

Effectiveness and Tendency of the Preparation Supported by Aromas

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Abstract: The purpose of this study is to investigate the effectiveness and tendency of using the aromas in the preparation to be done before medical practice to children. In the experiment, two kinds of data acquired. One was the psychological evaluation by questionnaire. Another was the gaze tracking by the equipment. Two materials were used as the stimulus. They were visual stimulations and olfactory stimulations. Visual stimulations were used for the two materials. One was the video of preparation tool for vaccination. Another was image extracted five important scenes from the video of preparation for vaccination. Olfactory stimulations were used five types of aroma oils. As an experiment, the children chosen the aromas appropriate to the scene of the preparation tool. The results of the experiment, two conclusions were derived. First, the same aroma was not chosen in five scenes of preparation. Second, there was a tendency to aroma the selected children and suitable for each scene. It was found that from these results, it presents the aroma when making preparations for children is effective.

Key words: *Aroma, Preparation, Children*

1. Introduction

Informed consent is a process for getting permission before conducting the health care intervention on a patient. The Preparation takes place in small children who cannot understand the informed consent. The Preparation is intended to reduce the fear of children by explaining the therapeutic contents. Various preparation tools such as books and toys for the Preparation have been developed. There are “Child Life Design” as a design approach to develop such the preparation tool [1]. One way to expand Child Life Design focused on the functionality of the aromas. The function to change the feelings of people with the aroma was noted. By using this function with the aromas, we thought that take care of the child’s feeling in the Preparation.

The purpose of this study is to investigate the trends and effectiveness of using the aroma in the Preparation to be done before medical practice to children. We examined whether the change, the children want to smell the aromas depending on the difference of the scene for the Preparation tool. The effect of changing the aroma to each scene in preparation tool was examined by experiment.

2. Experiment

The contents of the experiment conducted in this study were as follows.

2.1. Subject

Attributes of the subjects were as follows:

- Elementary school students
- The age range from 7 years old to 12 years old
- Average age 10.5 years old
- 8 boys, 6 girls, a total of 14 children

2.2. Stimulation

Two types of stimulation had been used. Those were visual stimulation and olfactory stimulation.

The visual stimulation was used two types of contents. One was the video of preparation tool related to vaccination as shown in Figure 1 [2]. Another was the still image of five important scenes that was captured from the video of preparation on vaccination. The five scenes extracted were “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness”, “Cheering of Children”, “Explanations for Treatment to Illness”, and “Praise of Children” (Figure 2 - a, b, c, d, and e).



Figure.1 Visual stimulation of Video (Preparation Tool for Vaccination)

a. Explanation about Cause of Illness	b. Explanation for Symptoms of Illness	c. Cheering of Children
d. Explanation for Treatment of Illness	e. Praise of Children	

Figure.2 Visual stimulation of Still Images (Preparation Tool for Vaccination)

Olfactory stimulation was used essential oils. Five kinds of essential oils shown in Table 1 were used.

Table 1. Aroma as olfactory stimulation used in the experiment

Aroma Name	Ylang-Ylang	Orange-Sweet	Peppermint	Lavender	Tea-Tree
Aroma Type	Oriental	Citrus	Herb	Floral	Wood

2.3. Equipment

An Experimental tool to present a still image of the visual stimulus was created. That had six phases shown below for each of the five scenes. Those were “Presentation of Scene (No presentation of Aroma)”, “Fixation Point (First Time)”, “Presentation of Scene (Presentation of Aroma)”, “Fixation Point (Second Time)”, “Choice of Aroma”, and “Explanations of Scene”. The flow of these phases was shown in Figure 3.

