HEALTH COMMUNICATION VIA LINE AND THAI SENIORS: IMPACTS OF CONTENT TYPE AND MESSAGE FRAMING ON AUDIENCES' RESPONSES

HEALTH COMMUNICATION VIA LINE AND THAI SENIORS: IMPACTS OF CONTENT TYPE AND MESSAGE FRAMING ON AUDIENCES' RESPONSES

A Dissertation Presented to

The Graduate School of Bangkok University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy in Communication Arts

by

Opaporn Pasvekin

2021

This dissertation has been approved

for the Graduate School by

Chairman, Doctoral Program in Communication

Bangkok University

Dean of the Graduate School

Bangkok University

Pasvekin, O. Ph.D. (Communication Arts), January 2021, Graduate School, Bangkok University.

Health Communication via Line and Thai Seniors: Impacts of Content Type and Message Framing on Audiences' Responses (229 pp.)

Advisors of dissertation: Assoc. Prof. Ratanasuda Punnahitanond, Ph.D.

ABSTRACT

This research aims to investigate the strategies of health messages sent to Thai senior citizens in LINE application, and to examine whether health message strategies (content type and message framing) sent via LINE directly influence Thai senior citizens' responses. A mixed research method (content analysis and survey) was used to find out the influences of health message strategies via LINE on senior audiences' responses. Thirty-one health messages via two senior group LINEs (Young Happy and O-lunla Club) between September 8, 2018 and March 9, 2019 were analyzed to identify the category of health message strategies. Analysis results identified three categories of content type (informational, narrative, and mix of both) and three categories of message framing (gain-framed, loss-framed, and mix of both frames). 303 Thai senior citizens were purposively recruited from Thai senior schools and senior clubs to participate in an offline survey. Data were analyzed using frequency, mean, standard deviation, and Variance-based Structural Equation Modeling (VB-SEM) by applying the Partial Least Squares (PLS) technique. Analysis results suggest that a mix of informational and narrative messages was more persuasive. Gain-framed messages were more persuasive than loss-framed messages.

Findings also reveal that health message strategies significantly influenced cognitive and behavioral responses, and that affective responses mediated the effect of cognitive responses on behavioral responses. Implications are provided for communication scholars, practitioners, and health promotion agencies to enhance the effectiveness of health messages targeting senior citizens.

Approved: 

Signature of Advisor

ACKNOWLEDGEMENT

This dissertation could not be completed without the help and support from my family, advisors, and friends. I would like to take this opportunity to express my deepest and sincerest gratitude to my major advisor, Assoc. Prof. Dr. Ratanasuda Punnahitanond who always helped and guided me throughout the dissertation process to complete my study. Moreover, I would like to give my utmost appreciation to Assoc. Prof. Dr. Rosechongporn Komolsevin for her advice and support throughout my doctoral study.

Furthermore, a special appreciation goes to Assoc. Prof. Wathna Soonthorndhai for his statistical guidance and consultation during my data analysis process. I also would like to thank Assoc. Prof. Dr. Pacharaporn Kesaprakorn, and my defense committee members, Assoc. Prof. Dr. Kamolrat Intaratat, and Asst. Prof. Dr. Suwannee Luckanavanich for their valuable comments and suggestions for my dissertation.

Thank you to my Bangkok University classmates, particularly Dr. Sora Kaitkanarat and Dr. Sarinya Kongtieng, who have helped me with their academic support and guidance during the process of research and data collection for this study.

Finally, thank you so much to my dearest grandfather for his kindness and support throughout my life and encouragement to study towards a doctoral degree. Most importantly, biggest thanks to my dearest grandmother, mother, father, and sister for all their love and support to help me complete and pursue this doctoral degree. Special thanks to my aunty Tiamchan Chartchaiganan, aunty Sukon Chumreonlert, and her son, Paul Chumreonlert, who have supported and helped me to

this point. There are not enough words to express my appreciation for them. Thank you very much.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

This chapter provides background of the study, including rationale and problem statements. It also describes research objective, scope and significance of the study, research questions and hypotheses, together with definition of terms.

1.1 Background of Study-Rationale

1.1.1 Internet and Technology

The Internet and new communication technologies have created more online networks among users (Anderson & Rainie, 2017). People today have become more reliant on the Internet and new technologies, and billions of people use smartphones now (Anderson & Rainie, 2017). With the development of new technology and media, it is changing the way individuals approach and communicate in their networks (Anderson & Rainie, 2017). Communication has become increasingly complicated with the introduction of new technologies, new devices, and digital platforms that have created social networks; thereby forming digital interaction among users (Agarwal, Gupta, & Kraut, 2008). Humphreys, Rodger and Flabouris (2013) and Yzer and Southwell (2008) also mentioned that Internet-based modes and new technology promoted the ability to have mass conversations and exchange information between individuals and groups and intercreativity, as people can share and create content in a collaborative environment with other users.

