Tomato Dice

A Multimodal Device to Encourage Breaks during Work

ABSTRACT

The COVID pandemic has resulted in many people working from home, blurring lines between work and personal time. In response, the Tomato Dice, a multimodal device, attempts to provide a fun way for people to take more effective breaks in the midst of work through timeboxing. After the dice is rolled, each side of the dice plays visual and audio feedback helping users to either take a break or work for a set amount of time. In this paper, we discussed the design process and the different modes of the dice. We also conducted a heuristic evaluation followed by a usability study which revealed that participants were mostly fascinated with the dice and were more likely to use the Tomato Dice to relax than to take breaks.

KEYWORDS

Multimodality, Timeboxing, Stressbuster, Breaks, Relaxation, Productivity, Time Management

ACM Reference format:

FirstName Surname, FirstName Surname and FirstName Surname. 2018. Insert Your Title Here: Insert Subtitle Here. In *Proceedings of ACM International Conference on Multimodal Interaction (ICMI'21). ACM, New York, NY, USA, 2 pages.* https://doi.org/10.1145/1234567890

1 Introduction

The COVID pandemic has forced many employees to shift to remote work, blurring lines between work and personal time [1]. One solution to bring back distinction between work and break times is timeboxing with micro-breaks. Micro-breaks are recommended as strategies for managing a worker's energy throughout a workday [2, 3, 4, 5]. Without microbreaks, an employee may experience greater stress, less focus and less productivity [6].

This project, the Tomato Dice, seeks to provide a way for people to take breaks more effectively through timeboxing and structured activities. Instead of spending break times on other household chores or thinking about what to do, the Tomato Dice is designed to relieve negative consequences of long continuous work hours through five relaxation modes: an Ocean Mode, a Tension Relaxation mode, a Dance mode, a Workout mode, and a Breathing Exercise mode. According to Fritz et al. [7], common break activities like smoking cigarettes or drinking coffee may seem to increase productivity on the surface. However, research suggests that the detriments of such activities (smoking - cardiovascular complications, cancer; coffee - nervousness, anxiety, and sleep disturbances) outweigh the benefits. Additionally, the authors also suggest that people who set boundaries between work and home life tend to recover more easily. Because of COVID most people have been working from home. Household chores during breaks don't support recovery as there is almost no boundary between work and home life [7]. According to Hunter and Wu [3], a characteristic of a break is performing activities that one likes. The Tomato Dice attempts to support this while helping people take relaxing breaks.

The paper begins by discussing how the benefits of the 'timeboxing' time management technique have been incorporated into the device. Next, it discusses the creation of the device including the ideation stage and the creation of a preliminary prototype. The construction of the device and an overview of each mode are then described. A usability study was implemented to test the device's effectiveness. Finally the conclusion evaluates limitations and future opportunities.

1.1 Timeboxing for Productivity

The timeboxing method of productivity has been around since the 1950's [8]. It has been found to increase productivity and reduce distractions in regular work settings [9]. Benefits of timeboxing include keeping a sustainable work pace and keeping task records [10]. It can be explained well by using a marathon runners' example [11, 12]. At the start of the marathon, runners know they can push and run faster, however, they also know that the race is long and they can't use all their energy in the start. Similarly, timeboxing tries to help people use their resources efficiently by "cooling down" after certain intervals. Multiple studies [13, 14, 15] suggest that being tethered to a desk for long intervals reduces productivity. The timeboxing technique used in the Tomato Dice is the Pomodoro Technique, a timeboxing tool that was created by Francesco Cirillo in the 1980s, which alternates between focused work sessions and short breaks [11, 12]. The most common time interval used is 25 minutes of work followed by a 5 minute break, and a larger 15 – 20 minute break after four such cycles. According to Gobbo and Vaccari [11], the notion of time running backwards (from 25 to 0) generates positive tension that facilitates the decision-making process.

