

OLFACTION**TABLE OF CONTENTS**

1.	Background and Rationale.....	2
1.1	Introduction	2
1.2	Past research.....	2
2.	Equipment and Supplies.....	3
3.	Safety Issues and Exclusions.....	3
4.	Participant and Exam Room Preparation	3
5.	Detailed Measurement Procedures	4
6.	Procedures for Performing the Measurement at Home.....	5
7.	Alert Values/Reporting to Participants	5
8.	Quality Assurance	5
8.1	Training and Certification	6
8.2	Certification requirements	6
8.3	Quality Assurance Checklist.....	6
9.	References	6

OLFACTION

1. Background and Rationale

1.1 Introduction

It has been suggested that sense of smell deteriorates with age and that this is associated with decreased appetite. In addition, there has been some work suggesting that loss of the sense of smell may be an early predictor for onset of cognitive impairment and Alzheimer's Disease. Most of these studies are based on clinical populations.

We will be measuring smell in the Health ABC study to address the following questions:

1. Poorer sense of smell will be associated with less varied diet and poorer meeting of dietary requirements.
2. Poorer sense of smell will be associated with lack of weight gain following weight loss from illness.
3. Poorer sense of smell will be associated with poorer cognitive function.

1.2 Past research

There are several population studies of smell. Researchers at the Monell Institute at University of Pennsylvania, including Dr. Richard Doty, used cards impregnated with smell particles for a "Scratch and sniff" test in the National Geographic which, in a large cross-sectional volunteer population, showed decline in smell with age. Subsequently, the Monell group published a study in JAMA in which they used this test to demonstrate, in a group of over 600 persons characterized for smoking history, that cigarette smoking was associated with a decrease in olfactory function in dose-related fashion.¹

A more recent study was conducted by Dr. Claire Murphy of San Diego State University who collaborated with the Beaver Dam epidemiologic study to test smell in a group aged 52-97. These data are currently being collected.

Loss of the sense of smell is associated with smoking, old age, head trauma, selected medications, and chronic allergic rhinitis. It is also associated with selected neurologic disorders including Parkinson's Disease and dementia.²

12-Item Cross Cultural Smell Identification Test (CC-SIT)³

12 items were selected from a larger battery after discussions with multiple experts from a variety of ethnic and cultural backgrounds. The battery includes six food-related and six non-food related odorants. This was then tested on 198 people. The authors used this group and a sex-age-race-smoking matched group to develop the 12 items for this test. The results were similar to those for the 40-item UPSIT (U Penn Smell Identification Test) and norms for the CC-SIT were created using the database for the 12 items from CCSIT which are similar to UPSIT. Odorants are embedded into an area on a card which is scratched and then held up to be smelled. The subject then indicates what the smell is from among four choices.

Score on the CC-SIT has age-specific norms. The 10th percentile for men aged 70-74 is 5, 75-79 is about 4; for women the 10th percentile for women aged 70-74 is 7, for women aged 75-79 is 4. Thus the score could be used as a continuous variable or dichotomized by some normative cutpoint, i.e. 10th percentile, 25th percentile. This variable could be used to examine the covariates of smell decrements or alternatively as a covariate in estimates of change in body composition.

2. Equipment and Supplies

- One test booklet called the Cross-Cultural Smell Identification Test for each participant
- Paper clip
- Handcards with names of odors in large print
- Olfaction data collection form

3. Safety Issues and Exclusions

There are no safety issues or exclusions for the olfaction test.

4. Participant and Exam Room Preparation

The olfaction test should be administered in a quiet place with minimal distractions. Reassure the participant that this is a routine test of smell.

5. Detailed Measurement Procedures

1. Read the text on the Olfaction data collection form to the participants to introduce the test (page 38 of the Year 3 Clinic Visit Workbook).

Script: “As people get older, they sometimes say their taste for food has changed. This may be due to a change in the sense of smell, so we have included a short test of smell in the examination this year.

“This is a simple test. On these cards (**show example**), there are very small capsules of odors which people find familiar. I will show you another card with four choices for each odor of the 12 odors we will test. I will read you these four choices and leave the card on the table in front of you, like this. I will then scratch the odor card with a paper clip and immediately hold it under your nose for you to sniff. I will then ask you to tell me which of the four choices you feel this smell is most like. If you are not sure, you can ask for a second sniff. After that, we would like you to make the best guess as to what odor you are smelling.”

2. Ask the questions printed on the form and indicate the responses.

- a. Script: “Have you had a cold in the past week?”

- b. Script: “Have you ever been hit in the head hard enough to make you faint?”

- c. Script: “Do you suffer from smell and/or taste problems?”

(Note, if they answer “Yes” to the question above, ask them to describe these problems, and record their answer on the Olfaction data collection form

- d. Script: “Do you currently smoke?”

3. To begin the test:

- For each odor card, make sure that you have the matching response card to read and display before the participant (Cards G through R in the Year 3 Clinic Visit Workbook Response Cards).
- IN SEQUENCE, read the response card to the participant and then place the response card in front of them on the table.

- Use a standard paper clip end to scratch the brown label on the MATCHING odor card from left to right four times in four separate places, i.e., scratch four lines on the odor card. This will release an odor.
 - IMMEDIATELY hold the card under the participant's nose (using both hands) and ask them to identify the odor. If they are not sure, scratch the card twice more as instructed and hold the odor card again. If they are still unsure, ask them to make the best guess they can. FOR THE TEST TO BE VALID, AN ANSWER MUST BE MARKED FOR EACH QUESTION, EVEN IF THE PARTICIPANT SMELLS NOTHING (i.e., the "Don't know" option should never be used, if possible).
 - As the respondent identifies the odor, indicate the response on the scannable data collection form (pages 38, 39, and 40 in the Year 3 Clinic Visit Workbook). Do not in any way indicate if the response is correct or not. Remove the choice card. Be encouraging.
 - Read the choices for the next set of smells in order and show the participant the card. Continue until all 12 smells have been presented.
4. At the conclusion of the test, indicate to the participant that we appreciate them participating in this test.
- You can offer to let them take the used cards with them if they would like.

6. Procedures for Performing the Measurement at Home

This examination can be performed in the home.

7. Alert Values/Reporting to Participants

Participants will not routinely receive results of the smell test.

8. Quality Assurance

8.1 Training and Certification

The technician requires no special qualifications or prior experience to perform this assessment. Training should include:

- Read and study manual
- Attend Health ABC training session on techniques (or observe administration by experienced examiner)
- Practice on other staff or volunteers
- Discuss problems and questions with local expert or QC officer

8.2 Certification requirements

- Complete training requirements
- Conducts exam on two volunteers while being observed by QC officer:
— According to protocol, as demonstrated by completed QC checklist

8.3 Quality Assurance Checklist

- Text on scoring sheet read properly to participants
- Used correct matching response cards for each odor card
- Odor cards presented in the correct sequence
- Odor cards scratched with a paper clip end from left to right four times
- Card held up to the participant's nose immediately after being scratched (examiner uses both hands)
- Answer marked for each question
- Did not indicate to participant whether or not the response was correct
- Offered used cards to the participant
- Reviewed form for completeness
- Correctly completed form

9. References

1. Frye RE, Schwartz BS, Doty RL. Dose-related effects of cigarette smoking on olfactory function. JAMA 1990;263:1233-1236.
2. Schiffman SS. Taste and smell losses in normal aging and disease. JAMA 1997;278:1357-1362.
3. Doty RL. The Smell Identification Test Administration Manual. Sensonics Inc. 125 White Horse Pike, Haddon Heights, NH 08035. Phone: 609-547-7702.
4. Doty RL, Marcus A, Lee WW. Development of the 12-Item Cross-Cultural Smell Identification Test (CC-SIT). Laryngoscope 1996;106:353-356.