The Internet in general is a media outlet for people to go online to search information on websites, to communicate, and to interact with others. New

communication technologies have been developing very rapidly, allowing most people to communicate on smartphones via communication applications in many ways such as instant messaging, video calls, Internet telephones, or social media (Fox & Duggan, 2013). Many people use the Internet as a primary source to find their health information or health related issues (Fox, 2011; Iacovetto & Allen, 2015; Volkman, et al., 2014). Online media become an important tool for individuals to search and share information with family and friends. Many researchers show a significant amount of the Internet time being used as a positive tool and source for health information (European Union, 2014; Fernandez-Luque & Bau, 2015; Fox, 2011; Iacovetto & Allen, 2015; Volkman, et al., 2014)

1.1.2 Social Media

Sweetser and Lariscy (2008, p. 180) defined social media as, "a set of technology tools that are just as they sound; mediated opportunities for bringing people together and encouraging social networking and dialogic communication". Spence, LachLan, Westerman, and Spates (2013) explained social media as a variety of channels and outlets that offer users the opportunity to work together, to create content by engaging in discussion for a better understanding, and to share their findings. Chua and Banetjee (2013) and Thackeray, Crookston, and West (2013) mentioned that social media refers to the Internet online services that support individuals to have social interactions online among users to co-create, distribute, find, and share information. Chua and Banetjee (2013) also stated that social media allow online users to evaluate the online information repository. The motivations that make people use social media are their basic needs to communicate, socialize, and be a part of a group and maintain relationships (Baltaretu & Balaban, 2010). Moreover,

Baltaretu and Balaban (2010) showed that people use social media because it is easier to communicate with friends, and find out updated information about their friends. Kelleher and Sweetser (2012) mentioned that social media allow users to engage and interact with each other, to share information, create, and maintain relationships. Keating, Hendy, and Can (2016) also argued that social media can help improve life satisfaction.

According to global digital report 2020, the number of internet users in Thailand is 52 million (Kemp, 2020). This source showed that 52 million Thais use social media on their smartphone and they use online media approximately nine hours per day while spending time on social media around three hours per day (Kemp, 2020).

1.1.3 LINE Application

Health communications have adopted social media and mobile phones to create online communication channels via the Internet among online patients. These groups of online communities share information about diseases and health-related issues to improve quality of health care, health service, and health outcomes (Hu, 2015).

Today there are many communication applications that are used by Thai people, such as LINE, Facebook, and Instagram (Kemp, 2018) which are the popular social network applications for Thai users respectively. Kemp (2020) reported the number of digital users in Thailand in 2020 on mobile devices to be around 93.39 million (Muangtum, 2020). Recently, LINE is one of the most popular mobile communication applications among Thai citizens in Bangkok, quickly becoming one of their broadest social platforms in the Internet social network application (Kemp,

2018; Muangtum, 2020; Nielsen Thailand, 2016). LINE is a mobile application; it offers users a private chat messenger via the Internet and allows them to send and receive unlimited text, audio, pictures, and video messages for free (Line Corporation, 2018).

LINE application (LINE) started off as an instant-messaging application for people to use on their smart phones, has more than 200 million active users worldwide and is used in over 230 countries (Line Corporation, 2018; Nielsen Thailand, 2016). LINE has also been ranked number one in the messenger application category (chat platform) in many countries including Thailand, Japan, Indonesia and Taiwan (Kemp, 2018; Line Corporation, 2018), and is the number one ranked mobile application for Thai users at present with recently 45 million users updated in January 2020 (Line Corporation, 2020; TWF Agency, 2020). Nielsen Thailand (2016) showed an average of Thai users spending the highest amount of time at 63 minutes per day on LINE social platform (TWF Agency, 2020). LINE has become even more popular for Thai smartphone users, due to being able to send LINE sticker messages, virtual messages, info-graphic messages, and video.

Background information about LINE is briefly described as follows: Line was firstly available on a smart phone. LINE can be defined as a kind of mobile messenger social chat applications that could maintain relationships among users (Line Corporation, 2018). People can download the LINE application in several platforms for their smart phone devices, e.g. iOS and Android (Line Corporation, 2018). However, it also offers a version for personal computer. Its main features are sending instant messages, photos, video clips, LINE stickers, video calls, phone calls, followed by news on LineToday, and Timeline for users to post their information

(Line Corporation, 2018). LINE has expanded its arsenal of tools for Thai citizens to use in communicating with family, friends, and organizations (Kemp, 2018).

1.1.4 LINE Message Interactivity

LINE is an Internet social network application that offers users the capability to communicate online (Kemp, 2018; Nielsen Thailand, 2016). LINE features allow users to chat online with family and friends by sending and receiving unlimited text messages (Line Corporation, 2018). Online-contact forms, or interface features for adjusting information flow, are communication tools that offer interactive features to users (Liu & Shrum, 2009; Lynch & Ariely, 2000). Message interactivity is the form of conversational ideals involved in information exchange among people (Rafaeli, 1988). Message interactivity can persuade people who use online-contact forms for exchanging messages (Liu & Shrum, 2009; Sundar, Kalyanaraman, & Brown, 2003). Researchers mentioned that people who have high level of interactive message exchanges can contribute persuasive outcomes in favorable ways to users and can affect users' attitudes and beliefs (Oh & Sundar, 2015).

