be replayed over and over, it allows the learner to easily rehearse the given behavior with proper sociality. Because it is also possible to provide an individual with a specifically tailored program, the learner can repeatedly practice it, until he / she has completely obtained proper behavior at his / her own pace, or can focus on a particular part to learn it intensively.

Purposes of this study

If those four characteristics are included in video games, we consider, they can nurture sociality. This study, therefore, investigated game players, aiming at clarifying, whether any features or devices, which enhance sociality, are included in the commercially circulated video games. If so, we further discuss, what kind of features of sociality can be enhanced, in terms of player's recognition. In addition, what kind of changes the features of games produce, how they enhance each principle of sociality in a player, and the processes of these are also discussed.

METHOD OF WEB INVESTIGATION

Participants and procedure

Through the internet research company, Cross Marketing Inc.（ http://www.cross-m.co.jp/） , we conducted a series of survey with questionnaires, using internet, three times between December 2005 and January 2006, for men and women who lived in the Metropolitan area in Japan.

Structure of the investigation

At first, in order to select the participants who met the conditions of the investigation, we provided the initial group of participants with a screening survey. Based on their responses for it, we selected the second group of participants. Only those in the second group responded to the questions of this study.

Screening survey

Among those monitors whom Cross Marketing Inc. holds, 54,000 men and women who lived in the Metropolitan area in Japan were the initial participants to whom we sent the URL of the survey screen on internet through e-mail. What the survey asked were, age, experience of video game, and whether he/ she positively evaluate the influences of video games on players, etc. The number of the responses for the screening survey was 16,885 (8,079 men, 8,806 women). Among these respondents, based on their responses to the questions, 1, 519 (803 men, 716 women) who were; 1) 18~49 years old, 2) currently enthusiastic about video games, and 3) positive in their evaluation of the influences of video games on players, were sampled as the second participants.

Main survey

The main survey was conducted to the 1,519 second participants sampled from the results of the initial screening survey. In this main survey, the participants listed 3 actual names of video games, which the participants considered would enhance sociality, for each of 12 features that consist of sociality [9](see Table 1). They are also asked to freely describe with respect to the following two points for each of the games they listed; 1) what kind of features and devices in the video game enhance sociality? ; 2) the reasons why they think these features and devices could enhance sociality. Considering the participants' heavy burden, we divided the 12 features of sociality into half, and made two kinds of questionnaires for them.

Also, the responses in which the participants entered something like "None" in all the items were considered

invalid, and were excluded from the participants for the analysis. Excluding those who did not appropriately respond to the questions, the number of valid respondents became 1,367.

CLASSIFICATION PROCEDURE OF THE RESPONSES

Exclusion of inappropriate responses
Inappropriate responses were further eliminated from the above 1,367 valid responses. The responses like "None" for the video games which would increase sociality, as well as the responses which, as we could judge, listed imaginative games were also eliminated.

Participants and procedure
After excluding the inappropriate responses, we created a classification code manual based on the actual responses and previous studies in order to classify the remaining responses.

The features of video game that increase sociality
We classified whether, and what kind of features/ devices of game enhance the characteristics of sociality through playing the game (e.g. Game features), or playing the game itself enhances these characteristics (e.g. Game play itself).

For the features of games, the classification codes were created based on the actual answers of players as well as the four learning theories, rehearsal, modeling, verbal instructions, and operant conditioning [5], which were indicated in the previous studies. The codes, which classify the features/ devices that enhance sociality, consist of "practice/ experience," "admiration," "proposal," "knowledge," "indication system," "directly corresponding to real situation," "reflection of the real world," and "others" (see Table 3).

"Practice/ experience" corresponds to the rehearsal and modeling of the learning theories which enhance sociality. The responses that the players and the characters of the games practice and experience the behaviors with sociality in the games and which enhance sociality are classified under this code.

"Admiration" corresponds to the operant conditioning of the learning theory. The responses if a behavior with sociality is performed in a game, positive feedback, such as admiration, acknowledgement, or physical reward is given, while, behavior without sociality negative feedback, which means punishment, is given, and thus, increasing sociality are classified under this code.

