



Product design activity as a process to develop a therapeutic toys for self-managed depression among adolescents

ABSTRACT

Adolescent mental health issues are on the rise, with rates rising from one in ten in 2011 to one in five in 2016. This issue was predicted to be one of the top causes of global disability by 2020. Hence, with the aim to develop a therapeutic toy for self-managed depression, this paper intends to elucidate the product design process based on the criteria of therapies practiced by patients to manage mild and moderate depression. Semi-structured interviews were conducted with a clinical psychologist, three licensed counsellors, and six young depressive disorder patients as a methodology for gathering empirical data, which was then followed by the design process. The result of the interview indicates a multitude of design needs in self-managed depression. Therefore, a few design criteria have been proposed and a set of the non-working models of the therapeutic toys was successfully developed as a proposal for potential future development and production. It is hoped that the outcome of the study exhibits the synchronization of the design thinking process inside the ergonomics ergo system framework in order to generate the design for the patient.

KEY WORDS

Depressive disorder, product design, adolescents, therapeutic toys, psychology

Muhammad Jameel
Bin Mohamed Kamil¹ 
Gwendolyn Ho Wan Ying²
Mohd Najib Bin
Abdullah Sani¹ 

¹ Universiti Malaysia Sarawak,
Design Technology Programme,
Faculty of Applied and Creative
Arts (FACA), Sarawak, Malaysia
² Universiti Sains Malaysia, Product
Design Department, School of The
Arts, Penang, Malaysia

Corresponding author:
Muhammad Jameel Bin
Mohamed Kamil
e-mail:
mkmjameel@unimas.my

First received: 25.8.2021.
Revised: 15.12.2021.
Accepted: 20.12.2021.

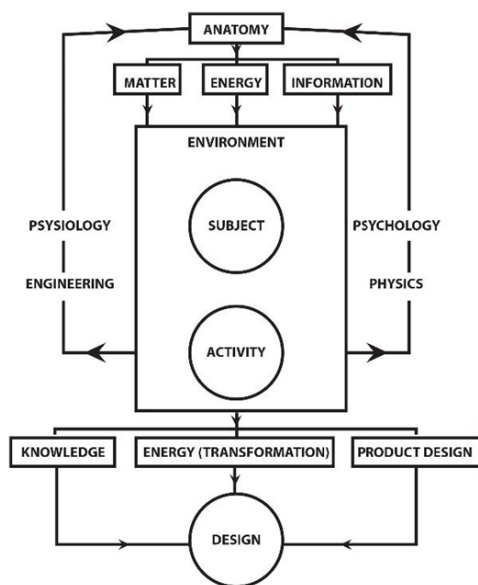
Introduction

According to a prior survey, mental health problems have grown from 10.7% in 1996 to 29.2% in 2015. For example, it is estimated that around 2.3 million Malaysians would suffer from mental illness at some time in their life (Mukhtar & Oei, 2011). There is a concerning trend with mental health disorders among adolescents, with estimates growing from one in ten persons in 2011 to one in five in 2016. According to Mustafa et al. (2014), adolescents are afflicted by a variety of problems and components as they move from infancy to maturity, which operate as agents of change, impacting them inside and out and eventually shaping their behaviours and manners. Landback et al. (2009) indicates that twenty-five percent

of all adolescents struggle with individual identity conflicts inside themselves and in society, which can lead to a depressive episode. As indicates by Mukhtar & Oei (2011), by 2020, depression as an emotional disorder will be one of the primary causes of global disability. It is thus critical to implement a preventative program, as well as early identification and treatment consultation.

This paper is a product design research article that looks at depressive disorders among adolescents. The primary objective of this research is to elucidate the product design process based on the criteria of therapies practiced by patients to manage mild and moderate depression and develop a therapeutic toy for self-managed depression. The ergonomics ergo system framework was used