1.1.5 LINE Use among Thai Senior Citizens

Aging society has become a trend of the global population. Since 2015, there were 901 million people age 60 and over and the number of senior people keeps growing (United Nations, Department of Economic and Social Affairs, Population Division, 2015). The world's largest number of senior people is the Asia-Pacific region at 508 million persons (United Nations, Department of Economic and Social Affairs, Population Division, 2015). According to the United Nations Department of Economic and Social Affairs, Population Division (2017), the number of senior people is growing fast especially in urban areas. The number of senior people aged 60

years and over increased 68% in urban areas, and 25 % in rural areas during 2000 and 2015. Moreover, United Nations, Department of Economic and Social Affairs, Population Division (2017, p.2) mentioned that women's longevity tends to be longer than men's one based on the statistics of the world's aging population showing life expectancy at birth for men and women. Its 2017 chart reveals that "Globally, during 2010-2015, women outlived men by an average of 4.6 years". The United Nations Department of Economic and Social Affairs (2017) reported that by 2030 the global population of older people 60 years and older will increase by 56 percent from 962 million in 2017 to 1.4 billion. As senior people will become the greater proportion of the total population, they have become important age group, and more influential in our society (United Nations, Department of Economic and Social Affairs, Population Division, 2015). Senior people are highly likely to have a great impact on society, including their need for goods and services such as healthcare, goods delivery, and information communication technology (TCT).

Thailand has a rapidly growing population of senior citizens. Since 2005, Thailand's population is growing towards an "aging society," according to the NESDB report (Chaitrong, 2017). An estimate by the National Economic and Social Development Board (NESDB) showed the rising number of Thai senior citizens aged over 60, and by 2021 Thailand's population will become a full-fledged aging society (Chaitrong, 2017). The Department of Older Persons of Thailand (2020) showed that Thai senior citizens can be categorized into three groups by ageing level corresponding with their needs, capabilities, and lifestyle that are shaped by their age and other factors (gender, education, experiences, and preferences) as follows:

1) Senior citizen early age: 60-69 years old

2) Senior citizen middle age: 70-79 years old

3) Senior citizen latest age: 80 years old and over

Based on the DOP (Patcharaarapa, 2016) the first stage includes the active aging seniors whose age is between 60 and 69 years old. In this stage, senior people are active and healthily ageing. They still have good health and be able to rely on themselves (self-care). They still have the ability to socialize, travel, and do activities of daily living with fully participating in society.

The second stage consists of the resting age seniors whose age is between 70 and 79 years old. They are likely to stay home as their health is less active and their body is beginning to become weak and slow. In this stage, senior people prefer more resting than going out and socializing. They may require physical support for some activities.

The third stage is composed of dependent seniors whose age is between 80 years and over. In this stage, senior people's health is quite poor with the most health problems. They are most likely to need help with daily living activities or someone to take care of them for long term care (personal care). Due to their fragile health, they rarely go out and socialize.

In this current time, many senior citizens continue in adopting digital media and health technologies in order to help them stay fit and strong (Hackett, 2020). Digital media have become a basic tool for older people and people in general to get connected, in order to share knowledge, useful information, and services to improve their health and quality of life (Olphert, Damodaran, & May, 2005). Hackett (2020) mentioned that digital media/digital health can assist senior citizens to maintain their health as many senior citizens not only own smartphone, but also download and use

various applications. Today, it comes to the point that digital media and health-related have served as an important tool for providing useful information (Hackett, 2020; Sardis, 2019). Many health organizations and stakeholders see this opportunity to improve and develop services of digital health media and technologies to serve senior citizen's essentials (Hackett, 2020; Sardis, 2019). This brings senior citizens growing use of smartphone and applications to get health information at nearly the same rate as younger citizens (Hackett, 2020). Thus, digital media especially for health have become very important for senior citizens (Sardis, 2019) as digital health can help senior citizens staying healthy by providing health care and serving health information needs (Sardis, 2019)

A study of College of Management Mahidol University reported that LINE application has become the number one most popular media platform among Thai seniors' citizens aged 55 to 70 (Angkulanon, 2018; "Knowing silver age", 2018; "Insight the way", 2018; Mahidol University, 2018). The senior people are increasingly using LINE for communicating with family, friends, and sharing information and health-related activities among their folks ("Knowing silver age", 2018; "Insight the way", 2018). Since they tend to involve with health issues, they use online media for maintaining relationship, health-related information-seeking, sending knowledge and interacting with others who share similar health situation or circumstances (Cohen, 2000; Hether, Murphy, & Valente, 2014; Lee, Boden-Albala, Larson, Wilcox, & Bakken, 2014). Head, Noar, Iannarino, and Harrington (2013) mentioned that using messaging were successful in health issues for improving health outcomes.