"Proposal" corresponds to the verbal instructions of the learning theory. In the verbal instructions, a question may be given as a clue to trigger the behavior with proper sociality. For example, a question "What are you going to tell him?" to a child, who broke a toy of his friend, would triggers the child's thought what kind of behavior is appropriate. The responses that there are features, which give the player clues to think about the necessity and

importance of sociality, in games are classified under this code.

"Knowledge" also corresponds to the verbal instructions of the learning theory. In the verbal instructions, other than the questions described in the above, rules and instructions which are helpful to enhance the learner's sociality are also frequently used. For instance, a poster of "No violence" would convey to children that physical and verbal attacks are not socially acceptable. Therefore, if the game contains the features which give the player a clue to think about the necessity and importance of sociality, we consider, it would enhance the player's sociality. Therefore, the responses that include this kind of features are classified under this code.

"Indication system" is a code which was created based on the actual responses in this investigation. It classifies those responses which refer to a yardstick that allows them to realize how much they have learned that sociality shown in the game, or on the contrary, how much they lack it, and this enhances their sociality.
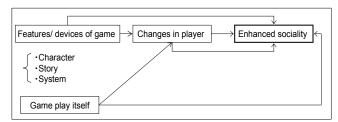
Just like those responses, "the game does not proceed without walking with a pedometer," the code of "directly corresponding to real situation" classifies the responses, which refer to that the play in the game directly encourages the player in the real situation to behave with sociality. This code also includes the responses that the system, which directly connects the play in the game with the behaviors with sociality, performed in the real situation enhances the player's sociality.

"Reflection of the real world" includes such responses that "the rumors I made spread over quickly in the world of the game, and then I realized I should not easily speak ill of others to many people." The responses that the players easily feel the impact of their own behaviors on the others surrounding him, due to the system of game in which the world is limited and smaller than that of reality, and which enhances their sociality, are classified under this code.

Those which do not fall into the above items of features, but the responses contain some kind of features/ devices which enhance sociality are classified under the code of "others."

Player's change produced by the features of game
In order to reveal how the features/ devices, which are expected to enhance sociality, in the game, actually enhance sociality, we identified the process how the features/ devices in the game contribute to produce the changes in the player (Figure 1). The classification codes were made based on the players' responses, and consist of 12 codes, such as "motivation/ will," "interest/ concern," "knowledge," "behavioral mode," "value," "sympathy for/ antipathy against the character," "confidence," "self-assessment," "point of view," "emotion," "others," "no entry."

Figure 1: Model of enhanced sociality by video game**.**

"Motivation/ will" includes such responses that "My feeling to try to understand others is enhanced by playing the game." In case that the players came to have a feeling that they wanted to learn and enhance the given sociality in the game, or their feeling to do so became stronger, their responses are classified under this code.

"Interest/ concern," includes such responses that "Playing game triggered the players to start thinking of the environment." In case that the players came to think of or to be interested in the issues and problems, which were related to learning or enhancing sociality, the responses are classified under this code.

"Knowledge" is the code for the responses that the respondents' knowledge, which is related to the components of sociality (such as the knowledge of environmental issues and different cultures, social rules, others' positions and situations), has increased.

"Behavioral mode" is the code for such responses that the respondents realized how to help others when they were in trouble. The responses which indicate that "Playing game enhance the respondent's appropriate behavioral mode and skills with respect to sociality" are classified under this code.

"Value" is the code for such responses that the respondents could feel that helping people in trouble is a good thing. Under this code, the responses that "Playing game makes them realize the importance of sociality, or notice that it is valuable to have learned such sociality, while bad and troublesome without learning it" are classified.

"Sympathy for/ antipathy against the character" is the code for such responses that the respondents felt that they wanted to help others just like the hero in the game. This code includes the responses that the respondents want to live with sociality just like the character which they sympathize, respect, and admire. On the contrary, this code also refer to such responses that the respondents do not want to betray people just like the character. The responses that the respondents thought that they do not want to live without sociality just like the character whom they cannot sympathize, but they dislike are classified under this code.

"Confidence" is the classification code that includes the responses that the respondents' confidence to behave with

sociality in the real world has increased, that they feel they can do so well, or that they are ready to do so.

"Self-assessment" is the code for the responses that the respondents have come to positively assess themselves, or that their self-esteem has increased.

