

Investigation on Anxieties while Using the Internet to Study about “*Anshin*”

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“*Anshin*” is an emotion in Japanese that is difficult to translate because it is vague, varies from person to person, and is subjective. It means something like “a feeling of contentment”. The demand for Internet use with “*Anshin*” is high. We believe that the emotion and the demand could be universal. To study “*Anshin*,” we conducted group interviews as our first step. We obtained 95/157 cases of “*Anshin*”/anxiety from 28 people. From the results, we found that studying anxiety is valuable. Anxiety is a kind of opposite concept to “*Anshin*” and controlling it leads to a kind of “*Anshin*.” To discuss this, we constructed a model of the process of anxiety generation and selected candidates for the related elements. After investigating obtained cases, we produced a questionnaire for Internet anxieties to prepare the evaluation of them.

1. Introduction

“*Anshin*” is a kind of emotion or feeling in Japanese. In Japanese, “*Anshin*” consists of two Kanji characters: “AN” and “SHIN”. “SHIN” means “mind” and “AN” means “setting one’s mind at ease.” From this point of view, “*Anshin*” means a feeling of contentment or something similar.

In Japan, this word is frequently used by the government, mass media and a lot of companies. The word has also come into frequent use by many Japanese people. However, the methods to achieve “*Anshin*” and also the concept of

“*Anshin*” are not shared universally. One reason is that “*Anshin*” is basically a subjective feeling. The trigger for and amount of “*Anshin*” vary from person to person. Even the same person may feel differently in a similar situation. However, we believe that some part of “*Anshin*” could be shared if it was objective and universal.

Understanding the concept of “*Anshin*” and establishing a method for achieving it are very difficult to do. However, they are very important, especially with regard to using the Internet. Thus, we began studying them from the viewpoints of social science and IT engineering.

For simplicity, we selected one target. The target was “*Anshin*” while using the Internet. The Internet has become a social infrastructure and the demand for its achievement is very high.

We conducted group interviews on “*Anshin*” and anxiety to obtain many cases about them and to understand the concept of “*Anshin*.” We believe anxiety is one of the antonyms of “*Anshin*.” One result of the interviews was that it is easier to talk about a case about anxiety than a case about “*Anshin*.” Thus, we decided to study anxiety while using the Internet as our first step.

We do not define “*Anshin*” precisely because it is so vague. We believe that it is possible to achieve “*Anshin*” while using the Internet without defining “*Anshin*” precisely.

In this paper, we will study factors which are associated with “*Anshin*.”

We show the results of the group interviews, candidate factors relating to anxiety, and also our proposed model of the process of anxiety generation. We describe related studies in Section 2 and our group interviews on “*Anshin*”/anxiety in Section 3. In Section 4, we show the candidates and the model. In Section 5, we describe about a questionnaire we have produced to evaluate them. In Section 6, we conclude this paper.

2. Related Studies

In this section, we show related studies and investigations in the field of social studies. Some studies for computer anxiety are introduced in Ref. 7).

Many related studies have been done in the field of nuclear energy generation. The purposes of those studies were usually to help people accept nuclear energy

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generation with a sense of security. Sakai, et al.¹⁾ investigated the matters associated with the word “Anshin”/Safety (and its reason) using a free-answer questionnaire. They mentioned that situations in which there are objective grounds for protecting people from daily dangers are evaluated as having “Anshin”/Safety.

Sekiya and Nakamura, et al.²⁾ investigated and analyzed the safety outlook of Japanese people using newspaper analysis, group interviews and home-visit interviews. “Safety outlook” is a common concept about the problems concerning safety, and it is mixed with rational safety recognition and feelings of “Anshin”/anxiety. They mentioned that people’s feelings of anxiety are easily influenced by news and information. They also mentioned that there are some psychological factors that make anxiety strengthen/weaken excessively when a person faces a concrete matter related to safety. Kikkawa, et al.³⁾ investigated the field and expression of the word Safety/“Anshin” as used in newspapers and arranged the concepts of “Anshin”/Safety. They defined “*Technical Safety*” and “*Social Anshin*.” Safety can be achieved by some technical solution. However, even though “Anshin” is closely related to “Safety,” it does not equal types of “Safety” because it contains some psychological factors. They also state that there are two types of “Anshin.” One is “*Ignorant Anshin*,” which is the status of feeling “Anshin” without any knowledge or information and consciousness. The other is “*Active Anshin*,” which is the status of feeling “Anshin” with enough knowledge and information.

