D8.1 Field Testing Manual

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Summary

1 Executive summary

The present report is a manual for the conduct of the NoBits trials. The manual provides a description of activities and processes for effective experimental protocols implementation,

assure compliance with scientific guidelines provided by Istituto Auxologico Italiano, define strategies to actuate corrective actions, verify accuracy and completeness of data reporting, and ensure that the privacy and ethical rights of participants are protected.

The report includes two main parts: (I) general methodology (II) documentation and materials.

The first section describes the general methodology for the trial, outlining the structure and key processes/activities. In addition, it describes the practices and procedures designed to ensure that the trial is performed in compliance to the planning document, and the experimental data are generated, documented and reported in compliance with good scientific practice. The second section (Appendix) includes the technical documentation for the trial, including informed consensus and questionnaires that will be used in the trial.

The methodology outlined in this report is contributed by partner Istituto Auxologico Italiano as a part of the work to be carried out in WP8, and will be defined further prior to the commencement of the testing.

2 Purpose of trials

The main objective of the field trials is to evaluate the user acceptability and effectiveness of the NoBits, approach, the service platform and the individual technologies incorporated within it. The methodology for the trials is articulated in two key phases: *formative evaluation* and *summative evaluation*.

The specific objective of the *formative evaluation* is to finalize the adequacy of the technical solutions, by means of identification and subsequent remediation of bottlenecks. The formative evaluation will involve usability experts and small groups of users. The expected output of formative evaluation is a set usability guidelines for improving the NoBits platform and tools. Results of all the usability evaluations will be included in a report to be fed back to developers.

In contrast to formative evaluation, the goal of *summative evaluation* is to judge the worth of NoBits approach, at the end of usability testing. For that reason, summative evaluation will have participants use NoBits service platform and tools without the obtrusive presence of the researcher or artificial usage conditions. The evaluation will provide a broad overview of user wishes and/or concerns with the use of a social reminiscing system. Furthermore, the summative trial results will inform the external stakeholders about the costs/benefits of the NoBits technology and applications relative to competing social reminiscence systems.

3 Formative evaluation

The specific objective of the formative evaluation is to finalize the adequacy of the technical NoBits solutions, by means of identification and subsequent remediation of bottlenecks. The formative evaluation will involve small groups of users (at least 10 elderly

users). The expected output of formative evaluation is a set usability guidelines for improving the NoBits portal.

The methodology outlined here was contributed by partner Istituto Auxologico Italiano as a part of the work to be carried out in WP8, and will be defined further prior to the commencement of the testing. Results of all the usability evaluations will be included in a report to be fed back to the application developers.

3.1 Expert review and laboratory testing (duration: about 1 week)

Heuristic Evaluation is a well-established formative evaluation technique, which involves a group of usability evaluators inspecting the system to identify usability issues. This approach has proven to be effective at finding usability problems and at the same time is relatively easy to implement, inexpensive, and does not necessarily require the selection of samples of users that are representative from the target community. The problems are identified by following a set of usability guidelines, or heuristics.

Key heuristics/design considerations to be evaluated in NoBits include (but are not limited to):

- *Visibility of system status*: for example, is the user notified of the number of other contacts online; are users notified of where they are in the application; is appropriate feedback given following actions
- *Match between system and the real world*: is the terminology comprehensible; are the representations clear; are there any terms/representations that are difficult to understand
- *User control and freedom*: are user's desired interaction steps supported; is navigation easy
- *Consistency and standards*: do terminology, representations, and actions have the same meaning in different views; is it easy to return to the main menu in different views
- *Error prevention*: are frequently used actions easy to get right and difficult to get wrong; for example, is it easy to exit the application by mistake when trying to change views
- *Recognition rather than recall*: for example, what do you think the function of icons x, y, and z are; does icon x suggest main menu; are the functions of the icons easy to recognize or is recall required; do you have to memorize things unnecessarily
- *Flexibility and efficiency of use*: for example, do any of the steps seem laborious; are actions efficient; are any actions unclear; is it easy to, for example, send an email within a particular view; how would you improve processes for common steps
- *Aesthetic and minimalist design*: are there any representations on screen that are never referred to or do not appear to be needed
- *Privacy*: are you concerned about sharing personal information with others; are you willing to disclose personal state-related information; what practical/personal barriers are there to sharing data
- *Help*: is help information supplied

The expert review will evaluate different aspects of the prototype against the heuristics outlined above. This expert review will be followed by evaluations with target end-users: seniors (primary users) and children (secondary users).