 "Point of view" is the classification code which includes such responses that the respondents felt that the people surrounding them would help them more than they expected. The responses which refer to the changes in their point of view as well as recognition that playing game produced are classified under this code.

"Emotion" is the classification code that includes the responses, "Because I can forget about bad things by playing the game, I can be nice to people in the real world." The responses that playing game enhances their positive feelings (fun, good feeling), and decreases stresses, which consequently enhances their sociality are classified under this code.

Those, which did not fall into any of the above ten frameworks, but which still described some kind of changes that playing game produced, were classified into "player's other changes." Also, in case that no change in players is specifically depicted, but those describe only the features of the games, they are classified into "no entry in terms of the changes in player."

Classification procedures
Regarding the coding process of the responses from the game players, 6 female students of the university, who were trained in the 2-hour course to learn the standard of coding, performed it. After the course, these coders worked for the coding operation at the time and place at their convenience. Their operation of coding is the selection and evaluation of all the responses in terms of the codes aforementioned, based on the features/ devices of the games which would enhance sociality, and on the reasons that the game players described in their responses.

RESULTS

Valid responses per feature of sociality
The valid responses without the inappropriate responses totaled 3,812, and the number of respondents were 1,148. The number of valid responses for each characteristics of sociality is indicated in Table 2. As shown in Table 2, for each characteristics of sociality, they entered the game which, they considered, would enhance the given sociality. Thus, it suggests that video games have potentiality to be able to enhance any characteristics of sociality.

However, uneven distribution was observed in the number of responses for each feature of sociality. More than 10% of total responses are included in the categories, "Skill or attitude to make one's own decision for one's own matter," "Skill or attitude to trust or understand others," "Skill or attitude to create and devise," and "Heart to take good care of living things and nature" in one hand, while the number

of responses for the games that increase "Skill or attitude to prevent problems arising in one's daily life," "Willingness to comply with the social manners and rules," and "Sense of being a member of the world" were relatively small on the other.

Table 2: The Number of responses per feature of sociality

Per-spectives	Features	Responses (%)	The Top 3 titles and series
Self	Confidence about oneself	354 (9.28)	Dr. Kawashima's Brain Training* / Final Fantasy / Doragon Quest
	Skill or attitude to control oneself	328 (8.60)	Doragon Quest / Metal Gear Solid / Final Fantasy
	Skill or attitude to make one's own decision for one's own matter	435 (11.41)	Final Fantasy / Doragon Quest / Romancing SaGa
	Skill or attitude to prevent problems arising in one's daily life	177 (4.64)	Tamagotchi / Doragon Quest / SimCity / Final Fantasy /Harvest Moon
	Skill to cope with important situation in one's life	253 (6.63)	The Game of Life / Final Fantasy / Doragon Quest
	Skill or attitude to create and devise	425 (11.15)	SimCity / Tukuru series (including RPG Tukuru) / Tetris
Others	Skill or attitude to trust or understand others	427 (11.20)	Final Fantasy / Doragon Quest / Kingdom Hearts / Tales Of
	Skill or attitude to get along with others surrounding them	325 (8.52)	Final Fantasy / Animal Crossing / Doragon Quest
Social	Willingness to comply with the social manners and rules	207 (5.43)	Animal Crossing / Doragon Quest / Final Fantasy
	Willingness to be useful in the society	243 (6.37)	Doragon Quest / SimCity / Final Fantasy
	Sense of being a member of the world	225 (5.90)	Doragon Quest / Final Fantasy / SimCity
Sublime	Heart to take good care of living things and nature	413 (10.83)	Harvest Moon / Animal Crossing / Tamagotchi
	Total	3812 (100.00)	

* Dr Kawashima's Brain Training: How Old Is Your Brain?

Results of classification of the features/ devices of games that enhance sociality

Totaling the results of coding operation of the features/ devices of games that enhance sociality, we calculated the ratio of each characteristics of sociality on the whole (Table 3).

On the whole, first of all, the responses that "practic(ing)/ experienc(ing)" sociality in games enhances the player's sociality are an overwhelming majority (65.51% on average). Since the effectiveness of repeating practice/ experience of the behaviors with sociality in games was pointed out by Smokowski & Hartung[8], we too consider, it is possible to enhance sociality by actually experiencing or practicing the behaviors with sociality in games.