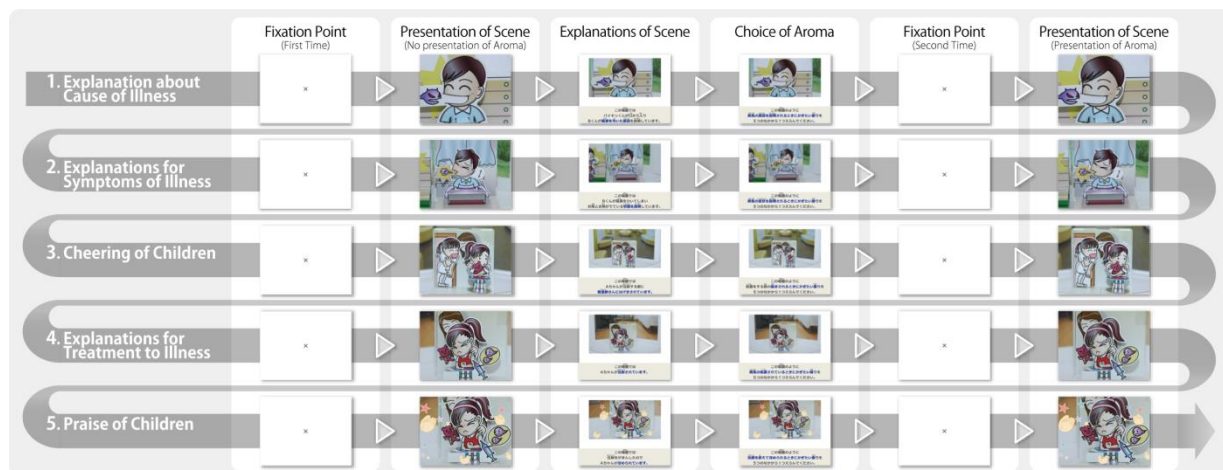


Figure.3 Flow Diagram of Experimental Tool to present Visual Stimulation used in the Experiment

This experimental tool was allowed to run on the personal computer and the LCD display. The gaze tracking of the subject when looking at still images were measured. To gaze tracking had been used by Tobii's X60.

As a way of presenting the aromas of olfactory stimulation, the cotton wool and the polyethylene containers were used. The cotton wool was placed in the polyethylene container. Cotton wool soaked in the essential oil of olfactory stimulation.

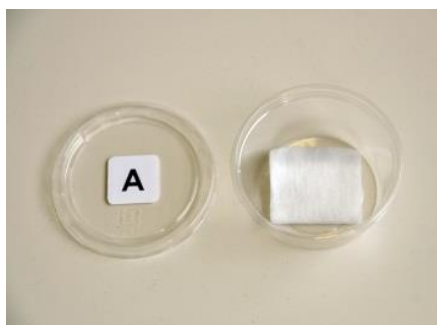


Figure.4 Equipment Presented Olfactory Stimulation used in the Experiment

2.4. Evaluation Items

In the experiment, two kinds of data were measured. One of the data was the psychological evaluation by questionnaire. Subjects were asked to rate the following three items. These were “Preference of Scenes”, “Ranking of Aromas” and “Preference of Aromas”. Another data was gaze of the subject looking at the images. Gaze of the subjects with and without the aromas were compared. However, as a result of psychological evaluation had been shown in this paper.

2.5. Experimental Procedure

According to the following procedure, experiments were performed in subjects one by one:

1. The video of visual stimulation was displayed on the computer screen. The subject was allowed to grasp the entire contents of the video
2. Displayed on the computer screen the experimental tool
3. Display the screen of “Explanations of gaze tracking”
4. Display the screen of “Fixation Point”. Automatic transition to the next screen after three seconds
5. Display the screen of “Presentation of Scene”. Automatic transition to the next screen after ten seconds
6. Display the screen of “Explanation of Scene”
7. Display the screen of “Choice of aroma”. The subject choose from five types of aroma that matches the scene
8. Display the screen of “Fixation Point”. Automatic transition to the next screen after three seconds
9. Display the screen of “Presentation of Scene”. The gazes of the subject are measured with the selected smell the aroma. Automatic transition to the next screen after ten seconds
10. Executed for scene five steps from No. 3 to No. 9.
11. After the completion of the trial of the five scenes, the subjects were made to the evaluation of three items. These were, “Preference of Scenes”, “Ranking of Aromas” and “Preference of Aromas”

3. Results of Experimental

3.1. The Aroma that was Selected as Suitable for the Scene

As a result of the selected aroma children wants smell when viewing scene was shown in Table 2. In addition, Figure 5 were graphical representations of those results.