The Pomodoro Technique was the inspiration for the Tomato Dice. The dice uses timed intervals for work and break modes; it also randomizes the activities for break times through the throwing of a dice. Unlike the Pomodoro Technique, the tomato dice guides users through specific relaxation methods and actions during their breaks. It also adds a sense of anticipation and fun by allowing the user to throw or flip the dice to select a working or relaxation mode which plays a relaxation sequence consisting of LED patterns and audio recordings. This brings an element of

uncertainty to the interaction with the device that could increase engagement and interest. In learning games, learners have the tendency to engage more with the follow-up questions when an element of uncertainty is included [14].

2 DESIGN PROCESS

2.1 Ideation

The initial idea was to create a multimodal tangible object that allows a person to take breaks and relax after hours of screen based remote work. Some ideas included a virtual concert, a mini game that could be played virtually with a co-worker, and a one-push button device that alternates between a few relaxing options. For example, relaxing activities might require the user to watch, listen, move or shout. To select among the different relaxing options, the user could squeeze a stress ball as a form of user input.

Figure 1: **Initial prototype.**

The concept of the dice was ultimately picked as the inherent randomness of the dice might add an element of fun and engagement known as the 'Pleasure Paradox' [16]. People's positive mood lasts longer when the condition is uncertain as cognitive processes related to positive events reduce the pleasure obtained from them. According to the authors, people's experiences are more pleasurable if an uncertain event is going to lead to something positive. For e.g. in a mystery movie, even though there is uncertainty about who the antagonist is, knowing that the person is going to be revealed at the end is what makes the movie experience positive. Similarly, even though there is uncertainty about what face the dice will land on, anticipating a positive experience once the dice lands, adds to the enjoyable experience.

2.2 Initial Prototype and Evaluation

After sieving through the ideas generated, an initial prototype was created using a soft toy dice with printed images on each side representing the multiple modes. We used Nielsen and Molich's heuristics [17, 18] to evaluate the usability of the dice and found that the initial prototype violated several heuristics as described below. There was no indication of an on or off status to inform the user whether the dice was ready to be rolled or if it was currently switched off. This violates the Visibility of the System Status Heuristic. There was also no indication of the remaining time for the 25-minute work mode. The user also could not exit or switch modes at any time, and the user could not silence the dice or turn off break reminders. These two findings violate the User Control and Freedom Heuristic. The new prototype was built with the aim of minimizing these usability issues.

2.3 Tomato Dice Prototype

The Tomato Dice prototype is controlled by an Arduino Uno board [19]. A Grove Seeed Shield was mounted on the Arduino board to allow the connection of Grove Seeed modules [20]. Since each face of the dice activates one mode, a 3-Axis Digital Accelerometer was used to identify which face of the dice was facing up. To identify the current status of the dice, an RGB LED Matrix displaying different light patterns was used. The audio used for each mode was stored using an MP3 Player module equipped with a Micro SD Card and played-back using a speaker. Figure 2 summarizes all the connections. All the components were encompassed inside a wooden cube (see Figure 3).

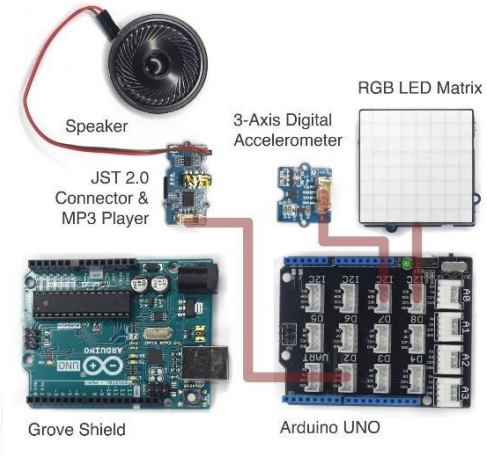

Figure 2: **Electrical Connections to the Arduino Uno via the Grove Shield.**

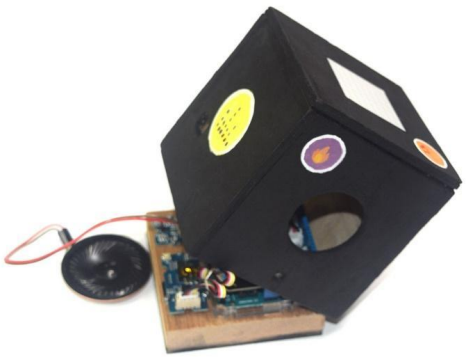

Figure 3: **Tomato Dice cube.**

2.4 Tomato Dice Modes

2.4.1 Mode 1 - Work Mode. The Work Mode is a simple 25 minute timer allowing the user to focus on accomplishing their task based on the focus sessions from Cirillo's Pomodoro Technique. There is no sound associated with this mode, the LED Matrix displays a tomato for all the duration. After 25 minutes, there is an animation prompting the user to move the dice to select a different mode.