Table 3: Ratio of the responses in terms of characteristics of sociality contained in games (%)

Per-spectives	Features	practice	admi-ration	proposal	knowledge	indication
Self	Confidence about oneself	58.47	5.08	2.26	1.69	6.78
	Skill or attitude to control oneself	73.78	3.05	0.91	0.30	0.30
	Skill or attitude to make one's own decision for one's own matter	83.22	0.69	1.38	0.23	0.00
	Skill or attitude to prevent problems arising in one's daily life	51.98	1.69	4.52	4.52	0.56
	Skill to cope with important situation in one's life	61.66	0.40	1.58	1.19	0.00
	Skill or attitude to create and devise	81.18	4.00	2.12	0.00	0.71
Others	Skill or attitude to trust or understand others	76.11	3.51	6.09	0.00	0.47
	Skill or attitude to get along with others surrounding them	71.38	4.62	5.23	0.00	0.92
Social	Willingness to comply with the social manners and rules	51.69	14.98	2.90	4.83	0.97
	Willingness to be useful in the society	60.49	7.41	1.65	0.82	0.00
	Sense of being a member of the world	46.22	0.00	10.22	5.33	0.00
Sublime	Heart to take good care of living things and nature	69.98	3.15	14.29	0.73	0.00
	Total	65.51	4.05	4.43	1.64	0.89

Per-spectives	Features	corre-sponding with reality	reflection of reality	others	play itself	unable to classify
Self	Confidence about oneself	0.56	1.41	13.84	5.65	21.47
	Skill or attitude to control oneself	0.00	0.00	10.37	2.74	20.43
	Skill or attitude to make one's own decision for one's own matter	0.23	0.92	12.18	0.69	14.94
	Skill or attitude to prevent problems arising in one's daily life	2.26	2.26	7.34	2.26	27.68
	Skill to cope with important situation in one's life	0.00	5.14	9.88	1.98	25.30
	Skill or attitude to create and devise	0.00	0.71	11.29	0.94	12.24
Others	Skill or attitude to trust or understand others	2.81	0.94	10.54	5.85	10.77
	Skill or attitude to get along with others surrounding them	2.15	0.00	11.38	12.00	12.00
Social	Willingness to comply with the social manners and rules	1.93	2.42	10.63	5.80	22.22
	Willingness to be useful in the society	0.82	0.82	6.58	2.47	31.28
	Sense of being a member of the world	2.22	4.44	11.56	2.22	32.00
Sublime	Heart to take good care of living things and nature	0.00	1.69	8.96	0.48	12.35
	Total	1.08	1.73	10.38	3.59	20.22

Table4: Ratio of the responses classified based on each character, story, and system (%)

Perspectives	Features	Proposal				Knowledge			
		character	story	system	others	character	story	system	others
Self	Confidence about oneself	0.56	0.85	0.85	0.00	0.00	0.00	1.69	0.00
	Skill or attitude to control oneself	0.00	0.61	0.30	0.00	0.00	0.00	0.30	0.00
	Skill or attitude to make one's own decision for one's own matter	0.00	0.23	1.15	0.00	0.00	0.00	0.23	0.00
	Skill or attitude to prevent problems arising in one's daily life	0.00	2.82	1.69	0.00	0.56	0.00	2.82	1.13
	Skill to cope with important situation in one's life	0.00	1.19	0.40	0.00	0.40	0.40	0.40	0.00
	Skill or attitude to create and devise	0.00	0.00	2.12	0.00	0.00	0.00	0.00	0.00
Others	Skill or attitude to trust or understand others	1.87	1.64	2.58	0.00	0.00	0.00	0.00	0.00
	Skill or attitude to get along with others surrounding them	1.54	0.92	2.77	0.00	0.00	0.00	0.00	0.00
Social	Willingness to comply with the social manners and rules	0.48	0.48	1.93	0.00	0.48	0.48	2.90	0.97
	Willingness to be useful in the society	0.00	1.23	0.41	0.00	0.00	0.00	0.41	0.41
	Sense of being a member of the world	0.00	6.67	3.11	0.44	0.44	1.78	3.11	0.00
Sublime	Heart to take good care of living things and nature	0.24	7.02	7.02	0.00	0.00	0.00	0.73	0.00
	Average	0.39	1.97	2.03	0.04	0.16	0.22	1.05	0.21