In the field of computers and the Internet, Hikage and Murayama, et al.⁴⁾ established a structure of the sense of “Anshin” for information security technology in order to achieve technology that secures safety in information systems and a system design (as well as an evaluation method) that provides a sense of “Anshin” for users. They classified factors of the sense of “Anshin” into outer factors (Security technologies, Usability, Confidence) and inner factors (Experience, Preference (likes and tastes), Knowledge). In these days, Murayama is advocating that “Anshin” is an emotional part of trust.

Recently, Japanese government agencies have begun to view IT(Information Technology) use with safety and “Anshin” as an important matter, and they have tried to reveal the anxiety related to Internet activities through investigations. According to one investigation⁵⁾, the most anxiety concerns “personal

information leakage by computer virus infection” (66.5%). Other results were as follows: “invalid access using leaked password” (52.1%) and “fictional claims and unfair billings resulting from only browsing some web pages” (50.5%). According to another investigation⁶⁾, 71.0% of families answered “anxiety about protection of personal information” as their main anxiety regarding Internet activities and 66.1% of families answered “anxiety about infection by a computer virus.”

There are many preceding studies about computer anxiety and Internet anxiety. Presno⁹⁾ selected and divided the Internet anxiety of Internet Class students into 4 categories; “Internet terminology anxiety”, “netsearch anxiety”, “Internet time delay anxiety”, “general fear of Internet failure.” These anxieties are only from Internet Class. But, as what should be mentioned specially, Presno shows how to reduce that kind of anxieties as instructional techniques and behavior. Those are to be referred in the future.

From the psychological point of view, Kraut, et al.¹⁰⁾ investigated about Internet use for social involvement and psychological well-being. They substitute the well-being by “Loneliness,” “Stress” and “Depression.” So, we think well-being and “Anshin” are not the same. But, Ref.10) is still interesting for us.

3. Group Interviews

3.1 Outline

To understand the concept of “Anshin,” we conducted group interviews on “Anshin” and anxiety. The details were as follows.

Date: 2008/09/17 (Wed)–19 (Fri), each session 2 hours

Place: Tokyo, Japan

Number of Participants: A/B/D/E group: 6, C Group: 4

Content of Questionnaire: Cases in which you feel “Anshin”/anxiety in your daily life/in your Internet activities

Recording method: Shorthand (assisted by video recordings)

Method of member selection: We selected the members of each group from an online monitor group belonging to an Internet investigation company. Through the pre-investigation, we selected the people who had high/low susceptibility to anxiety and people who had high/low Internet literacy, using our original standards: Anxiety-Standard and Literacy-Standard. We also selected

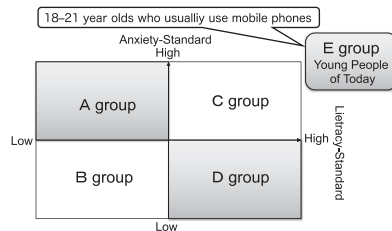


Fig. 1 Profile of each group member.

the members of the special group (E group) as front-runners of those who are 18–20 years old and accustomed to using the Internet on their mobile phones. The grouping is shown in Fig. 1.

3.2 Results

We extracted the cases about “Anshin” and the cases about anxiety from the participants’ opinions. We then divided the cases into those related to daily life and those concerning network and Information Technology (≈Internet Activities). Even if the situation was the same, if the case was described by a different member, we regarded it as a different case. To extract cases from the participants’ descriptions, we had to take their real intentions into consideration. That work was difficult, but we did it as carefully as possible. Breakdowns of the obtained cases are shown in Table 1.

As shown, we obtained 157 cases about anxiety and 95 cases about “Anshin.” Figure 2 shows the comparison of the number of cases about anxiety and the number of cases about “Anshin” for each group. It shows that the number of cases about anxiety is more than that about “Anshin” for each group. The comparison of the number of cases about “Anshin” and the number of cases about anxiety concerning network and Information Technology for each group is shown in Fig. 3.

In this section, we use the value $x[\%]$ for N_a (the number of cases categorized ^{*1}

^{*1} Categories are types of problems: “Vague Anxiety”, “Money/Property Damage”, “Communication Trouble”, “Invasion of Privacy”, “Trouble of Other People”, “Trouble by Knowledge”, “Trouble by Experience”, “Trouble by News and Announcements”, “Trouble by Word-of-Mouth Communication.” Some of them are used in Table 2 and Table 3. Authors categorized these by discussion.