Personalized channel, or a personal preference for channel people wish to use for sending information, is one important factor in successful health improvement outcome (Ruck, et al., 2017). Thai senior citizens use LINE to connect to friends and family, and mainly share useful information on health, health trackers, wellness trends, and health experiences. The study showed a large number of Thai senior citizens who like to read LINE messages and share useful content about health information or information relating to healthy living and quality of living, to relatives and friends (Angkulanon, 2018; "Knowing silver age" , 2018; "Insight the way", 2018; Mahidol University, 2018). Ruck, et al. (2017) mentioned that sharing success stories about health information experiences can motivate people to an action. The format sent via LINE to and among Thai senior citizens are various such as video clips, pictures, text or articles, and infographics (Angkulanon, 2018; "Knowing silver age", 2018; "Insight the way", 2018; Mahidol University, 2018). LINE mobile application has become mostly used among Thai senior citizens because the application is easy to use to copy links and share messages to their family and friends (Angkulanon, 2018; "Knowing silver age", 2018; "Insight the way", 2018; Mahidol University, 2018).

The LINE application is a very popular social networking tool among Thai senior citizens to communicate with family and friends (Angkulanon, 2018; "Knowing silver age", 2018; "Insight the way", 2018; Mahidol University, 2018). Research from the College of Management Mahidol University showed that Thai senior citizens use the LINE application to share information at a rate of 65 percent ("Knowing silver age", 2018), because the content they receive is useful and important and they want to show their opinion toward that content ("Knowing silver

age", 2018). Thai senior citizens also believe that sharing messages helps maintain relationships with family and friends ("Knowing silver age", 2018).

1.1.6 Health Messages on LINE

The number one content that Thai senior citizens often seek and share is the perceived useful information regarding messages for healthy living and preventing sickness from doctors, hospitals, health organizations, healthy food, health brands, health products, and health services ("Insight the way", 2018; "Knowing silver age", 2018). During recent years, messages that include health information in terms of disease treatment and prevention, positive lifestyle changes, have been circulated among social media users in Thailand (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c). These health messages also provide constructive behavior information for the readers to try and practice (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c). Tasks such as eating healthy food, drinking adequate amounts of water, and performing daily exercise are a few examples (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c)

LINE can play an important tool for disseminating effective health communication among Thai senior citizens in Bangkok (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c). For example, many parents have been sending health messages about specific healthy drinks, foods, and exercise recommendations to their children (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c). When senior people receive a useful message via LINE from other users about the benefit of herb juices to build a stronger immune system, for example, they then forward this health message to their family because they believe that this information will improve their child's health (Pantip, 2017a; Pantip, 2017b; Pantip, 2017c)

1.2 Background of Study-Problem Statement

Focus on beliefs and behaviors of recipients

1.2.1 Conflicting Research Findings in Health Communication and LINE Application

To this day, effects of online texting and social media are still controversial, with researches showing both positive and negative sides. Head, et al. (2013), for example, found that health information in the form of text messaging are successful as forms of ads, and effective for promoting health outcomes. Bounsanga, Voss, Crum, and Hung (2016) also found that using the Internet and new technology leads to positive health outcomes (Bounsanga, et al., 2016). However, some researchers found that social media are not effective for promoting better positive health outcomes (Bounsanga, et al., 2016). Korda and Itani (2013) have similar ideas that sometimes social media cannot make users get what they want for their desired outcomes. Head, et al. (2013) also mentioned in their studies that two-way communication was not more effective than one-way communication compared to message frequency.

Moreover, Cline and Haynes (2001) and Eysenbach, Powell, Kuss, and Sa (2002) mentioned an issue concerning the quality of health information provided via online media compared to traditional media, as the number of people who seek health information online are increasing. Many previous studies have focused largely on popular social media such as Facebook, Twitter, and YouTube. Bounsanga, et al., (2016) mentioned that there are some overlaps in the Internet and social media categories, as many studies on health information sources and outcomes contain conflicting information such as Google, Facebook, Facebook messenger, Twitter, Instagram, Instagram direct message, WeChat, Whatsapp, and YouTube. As each of

them is of different information sources, so there are varying of impact that can influence different health outcomes (Bounsanga, et al., 2016)

1.2.2 Social Media and Inaccurate Health Information

During recent years, a large number of circulated messages in social media, especially LINE, are not accurate and rarely based on medical personnel or research findings (Ungkasuwapala, 2016). It has become an issue lately in which a study showing more than 50 percent of health information that people have been sharing, forwarding, and sending via LINE application, are not accurate and contain unreliable information (Health and Trend, 2016; Ungkasuwapala, 2016). For example, there is a blog about, "Anyone of your parents believe in wrong health information that they have been sharing on LINE application?" posted by a son since his dad started using LINE application, and sharing this wrong information to their family. His father really believed in the forwarded information on LINE application without any question. The son consulted his professor who is reliably knowledgeable in some of these topics, to argue with his father about the information he received and its accuracy. However, his father would not believe what his son tried to say, but believed instead everything he received on LINE message (Pantip, 2016). The comments showed that there are many people, who said that their parents, aunts, uncles, and elderly cousins all believed in these forward messages via LINE (Pantip, 2016)

1.2.3 Conflicting Results in Social Media Research and Health Outcomes

The Pew Internet and American Life Project and Medical associations and information experts showed problems of incorrect online health information and experts' concerning inaccurate medical advice on the Internet (Craigie, Loader,

Burrows, & Muncer, 2002; Fox, 2014). The Manager Online news also reported that more than half of health information on LINE application was not true and sometimes caused LINE users to get sick and injured due to following the incorrect health practices that had been sent from their family or friends (Ungkasuwapala, 2016). First Draft (2018) found that Thai citizens use online media to share and report inaccurate information to others. For example, drinking cold water after meals can cause cancer. First Draft (2018) also reported that many Thai citizens get wrong information about diet dish recipes weekly by sharing and sending information online. There are some studies showing the conflict of findings and using the Internet and social media as a tool for positive health outcomes, as studies found an increasing rate of inaccurate health information that creates negative impacts on health (Chou, et al., 2009; Idriss, Kvedar, & Watson, 2009; Kortum, Edwards, & Richards-Kortum, 2008).

1.2.4 Lack of Gate-Keeper in Social Media

The physicians from Chulalongkorn University said that health information on LINE is not accurate for readers because that information LINE users received could have been written by anyone (Ungkasuwapala, 2016). Anyone can post any health-related information on the Internet or online media in which the content is not always reliable (Eysenbach, et al., 2002; Purcell, Willson, & Delamothe, 2002). Spence, et al. (2013) mentioned that health-related information on social media are almost completely user-generated and monitored, since social media allow users to create content together for a better understanding and to share their understanding.

1.2.5 Low Digital Media Literacy among Senior Citizens

One of the concerning issues is e-health literacy in the online media. Hu (2015) mentioned that many people have less skills to use new technologies for

health. Senior citizens tend to have lower physical and cognitive capabilities that can restrict their use of technology and social media (Hamm, et al., 2013; Tennant, et al., 2015; Thackeray, et al., 2013). Older users of social media have less functionality of social media due to lower skill levels with limited ability towards technological complexity to process complex information (Hamm, et al., 2013; Pfeil, Arjan, & Zaphiris, 2009; Tennant, et al., 2015; Thackeray, et al., 2013).

Moreover, elderly people use social media mainly for family-related information exchange, thereby they are ready to accept messages that are received from family and friends in a simplified format with visual presentation (McAndrew & Jeong, 2012). The study of elderly daily use of technology and social media is a less explored area (Hu, 2015; Parida, Mostaghel, & Oghazi, 2016). In the digital age, Hu (2015) also suggested that researchers should develop studies on improving skills of users for using the Internet and new communication technology on health literacy, such as ensuring that health information is accurate, and users should not choose health information for self-diagnosis.

Based on the past studies above, the researcher found that there were limited studies that examined the impact of health communication in LINE application despite the fact that inaccurate health information is largely available in social media. The Manager Online news also reported that more than half of health information on LINE application was not true and sometimes caused LINE users to get sick and injured after following the incorrect health practices that had been sent from their family or friends (Ungkasuwapala, 2016). Furthermore, there is not gatekeeper in social media. Hence, senior citizens tend to believe in the health information they received from their closed relatives, since most of them has low technology and social

media literacy (Hamm, et al., 2013; Tennant, et al., 2015; Thackeray, et al., 2013). Information above also shows that there are few studies on persuasive messages in LINE application and their impact on senior citizens.

Due to these problem statements, it would be significant to examine the impact of the persuasive messages about health information in LINE that affect the cognitive, affective, and behavioral responses among Thai senior citizens. A research is also needed to study on the types of persuasive messages that might make communication easier for readers to remember, understand, and share (Shen, 2010). There are some missing areas of concern in regards to persuasive message strategies via LINE application among Thai senior people that senders use to reach the audience (contents and formats), each of which will have different effects on receivers. Effects of LINE health message strategies, consequently, contribute to cognitive, affective, and behavioral responses of the message recipients.

This study, therefore, aims to investigate the potential influences of health messages sent via LINE application, especially on their cognitive, affective, and behavioral responses. The focus will specifically explore the contents of said messages, the types of contents, message framing, and the potential influence of those messages on senior citizens.

1.3 Research Objectives

Two research objectives are presented as below:

1.3.1 To investigate the strategies of health messages sent to Thai senior citizens in LINE application.

1.3.2 To investigate whether health message strategies sent via LINE directly influence Thai senior citizens' responses.

1.4 Scope of Study

This research studied health messages sent via LINE application and their potential effects on Thai senior citizens' cognitive, affective, and behavioral responses. This paper focused on Thai senior citizens who are over 60 years old and have used LINE for a minimum of one year, and will highlighted on the analysis of content type (informative versus narrative messages) and message framing (gain, loss or mix frame) of online health messages sent via LINE. This study begins by the researcher having joined official accounts of senior groups on LINE application since September 8, 2018, and collected secondary data on health messages for six months to March 9, 2019. The first phase of the study was the textual analysis of the online health message sent via LINE among Thai senior citizens. In the second phase, an online survey was conducted to examine potential influences of such online health messages sent via LINE on the cognitive, affective, and behavioral responses of the senior samples.

National Committee for the Elderly (2017) reported health situation of the Thai elderly in 2017 by showing that diabetes and high-blood pressure were of high and increasing number among the Thai senior citizens. Therefore, the survey focused on these two diseases.

1.5 Research Questions

Based on the literature review, this study proposes 11 research questions as follows:

RQ#1: Which content type of health messages (narrative versus informative messages) were sent to Thai senior citizens in LINE application?

RQ#2: Which message framing of health messages (gain-framed versus loss-framed versus mix-framed messages) were sent to Thai senior citizens in LINE application?

RQ#3: Do health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' cognitive responses?

RQ#4: Do health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' behavioral responses?

RQ#5: Do Thai senior citizens' cognitive responses have a direct effect on their behavioral responses?

RQ#6: Do Thai senior citizens' cognitive responses have a direct effect on their affective responses?

RQ#7: Do Thai senior citizens' cognitive responses have an indirect effect on behavioral responses as mediated by their affective responses?

RQ#8: Do health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' affective responses?

RQ#9: Do health message strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses?

RQ#10: Do health messages strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' behavioral responses as mediated by their cognitive and affective responses?

RQ#11: Do Thai senior citizens' affective responses have a direct effect on their behavioral responses?

1.6 Significance of Study

This study will add the body of knowledge in digital health communication that can help people especially senior people to achieve higher standards of health, and access health care services to promote and protect their health and well-being. It is hoped that this study will help health organizations and stakeholders to improve not only senior's knowledge and skills in relation to healthy aging, but also their health literacy.

This study will also benefit the Ministry of Public Health to be alert in using LINE application to communicate to people in general, and to senior citizens in particular, and to develop guidelines regarding the quality of health information to be shared on LINE, and that can guide LINE users to evaluate and utilize health information via Line. Moreover, the Ministry of Public Health, hospitals, and health care providers can create successful health education campaigns with improved quality of health information, as well as create policies for filtering inaccurate health information on LINE. This study will highlight the impacts of content type and message framing on Thai senior citizens. Thus, this should aid hospitals and health care providers to understand how to effectively create health campaigns to get people's attention effectively and positively affect their beliefs. This study might help

health organizations to design effective health online messages to promote itself with Thai senior citizens.

The researcher also hopes younger generations are affected by this study to help them create a positive atmosphere among family members and society. This study hopes to aid Thai senior citizens, parents, uncles, or aunts, be able to evaluate the quality of health messages and understand that some health messages that are sent via LINE are not accurate, and give them pause before sharing, forwarding, and sending these messages via LINE. This study may help family members have lesser arguments about health messages.

The goal of this study is to connect the growing researches in communication and health communication studies, with the intention of helping health communication professions such as those working in the Ministry of Public Health. Moreover, this paper is for all citizens to help each other to monitor inaccurate health information on LINE and report it to related in-charge agencies (e.g. the Ministry of Public Health). This study will also stimulate the LINE Corporation in Thailand to be aware of inaccurate information sent via LINE, since it may harm the society at large. This stimulation may make possible the development of a new LINE function so that users can report inaccurate messages about health-related issues or check accuracy of health messages circulated in LINE. This paper may also be beneficial to the public by creating awareness for LINE users to not create, send, or share inaccurate health messages, and that Thai senior citizens should learn how to evaluate the quality of health information before believing them. That is, the Thai people should evaluate health messages they receive in the LINE or other social media platforms.

1.7 Definition of Terms

Important concepts of this study were defined as followings:

1.7.1 LINE Application

LINE application is a software program offering users private texting message via the Internet (Line Corporation, 2018). LINE application that contains the health messages for Thai senior citizens. It allows users to send and receive unlimited text, audio, pictures, video clips, video calls, phone calls, LINE stickers, and TimeLine that could maintain relationships and create understanding among users (Line Corporation, 2018). LINE application can be downloaded in both iOS and Android system on smartphones and computers (Line Corporation, 2018).

1.7.2 Thai Senior Citizens

In this study, Thai senior citizen is a group of people who are 60 years and over (National Statistical Office of Thailand, 2014), and live in Thailand. They have been using LINE application for a minimum of one year to send, forward, and share health messages with their family and friends.

1.7.3 Health Communication

According to Khamis and Geng (2020), the Centers for Disease Control and Prevention or CDC in the U.S. defined Health communication as “the field and employing communication approaches to notify and inspire decision and engagements to enhance health issues”. In this study, health communication is particularly important for Thai senior citizens to send, share, and forward health messages or health information via LINE application among their family and friends that can influence health behavior (Rimal & Lapinski, 2009).