Perspectives	Features	Practice				Admiration			
		character	story	system	others	character	story	system	others
Self	Confidence about oneself	4.80	9.32	41.53	2.82	0.56	0.85	2.26	1.41
	Skill or attitude to control oneself	1.52	13.41	56.40	2.44	0.30	0.30	2.13	0.30
	Skill or attitude to make one's own decision for one's own matter	3.45	13.79	65.06	0.92	0.23	0.23	0.23	0.00
	Skill or attitude to prevent problems arising in one's daily life	1.13	11.30	38.42	1.13	0.00	0.00	1.69	0.00
	Skill to cope with important situation in one's life	3.56	24.51	32.41	1.19	0.00	0.00	0.40	0.00
	Skill or attitude to create and devise	0.71	12.47	65.88	2.12	0.24	0.24	3.53	0.00
Others	Skill or attitude to trust or understand others	10.07	21.55	41.45	3.04	0.00	0.70	2.81	0.00
	Skill or attitude to get along with others surrounding them	5.54	17.23	47.08	1.54	0.62	0.31	3.69	0.00
Social	Willingness to comply with the social manners and rules	6.28	12.08	29.47	3.86	3.38	1.45	10.14	0.00
	Willingness to be useful in the society	8.23	27.16	23.05	2.06	0.82	2.06	4.12	0.41
	Sense of being a member of the world	4.44	16.00	24.00	1.78	0.00	0.00	0.00	0.00
Sublime	Heart to take good care of living things and nature	2.42	29.06	33.17	5.33	0.00	0.73	2.42	0.00
	Average	4.35	17.32	41.49	2.35	0.51	0.57	2.79	0.18

In comparison with those in the above, the numbers of the responses for "admiration (4.05% on average)," which corresponds to operant conditioning of the learning theory, "proposal (4.43% on average)" and "knowledge (1.64% on average)," which correspond to verbal instructions, are small.

Observing the results per character, story, and system of game, the responses that are related to the features/ devices of characters, which correspond to modeling, are small on the whole (Table 4).

Results of the classification of changes that the features/ devices of game produce

In any characteristics of sociality, the responses that playing game increases their motivation to learn sociality, and which consequently enhances their sociality were relatively large (9.10% on average). The responses on the changes other than these are generally small, although uneven distribution is observed in each characteristics of sociality (Table 5).

In one hand, the number of responses for each "Skill or attitude to prevent problems arising in one's daily life," "Willingness to comply with the social manners and rules," and "Sense of being a member of the world" is relatively small. It can be suggested that the number of games which would be effective to nurture these characteristics of sociality is small, or that the players have not recognized the existence of such games, although they existed. If the number of games is small, we should examine whether we can nurture those characteristics of sociality, while keeping amusement of games.

On the other hand, if many games which aim at nurturing those characteristics of sociality have already been produced in reality, we consider, there is a possibility that the players have not realized yet that their sociality was enhanced, even if they played those games. It is known that indicating the purpose and significance of learning and telling clearly what he is learning to the learner increase the learner's motivation for learning, and are highly effective[3]. In the same way, in the situation to train social skills, it is a general procedure to explain the necessity and effects of the training before starting the training program[1]. When nurturing sociality through video games, by the same token, it is expected that the effects of learning would increase, if the player himself recognizes what kind of play enhances his sociality. Hence, in case that the player has not recognized that his sociality would be increased by the play, it is necessary to make it easy for him to recognize so. Additionally, it is possible that these results might be the reflection of the fact that many players are feeling that those characteristics of sociality would be hard to be nurtured through games. Therefore, it should be positively examined whether each characteristics of sociality can be enhanced through commercial games.