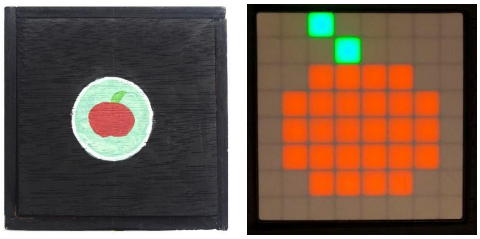

Figure 4: **Work Mode icon and the LED screen.**

2.4.2 Mode 2 - Workout Mode. The Workout Mode includes audio instructions to guide a user through several exercises. Research indicates that exercise is associated with improved mental health [21, 22]. Performing workout routines is also linked to reduced anxiety, and stress as well as improved self-esteem and mood state [23]. The Centers for Disease Control and Prevention (CDC) recommends short physical activity breaks, especially for employees subject to desk bounding positions [24]. When this mode plays, it displays a heart icon in the LED screen, followed by upbeat music and a voice-over reminiscent of a coach giving instructions to the user during a workout in-person session or class. While the voice-over and music plays, the screen displays a sequence of colored squares.

Figure 5: **Workout Mode icon and the LED screen**

2.4.3 Mode 3 - Ocean Mode. This mode reflects nature, using audio of sea waves, seagulls, and wave-like blue lights on the LED display. With COVID measures in place, people have reported less exposure to nature. Studies found that simulations of natural landscapes may replicate some of the soothing effects of nature [14]. Additionally, research suggests that sounds from nature were more effective for recovery from activation of the sympathetic nervous system than noisy environments. Nature sounds can help a person's fight or flight response return to homeostasis after a psychological stressor [15].

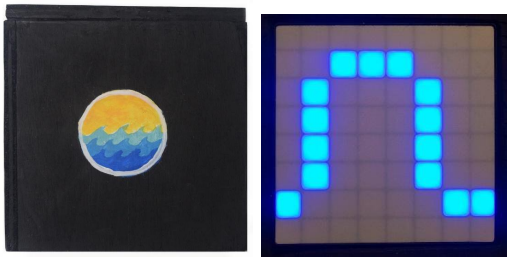

Figure 6: **Ocean Mode icon and the LED screen.**

2.4.4 Mode 4 - Muscle Relaxation Mode. The Muscle Relaxation Mode uses a common technique in Mindfulness sessions characterized by short stress intervals where a person tenses all of their muscles and then releases the tension in a breath [25]. Medical practitioners have found progressive muscle relaxation to be an effective method to reduce anxiety and improve sleep for patients in social isolation [26]. A famous relaxation technique is Jacobson's Progressive Muscle Relaxation, which works using intervals of muscle tension, followed by tension relief [27], or PMR for short. Studies have supported its effectiveness in reducing stress levels in a variety of groups [28, 29]. When this mode is selected, the LED screen displays a smiley face, followed by voice-over instructions. The screen then makes an animation, akin to the classic video game "snake." This is consistent with other modes that display an animation while the mode plays. Hardware limitations allowed only for a simple animation rather than a more informative visual representation of the steps being described to follow the technique.

