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*RESEARCH ARTICLE*

# SUBJECTIVE WELLBEING OF BANGKOK CITIZENS USING THE EXPERIENCE SAMPLING METHOD

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## *Abstract*

The question of what makes people happy still needs to be figured out. We used the Experience Sampling Method (ESM) to collect data from the participants. Our participants are Bangkok citizens and are required to use the LINE application, the most famous chatting application in Thailand, for connecting to our chatbot named "AI-oon", developed for sending questionnaires to our participants. AI-oon would send surveys consisting of 2 questions: (1) What are you doing at that moment?, and (2) How will you rate your emotion?. We eventually analysed the data from 79 participants that contributed for 7 consecutive days. Then, we discovered that eating tends to be the activity that shows the highest level of happiness. On the contrary, doing housework and working/studying revealed the lowest level of happiness. Interestingly, we found out that Baby boomers and Generation X are significantly happier than Generation Y and Generation Z. We expect this research could provide some useful information for further studies in order to find the cause of the happiness level in each generation. Hopefully, it could be beneficial for governments and organizations to find appropriate measures and solutions to tackle their people's stress and enhance their happiness levels.



## Introduction:-

Do activities influence the happiness level? This question has been raised by many researchers and has been examined through some studies. One of the promising ways to collect information is to use the Experience Sampling Method (ESM). The main point of ESM is to gather immediate responses from each individual about the context and content of their daily lives, including circumstances and the time of a day (Hektner*et al.*, 2002). Participants would receive beeps by their electronic devices (i.e., mobile phones and tablets) several times a day over a certain period. The beeps notify the participants to answer short and real-time questionnaires. ESM has the advantage of reducing the error from retrospective recall bias. This is due to the fact that retrospective reports rely on long-term memories whereas ESM focuses on the moment-to-moment experience (Shiffman*et al.*, 2008). Since ESM is based on momentary responses many times a day, it integrates technology into the procedure, which researchers could use software applications as an effective tool (Berkel*et al.*, 2017). However, the drawbacks of ESM include the beeps that may interrupt the participant's activities during the day; therefore, could lessen the participant's motivation to contribute to the study (Scollon*et al.*, 2003).

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A longitudinal study was conducted over one week. We developed a chatbot called "AI-oon" to send messages to participants via Line. Each participant would need to answer two short questions regarding the activity and mood at the time that the messages were sent. The main purpose of this research is to examine the subjective wellbeing of Bangkok citizens. Another purpose is that the participants could receive a self-report of their fluctuations of emotions and activities in 1 week. We collected the participant's data in a consecutive seven days.

## Review Of Literature:-

Experience Sampling Method (ESM) is a part of momentary assessment techniques (Hektner*et al.*, 2007). ESM is unique from other techniques by achieving a great level of response's immediacy. It combines technology with the study to collect data. Technology has developed from the beginning until the present, resulting in new advanced ways for receiving data (Berkel*et al.*, 2017). Focusing on the past when ESM was firstly initiated, Reed Larson and Mihaly Csikszentmihalyi used ESM to study the link between adolescent's aloneness and their emotion. 25 adolescents were given an electronic pager which beeped at random times in a week (Larson & Csikszentmihalyi, 1978).

In 2003, an ESM research was conducted by Csikszentmihalyi and Hunter with the 800 adolescent participants from Alfred P. Sloan Study of Youth and Social Development. They were required to use a programmable wristwatch that would beep random 8 times a day and complete some open-ended questions including the activity, the level of challenging feeling and the individual's skill for that activity at the moment. The research demonstrated that teenagers were happiest on Saturdays and least happy on Sundays. Also, their happiness level during lunchtime was greater than that at the beginning of the day. In addition, the highest level of happiness was shown to be when chatting with friends. The data illustrated that being alone resulted in the lowest happiness level.

Since the age of globalisation, people are more likely to use mobile phones than in the past. Consequently, nowadays, ESM is carried out by using mobile applications. In 2013, Mackerron and Mourato conducted an ESM study and developed a software application named "Mappiness" to examine the positive relationship between subject wellbeing and exposure to the natural environment. The participants were residents in the United Kingdom. As the default, the application sent signals to participants twice a day. However, the participants could choose the frequency of the beep as they prefered. The application used Global Positioning System (GPS) to determine the location, one of the variables of the study. The data from the participants were encrypted and researchers could not identify each individual's profile. The results revealed that the participants were happier when they were exposed to the natural environment.