Table5: Ratio of the responses on the changes in player which game produced (%)

Per-spectives	Features	motivation	interest	knowledge	behavioral mode	value	sympathy	confidence	self-assessment	point of view	emotion	others	no entry
Self	Confidence about oneself	5.93	0.28	0.85	1.41	1.13	2.26	12.15	11.30	2.54	5.08	3.67	55.37
	Skill or attitude to control oneself	12.20	0.30	0.61	5.18	0.61	0.30	0.00	0.30	1.52	0.61	4.57	74.39
	Skill or attitude to make one's own decision for one's own matter	6.67	0.46	0.23	1.84	0.46	1.15	0.46	0.92	2.30	0.46	3.68	82.30
	Skill or attitude to prevent problems arising in one's daily life	7.34	4.52	10.73	7.91	2.26	1.69	0.00	0.00	0.00	1.69	3.39	62.15
	Skill to cope with important situation in one's life	5.14	1.98	2.77	3.95	1.98	1.19	0.40	0.00	1.58	1.98	5.53	74.70
	Skill or attitude to create and devise	7.53	1.65	0.47	0.94	0.24	0.00	0.00	0.00	0.94	0.47	4.94	82.82
Others	Skill or attitude to trust or understand others	11.48	1.87	0.23	1.41	3.04	5.39	0.70	0.47	2.81	0.23	2.58	70.02
	Skill or attitude to get along with others surrounding them	9.54	1.54	0.92	7.69	2.46	1.23	0.00	0.00	2.77	0.31	4.31	69.23
Social	Willingness to comply with the social manners and rules	7.25	0.97	10.14	4.83	9.18	0.97	0.00	0.00	0.97	0.00	4.35	61.84
	Willingness to be useful in the society	14.40	2.88	1.23	2.47	7.41	2.06	0.41	0.00	1.65	2.88	9.05	56.38
	Sense of being a member of the world	9.33	6.22	10.22	1.33	5.33	1.33	0.00	0.00	2.67	0.89	7.11	57.33
Sublime	Heart to take good care of living things and nature	12.35	3.39	2.66	0.73	14.53	1.45	0.00	0.00	1.94	3.15	4.84	55.93
	Total	9.10	2.17	3.42	3.31	4.05	1.59	1.18	1.08	1.81	1.48	4.84	66.87

Features contained in games that nurture sociality

Viewing the features and devices incorporated in games that enhance sociality, the responses that "practic(ing)/ experienc(ing)" the behaviors with sociality in games enhanced the players' sociality were largest in any of the characteristics of sociality. This result reflects the fact that the currently commercially circulated games contain relatively large amount of this feature, "practice/ experience," which corresponds to the rehearsal of the learning theory, which is used to promote sociality. It is also expected to enhance sociality through "practic(ing)/ experienc(ing)" sociality in actual games, as many players have realized. In addition, it is suggested that "practice/ experience" can be an effective and highly general procedure to enhance any of the characteristics of sociality, since many responses were observed in every characteristics of sociality.

Despite the above, however, the responses that referred to the features/ devices, which corresponded to the learning principles, such as operant conditioning, verbal instructions, and modeling, other than rehearsal, were small on the whole. The games which actually incorporated these learning theories may be few, or there is a possibility that the players have not realized that their sociality was enhanced by those procedures, although such games existed. If the games which contain the learning theories are few, it should be discussed to incorporate them into games, since those learning theories have been proven to be effective to promote sociality in the previous studies. Despite incorporation of those learning theories in games, on the other hand, if the players have not realized them yet, it is necessary to devise more recognizable form in order to increase the learning effects.

Changes that sociality produced through playing games

With respect to the changes in players which are produced by playing game, the number of responses that their motivation to learn sociality increased was largest. Therefore, we consider, the commercially circulated games are useful to nurture sociality by increasing the player's motivation to learn such sociality, or triggering them to behave with sociality in their real lives. Besides, considering the large number of the responses classified into the category of "practice/ experience" as one of the features contained in games that nurture sociality, it is suggested that this kind of motivation yields from actually "practic(ing)/ experienc(ing)" the behaviors with sociality in games.

