

1

Let's Do as Friends Do: An Approach for Encouraging Social Behavior Transformation

Akinari Sakai¹, Takashi Hamatani¹, Keiichi Ochiai¹, Toru Otaki¹,
Takashi Suzuki¹, Satoshi Hiyama¹, Akira Yamada¹, Takuya Shirai¹,
Yutaka Arakawa²

¹NTT DOCOMO, INC., ²Kyushu University

Abstract

The importance of taking action for individual health and a sustainable environment has been growing. To ensure that people make their behaviors better, this study focuses on social behavioral transformation techniques and presents *Ainori* approach. *Ainori* is a method of making statements easier by declaring the same goals as others, rather than doing it voluntarily. Our evaluation revealed that *Ainori* could successfully encourage people to declare their goals for healthcare and sustainability.

1 Introduction

Although people set various goals in life and strive to achieve them, in some cases it is not easy to take action due to insufficient motivation. Empowering people to act on their goals has the potential to solve several social problems. Since environmental problems and lifestyle-related diseases have become serious, daily behavior of individuals is indispensable.

A public commitment, declaring one's goal to others, is known as an effective means of achieving goals [1]. Having consistency in word and deed makes it easier to take behavior. In addition, awareness that others are watching the goal statement and its execution is motivating. On the other hand, making a statement is also a behavior, and there is a possibility that the statement

itself has psychological barriers. Therefore, we focus on encouraging the act of making a goal statement itself.

In this study, we propose a social behavior transformation method that incorporates the concept of *Ainori*. Participating in the efforts of others and working together is called *Ainori*, a concept well-known in Japan. The original meaning is that people going to the same destination ride and move in the same car. Here, if we replace the destination with a goal and the car with a statement, *Ainori* means making the same goal statement as others have made. Since *Ainori* is easier than voluntarily declaration, it may remove the psychological barriers to making a goal statement.

To verify its effectiveness, we built social media for goal statements. In the verification experiment, it was confirmed that goal statements were activated by 88.1% due to the effect of our proposed method *Ainori*.

2 Key Idea and Approach

It is known that people can achieve their goals with a high probability by making a public commitment [1]. Therefore, it can be said that it is effective to make a goal statement as one of the approaches for behavior transformation. While the statement leads to the action, some people find it difficult to make the goal statement itself. Accordingly, making a goal statement is also considered as a behavior transformation.

One of the most important factors in behavior transformation is the concept of self-efficacy. Self-efficacy is the recognition that one has the self-confidence of achieving a certain goal [2]. In fact, there is a correlation between the strength of self-efficacy and the activeness of behavior. In other words, caring what others think and having fear of goal failure become psychological barriers to behavior. It makes it difficult to state a goal alone or behave alone.

To address such an issue, an approach named Teaming may work effectively [3]. Teaming has been shown to encourage behavior transformation by bringing together members of the same community and having them work toward the same goal. This is because communication with others influences behavior. In fact, there is research to understand listeners' emotional reactions toward speaker utterances and content [4]. That is, it is implied that having the same goal can reduce psychological barriers.

Although Teaming is an effective approach, how to encourage people to join the team is important. Therefore, in this research, we propose an approach that incorporates the idea of *Ainori* into Teaming. *Ainori* means declaring the same goal as others, instead of making a spontaneous statement. Even if it is difficult for people to state their own goal, providing an environment where people can state the same goal as others reduces their psychological barriers to the statement. This is the contribution that introduces the concept of *Ainori*

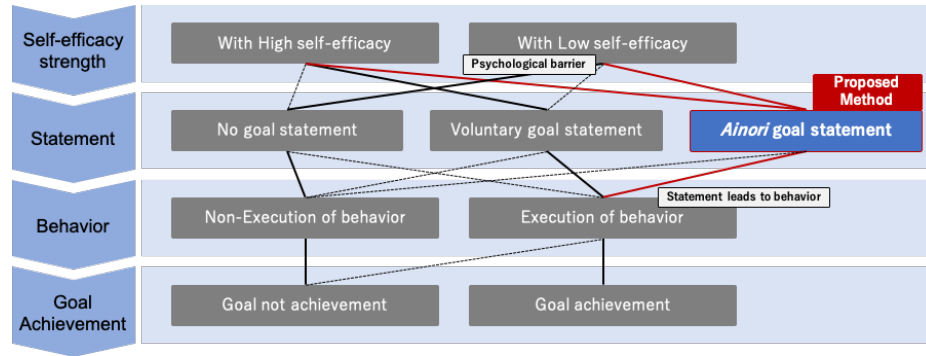


FIGURE 1: Behavior transformation flow.