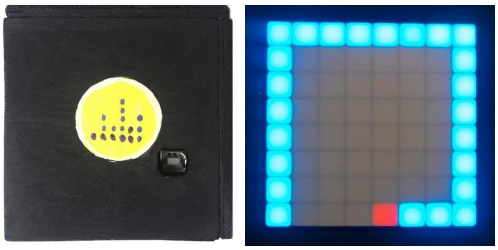

Figure 7: **Muscle Relaxation Mode icon and the idle LED screen that plays during voice-over.**

2.4.5 Mode 5 - Dance Mode. The Dance Mode plays upbeat music and lights to lift the mood and guide the user through Salsa dancing. It is accompanied with a colorful wave-volume animation on the LED display. Dancing has mental and physical benefits that help relieve stress. In a study conducted on 475 non-professional dancers, over 70% of participants reported feeling more enthusiastic, inspired, alert and not distressed [30]. Researchers showed that music in dance routines is effective for enhancing mood, and helps achieve mental alertness [31]. The authors also suggested that the effects of dancing are potentially more effective than other entertainment activities. This mode uses a salsa tune, voice-over instructions on a basic salsa step, and displays a high-energy fire-like animation on the LED screen.

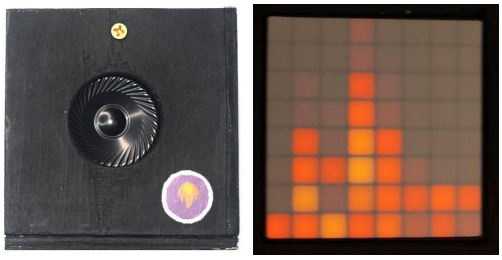

Figure 8: **Dance Mode icon (alongside the speaker) and the LED screen.**

2.4.6 Mode 6 - Breathing Exercises Mode. Lastly, the Breathing Mode guides users to take deep breaths, prompting relaxation, and clear the mind of external worries. Mindful Breath Awareness (MBA), and Breath Regulation Techniques (BRTs) have been most commonly used for mind-body therapy by adults in the United States [32]. These methods have been shown to reduce symptoms of depression and anxiety. Another study also shows that practicing breathing exercises supports relaxation and anxiety reduction [33]. This mode plays a recorded guided meditation session that prompts the user to take deep breaths, notice their environment, and relax their mind. The LED screen displays a visual of progressing lights to fit the rhythm of the breath [20], filling the screen completely when the mode finishes.

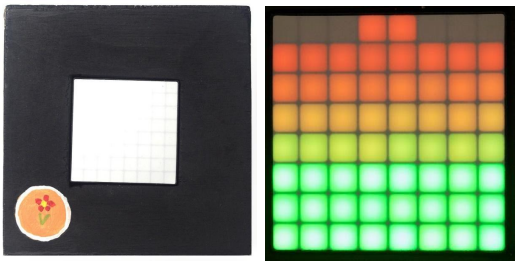

Figure 9: **Breathing Exercises icon (alongside the LED screen) and the LED screen.**

2.6 Operation

Once the prototype is switched on, a welcome audio message cues the user to roll or flip the dice. The user picks up the cube and rolls it on their desk. The corresponding audio file and LED patterns are then played.

When a mode has ended, the user can roll the dice again. If the user wishes to play a specific relaxation mode or start working with the 25 minute timer, the user can also choose to manually flip the dice instead of leaving it to chance. If nothing is done, an LED pattern of rotating arrows and a voice instruction prompt users to roll or flip the dice.

3 USABILITY STUDY

3.1 Participants

We recruited 7 adult participants between the ages of 27 and 57 who had either worked remotely or attended formal education remotely in the last year. The study included 4 females and 3 males. Due to the COVID-19 pandemic, participants were recruited from the authors' personal network. Three sessions were conducted remotely and four were conducted in person.

3.2 Pre-study Survey

Before the usability test, a brief survey was conducted to find out the typical ways that users take breaks. Based on our pre-study questions, it was found that users took breaks anywhere from every 15 minutes to every few hours. Several participants reported that they take a break when they feel overwhelmed or after completing a task. Typical break activities include walking, mobile games, chatting online, getting some food, looking out the window, doing household chores, interacting with pets, going to the store, and using social media or YouTube.

3.3 Usability Test

During the usability test, the participants were asked to complete three tasks that allowed them to interact with the dice and explore all the modes. After each task, participants were asked what their impressions were and if they found anything confusing. The Tasks were as follows:

- Task 1: The user was given the dice and told to interact with it. When plugged in, the dice started automatically and played one mode.
- Task 2: The user was asked to select a mode that they had not played yet.
- Task 3: The user was asked to play the four remaining modes that had not previously been played.