There are some tones of arguments that refer to the lack of direct social experiences in the real world, and many indirect experiences and simulated experiences in games, as one of the causes of declining sociality among the youth of the present [2]. Yet, this study suggested that simulated experiences of the behaviors with sociality in games enhanced the player's motivation to learn sociality, and that many players realized their sociality increased. Although it is the players' subjective realization, since many players

realize so, as shown in the large number of responses in some items, we consider, it is highly possible that the players' realization reflects the actual effects. Therefore, although it is simulated experiences in games, we think, there is a possibility that they could trigger the players to behave with sociality in the real world, and that these experiences could contribute to nurture sociality. At the present time when the chances of direct experiences, such as the relationships with others and natural experiences, are insufficient, the uses of games should be discussed more; games can make up for the lack of the chances of real experiences, by increasing the player's motivation through the simulated experiences, and giving the players clues to positively participate in real experiences.

CONCULUSION

It can be said that a relatively large number of games, which enhance especially those characteristics, such as "Skill or attitude to trust or understand others," "Skill or attitude to create and devise," and "Heart to take good care of living things and nature," exist at the present time, although any characteristics of sociality can be nurtured. Among those techniques and features which increase sociality, it is suggested that the learning principle of "rehearsal" is mostly used, but other types of principles, which we can expect positive effects, are not applied in developing games, or that the players do not recognize the effects despite the fact that some devices have been included in the game. Therefore, we consider, it is necessary to discuss procedures to apply various learning theories of which we can expect positive effects, and to positively discuss whether incorporation of the learning theories in games is actually effective to nurture sociality.

Also, this study suggested that a series of modeling that the players actually "practice(d)/ experience(d)" the behaviors with sociality in games, and which increased their motivation to learn sociality, and subsequently enhanced their sociality. Procedures to well connect the motivation to learn sociality, which is increased through the experiences in games, with the actual experiences in the reality should be discussed more.

ACKNOWLEDGEMENT

REFERENCES

1. Aikawa, M. "Selection Shakai Shinrigaku 20 Hitozukiai no Gijyuts." [in Japanese] "Selection social psychology 20: Skill for human relationship,Psychology for social skill", Tokyo: Saiensu-sha.Co. 2000

2. Board of Education of Chiba. "Seisyonen no Houshi Katsudo & Taiken Katsudo no Suishin Housaku ni Tsuite", [in Japanese] "Plan to promote volunteer services, active experiences of youths." Available at http://www.pref. chiba.jp/kyouiku/osirase/syakyou/housaku/mokuji.html

3. Gagne, R.M. , & Briggs, L.J. "Principles of instructional design", New York : Holt, Rinehart, and Winston,1979.

4. Handa, S., Aoyagi, H., Tajima, N., & Yazawa, K., (eds)., "Shakaisei no Hattatsu Shinrigaku",[in Japanese] "Developmental psychology of Sociality", Tokyo: Fukumura Shuppan Inc., 1991.

5. King, C. A. & Kirschenbaum, D. S. "Helping young children develop social skills; The social growth program", Pacific Grove, CA, US; Brooks/Cole Publishing Company, 1992.

6. Matsunaga, A. "Kodomo no Shakaisei wa Dou Hattatsu Surunoka", [in Japanese] "How does the children's sociality develop?", *Jidou Shinrigaku* [*Child Psychology*], vol. 58, no.2(2004), pp. 10-15.

7. Sato, K. "Ima Gakkou de Shakaisei wa Sodaterareruka-Chiiki/ Katei tono Kakawari no Nakade", [in Japanese] "Can sociality be nurtured in school nowadays?: In relation to local community and home", *Jidou Shinrigaku* [*Child Psychology*], vol. 58, no.2(2004), pp. 166-171.

8. Smokowski, P. R. & Hartung, K. "Computer simulation and virtual reality: Enhancing the practice of school social work", *Journal of Technology in Human Services*, vol. 21(2003), pp. 5-30.

9. Tajima, S., Matsuo, Y., Nohara, S., & Sakamoto, A. "TV game wo Riyou Shita Shakaisei Ikusei no Kanousei no Kentou (1) – Jissyou Kenkyu no Meta Bunseki yori", [in Japanese] "Discussion on nurturing potential sociality, using video game (1): Based on the meta analysis of positive studies", in *Nihon Simulation and Gaming Gakkai Zenkoku Taikai Happyou Ronbunsyu. Proceedings of Japanese Association of Simulation & Gaming (Tokyo Institute of Technology, May 2006)*, pp. 73-78.