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# Designing an expressive writing platform for young adults in Korea

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## Abstract

Many young adults face mental disorder risk. Especially in Korea, mental disorders such as depression have become the main cause of the high suicide rate among young adults and therefore have become serious social issues. In the meantime, the outstanding popularity of social media and high penetration rate of smartphone in Korea create a novel opportunity to utilize information and HCI technology for young adults in community settings. This paper describes an ongoing project of developing an online intervention platform that can help depressed young adults alleviate their depressive moods through non-clinical methods such as expressive writing. Based on a pilot study, we identify how our expressive writing platform improves moods of young adults who participated in our study. We discuss early findings and design implications of the research.

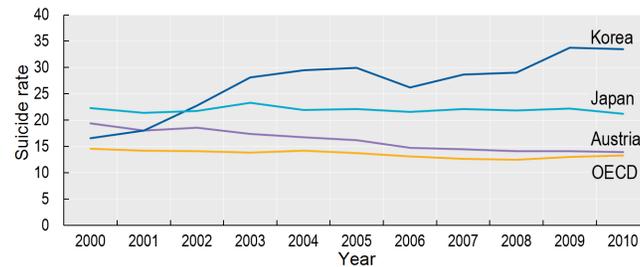
## Author Keywords

Mental health, intervention, application, social media, community setting

## Introduction

The number of young adults who suffer from depressive symptoms has increased over the years [4]. Even when depressive symptoms do not come to the surface, depression can result in serious problems such as

suicides [6]. Especially in Korea, mental health problem is more severe, which is considered the leading cause of death of young Koreans is committing suicide [8]. Korea also has the highest suicide rate among OECD countries (see Figure 1).



**Figure 1:** Trends in suicide rates (per 100,000 persons) from 2000 to 2010

Traditional clinical ways such as one-to-one interviews with a psychiatrist are extremely helpful to young adults suffering from mental health problems. However, many young adults hesitate to visit psychiatrists due to the perceived stigma [12]. For this reason, the intervention programs that can relieve psychological burdens of young adults in a non-clinical setting should be considered.

We have built an interdisciplinary team including data scientists and psychiatrists to effectively utilize information and HCI technologies, given that Korea has a high penetration rate of mobile devices such as smartphones [13]. We developed a web-based application, which utilized the Facebook API (Application Programming Interface) to crawl participants' behavioral data on Facebook. In addition, the application provided users with tips, which can help improve mood and understand depression [5]. We previously conducted an

experiment using the application and as a result, we could identify the specific patterns of online activity as well as the certain traits of depressed users on Facebook. This study was published in a leading journal covering eHealth and healthcare [9].

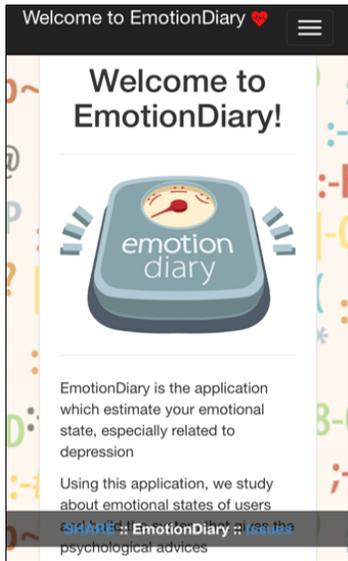
In this paper, we added two functions to an application to perform the intervention experiment. The first function is assessing users' daily emotions by asking him or her to answer the questions related to moods. The second one is called *expressive writing*, which is writing about impressive experiences and feelings from those events. The expressive writing is a widely used psychological tool to improve mental health of even non-clinical populations [1]. We introduce our experiment and discuss early findings and design implications of the research.

## Research on mental health and HCI

Recently research on mental health and HCI have received much attention. One team at IT University of Copenhagen built a monitoring system for bipolar patients [2]. Other researchers designed a technical intervention to assist women diagnosed with mental disorders [11].

There are two broad approaches of research improving health through online platforms. The first is detecting patterns of certain groups by analyzing unstructured large-scale data [9], and the second is conducting an experiment to make each participant change behaviors or level of symptoms influenced either from others [7, 10]. The second approach aims at a much challenging goal and hence has critical limitations.

Conducting experiments or providing practical services to the public can accompany unexpected risks such as an unintended disclosure of private information, leading to a



**Figure 2:** Snapshot of the mobile application

public outcry. Therefore it is crucial to utilize the HCI methodologies to closely examine which features will affect humans in practice before the experiments or services to the public.

### Online intervention for improving moods

We describe the application we developed (see Figure 2) and intervention experiment. While this is an ongoing project that aims to reach a large population of young adults, we present early results from a pilot study of 50 university students in Korea.

On a daily basis, we evaluated participants' emotional states by asking participants to answer the following questions regarding their general moods:

- How was your general mood today?
- How strongly did you feel such mood today?

Five-point Likert-scales were used for the above questions: (very bad, bad, so so, good, very good) and (very weakly, weakly, average, strongly, very strongly), respectively. We required students to write what they experienced and how they felt from that event via expressive writing. Finally we estimated participants' perceptions of emotional states by asking participants to rate from 0 to 10 regarding the following questions:

- How much were you affected from your experience?
- How well did you perceive your emotional states?

Before and after the experiment, we asked students to answer a well-known depression survey, CES-D (Korean version) [3], to identify changes in their depressive symptoms. All processes of the experiment were performed online through an application.

### User feedbacks on experiment

Participants gave us favorable responses, and we found that the expressive writing platform had positive effects on participants' moods. Here are some quotes from the participants:

*"When I wrote about my feeling I could think about my emotion and take time to reflect on myself."*

*"I felt much relieved as I verified my emotions."*

These feedbacks imply that expressive writing and identifying moods are helpful for young adults in coping with emotional difficulties. However, some participants suggested ways to improve the intervention method:

*"I was bored because I always answered the same questions. I'd like to see different questions."*

*"User interface can be improved. It was not intuitive to use the application."*

Feedbacks gathered so far suggest that personalization and user-friendly interfaces are needed in our application, which we further place to explore.

### Discussion and Future Directions

It is important to develop an online platform, which help improve moods of young adults in a non-clinical setting. We designed an online intervention platform and qualitatively verified the positive effects of this application through conducting an experiment with young adults in Korea. In the future, we hope to identify which traits of users in Facebook are associated with improvement of depressive moods during the intervention. The results can lead to efforts within the research community to understand relation between the online intervention and the changes in emotional states of each individual as well as to yield more personalized intervention services for

improving mental health.

Based on our early findings, we can propose two design implications. First, we consider social network platforms can provide a structured template that facilitates expressive writing to improve everyday moods for its users. Second, there seems a design opportunity to develop diary-like online services for young adults. Our study implies that writing emotions daily, even through online platform, can enhance one's moods. These implications may lead young adults who use online medium to alleviate their depressive moods.

We will further develop and apply the HCI framework to bigger community settings such as high schools. Through carefully designed and controlled experiments, we hope to develop an intervention framework for expressive writing to a larger group of young adults in Korea.

### Acknowledgements

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