ESM has also been adapted to provide findings in other fields such as psychopathology (Myin-Germeys*et al.*, 2009), education (Zirkel *et al.*, 2015), and organizational behaviour (Ritchie *et al.*, 2012). Nevertheless, ESM has some disadvantages. ESM requires consistency and accurate record from participants, which may lead to participant's lack of motivation to complete the questionnaires (Germeys*et. al*, 2009).

## Methodology:-

This longitudinal ESM study was conducted to determine the relationship between activities and momentary subjective wellbeing (SWB). We developed a chatbot named "AI-oon" to send questionnaires to our participants. "AI-oon" was deployed in LINE, a freeware application on electronic devices. We chose LINE as a platform for collecting data due to its high popularity among Thai people with current 49 million active users. Our chatbot could be used on smartphones and tablets. Participants could scan the Quick Response (QR) code or enter the chatbot's LINE identification number (ID). After they had added our chatbot into their LINE friends, the chatbot would automatically send them a link for registration.

Prospective participants needed to fill in their date of birth and gender, and further indicate their consent to taking part as in Figure 1. The anonymous participants were all Bangkok citizens. This project was promoted via social media platforms (i.e., Instagram, Facebook, and Line). After finishing the registration form, each participant would receive our daily messages at 09.00, 14.00, and 19.00. They were required to continuously answer the questionnaires for 7 days. The questionnaire consisted of 2 questions as in Figure 2: (1) What are you doing at that moment? , and (2) How will you rate your emotion?. Emotion variables included a 1-5 scale. Both questions provided icons that participants could choose the one that was most accurate to them. However, some additional activities were not listed in our icon list. Therefore, we provided an "others" icon, which participants could freely fill in the activities

they did. The data was encrypted and transmitted to our backend server. Google BigQuery and Microsoft Excel were used for data analysis once the data were completely gathered. Apart from this, we also created a website (www.ai-oon.com)providing the guideline of how the chatbot works. All the instructions were in the Thai language.


**Figure 1:-** Registration form after adding "AI-oon" chatbot in LINE application.


**Figure 2:-**The example of the questionnaire with 2 main questions (activity and emotion).

## Results:-

From the study, there are 115 participants registered. The responses from a few participants including 34 individuals who did not complete the 7-day period and 2 individuals who entered an invalid date of birth were eliminated before the process of data analysis. Finally, the data of 79 participants were analysed which are 66 females (81.16%) and 13 males (18.84%). Different ages were grouped into 4 generations. The majority of the participants are Baby Boomers as shown by 29 (36.70%). Generation Z comprises 30.38% of the total (N=24), while Generation Y, 25 to 41 years old, and Generation X equally account for 16.46% (N=13).

**Table 1:-** Demographic data asked in the registration form.

| | Gender | | Generation | | | |
|---|---|---|---|---|---|---|
| | **Female** | **Male** | **Generation Z (12 - 24 years old)** | **Generation Y (25 - 41 years old)** | **Generation X (42 - 56 years old)** | **Baby Boomer (57 - 75 years old)** |
| **N** | 66 (81.16%) | 13 (18.84%) | 24 (30.38%) | 13 (16.46%) | 13 (16.46%) | 29 (36.70%) |

Focusing on the level of happiness during doing particular activities, the result shows that eating contributes to the highest level of subjective wellbeing (M = 4.36). The level of subjective wellbeing from watching television (M = 4.18) and exercising (M = 4.17) are followed respectively. In contrast, both doing housework and working/studying lead to the lowest level of subjective wellbeing (M = 3.52).