3.2 Usability evaluation with end users (duration: about 3 weeks)

The tests with end-users will identify episodes of breakdown during the users' interaction with prototype of the NoBits portal. Breakdowns will be identified, discussed and examined; a report will describe recurrent problems, the context in which they occurred and the ways in which users solved/overcame/surrendered to the problem. The result of this work will be a contextualized description of the main problems that occur during user interactions with the NoBits portal, taking into account the situation in which they occur, the specific courses of action to which they are linked and the circumstances accompanying them.

3.2.1 Think-aloud protocol (participants: 2-3 end users)

Users will be required to participate in task-driven in-depth interviews using the initial prototype. Each user from the focus group will be interviewed individually in a one-hour session. Users will be required to perform a series of pre-defined goal-oriented tasks whilst being observed – the researcher will not assist or direct users in the use of the prototypes unless assistance is explicitly requested (in which case the minimum assistance to enable the participant to continue the trial will be provided). A "think-aloud protocol" will be utilized. To identify positive and negative user responses to the applications (including main usability issues and problems), users will be instructed to vocalise their thoughts as they interact with the applications. Tasks for NoBits application will include:

- writing a story
- uploading a photo
- ecc[1]

Users will not be supported during the execution of the other tasks listed above. Should they fail at a particular task, it is possible that they may discover how to accomplish it at a later stage in the interview. They will be asked open-ended questions about the steps used to perform the tasks and encouraged to verbalise their perceptions of their interaction with the application at all stages of task completion.

3.2.2 Usability trial (participants: 10-15 end users)

Following the *think-aloud protocol* a sample of prospect users (10-15) with no previous experience with the NoBits platform will be recruited to take part in a usability trial in which they will use the application in an ecologically valid setting. The testing session will be structured as follows:

1. *Briefing*: the researcher will describe the purpose and general functionalities of the NoBits platform and will assign a list of tasks to execute. Example:

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[1] A task list will be better defined once nobits.eu will be delivered

        - login to the system
        - upload content
        - etc (see note 1)

2. *Training*: the user will learn the basics of the system by itself

3. *Usage*: the user will work with the platform (without supervision), trying to accomplish the tasks given by the researcher in a limited timeframe

4. *Debriefing and usability survey*: the user will be administered the "Computer System Usability Questionnaire" (see appendix 1) assessing various aspects of their use of the application

5. *Focus group*: Additionally, users will take part in a final focus group to assess their subjective experience of using the application.

4. Summative evaluation

The goal of summative evaluation is to judge the worth of NoBits approach, at the end of usability testing. For that reason, summative evaluation will have participants use NoBits service platform and tools without the obtrusive presence of the researcher or artificial usage conditions. The evaluation will provide a broad overview of user wishes and/or concerns with the use of a social reminiscing system.

Furthermore, the summative field trials will make it possible to explore the effects of NoBits platform, to observe a prolonged usage of the service in real-life situations, and to collect information on usage and acceptance of the applications. The ethnographic approach adopted in the summative trials will allow identifying, for example, which kind of memories are willingly disclosed, and which not; they will also indicate which kind of NoBits services users find useful and meaningful. In addition, it will provide first hints regarding the relation between costs and benefits using technology to support storytelling and social reminiscence.

In particular, summative evaluation will aim at the following objectives:

- to test the effectiveness of the NoBits service and to explore the added-value of technology-supported social reminiscence
- to allow identifying which kind of memories are willingly disclosed and which not
- to evaluate the impact of social reminiscence on users' quality of experience and subjective wellbeing- to evaluate user's perceived usefulness and perceived ease of use of the NoBits service
- to inform the external stakeholders about the costs/benefits of the NoBits technology and applications relative to competing social reminiscence systems

These objectives will be addressed by implementing a multi-centric, controlled study, which will take place in Italy (coordinated by Istituto Auxologico Italiano) and in Hungary (coordinated by Arany Alkony).