as a template for optimizing the system's operations in order to construct the therapeutic toys in this study. This framework was adopted from the structural ergonomics view of work system by Bridger (2008), adapted by Sani et al. (2020) and Kamil et al. (2020). As argued by Bridger (2008), the framework is made up of groups of components that interact with one another and the environment's factors. The framework's base is the synchronization of "people" and "machine" interactions to create a function toward developing and creating some type of output. The input from auxiliary factors such as matter, design requirements, and information differs depending on the level of human factors study. The framework is most commonly used as a template for optimizing system functioning, but it may also be utilized in the context of product design. The framework is formulated as a design model in this study to aid designers' design thinking from the early stages of empathically experiencing the case under investigation, brainstorming and coming up with a solution for the user's need (based on the insights gained during the empathizing stage), conceptualizing, and periodically testing the design prototype. The following five sets of ergonomics science elements speed up the system: (1) physics; (2) psychology; (3) anatomy; (4) physiology; and (5) engineering. The subject's synchronization in a certain environment is built into the system's basis. To make sense of the relationship, one must first comprehend the subject's state or situation (matter) while doing activities in a certain context or place. Theoretically, the condition or situation will provide information about the subject's reflection on the physics of the environment they are in, including how it impacts their psychology and needs. Nevertheless, the articulation of anatomy and physiological requirements will give much-needed design knowledge that may be improved further.



» **Figure 1:** *The ergonomics ergo-system framework, adopted from Bridger (2008), Sani et al. (2020), and Kamil et al. (2020)*

The study uses the Design Thinking approach to spotlight the increased psychological comfort of the toolkit's user by synchronizing the use of ergonomics ergo system framework with other elements that are taken into account, such as human psychology and engineering. The explanation provided in relation to Ergonomics and Design Thinking relevancies, as well as the demonstration of the product design process, aims to broaden the scope of knowledge, leading to more design research exploration based on the integration of cross-disciplinary studies with psychology relevancy.

Methodology

The design development process was steered by the foundation set by Verduyn (2000), Saravanan, Alias & Mohamad (2017), and Sinniah et al. (2017) who investigated the effectiveness of individual cognitive behaviour therapy in depression. Their research, that is also in accord with numerous research such as treatment approaches for reducing the risk of major depression in adolescence including group cognitive-behavioural and individual interpersonal psychotherapy (Landback et al., 2009), tactile therapy as an effective psychological comfort (Schmidt, 2006; Kamil and Abidin, 2013; Fritz and Fritz, 2020), recovery rates in major depressive disorder patients (Novick et al., 2017), study of shape, colour and lights as a therapy for depression (Wileman et al., 2001; Loving et al., 2005; Kim and Kang, 2013; Roseman-Halsband, 2018; Hajra and Saleem, 2021), finds that the integration of tactile sensory, colours and design elements in cognitive behaviour therapy have significant potential to elevate comfort among adolescent with depressive disorder. This data plays an important element for the development of therapy product for adolescents with depressive disorder.

In this study, the development of therapeutic toys aims to meet the needs of adolescents suffering from depression (hereinafter referred to as patient) and to improve their psychological comfort. In order to assess design requirements needed by patients, including the optimal design function to be applied in the therapeutic toys, therefore, an assessment through semi-structured interview study was conducted with a clinical psychologist, three certified counsellors, and six patients. The interview session was conducted within 45 minutes per sessions at Clinical Psychologist Borneo Medical Centre, Sarawak, Malaysian Mental Health Association (MMHA), Selangor, and Universiti Sains Malaysia (USM), Penang. The context of interview was specifically designed based on the five sets of ergonomics science elements as proposed in the ergonomics ergo system framework (physiology, psychology, physics, anatomy, and engineering). For instance, the interview session with the clinical

psychologist was designed to obtain a professional opinion regarding depressive disorder such as symptoms and diagnosis of depression (psychology), the impact of the untreated depressive disorder to physical well-being (anatomy and physiology), and medical treatment available for depressive disorder. Meanwhile, the interview session with certified counsellors was designed to obtain a deeper understanding regarding the toolkits therapy technology (engineering) and variation of CBT approaches such shape, colour, lights, and tactile therapy (physics). On the other hand, the interview session with patients was designed to assess design requirements needed based on their psychological response towards the existing CBT including the shape, colour, lights, and tactile therapy (psychology and physics).

the ergonomics ergo system framework and the design thinking process to inform a clear design direction. During Phase 1, the data from interviews were analysed to gain an empathetic understanding of the respondents, the therapy and intervention, and design needs. Adopted from Perreault (2009) and Saldaña (2009), the written verbal transcriptions from the interview data were analysed and systematically categorized into information categories using three phases of coding: (1) open coding; (2) axial coding; and (3) selective coding. For example, in a study of respondents' perceptions of colour variations in therapy (see Table 1), the researcher categorised the selected emphases of the respondent's utterance and retrieved the utterance's characteristics. In this work, open coding begins with the creation of simple descriptive labels or characteristics of speech analysis. An excerpt of open code from one of those utterance analyses may be seen in the 'Open Codes' column.