1.7.4 Health Communication in Digital Age

Nowadays, health communication has been used in a variety of forms of new media such as: mobile technology, digital media, and social media are used to promote health behavior, health campaigns online, and help improve quality of life (Hu, 2015; Jirasevijinda, 2016). In this study, one of the most popular methods for health communication in this digital age among Thai senior citizens is LINE application. LINE application allows Thai senior citizens to exchange health information about health-related issues, health care, health service, treatment, and disease prevention.

1.7.5 Health Communication via LINE Application

In this study, health communication via LINE application refers to Thai senior citizens' use of LINE for communication by sharing information about health issues among users such as sending text, pictures, audio, and video clips, and/or interacting with health-related messages by sending stickers or commenting about the particular health-related topics among their LINE friends.

1.7.6 LINE Official Account

LINE official account is an account that one must register with the LINE Company. This study examined only the LINE official accounts for Thai senior citizens. They are reliable because they register with the LINE Company, and these LINE official accounts have a lot of friends who follow their LINE official account. In this study, the two LINE official accounts being investigated are O-lunla club and Young Happy. Each of them has more than 3,900 followers.

1.7.7 Health message strategies

Strategies of online health messages via LINE application among Thai senior citizens refer to content type and message framing. In terms of content type, there are two content types -narrative messages versus informative messages. In terms of message framing, there are three types of framing–gain, loss, and mixed frame. Both strategies are expected to influence their belief, affect, and behavior. Conceptual definition of online health messages is developed as follows:

1) Narrative Messages

A narrative message can be considered as a form of communication to describe someone's story about his/her health experiences, e.g., specify health condition on specific situations (Bente & Feist, 2000; Greene & Brinn, 2003; Keer, Van Den Putte, De Wit, & Neijens, 2013; Zillmann & Brosius, 2000). Lagu, Kaufman, Asch, and Armstrong (2008) stated in their studies that a medical message online blog is referred as a web-based narrative about medical content that is written in someone's journal style to share his/her narratives, knowledge, and personal experiences.

2) Informative Messages

An informative message is a message that presents health messages in the form of facts, statistical evidence, abstract data, numbers, evidence/proof, specific name of medical descriptions, location of clinic/hospital, educational tools and resources (Bente & Feist, 2000; Greene & Brinn, 2003; Keer, et al., 2013; Zillmann & Brosius, 2000).

3) Gain-Framed Messages

A gain-framed message presents the benefits and promote advantages of engaging in health activities (Rezai, Chin, Bassett-Gunter, & Burns, 2017; Sherman, Updegraff, & Mann, 2008).

4) Loss-Framed Messages

A loss-framed message presents the risks and the consequences of failure to engage in health activities (Rezai, et al., 2017; Sherman, et al., 2008). Moreover, loss-framed messages present how those risks can be prevented (Rezai, et al., 2017; Sherman, et al., 2008).

5) Mix-Framed Messages

A mix-framed message presents both benefits of engaging (gain-framed) and costs of failure to engage (loss-framed) in health activities (Heather, Wei, & Amy, 2012; Latimer, et al., 2008).

1.7.8 The Impacts of Health Messages

Impacts of health messages on audiences are classified into three types – cognitive, affective, and behavioral responses.

1) Cognitive Responses

In this study, the impact of health message based on the Health Belief Model (HBM) that can explain the relationship of health behavior of people in relation to individuals' belief factors. The HBM has been applied to study many types of the health behavior prediction. It provides key health beliefs, which is a useful framework for understanding individuals' beliefs that lead toward their health behaviors (Becker, et al., 1977; Rosenstock, 1974; Shojaei, Farhadloo, Aein, & Vahedian, 2016).

Base on the HBM, the cognitive responses include five components: (1) Self-awareness, (2) Perceived risk or threat, (3) Perceived benefits (value of engaging in actions), (4) Perceived barriers (low-potential of one-self to take actions), and (5) Self-efficacy (Becker et al., 1977; Rosenstock, 1974; Shojaei, et al., 2016). For this study, the dimensions of the recipient's cognitive responses were measured in terms of self-awareness, perceived risk, perceived benefits, and self-efficacy.

2) Affective Responses

The affective responses include emotions and sharing of feelings. Emotional dimension was measured in this study in terms of sympathy and fear.

3) Behavioral Responses

Behavioral response is an action in a form of sharing, forwarding, and sending health information via LINE application (Health and Trend, 2016; Ungkasuwapala, 2016). Moreover, behavior also refers to the form of people engaging in health-related activities such as exercising, eating food with low sugar after receiving these messages.