More specifically, the study will assess the impact of the proposed approach (technology-supported social reminiscence) by comparing it with a control condition, in which participants will perform social reminiscence activities without the aid of technology.

The experimentation will involve two type of users: seniors (primary users) and children (secondary users). The specific methodologies and procedures to be used in the summative evaluation are described in the following sections.

4.1 Methods

4.1.1 Trial design

The study will apply a between-subject, repeated measure design.

4.1.2 Participants (20 primary users)

Participants are 20 seniors that will be randomly assigned to two conditions:

E-Group: technology-supported social reminiscence (NoBits, experimental condition)
C-Group: social reminiscence (control condition)

Moreover, social reminiscence will involve two different group situations:

- In Italy, seniors will perform social reminiscence with children;
- In Hungary, seniors will perform social reminiscence with other seniors.

In this way, it will be possible to understand not only the effect of social reminiscence, but also the differences existing between different social contexts in which this activity may occur.

4.1.3 Procedure

Participants will be enrolled in the trial through opportunistic sampling. They will not receive any form of compensation to take part in the trial and will be asked to provide their explicit consensus. Then, they will be randomly assigned to either the experimental or control condition.

The trial consists of three weekly sessions[2]: from the first meeting to the last one, there must be a minimum interval of 14 days. Mixed groups (scheduled in Italy) should not exceed ten members with at least 2 elderly; elderly groups (scheduled in Hungary) should be composed of 5 seniors. The goal is to have at least 10 primary users for each group: Italy should carry out the trial with 5 E groups and 5 C groups; Hungary should create 2 E groups and 2 C groups (see table below).