Using the sentiment analysis participants' answers were classified by positive and negative statements. A chi-square test of independence was performed to examine the relation between task and sentiment. The relation between these variables was not significant, $\chi^2(2) = 2.62, p > .05$. From Fig. 10, Tasks 2 and 3 obtained more positive comments; while task 1 obtained almost as many negative comments as positive.

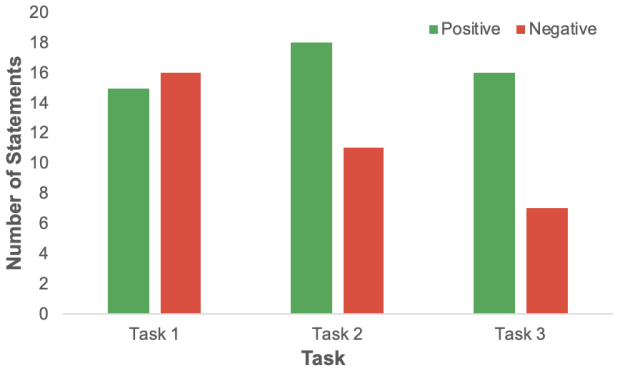

Figure 10: **Bar graph for number of positive and negative statements for each user task.**

From participants' statements, they reported liking the Ocean Mode (Mode 3) the most. The negative statements were related to usability issues that came up during testing including confusion with the directional arrows that inform the user to roll the dice, confusion due to the delay between the dice rolling and the mode onset. Finally, some users suggested additional visual or audio feedback during the Work Mode (Mode 1) that was originally kept to a minimum to avoid distraction.

3.4 Post-study Survey

The post-study survey included three questions about the ease of use, the likelihood of using the dice for breaks, and the likelihood of feeling relaxed. A fourth question was related to the Net Promoter Score (NPS): how likely would they recommend the dice to a friend. All questions were either on a 10-point Likert scale or converted to a 10-point Likert scale. Finally, we used a simplified version of Desmet's Product Emotion Measurement Tool (PrEmo) that shows the participant a range of fourteen different emotions, seven positive and seven negative [34]. Participants were asked to pick the cartoon character that depicted their emotions after the test.

A Friedman Two-Way test for ordinal data was performed to compare participants' scores for the three questions related to ease of use, taking breaks, and feeling relaxed. The non-parametric Friedman test was significant ($\chi^2(2) = 4.96$, $p < 0.05$). We followed-up with the Wilcoxon Signed Rank test for post-hoc analysis; which revealed a significant difference between taking breaks and feeling relaxed ($p = 0.01$). Participants are more likely to feel relaxed with the Tomato Dice than to use it to take breaks. Fig. 11 summarizes the results. One participant commented that he has other ways to take a break but there may be other people who are interested in it.

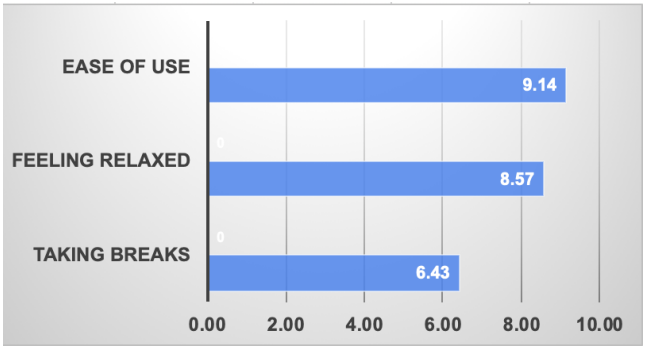

Figure 11: **Participants' scores for 3 questions related to the ease of use, feeling relaxed, and taking breaks on a 10-point Likert scale**

NPS values vary between -100 and 100 and any score between 0 and 30 is considered good by the industry standards [35]. It is obtained by subtracting the percentage of promoters from the percentage of distractors. Three users were promoters, two were distractors and two were neutral. Fig. 12 shows that the obtained NPS score was 14 which is considered good but there is room for improvement.