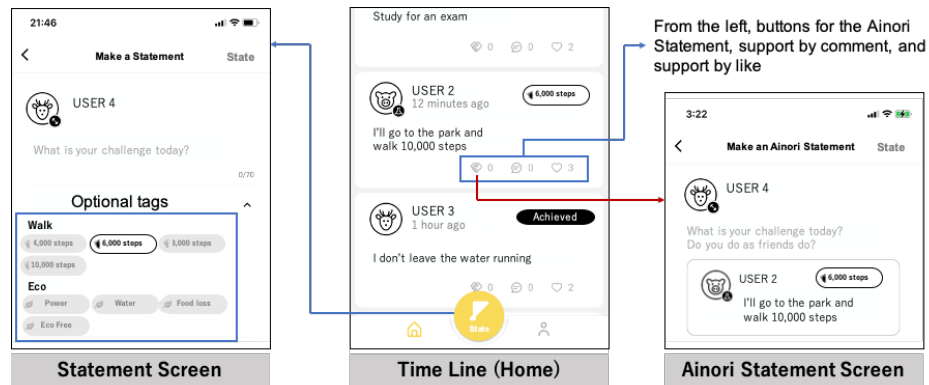


FIGURE 2: Screen image of the goal statement application.

into public commitment. It makes it easier even for people with low self-efficacy to state their goals (Fig. 1). In addition, we aim to achieve the effect of the goal statement by making the team of *Ainori* public rather than private.

3 Implementation and experimental protocol

To verify the proposed method, we implemented a research application which is a social media that allows users to state and share their goals with others. As shown in Fig. 2, it has a standard goal statement function and *Ainori* goal statement function as basic functions.

Each user's goal statements are displayed on all users' timelines (the first screen to appear upon launching the application). After watching the timeline,

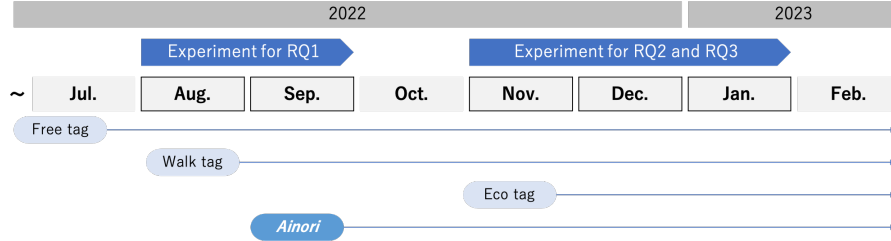


FIGURE 3: Calendar of experiments and application function releases.

users can perform actions such as sending stamps, sending comments, and stating the same or different goals.

Also, as shown in “Optional tags” in Fig. 2, users can add two types of tags to any statement: walking for health and eco for the environment. Here, statements are classified into three domains: “walk statement” tagged with the number of steps, “eco statement” tagged with eco, and “free statement” without a tag.

In order to collect the data needed for validation in this study, we provided an application to approximately 800 students at Kyushu University (Japan). We collected and analyzed data from August 2022 to January 2023. Fig. 3 summarizes the implementation timing of the functions and each tag in the application, as well as the timing of each experiment explained in Chapter 4.

The average number of active users per day during the verification period was approximately 50. Here, an active user is defined as a person who makes a goal statement or supports another’s goal statement by like on that day.

To verify the effectiveness of the proposed method, we first released the application without *Ainori* statement function and then added the function. Also, *Ainori* is assumed to have an original statement. Thus, we administrator made a statement for one of the domains daily and pinned it to the top of the timeline to provide the goal statement for *Ainori*. Therefore, users can choose all statements, including one presented by the administrator.

In addition, users have agreed to terms of service that prohibit providing information that is untrue. Therefore, we basically verified it on the assumption that there was no false.

4 Evaluation

Here, we evaluate whether *Ainori* is effective or not for motivating goal statements. We set three research questions and answer them to confirm the effectiveness of *Ainori*.

Group	walk/day	free/day	WAV
Without <i>Ainori</i>			
<i>Ainori</i>	6.1	8.6	0.71
<i>Ainori</i> (walk)	10.0	7.5	1.33
<i>Ainori</i> (free)	9.4	15.6	0.60

TABLE 1.1: Results of goal statement activation.

Domain	Increase in Acceptability
Walk	3.29
Eco	11.13
Free	8.10

TABLE 1.2: The growth rate of users who make an *Ainori* statement only.

RQ1: Does Ainori motivate the user’s goal statement?

We first validate whether *Ainori* is able to motivate the user’s goal statement. To validate that, we first deployed our experiment application without *Ainori* function, then we released *Ainori* function to the application users. Comparing the number of statements makes the effectiveness of *Ainori* clear.

In the analysis, we focused on users who were using the application in August to reduce the impact of differences in the timing of participation. In addition, we used logs from as close a time period as possible to reduce seasonal effects. Then, since the release of new functions activates the use, we used logs that a few days have passed after the release of each function.

Considering that the total number of statements may vary from day to day due to environmental factors, we defined evaluation metrics as the value obtained by dividing the number of people who started with the walk tag by the number of people who started with the free tag. We name this evaluation metric WAV (Walk Activation Value). This index increases as more people state with a walk tag, and conversely, it decreases as more people state without a tag.