Table 2. The aroma that was selected in the scenes (gray cells are highest rating of the scene)

Contents of Scene	Ylang-Ylang	Orange-Sweet	Peppermint	Lavender	Tea-Tree
Explanation about Cause of Illness	3	6	3	1	1
Explanations for Symptoms of Illness	2	5	4	2	1
Cheering of Children	7	2	1	1	3
Explanations for Treatment to Illness	3	5	4	2	0
Praise of Children	7	4	3	0	0

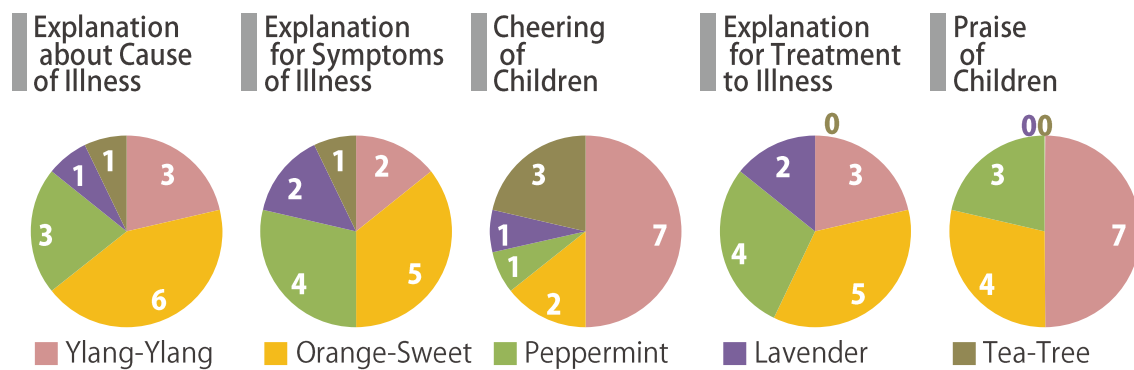


Figure.5 Percentage of chosen aroma in the scenes

As a result, two trends were found.

The first trend had been chosen for children most often Orange-Sweet in “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness”, and “Explanations for Treatment to Illness”. As another trend, Ylang-Ylang chose a lot of children for “Praise of Children” and “Cheering of Children”.

3.2. Preference for the Aromas

As a result of the preference of the subject for each aromas were shown in Table 3. In addition, Figure 6 were graphic representations of those results.

Table 3. Preference for the aromas (gray cells are highest rating of the aroma)

Aroma Name	Preference				
	Like	Slightly Like	Neutral	Slightly Dislike	Dislike
Ylang-Ylang	3	6	4	1	0
Orange-Sweet	6	4	3	1	0
Peppermint	3	4	2	4	1
Lavender	1	1	0	4	8
Tea-Tree	1	3	2	4	4

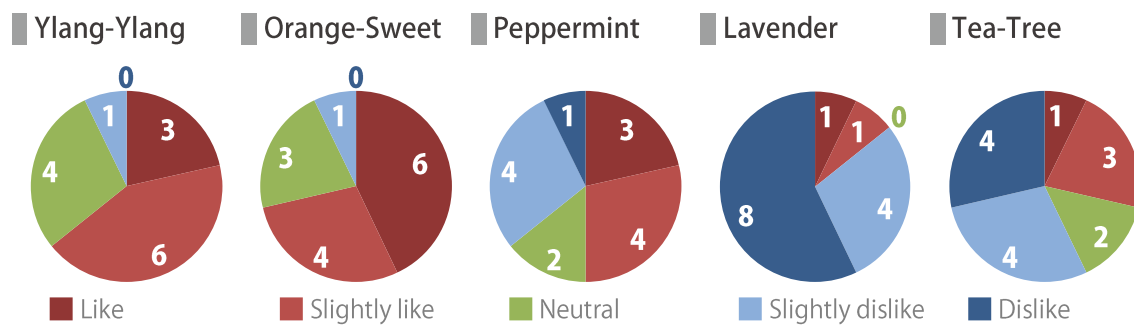


Figure.6 Percentage of preference for the aromas

In order to clarify the trend, the following settings had been made;

- The total number of “Like” and “Slightly Like” had been positive evaluation
- The total number of “Dislike” and “Slightly Dislike” had been negative evaluation
- The aroma had many positive evaluations than negative evaluations had been called “the Aroma of Positive Evaluation”
- The aroma had many negative evaluations than positive evaluations had been called “the Aroma of Negative Evaluation”

For Ylang-Ylang, there were nine children were evaluated with positive. In addition, Ylang-Ylang was evaluated “Slightly Like” by six children. Therefore, Orange-Sweet aroma was acclaimed.