Table 1 Breakdowns of obtained cases (NW = network, IT = Information Technology).

	Number of cases about anxiety			Number of cases about “Anshin”		
	Daily Life	NW/IT	Sum	Daily Life	NW/IT	Sum
A group	13	16	29	11	11	22
B group	11	14	25	8	11	19
C group	22	16	38	8	6	14
D group	16	16	32	5	9	14
E group	17	16	33	9	17	26
total	79	78	157	41	54	95

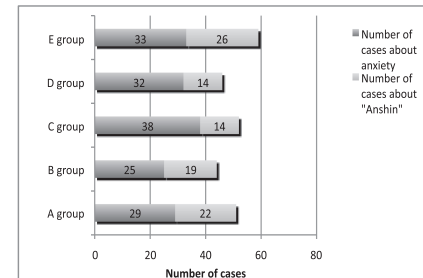


Fig. 2 Number of cases about anxiety and “Anshin” for each group.

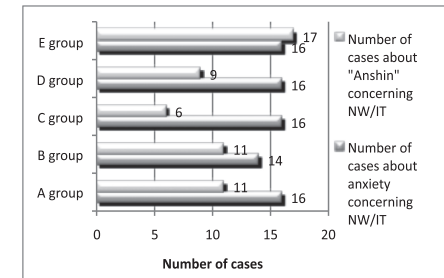


Fig. 3 Number of cases about “Anshin” and anxiety concerning network&Information Technology for each group.

in category a) and N (the number of cases) as follows:

$$x[\%] = (N_a/N) * 100. \tag{1}$$

3.2.1 Front-runners (E group)

First, we show the results of the special group (E group). Though we hoped the members would talk about radical use of Internet, they did not do so, probably because they are an online monitor group belonging to an Internet investigation company. They were commonsense and felt more anxiety than the other groups, when they thought they might trouble others (60.6%, $N = 33$). Concerning network and Information Technology, different from the other groups, the number of cases about “Anshin” was much larger than that about anxiety (Fig. 2). The number of cases about anxiety coming from “Knowledge” (by negative knowledge

or lack of positive knowledge) was high (42.4%, $N = 33$) and anxiety about “Communication Trouble” was also high (24.2%, $N = 33$). In contrast, these participants felt little anxiety due to “News and Announcements” (6.1%, $N = 33$). Those results were expected. As for “Anshin,” many of these participants felt “Anshin” while using the Internet. One said that SNS (social networking sites) friends and PC e-mail addresses are easy to change so she does not feel anxiety.

3.2.2 Comparison from Viewpoint of Axis of Literacy-Standard

Next, we show the results from viewpoint of axis of Literacy-Standard (see Fig. 1 x-axis and **Table 2**). The A/B groups tended to have low Internet literacy, and the C/D groups tended to have high Internet literacy. Both groups felt high anxiety about “Money/Property Damage” (low: 40.7%, $N = 54$ ↔ high: 34.3%, $N = 70$). In addition, both groups felt anxiety about “Invasion of Privacy,” including leakage of personal information, which is a well-known problem (low: 16.7%, $N = 54$ ↔ high: 17.1%, $N = 70$).

Concerning network and Information Technology, the low literacy groups felt “Vague Anxiety” (low: 40.0%, $N = 30$ ↔ high: 21.9%, $N = 32$), and the high literacy groups felt anxiety by expecting concrete problems such as those in network communication (low: 3.3%, $N = 30$ ↔ high: 15.6%, $N = 32$). Probably because they have inner reserves, the high literacy groups felt anxiety when expecting “Troubles of Other People” such as a child (low: 0.0%, $N = 30$ ↔ high: 12.5%, $N = 32$). Anxiety because of “Word-of-Mouth Communication” was greater for the high literacy groups (low: 3.3%, $N = 30$ ↔ high: 9.4%, $N = 32$). As we expected, the low literacy groups tended to feel anxiety coming from “Knowledge” (by negative knowledge or lack of positive knowledge) (low: 56.7%, $N = 30$ ↔ high: 18.8%, $N = 32$), and the high literacy groups tended to feel anxiety coming from “Experience” (by negative experience or lack of positive experience) (low: 16.7%, $N = 30$ ↔ high: 31.3%, $N = 32$).

