

Study on the Effectiveness of Coloring on Physical and Mental Health of the Elderly in Adult Daycare Centers

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Abstract—It has been reported that coloring provides a wide-range of health benefits for all ages, especially the elderly. Many nursing homes started to apply coloring as a routine activity for their residents in Japan, and its usefulness is expected. As the rapidly declining birthrate and aging of the population continue, it is necessary to develop new activities to improve the lifestyle of senior adults. The purpose of this study is to assess the effectiveness of coloring therapy for the elderly on their mood states, and to investigate whether there is a correlation between color and the mood stage while coloring. A daily experimental scheme is proposed for the elderly in a daycare center by providing purposeful line drawings with concrete elements.

Keywords—coloring; art therapy; elderly; daycare center.

I. INTRODUCTION

As Japan enters the super-aging stage, the number of people certified for long-term care/support has been increasing. Citizens over the age of 65 account for 26.7% of the country's population, and only around 1.7 million care workers are available for almost 6.2 million individuals requiring special attention [1]. This increase in elderly per caregiver ratio results in a heavy burden for the worker and a reduction in quality care. In response to this, many nursing homes arrange activities beyond daily care to lessen stress on caregivers and provide a better living environment.

Recently, a number of nursing centers started applying 'coloring' as a routine activity, since it has been reported that coloring books have a wide-range of therapeutic and health benefits [2]. Furthermore, related research proved that the use of coloring in non-pharmacological treatment made a positive impact on patients with various diseases of aging, like cognitive disorders and disabilities. Hattori et al. [3] found significant improvements in the vitality and quality of life on patients with mild Alzheimers disease. Moreover, it is suggested to be an effective stress reducer for persons with intellectual disability [4], while cardiac rehabilitation patients also experienced a greater relaxation and positive mood response after the coloring therapy [5]. However, although the use of coloring books is encouraged as a pleasurable activity, it is not considered as professional art therapy [6].

In this regard, the purpose of this study is to determine

the effectiveness of coloring on physical and mental health of adult daycare center users, and provide evidence on whether or not this activity affects the elderly. This paper is structured as follows. In Section I, the current state of Japanese elderly care and coloring as a therapy is introduced. In Section II, general information of the cooperative facility is given, and in Section III and IV, the methodology and preliminary study are described, respectively. Finally, a brief discussion and conclusion for the current study progress are given in Sections V and VI.

II. DAYCARE CENTER

For this research, a daycare center in Ibaraki, Japan, was visited. This facility nurses 32 senior adults in need of Long-Term Care(LTC) / Support, 11 males and 21 females, ranging between the age of 60 and 105, with a mean age of 87. According to the Japanese Ministry of Health, Labor and Welfare, the level of care is classified from Support Level 1(Needs social support and partial assistance with ADLs but may maintain or improve functions), to Care Level 5 (maximum demand for full service) [7]. Following this classification, the users of the

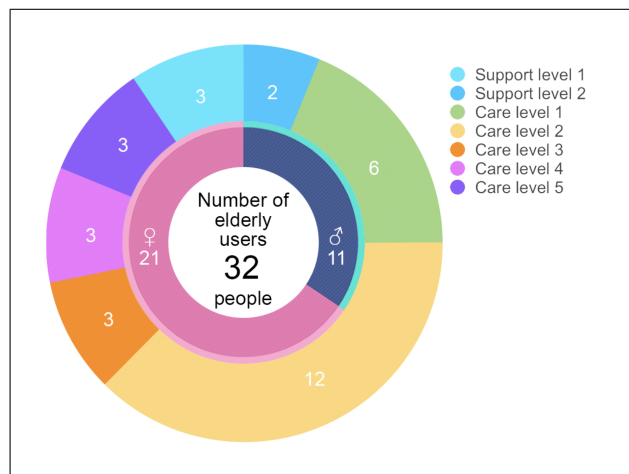


Figure 1. Number of Elderly Users and Care Levels

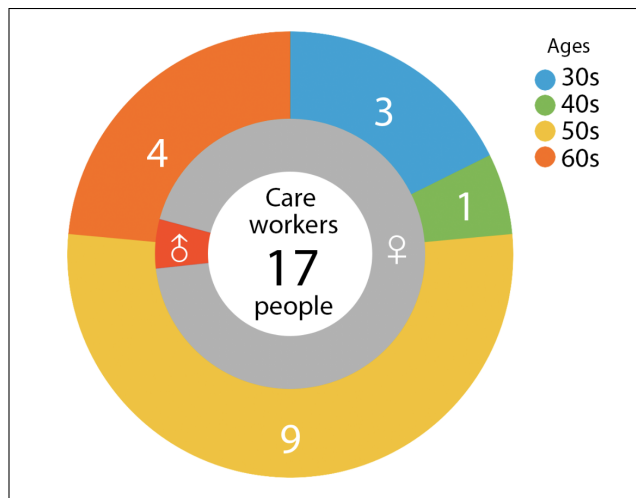


Figure 2. Number, Ages and Gender of Care Workers

care center are distributed as presented in Figure 1, while 81% of the elderly able to do coloring are below Care Level 3.

On the other hand, Figure 2 shows that from the 17 care workers at the daycare center, only one is male. What is more, the majority of carers are concentrated on the 50-60 age range group, while no one is in their twenties.

III. METHODOLOGY

This study included a total of N=30 elderly. Even though most of the participants are under Care Level 3, they are more or less suffering some common geriatric disease, such as: hypertension, heart diseases, bone and joint pain or diabetes. In addition, some of them are observed to have different degrees of progressive memory loss and cognitive impairment, namely suspected of having Alzheimer’s disease (AD). For this reason, in order to avoid causing discomfort, the length of each coloring time and the complexity of the drawings were designed as stated below.

A. Drawing Design

Considering cultural influences, Japanese elderly prefer contents which are familiar and related to their past. To elicit emotion and empathy, three themes were chosen: ‘Flowers’ and ‘Traditional Objects’ (Figure 3). The contents of these line drawings are colorless and were previously tested with the elderly to not be difficult for the subjects.

B. Procedure

Firstly, the participants, after signing an informed consent, are presented with a set of 12 pre-determined colored pencils

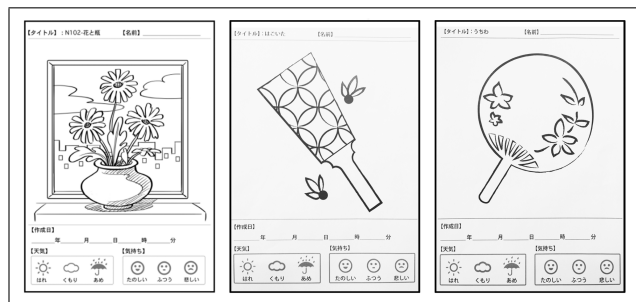


Figure 3. A Sample Drawing From Each Theme



Figure 4. Answer Icons

and line drawings. Coloring time is divided into two sessions of 30 minutes each. On the first session, the subjects will color an specific drawing, whereas, on the second session, the elderly are free to choose which drawing to color.

Secondly, before starting coloring, the subjects are asked to record the ‘date’, ‘weather’, and ‘mood’ at the time of the activity. To account for participants with mild cognitive impairment, each answer uses easy to understand icons as shown in Figure 4.

Finally, the finished coloring works are collected and scanned to build a digital database. Then, the ‘color’, ‘drawing’, ‘blood pressure’, ‘hearbeat rate’, ‘body temperature’, ‘date’, ‘weather’, and ‘mood’ elements are analyzed to find relationships between the activity and change on the elderly. Furthermore, a color analysis program will assess color usage, line pressure, and line consistency of each work.

IV. PRELIMINARY STUDY

For the purpose of collecting design data, a preliminary study was conducted at the daycare center. A pilot study with prototype drawings (Figure 5) showed that most of the elderly were willing to try coloring. During the activity time, the atmosphere became lively and relaxed. In addition, two opposite phenomena were perceived: some of the subjects were extremely devoted and refused to communicate with the outside world; while some actively communicated with people, showing a significant social desire.

Additionally, Figure 6 presents the coloring works of one subject (age 92). This female participant is a farmer living with her son and daughter in law, husband deceased. According to the information provided by the daycare center, she has been attending this institution for 3 years, 6 times per week, and suffers from astigmatism and arrhythmia. On the other hand, during the activity, she showed careful thinking while filling the line drawings. Moreover, some of her personality traits made detectable during the experiment were: will not say anything when depressed, murmurs while drawing if feeling angry, gets easily angry when remembering bad experiences, and goes along with other people.



Figure 5. Pilot Study on Coloring

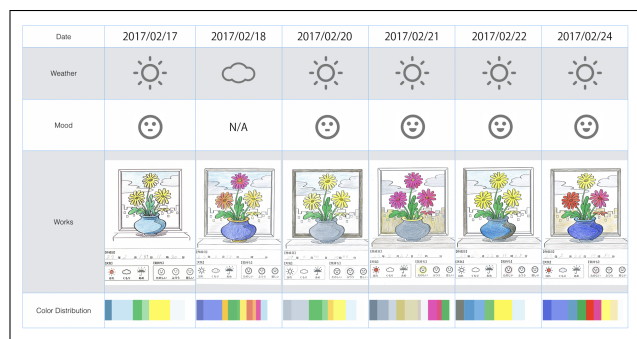


Figure 6. Collected Data from a Subject

V. DISCUSSION

This study found that the following points need more strictly control for the upcoming experiment. On one side, there are many factors of external interferences on the processes of coloring and not all of the elderly can finish their works everytime. On the other side, the pilot study did not found any significant relationship between the emotion of subject and the color they have used. Therefore, in the upcoming experiment, the study will introduce the experiment more specifically to the elderly, and briefly interview them about their feeling while coloring to have more information to analyze.

VI. CONCLUSION

The purpose of this study was to determine the effectiveness of coloring as a therapy for elderly nursing home users, and provide evidence supporting the positive effects that coloring can make on mental and physical health. A daily experimental scheme was proposed by providing meaningful line drawings with figurative elements to the elderly, to collect, analyze and track their daily mood.

From the guidelines presented in this paper, a three months research will be conducted at the daycare center to gather and process the data.

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