Data analysis and result

Phase 1: Assessing the design needs

The analysis of the interview was part of the phase in design development process that involves synchronizing

The open codes are then organised into axial codes, which are more abstract conceptual categories. Selective coding, in particular, entailed sorting and relabelling comparable coded data reduced from open codes into conceptual groups. The code is refined during the cycle to get the optimum match, and more than one axial code

Table 1

Sample of coding on respondents' perceptions of colour variations in therapy (open codes)

Respondents' Index	Protocol Time	Transcription	Attributes	Open Codes
Respondent 1	15:30	<i>"...I will feel more comfortable if I manage to walk around in a jungle nearby my house ... enjoying the green, yellow...earth colour palette of the nature."</i>	1. Enjoying the forest and nature will make respondent feel more at ease. 2. Green, yellow, earth colour palette	The green, yellow, and earth colour scheme of the jungle and nature make the respondent feels more at ease
Respondent 2	25:15	<i>"It always seems to me that the white sandy beach and blue ocean will comfort me for a time being..."</i>	1. Enjoying the ocean and beaches make respondent feel more at ease. 2. White, blue colour	The white and blue colour scheme of the ocean and beaches make the respondent feels more at ease.
Respondent 3	18:55	<i>"I love the colour on my cat fur. It is kind of pastel grey... rubbing it for some times helps me to feel calmer."</i>	1. Rubbing cat fur make respondent feel more at ease. 2. Grey, pastel colour	Rubbing the grey and pastel colour of the cat fur make the respondent feels more at ease.

Table 2

Sample of coding on respondents' perceptions of colour variations in therapy (axial codes).

Respondents' Index	Protocol Time	Open Codes: Categories of information	Axial Codes
Respondent 1	15:30	The green, yellow, and earth colour scheme of the jungle and nature make the respondent feels more at ease	The colour of nature such as green, yellow, and earth colour scheme help in therapy
Respondent 2	25:15	The white and blue colour scheme of the ocean and beaches make the respondent feels more at ease.	The colour of nature such as white and blue help in therapy
Respondent 3	18:55	Rubbing the grey and pastel colour of the cat fur make the respondent feels more at ease.	The colour of living nature such as grey and pastel colour help in therapy

might be produced throughout this process. Furthermore, information that was 'split' or 'fractured' throughout the open coding process will be carefully reassembled. The axis is a category derived from open coding at this level. A 'dimension' is a phrase used to describe a category, and one of the goals of early coding is to find these dimensions and arrange the available codes along them. For example, the open codes introduced in Table 1 have been renamed and reorganised in relation to one another (see Table 2). After determining a category or dimension, the researcher may need to go back to the data and recode the data in relation to the emergent notion summarised in the category or dimension.

According to Muller and Kogan (2012), selecting which codes (from the axial codes) to develop further required a decision on what themes to study. The information was derived through selective coding by analysing the interrelationships that arise among the categories created in axial coding (Perreault, 2009). In order to produce explicit information, the selected coding maintains only relevant and applicable variables to the core variables during the process. The core category (axial coding) was stated as an information statement, which was then categorise and recoded as selective codes (see Table 3). To establish the link between codes and achieve the most credible theory, this procedure may need to be repeated a few times.

Theoretically, adapted based on the ergonomics ergo system framework, the analysis of interview data (through coding process) in this study is an early stage of empathically experiencing the case under investigation; assessing design requirements needed by depression patients among adolescents in the context of five sets ergonomics science elements that interact with one another (physiology, psychology, physics, anatomy, and engineering). Throughout the analysis of the interview, the information of condition or situation of depressive disorder was provided based on respondents' reflection on the situation and environment, including

how it impacts the psychology and needs of patients. Nevertheless, the understanding of the anatomy's articulation and physiological requirements through the interview study help to determine the optimal design function and design knowledge that may be improved further in the therapeutic toys design process. As a result, the outcomes of the interview study were summarized in six elements of solutions (see Table 4)

Table 4

The description six elements of solutions

Elements of solutions	Descriptions
Self-image	The therapeutic toys should be able to boost patient's confident level to realize their strength and abilities
Emotion management	The therapeutic toys should be able to boost patient's confident level to realize their strength and abilities.
Self-regulating	The therapeutic toys should be able to provide the feel of comfort, secure and calmness.
Assistive toolkit	The therapeutic toys should be assistive to reduce sensory dullness, stress, and anxiety.
Assistive in expressing	The therapeutic toys should be assistive to help the patient manifest their inner trauma and promoting positive interaction.
Cognitive comfort	The therapeutic toys should be able to elevate positive cognitive thinking and behavioural tendency.

Phase 2: Generating design ideations

Previously in Phase 1, the six elements of solutions were generated through the result of interview analysis and synthesis. Meanwhile in Phase 2, the six elements of solutions help in brainstorming process to generate the design criteria of the therapeutic toys (see Table 5).

Based on the outlined design criteria, the therapeutic toys will include a form inspired from organic shape and

Table 3

Sample of coding on respondents' perceptions of colour variations in therapy (selective codes)

Respondents' Index	Protocol Time	Open Codes: Categories of information	Axial Codes	Selective Codes
Respondent 1	15:30	The green, yellow, and earth colour scheme of the jungle and nature make the respondent feels more at ease	The colour of nature such as green, yellow, and earth colour scheme help in therapy	The colour inspired by nature such as green, yellow, white, blue, grey, pastel and earth colour make the respondent feels more at ease during therapy
Respondent 2	25:15	The white and blue colour scheme of the ocean and beaches make the respondent feels more at ease.	The colour of nature such as white and blue help in therapy	
Respondent 3	18:55	Rubbing the grey and pastel colour of the cat fur make the respondent feels more at ease.	The colour of living nature such as grey and pastel colour help in therapy	

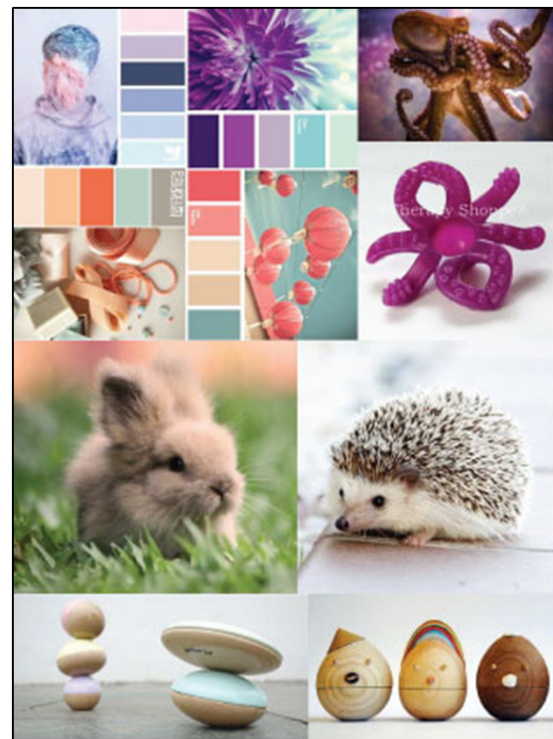
biomimicry. It is hoped to help reducing sensory dullness by manipulating the soft tissue, neuroendocrine system, connective tissue system, and circulatory system. Furthermore, the implementation of form inspired by biomimicry design (inspired animal) is hoped to elevating users' positive thoughts and emotion through natural elements. In order to enhance the aesthetic elements of the design, a sleek natural element with calming colour will be embedded. The calming colour mixing also will be used as therapy to emotionally react to the visual brain and cause psychological phenomena. The design also will be implemented with playfulness elements such as squeezable and bounceable, through the physical form of the design. The interaction between the physical form of the design and user will help to provide a fun interactivity and eliminate negative thoughts. Finally, we have also suggested that a low-cost, nimbler, and safer material such as three-dimensional (3D) printed plastic Acrylonitrile Butadiene Styrene (ABS) and silicon to be used for design production.

Table 5
The description of design criteria

Design Criteria	Descriptions
Tactile sensory experience	Aim to help reducing sensory dullness
	Manipulates the soft tissue, neuroendocrine system, connective tissue system, and circulatory system
	The design form inspired by organic shape and biomimicry design.
Aesthetic	Using calming colour for the design
	The design form inspired by nature
	Sleek design
Mixed material	Using low-cost, nimbler, and safer material such as three-dimensional (3D) printed plastic Acrylonitrile Butadiene Styrene (ABS) and silicon.
Colour mix and match	Colour will be used as therapy to emotionally react to the visual brain and cause psychological phenomena.
	Calming colour mixing
Emotional design	Aim to help elevating users' positive thoughts through nature elements
	The design form inspired by animal (biomimicry design)
Playfulness	Aims to eliminate the negative thoughts through fun interactivity
	Playful physical interaction between user and product

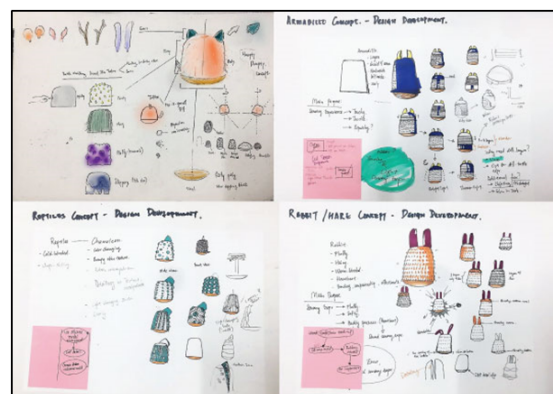
The mood board design concept was first executed in Phase 2. The mood board is a visual guideline that was created based on the design criteria (Kamil

& Sani, 2021). The visual guideline used in this study was developed from a variety of sources, including natural forms and shapes, colours, and physical properties. These visual guidelines aid the research team in determining the appropriate design direction as indicated by respondents in the interview study. The forms and shapes of rabbit and hedgehog, for example, influenced the visual characteristic of therapeutic toys while the pastel colours and earth colour palette influenced the colour variation. The physical qualities of natural elements such as fur, spikes, and tentacles will, however, influenced the textural properties of the design (as part of element in tactile therapy).



» **Figure 2:** Design concept mood board

The design ideation process was carried out using a sketching activity based on the mood board design concept.



» **Figure 3:** Design ideations development

Sketching activity help to better understand the visual composition and structure of form design, functionality of form aesthetics and format of form ingredients (Kamil & Abidin, 2015). Throughout the process, the therapeutic toys' visual shape was developed in accordance with components generated from design criteria and visual guidelines in the mood board design concept.

At the end of Phase 2, the outcome from the sketching activity was generated into three-dimensional (3D) design using Autodesk Inventor 3D Design software. During the process, the dimension and visual appearance of the design was enhanced realistically. The outcome of the 3D design helps to obtain a proper understanding of the therapeutic toys such as the textures, colours, and product proportions.

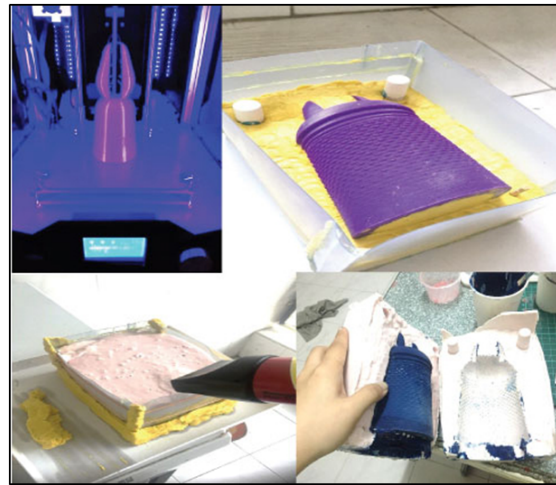


» **Figure 4:** 3D design

Phase 3: Model making process

During Phase 3, the model making process were executed. Making a model helps designers to see how the product tangible looks in, and to ensure that a product is viable. This involved three-dimensional printing process (based on 3D files generated in Phase 2), moulding process using silicone mould, and product furnishing. Throughout the process, the technical aspects of the model were investigated on a regular basis to ensure that

all design flaws were addressed. At the end of this stage, a preliminary grasp of the restrictions inherent to the therapeutic toys, as well as how real users would behave, think, and feel when handling the product, was gained.



» **Figure 5:** Model making process

The final non-working model is eventually completed, established, and validated after the serial iteration phases, which entail several adjustments to match the proper comfort of the user. The main features validating the non-working model are the characteristics of aesthetic involving the current therapeutic toys' design style or fashion, as well as the technological consideration emphasizing how real users would behave, think, and feel when handling the end product.



» **Figure 6:** The final non-working model

Discussion

The product design process has proven the possibility of integrating the theoretical study with the product design

context. Based on the study, our research team proposes The Moody Lab, a trio set of three roly-poly therapeutic toys for self-managed depression among adolescents. The Moody Lab therapeutic toys aims to provide a calming effect on emotion management for adolescent with depressive disorder by reducing symptoms and managing emotions such as sensory dullness and lose concentration through an understanding of theoretical and interview study, design thinking process, and alignment with the outlined design criteria. The element of tactile sensory experience implemented in the design was inspired by organic shape, peaceful colour mixing, and biomimicry design, all of which will be used to enhance tactics in the therapeutic toys. The element of organic tactile body parts that can be squeezed in the design will helps to manipulates the soft tissue, neuroendocrine system, connective tissue system, and circulatory system, which also helps to lower cortisol stress hormone levels. As a result, it will decrease the psychological effects of stress, anxiety, and sadness. Nonetheless, the element of biomimicry design in bodily parts (using animals as examples) will serve to emotionally affect users' positive thoughts, perceptions, and provide a sense of playfulness. Relaxing colour variation implemented in the design will be used as a therapy to emotionally react to the visual brain and cause psychological phenomena. The user's feelings and senses will be influenced by differences in brightness, saturation, and colour coordination.



» **Figure 7:** *The Moody Lab therapeutic toys*

Conclusion

This research has successfully developed The Moody Lab therapeutic toys as its design proposal to be used during cognitive behavioural therapy intervention and helps to elevate patient's psychological comfort. During the process, ergonomic comfort characteristics such as (1) cognitive comfort, (2) playfulness and (3) psychological comfort, are significant to the construction of therapeutic toys. By allowing users to discharge their negative inner thoughts, it aids in the elimination of negative beliefs about oneself. This relevance has been primarily

created by the aesthetic design, the fusion of materials in product creation, and the ergonomics criterion. Furthermore, because users are considered essential stakeholders in design practice, the synchronization of the empathetic protocol in the Design Thinking research process highlights the relevance of user feedback. In this case, the issue addressed by the user helps to determine the function of the developed design. The six solution and design criteria elements have properly described the user's requirement for depression management. The proposed therapeutic toys have the potential to be further developed and mass-produced. This may be accomplished by implementing the design criteria's suggested elements. With this advancement, it is envisaged that the product can aid depressive disorder sufferers, especially among adolescents. However, in order to further evaluate the applicability of the proposed therapeutic toys, a comprehensive user testing and assessment of the product's effectiveness is necessary in the near future.

Acknowledgement

The Moody Lab therapeutic toys copyright number: AR2018005129 is patented under the ownership of Universiti Sains Malaysia.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

References

- Bridger, R. (2008) *Introduction to ergonomics*. Boca Raton, CRC Press.
- Fritz, S. & Fritz, L. (2020) *Mosby's Fundamentals of Therapeutic Massage-E-Book*. Amsterdam, Elsevier Health Sciences.
- Hajra, B. & Saleem, T. (2021) The Use of Islamic Patterned Art Therapy: Healing of Psychological Problems Among University Students. *Journal of Religion and Health*. 60, 4361-4368. Available from: doi: 10.1007/s10943-021-01240-7
- Kamil, M. J. M. & Abidin, S. Z. (2013) Unconscious Human Behavior at Visceral Level of Emotional Design. *Procedia - Social and Behavioral Sciences*. 105, 149-161. Available from: doi: 10.1016/j.sbspro.2013.11.016
- Kamil, M. J. M. & Abidin, S. Z. (2015) Unconscious Interaction Between Human Cognition and Behaviour in Everyday Product : a Study of Product Form Entities Through Freehand Sketching Using Design Syntactic Analysis. In: *International Conference On Engineering And Product Design Education, E&PDE, 3-4 September 2015, Loughborough, United Kingdom*. pp. 369-374.

- Kamil, M. J. M. & Sani, M. N. A. (2021) The Challenges and Initiatives of Teaching Product Design's Course Online During the COVID-19 Pandemic in Malaysia. *Asia Pacific Journal of Educators and Education*. 36 (1), 113–133.
- Kamil, M. J. M., Shi, S. M. L. & Sani, M. N. A. (2020) Re-assessing the Design Needs of Trans-Radial Amputees in Product Design Innovation. *Wacana Seni Journal of Arts Discourse*. 19, 61–71. Available from: doi: 10.21315/ws2020.19.5
- Kim, M. K. & Kang, S. D. (2013) Effects of art therapy using color on purpose in life in patients with stroke and their caregivers. *Yonsei Medical Journal*. 54 (1), 15–20. Available from: doi: 10.3349/ymj.2013.54.1.15
- Landback, J., Prochaska, M., Ellis, J., Dmochowska, K., Kuwabara, S. A., Gladstone, T., Larson, J., Stuart, S., Gollan, J., Bell, C., Bradford, N., Reinecke, M., Fogek, J. & Van Voorhees, B. W. (2009) From prototype to product: Development of a primary care/internet based depression prevention intervention for adolescents (catch-it). *Community Mental Health Journal*. 45 (5), 349–354. Available from: doi: 10.1007/s10597-009-9226-3
- Loving, R. T., Kripke, D. F., Knickerbocker, N. C. & Grandner, M. A. (2005) Bright green light treatment of depression for older adults [ISRCTN69400161]. *BMC Psychiatry*. 5, 1–8. Available from: doi: 10.1186/1471-244X-5-42
- Mukhtar, F. & Oei, P. S. T. (2011) A Review on the Prevalence of Depression in Malaysia. *Current Psychiatry Reviews*. 7 (3), 234–238. Available from: doi: 10.2174/157340011797183201
- Muller, M. J. & Kogan, S. (2012) Grounded Theory Method in HCI and CSCW. In: Jacko, J. A. (ed.) *Human Computer Interaction Handbook*, Boca Raton, Florida, CRC Press, pp. 1003–1024.
- Mustaffa, S., Aziz, R., Mahmood, M. N. & Shuib, S. (2014) Depression and Suicidal Ideation among University Students. *Procedia - Social and Behavioral Sciences*. 116, 4205–4208. Available from: doi: 10.1016/j.sbspro.2014.01.917
- Novick, D., Montgomery, W., Vorstenbosch, E., Moneta, M. V., Dueñas, H. & Haro, J. M. (2017) Recovery in patients with major depressive disorder (MDD): Results of a 6-month, multinational, observational study. *Patient Preference and Adherence*. 11, 1859–1868. Available from: doi: 10.2147/PPA.S138750
- Perreault, K. (2009) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. *Manual Therapy*. 16 (1), 103. Available from: doi: 10.1016/j.math.2010.09.003
- Roseman-Halsband, J. L. (2018) Is Color and Light Therapy an Effective Complementary Therapy for Oncology Patients? An Analysis of One Practitioner's Anecdotal Experiences. *Alternative and Complementary Therapies*. 24 (3), 121–128. Available from: doi: 10.1089/act.2018.29165.jlr
- Saldaña, J. (2009) *The coding manual for qualitative researchers*. Thousand Oaks, Sage Publications Ltd., p. xi, 223.
- Sani, M. N. A., Amran, A. A., & Muhammad, J. M. K., Romainoor, H. & Kanyan, L. R. (2020) The appropriation of product design as solution to minimise risk of exertional heat illness among Marathon runners. *International Journal of Human Movement and Sports Sciences*. 8 (6), 63–67. Available from: doi: 10.13189/saj.2020.080711
- Saravanan, C., Alias, A. & Mohamad, M. (2017) The effects of brief individual cognitive behavioural therapy for depression and homesickness among international students in Malaysia. *Journal of Affective Disorders*. 220, 108–116. Available from: doi: 10.1016/j.jad.2017.05.037
- Schmidt, N. L. (2006) *Self-Administered Tactile Therapy: A Proposed Intervention For The Treatment Of Public Speaking Apprehension*. PhD thesis- Partial fulfillment. Washington State University.
- Sinniah, A., Oei, T. P. S., Maniam, T. & Subramaniam, P. (2017) Positive effects of Individual Cognitive Behavior Therapy for patients with unipolar mood disorders with suicidal ideation in Malaysia: A randomised controlled trial. *Psychiatry Research*. 254, 179–189. Available from: doi: 10.1016/j.psychres.2017.04.026
- Verduyn, C. (2000) Cognitive Behaviour Therapy in Childhood Depression. *Child and Adolescent Mental Health*. 5 (4), 176–180. Available from: doi: 10.1111/1475-3588.00308
- Wileman, S. M., Eagles, J. M., Andrew, J. E., Howie, F. L., Cameron, I. M., McCormack, K. & Naji, S. A. (2001) Light therapy for seasonal affective disorder in primary care: Randomised controlled trial. *British Journal of Psychiatry*. 178 (4), 311–316. Available from: doi: 10.1192/bjp.178.4.311