For verification, three groups were classified and aggregated according to the period instead of pre-grouped: (1) without *Ainori*; (2) a group in which the application encouraged *Ainori* by a walk statement; and (3) a group in which the application encouraged *Ainori* by a free statement. We note that the feasibility of daily walking activity is affected by environmental conditions (e.g., temperature). To mitigate such seasonal effects, we set the experimental period without *Ainori* (1) to August, and the period of *Ainori* (2) & (3) to September. Therefore, in September, there are two types of days, encouraged walk statements and encouraged free statements.

Table 1.1 shows WAV of *Ainori* (walk) is 1.33. Comparing WAV of without *Ainori* and WAV of *Ainori* (walk), the improvement is 87.3%, indicating that the intervention activated the walk statements. In addition, WAV of *Ainori* (free) is 0.60, which is lower than WAV of without *Ainori* 0.71, so it can be said that the intervention activated the free statements. From the above, the result confirmed the hypothesis that *Ainori* can activate goal statements.

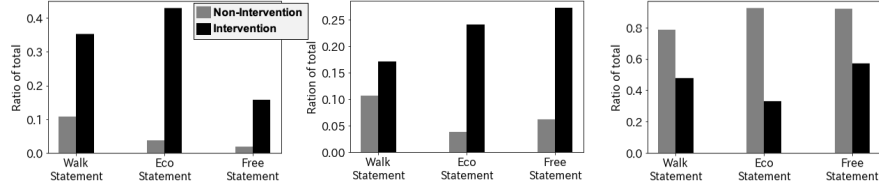


FIGURE 4: Changes in statement population rates due to intervention in each domain. From the left, *Ainori* statements only, both *Ainori* and standard statements, and standard statements only.

RQ2: Do people prefer *Ainori* when setting their goals?

In this review, we examined whether *Ainori* is more receptive than a voluntary goal statement. This experiment was conducted from November 2022 to January 2023 when each tag existed simultaneously. As a specific evaluation, we compare the number of people who only state their goals between with and without intervention; we calculate them in each domain. Besides, evaluation values were aggregated in the logs of all applicable intervention days, not in daily logs. Thus, it is not randomly grouped in advance.

As shown in the left graph of Fig. 4, we confirmed that there will be more people who make *Ainori* statements only. This indicates that it is easier to state a goal by *Ainori* than by stating it voluntarily; it implies that *Ainori* is effective in encouraging people with low self-efficacy to state a goal.

RQ3: Is *Ainori* more receptive in particular domains?

We have summarized the amount of increase in the number of users who only made statements by *Ainori* in each domain in Table 1.2 based on Fig. 4. Thus, the aggregated data is the same as RQ2.

The amount of increase in the eco domain was 11.1 times, which was the highest result among the three domains. With regard to this, we can also interpret that eco behavior is inherently difficult. In light of this result, we can consider the following two reasons: 1) since eco behavior is for society rather than for the individual, the priority is low; and 2) for goals that require long-term behaviors such as eco, it is not easy to obtain motivation due to small effects of daily behaviors. As a result, we confirmed that *Ainori* is effective for goals for which making a statement is originally difficult.

5 Conclusion

In this study, we have proposed one of the social behavior transformation methods, *Ainori*, which encourages people to state the same goals as others

with the aim of behavior transformation. We implemented a social media application and verified our method to confirm the effect of *Ainori*, which activated goal statements about 87.3%. In addition, we obtained the result that the *Ainori* acceptability improved in all domains of walking, eco, and free. Especially, *Ainori* is effective for goals for which it is originally difficult to make a statement as in the case of eco behavior.

While we have confirmed that *Ainori* activates goal statements, we are yet to confirm how *Ainori* removes psychological barriers to action and increases self-efficacy. In future work, we would like to conduct an analysis that combines the element that expresses self-efficacy [5] with behavior transformation through *Ainori*.

Furthermore, our experiments were conducted in Japan, which is very community-oriented. We have not confirmed whether it is equally effective in cultures that emphasize individualism over collectivism. Therefore, We would like to further verify the correlation between community orientation and *Ainori*.

Acknowledgement

This study was approved by Kyushu University Ethics Review Committee. We would like to express our special thanks of gratitude to imago co. ltd. that cooperated in our research.

Bibliography

- [1] Wokje Abrahamse and Linda Steg. Social influence approaches to encourage resource conservation: A meta-analysis. *Global environmental change*, 23(6):1773–1785, 2013.
- [2] Albert Bandura. Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, 84(2):191, 1977.
- [3] Amy C Edmondson. *Teaming: How organizations learn, innovate, and compete in the knowledge economy*. John Wiley & Sons, 2012.
- [4] Motoki Sakai, Masaki Shuzo, Masahide Yuasa, Kanae Matsui, and Eisaku Maeda. Biological and behavioral information-based method of predict-

ing listener emotions toward speaker utterances during group discussion. *Activity and Behavior Computing*, pages 189–207, 2021.

- [5] Ralf Schwarzer and Matthias Jerusalem. Generalized self-efficacy scale. *J. Weinman, S. Wright, & M. Johnston, Measures in health psychology: A user's portfolio. Causal and control beliefs*, 35:37, 1995.