GROUPS	
Mixed Groups	Elderly Groups

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[2] The suggested timing can be modified once obtained the results of the trial carried out with the Italian prototype
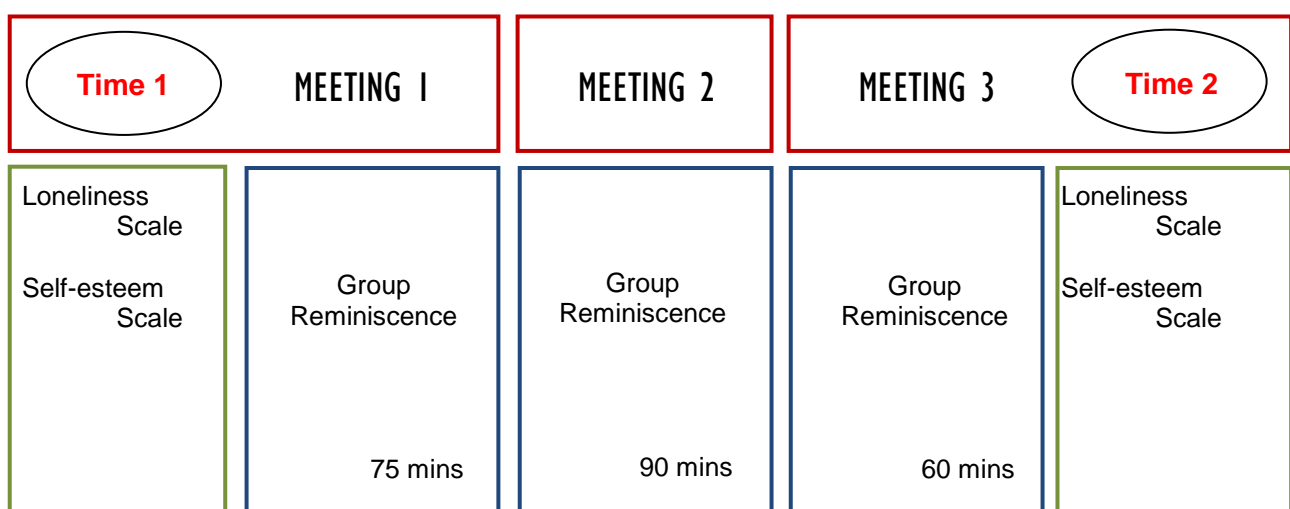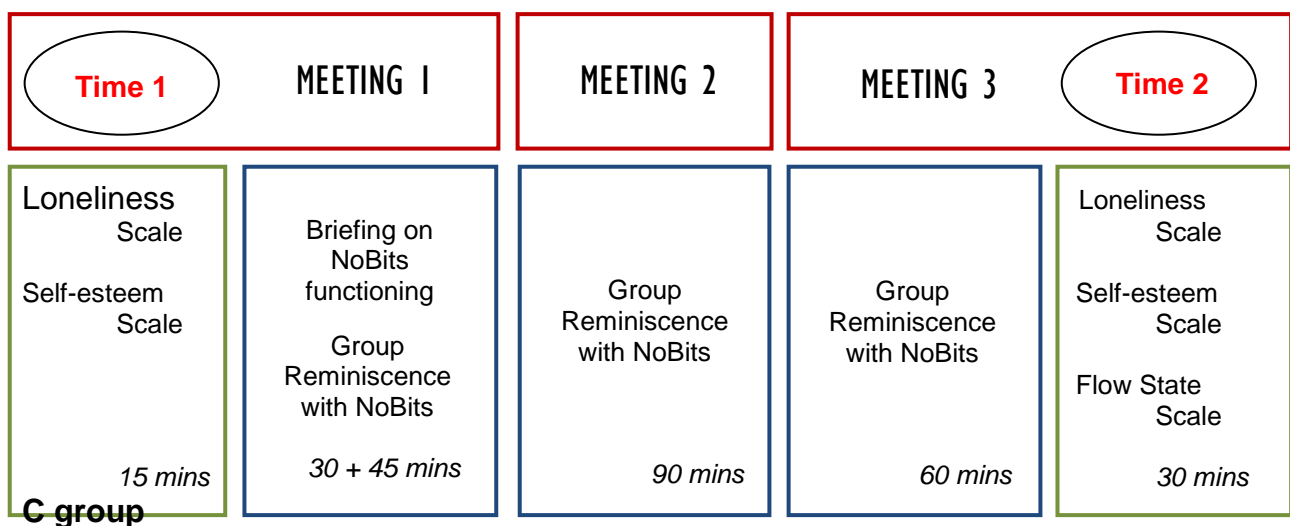
		E	C	E	C	
PARTICIPANTS	ITA	5 (10 elderly)	5 (10 elderly)	0	0	20
	HUN	0	0	2 (10 elderly)	2 (10 elderly)	20

In Italy all the meetings Istituto Auxologico Italiano will organize the trial in schools: elderly people will join groups of children during school time. In Hungary, settings should be defined for local users and possibly English speakers. According to the number of personal computers available, it is recommended to have at least two machines for each group.

At the beginning of the first meeting, Loneliness and Self-esteem scales are administered to all the participants. Each E group start with a briefing explaining the main functionalities of the website, so that the elderly could work with enough autonomy: still the researcher should be always available to provide any help and fix technical problems. The second meeting is not strictly planned: elderly should reminiscence spontaneously, feeling free to organize the activities as they prefer. At the end of last meeting, the two scales of time 1 will be administered again plus the Flow State Scale.
The three meetings for participants in the control groups (C) will follow the same timing. The reminiscing activity will be spontaneous: the role of the researcher is limited to assist them and be sure that that they do not change the general topic of discussion from memories to other issues, e.g. organizing activities, talking about politics.