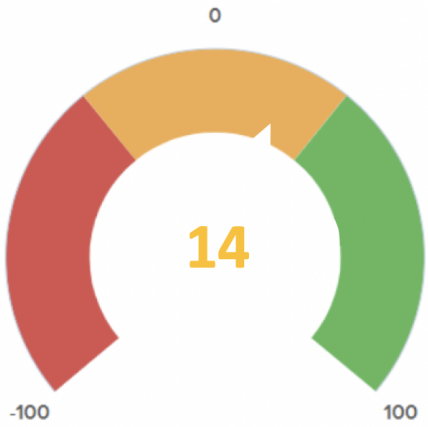

Figure 12: **NPS Score for the Tomato Dice was 14 which is considered good.**

Finally, among the 14 emotions, most of the users expressed fascination towards the Tomato Dice (4 out of 7). Two participants described their emotion as joyful while one user mentioned they were satisfied with the current prototype (see Fig. 13). Combining the most prevalent emotion selected and the other scores, the overall reaction in the post-study survey may be best described as lukewarm with some fascination and open-mindedness about how the dice may be better used if it were improved and used by the right audience.

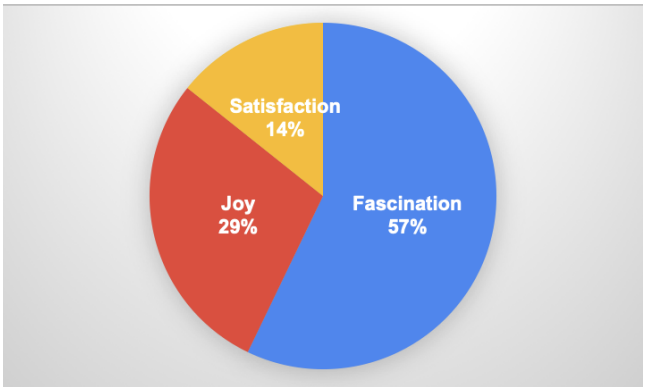

Figure 13: **Pie chart for the emotions selected by the participants**

4 LIMITATIONS AND CONCLUSION

The results of the study revealed issues such as confusion over some instructional audio and visual cues. Our results showed that participants were mostly fascinated by the dice and are more likely to use it for relaxation than taking breaks. We believe this finding is related to the participants' broader definition of the activities that constitute a break. From the pre-study survey, typical break activities included walking and preparing a meal. A common point between these activities is that the user is physically away from their workstation; which is where the dice is originally located. Additionally, participants' definition of a break included consuming online content such as browsing through their social media or watching Youtube videos. While the visual and audio playbacks of the dice may be relaxing, it is not as content-heavy as the other online media. It is also lacking the social aspect which is often the reason for social media platforms. Finally, for the purpose of the experiment, the break modes were only played for 1 minute instead of the intended 5 minutes. The modes might be long enough for the user to feel relaxed, but not sufficient to feel like a break from work.

Based on the usability study, other improvements include allowing the user to customize the cube, adding volume control, adding a countdown on the timer mode, and adding bluetooth. All of the participants reported that they would use the cube less if they were working in an office because they would not want to disturb others. The cube could have additional modes that would be optimized to help users feel comfortable using the Tomato Dice in a shared workspace. For example, there could be a silent mode for users whose work is no longer remote. Some participants also suggested adding some elements of humour, adding more sensations to the cube, and making it more 'hands-on', such as being able to manipulate it freely while it is in Work Mode.

During the development of the Tomato Dice, the team encountered a few limitations with the hardware. The first limitation was related to the size of the dice as it depends on the size of the hardware components. The current prototype is not small enough to fit comfortably in the hand. This aspect led to some negative statements from two users who suggested making it smaller so that it could be placed in the pocket and would take up less space on the desk. This aspect can be fixed by opting for smaller electronics to reduce its size. The second limitation was related to the LED 8x8 matrix which limited the quality and diversity of the animations.

Considering that the dice will be thrown around, we would also need to explore ways that the material and design of the cube would reduce any impact on its electrical components.