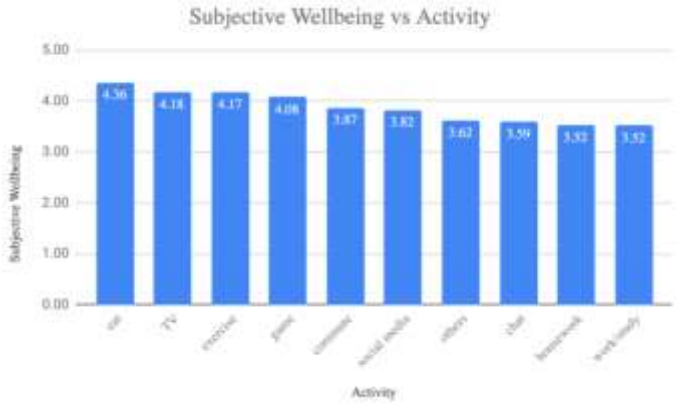


**Figure 3:-** Average subjective wellbeing from all participants in each activity ranging from highest to lowest.

Comparing the data by gender, males and females, the average subjective wellbeing of males is 3.76 (SD = 0.54) while that of females is 3.89 (SD = 0.55) as in Figure 4. However, there was no significant effect for gender on SWB ($t(77) = 0.019$, $p = 0.51$).

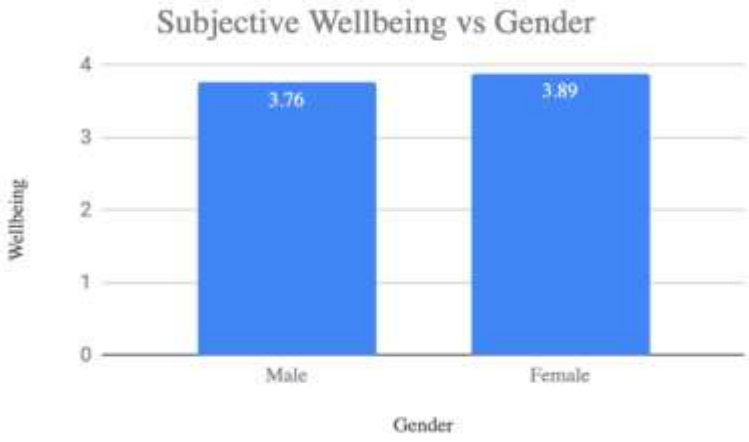


**Figure 4:-**Average subjective wellbeing of males and females.

When focusing on the average subject wellbeing level of each generation. Generation X is the happiest generation (M = 4.16, SD = 0.55) and is followed by Baby boomers (M = 4.13, SD = 0.44). On the contrary, Generation Y (M = 3.56, SD = 0.43) and Generation Z (Mean = 3.58, SD = 0.48) have a massive lower happiness level. The multiple *t*-test was analyzed for each pair as shown in Table 2. From the analysis, Generation Z demonstrates significantly lower subjective wellbeing than Generation X ($t(35) = -3.34$, $p = 0.002$) and Baby Boomers ($t(51) = -4.31$, $p = 0.0001$). Similarly, Generation Y also depicts significantly lower subjective wellbeing than Generation X ($t(24) = -3.12$, $p = 0.0046$) and Baby Boomers ($t(40) = -3.89$, $p = 0.0004$). However, there is no significant difference between Generation X and Generation Y ($t(35) = 0.12$, $p = 0.90$).