E group

Time 1	MEETING 1	MEETING 2	MEETING 3	Time 2
Loneliness Scale Self-esteem Scale *15 mins*	Briefing on NoBits functioning Group Reminiscence with NoBits *30 + 45 mins*	Group Reminiscence with NoBits *90 mins*	Group Reminiscence with NoBits *60 mins*	Loneliness Scale Self-esteem Scale Flow State Scale *30 mins*

C group

Time 1	MEETING 1	MEETING 2	MEETING 3	Time 2
Loneliness Scale Self-esteem Scale	Group Reminiscence *75 mins*	Group Reminiscence *90 mins*	Group Reminiscence *60 mins*	Loneliness Scale Self-esteem Scale

4.1.4 Materials

The main performance indicators for the summative evaluation of elderly are loneliness and self-esteem. They are assessed before and after the reminiscing programme: we hypothesize that participants in the experimental group (E) will reduce their feeling of loneliness and improve their self-esteem more than controls (C). At the end of the trial, we will also assess the quality of the reminiscence by investigating whether elderly reached a flow state during the reminiscing process. Be sure that on the top of each sheet the participant writes the first letter of the gender (M = male, F = female) and age in number.

Loneliness

Loneliness is a social condition of isolation from other people, but it is not more important than feeling lonely. In fact, elderly people often feel lonely even if they have a family and a group of friend. Subjective loneliness describes people who feel a disagreeable or unacceptable lack of meaningful social relationships. Reminiscing with the help of a Web portal may let elderly feel part of a broader community interested in their memories.

To assess loneliness in Italy the Italian Loneliness Scale (Zammuner, 2008) will be used: it includes items from the UCLA Loneliness Scale (Russell, Peplau and Cutrona, 1980), and from the Loneliness scale by De Jong-Gierveld & van Tillburg (1999). The UCLA Loneliness Scale (version 3, see appendix 2) could be used in the Hungarian context. In both cases, three subscales will be tested: Emotional Loneliness, Social Loneliness and General Loneliness.

Self-esteem

Self-esteem is crucial among elderly: most of them can experience depressive mood as age grows, mostly because of reviewing their life and not be as satisfied as they would like. Elderly may also feel the guilt of being a burden for the family, if they have lost their autonomy. Reminiscing with children could give to elderly a guiding role in the society: as in past times, they could represent a trustable source of knowledge. Working with new technology may improve elderly self-esteem if they will be able to complete all the task required to work with the website (formative evaluation).

To assess self-esteem the Rosenberg Self-Esteem Scale (Rosenberg, 1965) will be used. It is a 10 item measure made up of 4-point Likert scale - from "strongly agree" to "strongly disagree" (see appendix 3).

Flow state

A way to measure elderly involvement in NoBits project activities is assessing their involvement (and subjective quality of experience) in the social reminiscing process. Flow state is a concept of positive psychology referring to the mental state of operation in which

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a person is fully immersed in the activity he/she is doing: it defines full involvement in the task, an energized focus and success. Individuals prefer to focus their psychological resources on actions associated with a positive and gratifying state of consciousness, called "optimal experience" or "flow" (Csikszentmihalyi, 1990). Some characteristics of this state are the focus of the attention on the current activity, the easiness of concentration, the engagement and control of the situation and loss of self-observation.

Elderly can be very involved in reminiscing activity, whose importance increases with age: cross-generational reminiscence can represent an optimal performance and they may experience flow. To verify our hypothesis, elderly will fill up the Flow State Scale (Jackson & Marsch, 1996). The Italian version was validated by Muzio et al. (in press): the English version is not free, available at http://www.mindgarden.com/products/flow.htm.

5 Appendixes

5.1 Computer System Usability Questionnaire (adapted version)

Participant: Gender _____ Age _____

System: http://www.nobits.eu

This questionnaire (which starts on the following page), gives you an opportunity to tell us your reactions
to the system you used. Your responses will help us understand what aspects of the system you are particularly concerned about and the aspects that satisfy you.
To as great a degree as possible, think about all the tasks that you have done with the system while you answer these questions.
Please read each statement and indicate how strongly you agree or disagree with the statement by circling
a number on the scale. If a statement does not apply to you, circle N/A.
Please write comments to elaborate on your answers.
As you complete the questionnaire, please do not hesitate to ask any questions.
Thank you!

1) Overall, I am satisfied with how easy it is to use this website.

STRONGLY　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

2) It was simple to use this website.

STRONGLY　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

3) I could effectively complete the tasks I wanted, using this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

4) I was able to complete the tasks I wanted quickly using this system.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

5) I felt comfortable using this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

6) It was easy to learn to use this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

7) I believe I could become productive quickly using this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

8) The website gave error messages that clearly told me how to fix problems.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

9) Whenever I made a mistake using the website, I could recover easily and quickly.