3.2.3 Comparison from Viewpoint of Axis of Anxiety-Standard

We also show the results from viewpoint of axis of Anxiety-Standard (see Fig. 1 y-axis and **Table 3**). The A/C groups tended to feel low anxiety, and the B/D groups tended to feel high anxiety. Both groups felt similar levels of anxiety because of “News and Announcements” (low: 19.3%, $N = 57$ ↔ high: 17.9%,

Table 2 Comparison from viewpoint of axis of Literacy-Standard.

	Type of Anxiety	Low Literacy Group		High Literacy Group
Daily Life				
Network/ Information Technology	Anxiety coming from “Knowledge”	56.7%	>	18.8%
	Vague Anxiety	40.0%	>	21.9%
	Anxiety coming from “Experience”	16.7%	<	31.3%
	Communication Trouble	3.3%	<	15.6%
	Troubles of Other People such as a child	0.0%	<	12.5%
	Anxiety because of “Word-of-Mouth Communication”	3.3%	<	9.4%
Total	Money/Property Damage	40.7%	>	34.3%
	Invasion of Privacy	16.7%	<	17.1%

Table 3 Comparison from viewpoint of axis of Anxiety-Standard.

	Type of Anxiety	Groups susceptible to Low anxiety		Groups susceptible to High anxiety
Daily Life				
Network/ Information Technology	Invasion of Privacy	36.7%	>	30.0%
	Money/Property Damage	50.0%	<	70.0%
	Anxiety coming from “Knowledge”	33.3%	<	65.0%
	Vague Anxiety	23.3%	<	60.0%
	Anxiety coming from “Experience”	20.0%	<	45.0%
Total	Anxiety because of “News and Announcements”	19.3%	>	17.9%
	Anxiety because of “Word-of-Mouth Communication”	0.0%	<	7.5%

$N = 67$). Groups susceptible to high anxiety (the high anxiety groups) tended to feel anxiety because of “Word-of-Mouth Communication” (low: 0.0%, $N = 57$ ↔ high: 7.5%, $N = 67$).

Concerning network and Information Technology, the groups susceptible to high anxiety felt “Vague Anxiety” (low: 23.3%, $N = 30$ ↔ high: 60.0%, $N = 32$). They also felt this when expecting concrete problems such as “Money/Property Damage” (low: 50.0%, $N = 30$ ↔ high: 70.0%, $N = 32$). As the same as the result of pre-investigation, groups susceptible to high anxiety tended to feel high anxiety even if what problem happens is not understood well. However, as for “Invasion of Privacy,” the groups susceptible to low anxiety felt anxiety a little stronger (low: 36.7%, $N = 30$ ↔ high: 30.0%, $N = 32$).

And, the groups susceptible to high anxiety tended to feel anxiety coming from “Experience” (by negative experience or lack of positive experience) (low: 20.0%, $N = 30$ ↔ high: 45.0%, $N = 32$) and also from “Knowledge” (by negative knowledge or lack of positive knowledge) (low: 33.3%, $N = 30$ ↔ high: 65.0%,

$N = 32$).

3.2.4 Others

Finally, we show some significant opinions.

<About “Anshin”>

- Many participants thought that high “Anshin” and high usability are the same.

- Many participants felt relieved after leaving work and being at home.

<About measures>

- Even feeling anxiety, many participants used Internet services if there are merits. In particular, one participant used a Consumer Generated Media (CGM) service that she did not usually use due to a sudden injury.

- For anxiety about money, many participants take countermeasures such as avoiding giving their bank account number and avoiding expensive shopping over the Internet.

- Concerning network communication, some participants believe that some trouble is avoidable to a degree, and they pay attention to what they write to avoid flaming.

3.3 Considerations

Overall, it is NOT easy to obtain clear, adequate, and quick answers to questions about cases of “Anshin.” In contrast, relatively clear and quick answers tended to be obtained to questions about cases of anxiety.

This may mean that recognition of “Anshin” is still vague. Controlling (Reducing) anxiety is not the only method for achieving “Anshin” (obtaining relief is also a method), but studies on anxiety are valuable.

Now, let us think about the definition of “Anshin” again. In the Section 1, we told that we do not define “Anshin.” Some of the reasons are that “Anshin” is vague and subjective emotion that would be changed by the person and the situation. But, we believe that there is a factor which is highly associated with “Anshin” and also easy to handle. According to the result of the interview, “anxiety” could be the factor. So, we will make “controlling (reducing) anxiety” provisional definition of “Anshin” and will consider about it in this paper.

Considering the content of some opinions, some structures concerning anxiety appear, that is, a participant feels anxiety when expecting concrete problem(s),

and there are some common factors (distrust of another party, lack of knowledge, and so on) that expect such problems and weaken, strengthen, or remove that expectation.

4. Model of the Process of Anxiety Generation

4.1 Construction of Model

To discuss about controlling (reducing) anxiety, we constructed a model of the process of anxiety generation in order to clarify how anxiety is generated (Fig. 4). This model includes the following definitions.

Definition 1. <Expected Problem and Anxiety>

By expecting problem(s) (“Invasion of Privacy” and so on), anxiety is generated. We named this “Expected Problem”. “Expected Problem” is different depending on the person and the situation. “Expected Problem” is affected by “Anxiety Factor(s).”

Definition 2. <Chains of Expected Problems>

Not only one “Expected Problem” exists because anxiety is generated due to chains of “Expected Problems.”

Definition 3. <Positive Anxiety Factor>

There is a factor(s) that is the reason for expecting problem(s). There is also a factor(s) to strengthen the expectation and the anxiety. We named those factors “Positive Anxiety Factors.”

Definition 4. <Negative Anxiety Factor>

There is also a factor(s) to weaken/remove the expectation and the anxiety. We named those factors “Negative Anxiety Factors.”

Definition 5. <Attitude of anxiety>

Unless the “Expected Problems” come true or the expectation disappears,

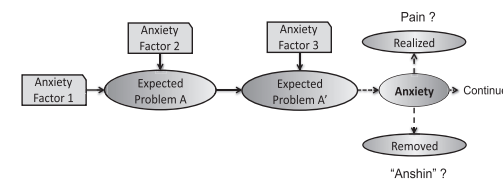


Fig. 4 Model of the process of anxiety generation.

Table 4 Candidates for Anxiety Factors.

#	Anxiety Factor	#	Anxiety Factor	#	Anxiety Factor
1	Character & Feeling	9	Difference from Daily Life	16	Experience
2	Confidence	10	Context	17	Knowledge
3	Sense of Intimacy	11	Importance	18	Information Source
4	Likes & Dislikes	12	Probability of Happening	19	Insurance
5	Mob Psychology	13	Sympathy	20	Support
6	Controllability	14	Superiority & Inferiority	21	Alternative
7	Ability to Estimate	15	Usability	22	Ability to Troubleshoot
8	Difference from Ideal				

anxiety continues.

4.2 Candidates for Anxiety Factors

We made a list of candidates for Anxiety Factors by using the results of the group interviews (Table 4). These candidates could be factors that lead to “*Expected Problems*.” In addition, these candidates could be factors that strengthen, weaken, or remove such expectations (and the anxiety itself).

These factors can be changed by type and level. In addition, there are at most four versions of each candidate, i.e., one for the subject, one for the other party, one for the method, and one for the objective.

“**1. Character & Feeling**” and “**18. Information Source**” contain various types of content. As for “**2. Confidence**” and so on, these candidates can be both Positive Anxiety Factors and Negative Anxiety Factors because high confidence and low confidence affect anxiety differently. For example, while online shopping, if confidence in the seller is high enough, then the expectation of money problems will be weakened and anxiety will also be weakened. In contrast, if that confidence is low enough, then the expectation will be strengthened and the anxiety will also be strengthened.

4.3 Candidates for Expected Problems

We made a list of candidates for Expected Problems. However, problems are uncountable and these candidates do not cover all. We selected the ones that seemed to be major problems by using the results of the group interviews and our own knowledge.

Finance 1) Unexpected expensive Internet fee, 2) Phishing, 3) One-click fraud, 4) Fake billing

Online shopping/auctions 5) Invalid use of credit card information that is

used for payment, 6) Non arrival of the goods that is bought or made a successful bid, 7) Bad status or unexpected content of goods

E-mail and so on 8) Wrong sending address for e-mail, 9) Non-arrival of sent e-mail, 10) E-mail stealing, 11) No reply to sent e-mail, 12) Misunderstanding by e-mail, chat, and so on, 13) Spam mail and comment spam

Security 14) Infection by computer virus and malicious software, 15) Leakage of secret business data by losing PC or USB memory, 16) Exposure of your web browsing history, 17) Data modification or data deletion on your PC or mobile phone while using net service, 18) Invalid use of your ID and password, 19) Leakage of personal information from net service entrepreneurs (sales companies etc.) with which you registered

Connection to Network 20) Non-availability of Internet due to broken hardware, 21) Non-availability of Internet due to empty battery of mobile phone, 22) Non-availability of Internet on mobile phone due to being out of range, 23) Non-availability of Internet service due to software trouble, 24) Irritation due to slow Internet connection

Copyright 25) Warning of your copyright violation on the Internet, 26) Invalid use of your copyrighted content on Internet

CGM 27-29) {At your site that can be accessed only by your friends, — At your site that can be accessed by everyone, — At somebody’s site that can be accessed by everyone,} abuse/violent language/teasing etc., 30) No response to your comment, 31) Warning of your illegality about your comment, 32) Hate, or collapse of confidence, 33) Careless writing including your personal information or secret business information, 34) Others’ comments including your personal information, 35) Posting of harmful content on your site, 36) Threat to your real life, like stalking, due to your comments

Harmful content 37) Browsing of harmful content without notice, 38) Browsing of harmful content by your family(child)

Others 39) Mis-operation of PC or mobile phone, 40) Scolding due to private Internet use during work or class, 41) Falling victim to criminal act due to using dating service website, 42) Falling victim to criminal act due to your profile site, 43) Adverse effect of electromagnetic radiation on your body through using Internet on PC or mobile phone

5. Preparation for Evaluation

After construction of the model of the process of anxiety generation and selection of candidates for Anxiety Factors and Expected Problems, we designed a questionnaire to evaluate them.

(1) Expected Problems

We designed questions that ask extent of anxiety for each 43 trouble (see Section 4.3). Analyzing the answer of that, we will know if people feel anxiety for each trouble.

(2) Anxiety Factors

- [16.Experience] We also designed questions that ask experience for each 43 troubles. Analyzing correlation between this result and the result about extent of anxiety which is felt, we will know the relationship between [16.Experience] and anxiety.

- [17.Knowledge] We designed questions that ask if you hear about 15 troubles from your friends/news program/drama or variety show on TV. Analyzing correlation between this result and the result about extent of anxiety which is felt, we will know the relationship between [17.Knowledge] and anxiety.

- [12.Probability of Happening] We designed a question that asks probability of happening of leakage of personal information. Analyzing correlation between this result and the result about extent of anxiety which is felt when personal information is leaked, we will know the relationship between [12.Probability of Happening] and anxiety.

- [18.Information Source] We designed questions that ask extent in which each 17 information sources on the internet can be trusted. Analyzing correlation between this result and the result about extent of anxiety which is felt, we will know the relationship between [18.Information Source] and anxiety.

- [1.Character&Feeling][10.Context][15.Usability] As for these candidates of Anxiety Factors, it is difficult to evaluate. So, we carried them over to another questionnaire.

- [Others] We designed questions that ask if some of remains of candidates (with [12.Probability of Happening] and [17.Knowledge]) affect each 4 troubles: Leakage of personal information, Invalid use of credit card information, Commu-

nication trouble in CGM, Browsing of harmful content by your family. Analyzing correlation between this result and the result about extent of anxiety that is felt when each of these troubles happens, we will know the relationship between these Anxiety Factors and anxiety.

(3) Model of the Process of Anxiety Generation

As for the model of the process of anxiety generation, we will evaluate partly with the result of above evaluation. As for Definition 1/3/4, we will be able to almost know the correctness from above analysis. However, as for Definition 2/5, we have to design another questionnaire or psychological experiment to know their correctness.

6. Conclusion

We started investigating the emotion “Anshin” (a kind of emotional trust or something similar) while using the Internet. From the results of group interviews, we believe that anxiety should be studied before “Anshin” because anxiety is simpler than “Anshin” and control of anxiety leads to a kind of “Anshin.” To discuss that, using the interview results, we constructed the model of the process of anxiety generation, selected the candidates for related factors and the types of problems that may lead to anxiety if expected.

To verify the model and evaluate these candidates, we designed a questionnaire for home-visit investigation. The questionnaire consists of candidates for Internet anxieties and additional questions for psychology.

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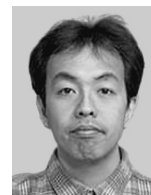
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