For Orange-Sweet, there were ten children were evaluated with positive. And, Orange-Sweet had been evaluated to “Like” by six children. Therefore, Orange-Sweet was the most favorable evaluation aroma.

For Peppermint, seven children were in positive evaluation. In addition, five children were negative for the evaluation Peppermint. From this fact, Peppermint was a neutral aroma for children were the subject of this experiment.

For Lavender, there were twelve children were evaluated with negative. And, Lavender had been evaluated “Dislike” by eight children. Therefore, the evaluation of Lavender was the lowest.

For Tea-Tree, there were eight children were evaluated with negative. Therefore, the evaluation of Tea-Tree was low.

3.3. Preference for the Scenes

As a result of the preference for each scene was shown in Table 4. In addition, Figure 7 were graphic representations of those results.

Table 4. Preference for the scenes (gray cells are highest rating of the scene)

Contents of Scene	Like	Slightly Like	Slightly Dislike	Dislike
Explanation about Cause of Illness	0	1	5	3
Explanations for Symptoms of Illness	0	0	5	4
Cheering of Children	2	5	2	0
Explanations for Treatment to Illness	0	1	5	3
Praise of Children	7	2	0	0

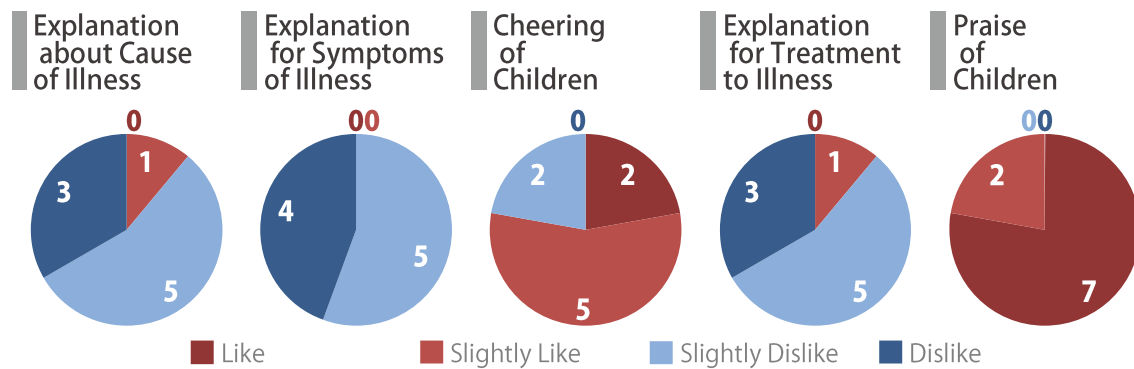


Figure.7 Percentage of preference for the scenes

In order to clarify the trend, the following settings had been made;

- The total number of “Like” and “Slightly Like” had been positive evaluation
- The total number of “Dislike” and “Slightly Dislike” had been negative evaluation
- The scene had many positive evaluations than negative evaluations had been called “the scene of positive evaluation”
- The scene had many negative evaluations than positive evaluations had been called “the scene of negative evaluation”

The scene of “Explanation about Cause of Illness” was the positive evaluation of one child and the negative evaluation of eight children. Therefore, it was the scene of negative evaluation. The scene of “Explanations for Symptoms of Illness” was the positive evaluation of zero children and the negative evaluation of nine children. Therefore, it was the scene of negative evaluation. The scene of “Cheering of Children” was the positive evaluation of seven children and the negative evaluation of two children. Therefore, it was the scene of positive evaluation. The scene of “Explanations for Treatment to Illness” was the positive evaluation of one child and the

negative evaluation of eight children. Therefore, it was the scene of negative evaluation. The scene of “Praise of Children” was a positive evaluation of nine children and negative evaluation of zero children. Therefore, it was the scene of positive evaluation.

In other words, the scene of positive evaluation had two scenes. These were “Praise of Children” and “Cheering of Children”. And, the scene of negative evaluation had three scenes. These were “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness”, and “Explanations for Treatment to Illness”.

From these results, the following two ideas had been derived. The children had been favorably received by the scene that was trying to feel positive, such as “praise” or “support”. In addition, children were not taking a positive view of the scene, such as “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness” and “Explanations for Treatment to Illness”.

4. Discussion

Three evaluation items of the selected aroma in each scene, the preference of the aromas, and preference of the scenes have been discussed comprehensively.

The aroma that was preferred in most situations was Ylang-Ylang and Orange-Sweet. From the results of the evaluation of the aroma, these two aromas were preferred in children has become evident.

In addition, when classified by evaluation of the scene, “Praise of Children” and “Cheering of Children” was scene of positive evaluation, “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness”, and “Explanations for Treatment to Illness” was the scene of negative evaluation. Coincides with these two types of aromas were selected in each scene. These relationships were shown in Figure 8.

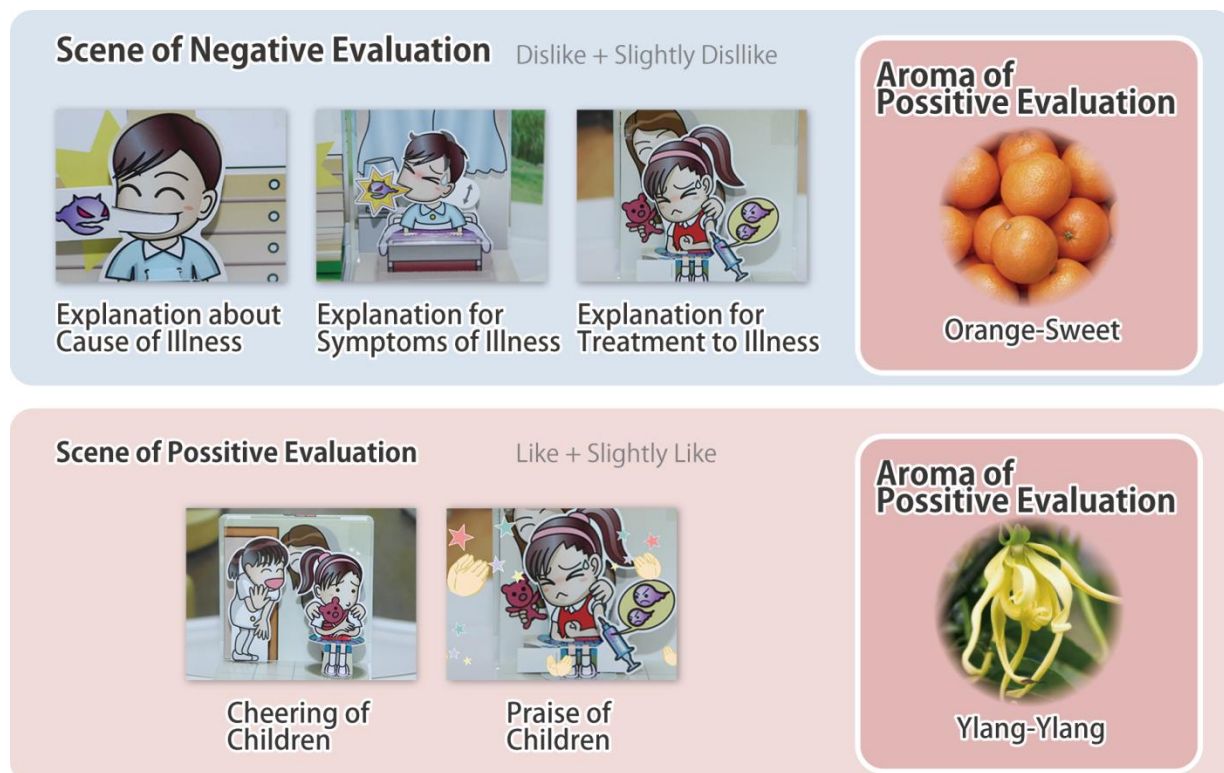


Figure.8 Classification of the scene in considering the evaluation of the three items

For the scene of three negative evaluations were higher, the children chosen Orange-Sweet that most prefer. In addition, the two scenes were more positive evaluations, Ylang-Ylang that children would prefer the second was selected. From these results, changing the aroma presented to children in accordance with the scene that were meaningful became clear.

Then, the different trend was seen also in the similar images.

Two images “Praise of Children” and “Explanations for Treatment to Illness” were shown in Figure 9. Between the two images, a small difference in the expression. “Praise of Children” was the image that was added to “Explanations for Treatment to Illness” expression of “applause” and “stars”. However, “Evaluation of the Scene” and “aroma suitable for the selected scene” in accordance with the children in these images were very different. From this trend, the children that had chosen the aroma suitable scene to understand the content, not just the visual representation were suggested.

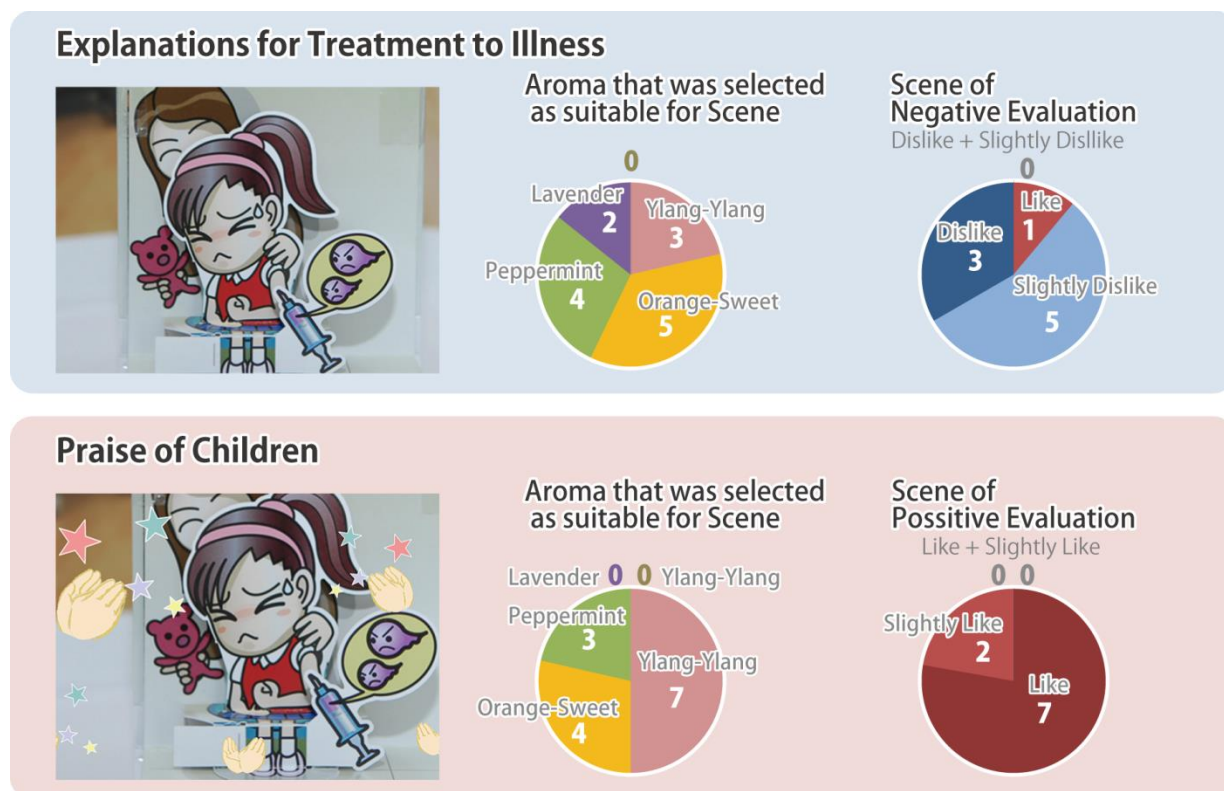


Figure.9 Similar images were chosen different aroma

5. Conclusion

From the above discussion, two conclusions were derived.

First, the same aroma was not chosen in five scenes of the preparation tool. Therefore, it was possible to present aroma suitable depending on the scenes of preparation tool were useful things became clear.

Second, there was a tendency to the aroma the selected children and suitable for each scene. There were many negative evaluations for the description of the scene, such as “Explanation about Cause of Illness”, “Explanations for Symptoms of Illness”, and “Explanations for Treatment to Illness”. In those situations there were many negative evaluations, children chosen the most favorite Orange-Sweet. In addition, there were many positive

evaluation scenes that attempts to positive feelings, such as child support or praise. In the scene there were many positive evaluations of these children chose Ylang-Ylang second favorite. Therefore, it was effective for children as a whole presents the favorite aroma.

6. Acknowledgment

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7. Examples Citations

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