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

10) It was easy to create new artifacts (pictures, writings, stories etc.).

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

11) It was easy to find artifacts (pictures, writings, stories etc.) created by others.

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

12) The organization of information on the website screens was clear.

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

Note: *The "interface" includes those items that you use to interact with the system. For example, some components of the interface are the keyboard, the mouse, the microphone, and the screens (including their use of graphics and language).*

13) The interface of this website was pleasant.

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

14) I liked using the interface of this website.

STRONGLY　　　　　　　　　　　　　　　　　　　　　　**STRONGLY**
AGREE　　1　　2　　3　　4　　5　　6　　7　　**DISAGREE**

COMMENTS:

15) I find it easy to read the characters on the pages of this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

16) I like the use of colors of this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

17) I find the sequence of pages logical on this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

18) The terminology of the website is easy to understand.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

19) This website has all the functions and capabilities I expect it to have.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

20) I enjoyed using this website**.**

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

21) I felt that my data are safe and secure using this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

22) Overall, I am satisfied with this website.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

23) I would use this website regularly in the future.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

24) I would recommend this website to others.

STRONGLY   **STRONGLY**
AGREE   1   2   3   4   5   6   7   **DISAGREE**

COMMENTS:

25) Please list the three things you liked most about this website.

  -

  -

  -

26) Please list the three things you liked least about this system software.

  -

  -

  -

27) Is there anything you are missing on this website?

5.2 UCLA Loneliness Scale (version 3)

Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often do you feel the way described by writing a number in the space provided. Here is an example:

How often do you feel happy?

If you never felt happy, you would respond "never"; if you always feel happy, you will respond "always".

Never = 1   Rarely = 2   Sometimes = 3   Always = 4

1. How often do you feel that you are "in tune" with the people around you? ____
2. How often do you feel that you lack companionship? ____
3. How often do you feel that there is no one you can turn to? ____
4. How often do you feel alone? ____
5. How often do you feel part of a group of friends? ____
6. How often do you feel that you have a lot in common with the people around you? ____
7. How often do you feel that you are no longer close to anyone? ____
8. How often do you feel that your interests and ideas are not shared by those aroundyou? ____
9. How often do you feel outgoing and friendly? ____
10. How often do you feel close to people? ____
11. How often do you feel left out? ____
12. How often do you feel that your relationships with others are not meaningful? ____
13. How often do you feel that no one really knows you well? ____
14. How often do you feel isolated from others? ____
15. How often do you feel you can find companionship when you want it? ____
16. How often do you feel that there are people who really understand you? ____
17. How often do you feel shy? ____
18. How often do you feel that people are around you but not with you? ____
19. How often do you feel that there are people you can talk to? ____
20. How often do you feel that there are people you can turn to? ____

Scoring. Items that are asterisked should be reversed (i.e. 1 = 4, 2 = 3, 3 = 2, 4 = 1), and the scores of each item then summed together. Higher scores indicate greater degrees of loneliness.

5.3 Rosenberg Self-esteem Scale

	STATEMENT	Strongly Disagree	Disagree	Agree	Strongly Agree
1	I feel that I am a person of worth, at least on an equal plane with others.				
2	I feel that I have a number of good qualities.				
3	All in all, I am inclined to feel that I am a failure.				
4	I am able to do things as well as most other people.				
5	I feel I do not have much to be proud of.				

6	I take a positive attitude toward myself.				
7	On the whole, I am satisfied with myself.				
8	I wish I could have more respect for myself.				
9	I certainly feel useless at times.				
10	At times I think I am no good at all.				

Scores are calculated as follows:

- *For items 1, 2, 4, 6,* and *7:* Strongly agree = 3, Agree = 2, Disagree = 1, Strongly disagree = 0;
- *For items 3, 5, 8, 9,* and *10* (which are reversed in valence): Strongly agree = 0, Agree = 1 Disagree = 2, Strongly disagree = 3.

The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem.