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DESIGNING MOTIVATOR STATIC FORMS TO PREVENT RISK DISEASE: CONSIDERATION FOR GRAPHIC DESIGNERS

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ABSTRACT

Prevention of the disease can only be succeed if the message can be deliver to target audience and they willing to perform health behavior to prevent from risk disease. The purpose of this article was to review the literature about framework that could be a motivator for target audience to change their behavior and also to maximize their effectiveness. Future recommendations also will be added in this paper in order to enhance the framework. Literature review of published research and education articles. The needs of few features that can complete the framework in order to help the target audience to perform behavior change is required. In order to be effective, McGuire's conceptual framework need to hybrid with Fobb's behavior model to analyze outcome for behavior change among target audience. Graphic designer need to identify the use of static form that could motivate target audience to perform health desirable behavior in order to prevent them from risk disease. The use of image might be vary and need to be acceptable to range of age target audience.

1. Introduction

Non-communicable diseases (NCDs) are the main cause of disease burden and mortality in the Asia Pacific region, claiming 55 percent of total life in the South East Asia region each year while 75 percent have been recorded in the Western Pacific region [36][37]. It can be caused by correctable problems, such as an Unhealthy lifestyle which can be divided into five subcategories such as smoking, alcohol consumption, sedentary lifestyle, diet, overweight obesity and depression or psychosocial factors [34][38]. As reported by National Health and Morbidity Survey (HHMS), It is estimated that 73 percent of the total deaths in Malaysia were due to non-communicable diseases (NCDs) and half of the number were caused by cardiovascular diseases [35], Atherosclerosis is also the most common cause of cardiovascular disease [38]. These facts can be assumed that the prevalence of NCD risk factors continued to rise and was indeed a worrying trend for the country [35]. In order to reduce Malaysian from perform risk behavior an Effective written health information must be formatted in a manner that the recipient can read and understand [1]. Written materials offer a number of advantages such as message consistency, reusability, portability, flexibility of delivery, and self-paced learning [2]. In 1990, a study found that Patients frequently forget information that is

conveyed verbally [3]. The use of health information materials can provide recall and reinforce verbally delivered information [4]. Design characteristics are fundamentals to be consider when come in developing a printed material, in order to deliver the information, an effective printed materials need a design characteristic, which it consists of typography, layout, emphasis, document type, colour and graphics [5]. This design characteristic also mentioned by other scholars as a very essential characteristic to be ignore [6]. The use of design characteristics must be supported by other elements to trigger behavior among potential target audiences. One of the study that has been done by Green in 2015, investigation on exposure graphic warning label (GWLs) towards young adult smokers to identify neural response to graphic warning label and to assess effect differences through plain cigarette packaging or branded [30]. Through the study involved respondent from 18 to 30 years, the graphic warning label was tested four warnings as proposed by Food and Drug Administration (FDA) in the United States of America. Those graphic warning label are deliver a message regarding the smoking associated risks of stroke/heart attack, lung disease, cancer and mortality [30]. The outcome from this research has been highlighted by scholar as an effective approach at eliciting cognitive and emotional reaction in prior studies towards young adults, the use of graphic warning label also has been used widely over 65 countries around the world [32].

Every target audience have a various academic background, and because of knowledge is often a prerequisite to understanding the need for behaviour change, health education includes interventions to inform target audience and enhance their understanding of health conditions and their treatment are need to be specific, such as to increase self-efficacy and enable them to participate in decisions about their care [1]. As reported by scholar, the content and design characteristics of health education materials have received far less attention in the literature compared to the issue of readability [1]. Meanwhile other studies are focusing on influence health education through comprehension of information [7]. Most of the previous research on content and design characteristics regarding printed educational materials has been focused on readability [1][8][9][10][11].

Despite of readability, the usage of graphic design characteristics can be seen in printed education materials, and most of scholars mentioned the variables in content and design characteristics. According to scholar the content and design characteristics of written health materials have received far less attention in the literature than the issue of reading levels [7]. “However, these features can also influence the comprehension of information” [7]. The use of design characteristics always been taken for granted, according to scholar “With respect to graphics, while most of the materials we assessed had visuals/pictures that were deemed professional and easy to understand, they often did not contribute to the overall message” [12]. According to scholars, design characteristics consists typography, layout, emphasis, document type, colour and graphics [5]. There are five elements that need to be considered in the design of written materials: content, language, layout/typography, organization, and graphics (Caposecco, Hickson, & Meyer, 2011). Meanwhile other research suggested that design characteristics could be divided into six sub-components such as typography, layout, emphasis, document type, colour and graphics. Design characteristics also are fundamentals that need to be considering when developing health education materials [5].

2. METHODOLOGY

Article relevant to this paper were initially located by conducting searches through google scholars by using the following key search terms, ‘behavior change’, ‘health education’, ‘prevention diseases’, ‘persuasive communication’, and ‘risk behavior’. Additional articles were subsequently located from the reference lists of retrieved articles.

3. IMAGES AS EDUCATIONAL TOOLS

The use of image in to improve health communication are widely discussed among scholars [51]. Usability of images has been reviewed through comprehension, recall, adherence and attention. As showed in Plate 1, this study has been done by Delp and Jones [52], the study involved 234 respondents who basically are patients coming to an emergency room with laceration. Respondents will be given printed instruction post treatment of taking care their wounds at home, distribution printed materials are randomly just text while the others received the same text but with pictures which presented the information, the outcome of the study are proven that pictures in the materials does effect health behaviour among recipient.

Plate 1: Sample of picture and text given to emergency room patients for wound care at home

Meanwhile other study which has been done by Ngoh and Shepherd back in 1997 in rural Cameroon, an experimental study among group of women after receiving verbal instruction about taking medications, they are provided an images to take home to remind them when to take medicine. The images that represent similar to Cameroon women are taking medicine with similar lifestyle environment in Cameroon. This control group does not receive any other spoken instruction. The adherence was assessed four or more days later through home visit by counting pills remaining from the prescription. The results showed that 90 percent of the pills prescribed for the time period as compared to 78 percent for the control group. This difference was statistically significant. Development of the images Ngoh and Shepherd developed their drawings in close consultation with people in the population who would use them. They concluded that, for pictures to be effective, they must be meaningful to people in the audience (i.e. culturally relevant) and must be tied to simple, understandable words. Examples of pictures used in the Ngoh and Shepherd study are shown in Plate 2.

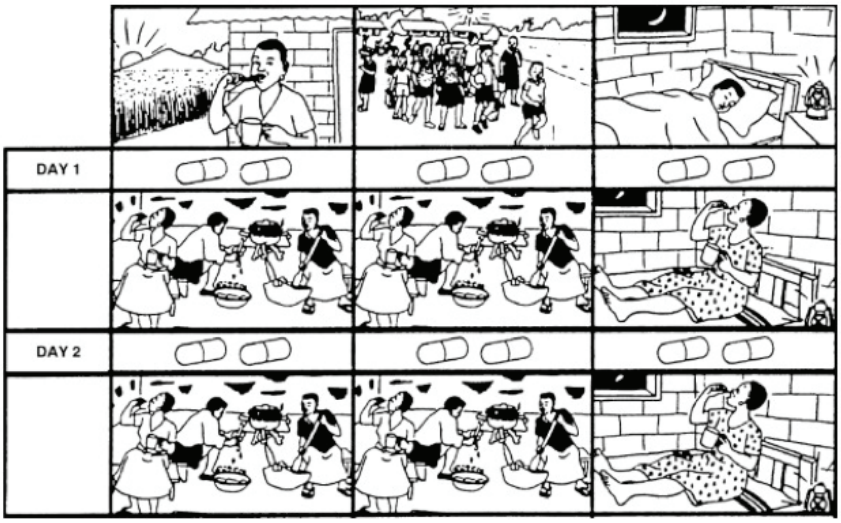

Plate 2: Examples of pictures given to non-literate women in rural Cameroon to explain when to take pills:

3.1 IMAGES AS PREVENTION RISK BEHAVIOR

Images of person who engage or do not engage in certain health behaviors are important because these images are social-psychological representations of characteristics associated with the risk behavior. The importance of images has been revealed in past research which representations work through a social comparison process that of comparing oneself to the image. Moreover, it has been suggested that young adulthood is a period of time in which individuals are preoccupied with their social image [26][39]. While, some other studies have suggested that images of the future self or possible self also are an important predictor of current health behavior [40] and of responses to health messages [41].

The outcome from other scholar is varying compared to what the result in another study, "The importance of pictures for enhanced patient understanding of the risk/benefits of medication treatment" [13]. Two studies has suggested that people with less education are especially likely to

adhere to medical instructions accompanied by pictures [52][53], while images are not a disease, they can play an important role in helping community with low literacy skills to understand and adhere health information for their health.

According to scholar, health professional always faced difficulties in order to deliver information regarding health education [15]. Scholar findings suggest that images are not only related to willingness and behavior (as past research has suggested) but that systematic contemplation of images can produce changes in behavior [16]. Images also can affect antecedents to behavior, as well as behavior [24]. This is another variable which is need to be add on in design characteristics in order to persuade target audience to perform risk behavior. The idea that images of the self or others are related to and can often guide behavioral choices is not a new phenomenon as mentioned in other research [17][18][19][20]. But according to scholars, there are differences approach to certain target audiences, as recommended for this difference is that images of "unhealthy behavior are usually more vivid than images of healthy behavior" [21][22][23]. However, other preliminary study get outcome from different images, according to Ouellette, the exerciser and non-exerciser images were both easily generated and were more vivid than all of the other active images. Specifically, images of the person who works out and is in shape and the couch potato were both more vivid than those of the smoker, drinker, condom user, and so forth. Thus, the relatively high vividness of both the exerciser and non-exerciser images may explain why these images were equally impactful in the current study, unlike previous finding regarding healthy versus non-healthy images. As suggested by past research, she also recommended that through their findings suggest that images are not only related to willingness and behavior but that systematic contemplation of images can produce changes in behavior [16][59]. When it comes to investigation how future image might relate to healthy behavior especially on physical activity and healthy diet, very few studies have been done on this two lifestyle activity [16].

Another type of image that may affect an individual's decision about health behavior is an image one has of oneself in the future-termed a possible self. A possible self is an individual's idea of what they might become, including what they want to become as well as what they fear becoming [48][49][50]. Possible selves can be viewed as the future-oriented components of the self-system-they are the manifestation of one's goal, aspirations, motives, fears, and threats [48].

In other study, the use of favorability images which associated with condom use and nonuse was manipulated in persuasive communication about safe sex [45]. Responsible character who is using condom (positive prototype) or irresponsible character (negative prototype) who is non-use condom were presented in communication. Outcome from the research shows, people are willing to practice safe sex by using a condom after exposed to negative prototype, while respondent exposed with positive prototype had no effect. This study similar to others, where scholar found an exposure negative picture of a person who perform in casual sex (negative prototype) led to a reduction in willingness to perform in casual sex [46].

A perspective study has been done through impact of images of people through 'age' who is 'drink frequently' and those who 'do not drink' among adolescents' willingness to drink and subsequent alcohol consumption [47], the findings from this study shows positive drinker images aid drinking a year later while positive nondrinker images inhibited willingness to drink and drinking behavior over the same period of time. It is show that risk images can be used to reduce potential target audience willingness to engage in risky behaviors [21][26], as suggested from all the studies which also can help them to become healthy, this recommendation also supported by Gerrard through

indication of an appropriate images could prohibit potential risk behavior [47].

The evidence of the impact of favorability of the image is varied. Two studies indicated that unfavorable, but not favorable, prototypes lead to a reduction in willingness to engage in a risky behavior. One study, Gerrard [47] found that both types of images affected behavior; specifically, unhealthy images (drinker) facilitated drinking, whereas healthy (nondrinker) images inhibited future drinking. Thus, although the evidence for the impact of favorability (i.e., valence) of the prototype is somewhat mixed, evidence does suggest that unfavorable (i.e., unhealthy) images consistently affect behavior [16]. According to scholars, the change of adherence to health guidance can be achieve by using a pictures, but the result may vary when it comes to emotional response to pictures affects whether the target audience will perform the target behavior or otherwise [15]. As the previous study with a variety of other health-behavior images is to determine which ones are most effective and whether image vividness is a determining factor, future research is needed to identify this situation [16].

4. MCGUIRE'S COMMUNICATId ON PERSUASION MODEL

The use of McGuire's Communication Persuasion Model basically is a framework in order to assess response of target audience to the materials [54]. McGuire's model has listed a series of instruction whereby human would change their behaviour after being exposed to an educational content. McGuire's model required six steps as to the messages, as can see in Figure 1, this model is found as an acceptable to evaluate the effectiveness of health education materials [55]. As shown in Figure 1, was the model of Persuasion by Willian McGuire's. Start with an exposure or presentation, Target audiences are presented with a message through appropriate media (Eg: Printed). Second phase will be attention or awareness, where audiences will see and recognize the content and identified either creative exposure, or repeated exposure, and does it often 3 times or more. Third phase audience will be asked regarding Comprehension or understanding, this steps will expose either audiences comprehend the value or point of the message. Forth step are acceptance, either audiences believe the content in the media. Fifth step are retention, audiences will be asked either they still remember the content, and able to identify the content with the company and its products or services. The last would be the action, audiences change their behavior in the desired direction. All the six steps of McGuire's Model can be justified in six outcomes in Table 1

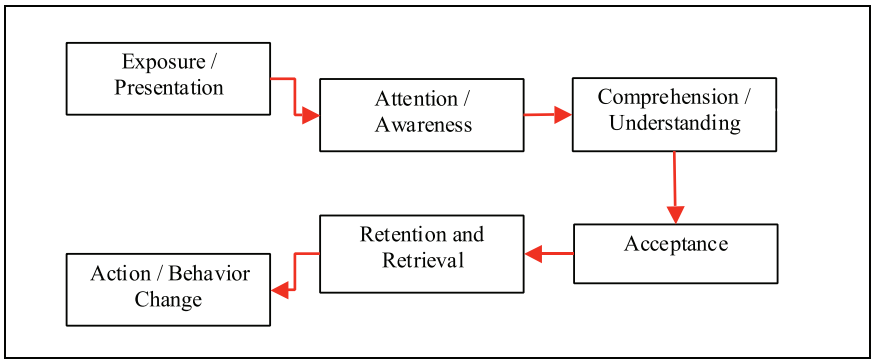

Figure 1: William McGuire's Framework

Table 1: Six Steps of McGuire's Model

Step	Respondent	Researcher
A	Participant's recall of printed materials they receipt	[1] Participant remembered receiving the printed materials. [2] Detail description if unable to recall.
B	Participants' reported retention of the	1) Still have the printed materials.
	printed materials	2) Thrown printed materials away
C	Participants' reported utilization of the printed materials	1) Which sections were found to be the most and least useful in the printed materials
D	Participants' reported utilization of the printed materials	1) Sections of the printed materials they had completed
E	The perceived acceptability of the materials to participants	2] eye-catching, 3] believable content, 4] interesting and easy to read
F	Participants' awareness and behavior regarding issues in the printed materials	1) participants' perceptions of the preventability of diseases: heart disease, lung cancer, skin cancer, breast cancer, cervical cancer (etc.) 2) Perceptions of the benefits of early detection of each type of cancer. 3) Perceptions of their own likelihood of suffering disease
G	Participants' demographic characteristics	age, gender, marital status, education level, country of birth, employment status, occupational status and gross household income.

Six steps of McGuire's model required few steps in order to identify how participant evaluate the printed education materials. An assessment by researcher either participant remembered receiving the printed materials, they will be given detail description if they unable to recall at the first place (Step A). Assessed by asking if participant still had the printed materials or had given or thrown them away (Step B), Assessed by asking which sections were found to be the most and least useful in the printed materials (Step C), Which sections of the printed materials they had completed (Step D), This section will be focus on participant evaluation, where they will be assess by asking how eye-catching, believable, interesting and easy to read the printed materials, In order to identify recipient suggestion to improve printed materials, pre-testing which frequently used by NSW Cancer Council and Anti-Cancer Council of Victoria has been carried out and will be identified in Step E, this section not only for improvement but also to identify willingness to buy the printed materials, other findings also to identify either the content in printed materials effect annoying, frightening or confusing in the printed materials and overall rating the item will be collected (Step E), This section will including participants' perceptions through awareness and behaviour regarding the issue which has been highlighted in the printed materials especially on preventability of other diseases such as heart

disease, lung cancer, skin cancer, breast cancer and cervical cancer, second will be their perceptions of the benefits of early detection of each type of cancer; and the third will be their perceptions of their own likelihood of suffering from the diseases. It is a potential predictors of utilization, according to Health Belief Model for behaviour change, which it specify that individual get prepare to perform positive health behaviour is related to the individual's perceived severity of the related disease, their perception of personal susceptibility to the disease and the perceived trade-off of costs and benefits associated with adopting the desired behaviour [56][57] (Step F). The last compulsory section will be demographic for participant that basically will include age, gender, marital status, education level, country of birth and any related information.

5. FOGG's BEHAVIOR MODEL

As McGuire's model is focusing on respondent reaction to the material, it is essential to identify how the target audience react after read the printed material. In Fogg Behavior Model, it highlighted into three principals, and each principle have sub-components as can be seen in Figure 2.

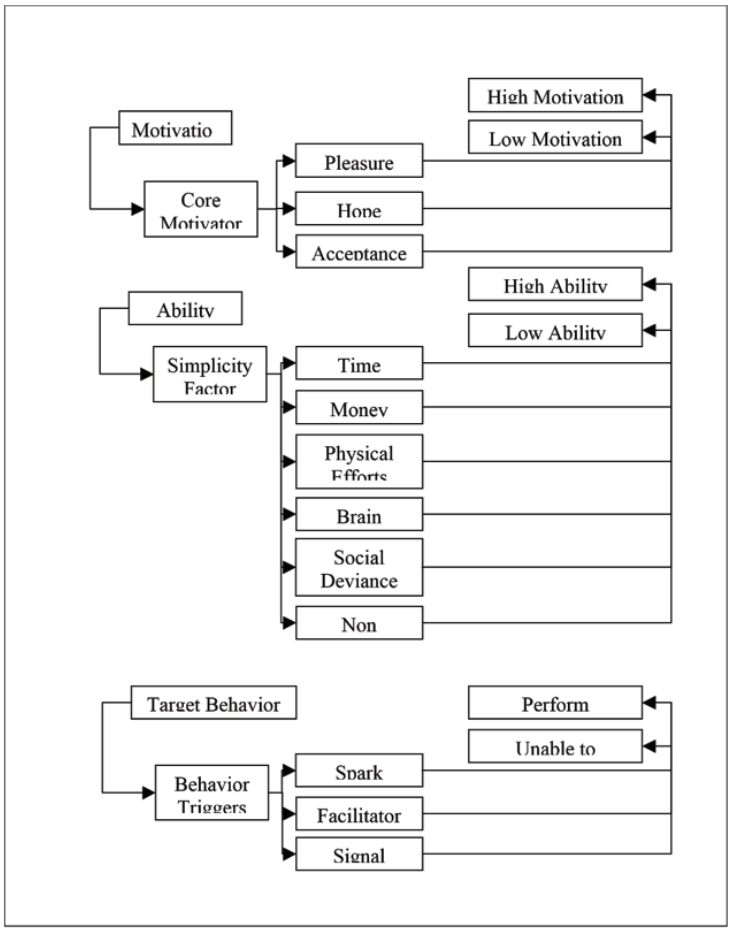

Figure 2 : Fogg Behavior Model

According to Fogg, in order to understand persuasion and behavior change, many scholars has been proposed ways, and some of them will refer to very early beginning theory from Aristotle in ancient Greece. This is what make the Fogg Behavior Model (FBM) stand out from ordinary theories, the result from this theory are combination of three very specific elements at one moment. FBM have three main components in order to achieve one target behavior, every three main components will have its own sub-components as showed in Figure 2. This FBM are applies directly through these three main components in order to designing for behavior change that will be effect to practical issues.

6. CONCLUSION

The use of other theory such as Suitability Assessment of Materials has been widely use in order to identify of appropriateness of the printer material, this theory also is a benchmark for scholars [66][67][68], other than that, scholars also assess on the readability of the printed materials by using The Flesch-Kincaid readability score [60], and some of them investigate through systematic review which include related theory for readability such as FRE, f-K, Fog, SMOG, Fry [62][63][64][65]. As the assessment on printed of material to measure it appropriateness, and readability of the printed materials, it is shows only few studies has been done to identify how the content in the printed material successful persuade the target audience to perform health behavior change. Other scholar has mentioned the use of pictures does help "clinical research endeavors", which is pictures also can help comprehension on medical illness [14]. Since the use of images could help respondent to perform health behavior change, this study should be done in the future to identify how the images could help other regions as the other scholar only recover certain region. This could help health education to other country in order to reduce disease in the future.

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