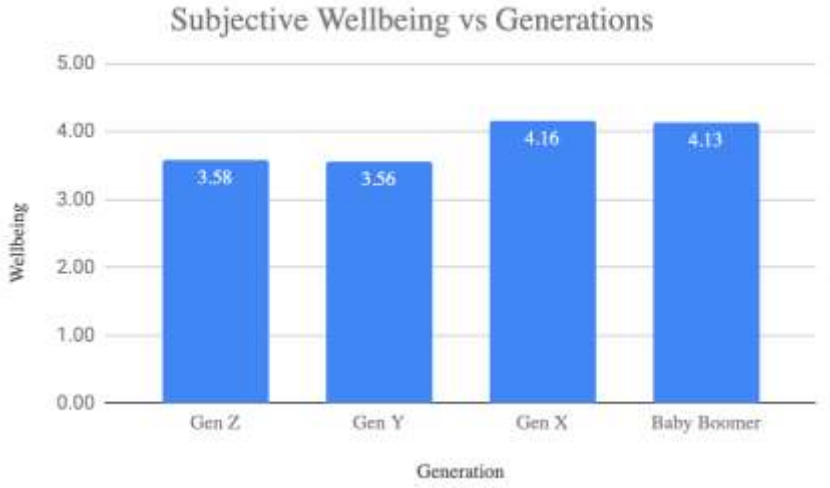


**Figure 5:-** Average subjective wellbeing of each generation.

**Table 2:-** Multiple t-tests analysis between each generation.

| **Generation** | **N** | **Average SWB** | **SD** | Generation Z | Generation Y | Generation X | Baby boomer |
|---|---|---|---|---|---|---|---|
| Generation Z | 24 | 3.58 | 0.48 | - | | | |
| Generation Y | 13 | 3.56 | 0.43 | 0.12 | - | | |
| Generation X | 13 | 4.16 | 0.55 | -3.34** | -3.12** | - | |
| Baby boomer | 29 | 4.13 | 0.44 | -4.31** | -3.89** | 0.21 | - |

*$p$< 0.05; **$p$ < 0.01

The responses from participants were collected at 9:00, 14:00, and 19:00 everyday for 7 consecutive days. Unfortunately, some participants sometimes missed to respond to the questionnaire; therefore, the number of responses each time of the day was different. However, all collected participants' responses depict that they have the highest level of subjective wellbeing during 19:00 (M = 4.00, SD = 0.87), followed by 14:00 (M = 3.87, SD = 0.94) and 09:00 (M = 3.77, SD = 0.94). The result also found that the average level of subjective wellbeing at 9:00 and 14:00 are significantly lower than at 19:00 ($t(3359) = -7.34$, $p = 0.0002$ and $t(3442) = -4.30$, $p = 0.028$ respectively).


**Figure 6:-**Average subjective wellbeing during times of the day.

**Table 3:-** Multiple t-tests analysis between each time of the day.

| Times of the day | N | Average SWB | SD | 9:00 | 14:00 | 19:00 |
|---|---|---|---|---|---|---|
| 9:00 | 1719 | 3.77 | 0.94 | - | | |
| 14:00 | 1802 | 3.87 | 0.94 | -3.06 | - | |
| 19:00 | 1642 | 4.00 | 0.87 | -7.34** | -4.30* | - |

*$p$< 0.05; **$p$ < 0.01

## Discussion:-

Although many ESM studies exist in foreign countries, this research is a pioneering ESM study in Thailand. We discovered that eating results in the highest subjective well-being(M = 4.36) compared to other activities. A plausible reason is that eating stimulates endorphin release in the brain (Tuulari*et al.*, 2017). Endorphin is a neurotransmitter linked to the level of happiness, often called feel-good chemicals. In contrast, working, studying and doing housework contribute to the lowest subjective well-being (M = 3.52). Factors inducing stress from working could be the energy-consuming job characteristics (Caplan *et al.*, 1975) and the intense work environment (Simpson &Rothschild, 1974). Thai students are encountering stress, especially high school students who are preparing for university admissions (Ponkosonsirilert*et al.*, 2020). Doing chores is also shown to be the least happyactivitywhich is similar and, on the other hand, contradicts some studies in the past. In a previous study by Hoshino *et al.*, 2016, housework is associated with depression. Nevertheless, in 2015, Hanley *et al.* mentioned washing dishes as an informal contemplative practice that helps promote mindfulness. The study was carried out during the COVID-19 pandemic when most people had to work from home and study online. The results may differ from the normal situation since psychological problems, especially depression and anxiety, could worsen during the pandemic (Jiang *et al.*, 2021). Moreover, we found out that Baby boomers and Generation X are significantly happier than Generation Y and Generation Z. The result is similar to Thai Development Research Institute [TDRI] (Chandoevwit, 2021), revealing that Baby boomers are less stressed than younger generations. Turning to the times of the day, there is a statistically significant difference in the higher happiness level during 19:00 than that of 09:00 and 14:00, which supports the former research from Guillaume *et al.* showing that people are happiest around 19.00.