Additionally, the design of the modes could be improved. Other than adding more clarity and feedback in some of the modes, different choices of modes could be explored to fit the different ways that different people prefer to take their breaks. The modes of the dice could, for example, encourage users to move away from the work desk. It can also be tweaked for other leisure activities that are also relaxing and fun for a break. For example, it can also be incorporated into game designs with visual patterns and sounds that fit the gameplay. In terms of product strategy, there is still room to explore different angles and types of target users.

Finally, we would also need to conduct more non-remote usability studies with higher sample sizes on further iterations. Because of the current pandemic, we limited our testing to the team's friends and family network. Some of the questions we are interested in are:

1. To what extent would the dice actually boost productivity and help people relieve stress as the team has imagined?
2. Are there other relaxation modes?
3. Which modes are the most effective ones?
4. How do we make the options for timeboxing more flexible?
5. Which types of user groups would be most interested in using this dice for relaxation from work?

Answering these questions would help improve the Tomato Dice that can be used by people to take more effective breaks between work.

REFERENCES

[1] Toscano, F., & Zappalà, S. (2020). Social Isolation and Stress as Predictors of Productivity Perception and Remote Work Satisfaction during the COVID-19 Pandemic: The Role of Concern about the Virus in a Moderated Double Mediation. Sustainability, 12(23), 9804.

[2] Fritz, C., Lam, C. F., & Spreitzer, G. M. (2011). It's the little things that matter: An examination of knowledge workers' energy management. Academy of Management Perspectives, 25(3), 28-39.

[3] Hunter, E., & Wu, C. (2016). Give me a better break: Choosing workday break activities to maximize resource recovery. Journal of Applied Psychology, 101(2), 302.

[4] Trougakos, J., & Hideg, I. (2009). Momentary work recovery: The role of within-day work breaks. In Current perspectives on job-stress recovery (pp. 37–84). Emerald Group Publishing Limited.

[5] Zacher, H., Brailsford, H., & Parker, S.. (2014).

Micro-breaks matter: A diary study on the effects of energy management strategies on occupational well-being. Journal of Vocational Behavior, 85(3), 287-297.

[6] Bao, L., Li, T., Xia, X., Zhu, K., Li, H., & Yang, X. (2020). How does Working from Home Affect Developer Productivity? – A Case Study of Baidu During the COVID-19 Pandemic. Science China Information Sciences. Retrieved May 25, 2020 from the arXiv database.

[7] Fritz, C., Ellis A., Demsky, C., Lin, B., & Guros, F. (2013). Embracing work breaks. Organizational Dynamics 42, 4 (2013), 274–280.

[8] Larman, C., & Basili, V. (2003). Iterative and incremental developments, a brief history. Computer, 36(6), 47–56.

[9] Jalote, P., Palit, A., Kurien, P., & Peethamber, V. T. (2004). Timeboxing: a process model for iterative software development. Journal of Systems and Software, 70(1–2), 117–127.

[10] Zao-Sanders, M. (2018, December 12). How Timeboxing Works and Why It Will Make You More Productive. Harvard Business Review. Retrieved February 20, 2021, from https://hbr.org/2018/12/how-timeboxing-works-and-why-it-will-make-you-more-productive

[11] Gobbo, F., & Vaccari, M. (2008). The Pomodoro Technique for Sustainable Pace in Extreme Programming Teams. In Lecture Notes in Business Information Processing (pp. 180–184). Springer Berlin Heidelberg.

[12] Cirillo, F. (2007). The Pomodoro Technique. XPLabs Technical Report version 1.3. English Version. Published June 15, 2007, http://www.tecnicadelpomodoro.it

[13] Scroggs, L. (n.d.). The Pomodoro Technique – Why It Works & How To Do It. Retrieved from https://todoist.com/productivity-methods/pomodoro-technique

[14] Feldman, R. (2013). Techniques and applications for sentiment analysis. Communications of the ACM, 56(4), 82–89.

[15] von Thiele Schwarz, U., & Hasson, H. (2011). Employee Self-rated Productivity and Objective Organizational Production Levels. Journal of Occupational & Environmental Medicine, 53(8), 838–844.

[16] Wilson, T., Centerbar, D., Kermer, D., and Gilbert, D. (2005). The Pleasures of Uncertainty: Prolonging Positive Moods in Ways People Do Not Anticipate. Journal of Personality and Social Psychology 88, 1 (2005), 5–21.

[17] Molich, R., and Nielsen, J. (1990). Improving a human-computer dialogue, Communications of the ACM 33, 3 (March), 338-348.

[18] Nielsen, J., and Molich, R. (1990). Heuristic evaluation of user interfaces, Proc. ACM CHI'90 Conf. (Seattle, WA, 1-5 April), 249-256.

[19] Arduino Team. (n.d.). Arduino Uno SMD. Retrieved February 09, 2021, from https://www.arduino.cc/en/Main/ArduinoBoardUnoSMD

[20] Grove Seeed Team (n.d.). Retrieved February 09, 2021, from https://www.seeedstudio.com/category/Grove-c-1003.html

[21] Raglin, J. S. (1990). Exercise and Mental Health: Beneficial and Detrimental Effects. Sports Medicine, 9(6).

[22] De Melo, C. M., Kenny, P., & Gratch, J. (2010). Real-time expression of affect through respiration. Computer Animation and Virtual Worlds, n/a-n/a.

[23] Rodday, A., Terrin, N., Chang, G., & Parsons, S. (2012). Performance of the parent emotional functioning (PREMO) screener in parents of children undergoing hematopoietic stem cell transplantation. Quality of Life Research, 22(6), 1427–1433.

[24] Jackson, T., & Victor, P. (2011). Productivity and work in the 'green economy.' Environmental Innovation and Societal Transitions, 1(1), 101–108.

[25] Howard-Jones, P., & Demetriou, S. (2009). Uncertainty and engagement with learning games. Instructional Science, 37(6), 519.

[26] Alvarsson, J. J., Wiens, S., & Nilsson, M. E. (2010). Stress recovery during exposure to nature sound and environmental noise. International Journal of Environmental Research and Public Health, 7(3), 1036–1046. https://doi.org/10.3390/ijerph7031036

[27] Agee, J. D., Danoff-Burg, S., & Grant, C. A. (2009). Comparing Brief Stress Management Courses in a Community Sample: Mindfulness Skills and Progressive Muscle Relaxation. EXPLORE: The Journal of Science and Healing, 5(2), 104–109. doi:10.1016/j.explore.2008.12.004

[28] Liu, K., Chen, Y., Wu, D., Lin, R., Wang, Z., & Pan, L. (2020). Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. Complementary Therapies in Clinical Practice, 39, 101132. https://doi.org/10.1016/j.ctcp.2020.101132

[29] Progressive Relaxation: A Physiological and Clinical Investigation of Muscular States and Their Significance in Psychology and Medical Practice. (1938). Journal of the American Medical Association, 111(12), 1129. https://doi.org/10.1001/jama.1938.02790380071032

[30] Murcia, C., Kreutz, G., Clift, S., & Bongard, S. (2010). Shall we dance? An exploration of the perceived benefits of dancing on well-being, Arts & Health: An International Journal for Research, Policy and Practice, 2:2, 149-163, DOI: https://doi.org/10.1080/17533010903488582

[31] Guzmán-García, A., Hughes, J. C., James, I. A., & Rochester, L. (2012). Dancing as a Psychological Intervention in care homes: A systematic review of the literature. International Journal of Geriatric Psychiatry. doi:10.1002/gps.3913

[32] Sarris J, de Manincor M, Hargraves F and Tsonis J (2019) Harnessing the Four Elements for Mental Health. Front. Psychiatry 10:256.

[33] Decker, J.T., Constantine Brown, J.L., Ashley, W., & Lipscomb, A.E. (2019): Mindfulness, meditation, and breathing exercises: reduced anxiety for clients and self-care

for social work interns, Social Work with Groups

[34] Desmet, P. (2003). Measuring emotion: Development and application of an instrument to measure emotional responses to products. In Funology (pp. 111-123). Springer, Dordrecht.

[35] Reichheld, F. F. (2003). The one number you need to grow. Harvard business review, 81(12), 46-55.