## Limitations and Recommendations:-

Promising participants are limited to those with electronic devices and the LINE application which are essential tools for recording personal information, activities, and emotions. Due to the uncontrollable convenience sampling, we obtained more females than males, distinguishably. Other limitations include the delayed responses and the misinterpretation of the activity icons provided in the questionnaire. Delayed responses are dependent on retrospective memories, not the immediate experience; therefore, may result in errors.

As for the icons, a possible solution could be providing some texts to clarify those pictures. Besides, this study is conducted during the serious COVID-19 pandemic; accordingly, the happiness level may be less than that of normal situations. However, this study is for collecting data from each participant and could not provide an exact explanation for the results. Further study is compulsory for finding the rationale behind this such as why each activity leads to different levels of happiness and why the elderly (i.e., Generation X and Baby boomers) are happier than the young (i.e., Generation Y and Generation Z). Additionally, if there is another study in the future, collecting socioeconomic statuses such as education, income, and occupation can also be taken into analysis to determine the association to an individual's wellbeing.

**Appendices**

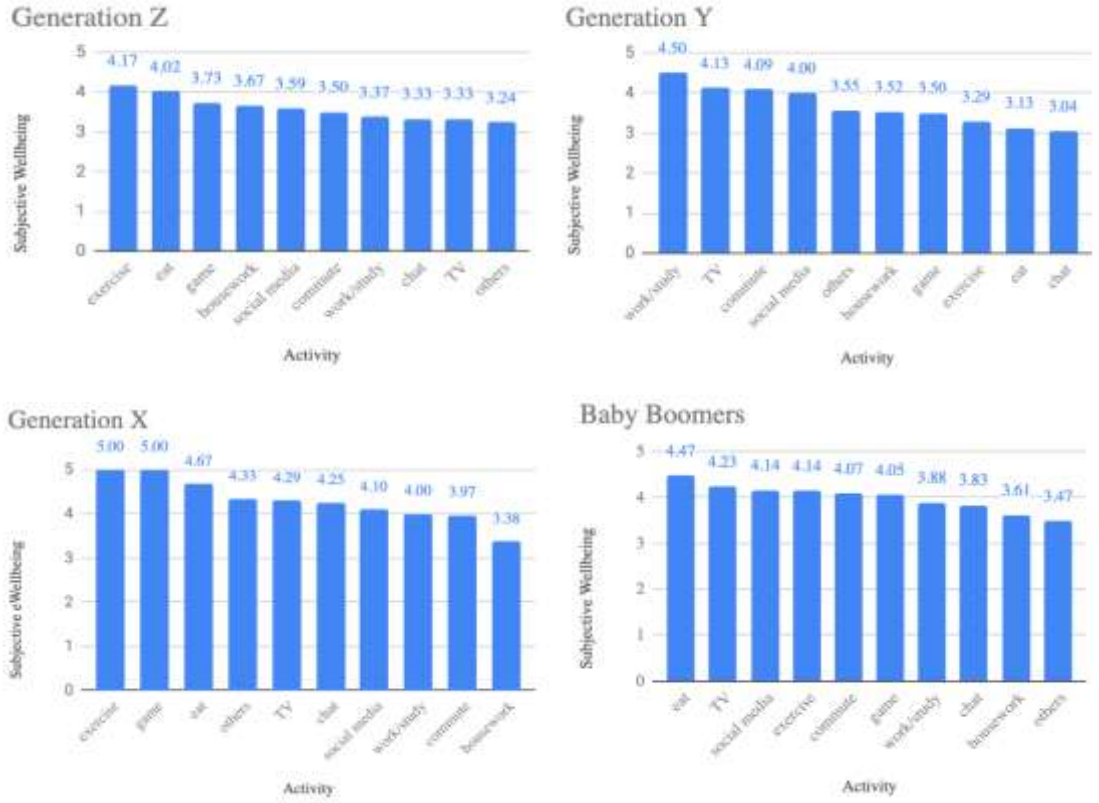


**Figure 7:-**The average subjective wellbeing of activities of each generation (from highest to lowest).


**Figure 8:-**The graph shows theaverage subjective wellbeing (SWB) on each day of week. The result demonstrates that SWB on weekends is higher than on weekdays.

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