CHAPTER 2

LITERATURE REVIEW

This chapter provides the literature review of relevant concepts, including health communication in digital age, media literacy, digital health literacy, health messages strategies, relevant theories, theoretical framework, and conceptual model. It also describes types of online messages (informative and narrative messages) and message framing (gain-framed and loss-framed messages). This chapter consisted of the followings:

This chapter reviewed literature regarding persuasive strategies of health communication in terms of content type (narrative versus informational) and message framing (gain-frame versus loss-frame), and impacts of health messages. The theoretical framework applying the Health Belief Model (HBM) is also aimed to investigate the potential impacts of online health messages via LINE on Thai senior citizens' cognitive, affective, and behavioral responses.

During the past few years, messages that include health information regarding disease treatment, prevention, and positive lifestyle changes have been circulated among social media users in Thailand. These health messages also provide constructive behavior information for the readers to try and practice. Miller and Pole (2010) found that almost half of health information online or health blogs is written by writers who work in health careers such as physicians, specialists in internal medicine, medical students, family practice, and emergency medicine workers. Miller and Pole (2010)'s research also showed that more than half of health information online is written by people who are not physicians such as health consultants, insurers, nutritionists, therapists, and pharmacists (Miller & Pole, 2010). However, a lot of health information online has been posted by patients and consumers on their personal perspectives (Miller & Pole, 2010).

According to research articles on health, time periods of articles showed changing trends of health topics and issues based on elderly health concerns. In terms of health, readers or receivers of messages are more concerned and attentive to information, and content, rather than source characteristics and features (Benoit, 1987; O'Keefe, 1990; Stanford, Tauber, Fogg, & Marable, 2002). For health issues, Miller and Pole (2010) stated that disease and disability experience were the most popular

topics of health information on the Internet. The second popular topic was a specific disease in the brain (Miller & Pole, 2010). Moreover, other popular health information topics on the Internet were found to be health policy, law, business, and health research and news (Miller & Pole, 2010).

However, Hu (2015) mentioned that most health message issues on the Internet that have been studied are cancer and mental health, followed by HIV/AIDS/STD, general nutrition, diet, exercise/ obesity, physical disability, diabetes, and substance/alcohol/tobacco use. The most studied methods of new media technology in the digital age for health messages are websites, traditional online forums, blogs, and web 2.0 social media. Nevertheless, there are fewer studies on newer technologies like mobile messages (mobile application) for health information (Hu, 2015).

2.1 Health Communication in Digital Age

The World Health Organization (WHO) defined health communication as, "seen to have relevance for virtually every aspect of health and well-being, including disease prevention, health promotion and quality of life" (Rimal & Lapinski, 2009, p.1). Health communication scholars and practitioners mentioned that communication is important for people to send health messages and exchange information that can influence human health behavior and change their behavior such as: prevention of disease and threat behaviors (Rimal & Lapinski, 2009).

Health communication started by using mass media such as radio, television, and newspapers to promote health behavior (Rimal & Lapinski, 2009). Recently, with the rapid change of communication and technology in health, health organizations

have been changed by using new communication technology in health communication for health education, in order to reach their audiences for effective promoting and outcomes of health behaviors (Rimal & Lapinski, 2009). The Internet, new technology, and new media has allowed people to find and exchange health information about health-related issues, health care, health service, treatment, and how to help prevent disease (Hu, 2015). Lately, there are health communications through a variety of forms of new media such as mobile technology, digital media, and social media that is used for promoting health behavior and health campaigns online (Hu, 2015; Jirasevijinda, 2016).

The impact of new communication technologies in health communication has been changed in medical technology, health care, and health organizations (Hu, 2015; Rimal & Lapinski, 2009). In recent years, newer technology such as web 2.0 social media and mobile phone health has been used by health professionals for e-health and digital health care, to improve the way to communicate and give service to many different groups of their audience and patients (Hu, 2015).

2.2 Media Literacy and Senior Citizens

Among different generations who have adopted digital technology, the elderly people have some factors for late acceptance and adopting new media and technology (Hamm, et al., 2013; Olson, et al., 2011; Tennant, et al., 2015; Thackeray, et al., 2013). Senior citizens tend to be late adopters because they have lower skill levels, inability to learn complexity of new media, negative attitudes, and negative feelings toward social media and technology use (Hamm, et al., 2013; Olson, et al., 2011; Tennant, et al., 2015; Thackeray, et al., 2013).

Some studies showed that in the past there have been few numbers of senior citizens who use new media and technology (Hamm, et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013). Most of senior citizens are not interested in learning to use new media, and they are more likely to watch television, listen to radio, and read newspaper than learning to use new media and technology (Hamm, et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013). They lack the skills, have less confidence, and are nervous about using new media (Hamm et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013). Moreover, senior citizens have negative feelings in that they will make mistakes while using new media (Hamm et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013).

Lately, senior citizens are likely to use social media with basic skills, easy functionality, and user-friendly technology (Somwatson, 2016; Schiffman & Sherman, 1991). They do not like to use social media that is complicated to learn (Hamm, et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013). For example, Thai senior citizens tend to use the LINE application to larger extent for sending stickers and beautiful pictures for greetings, but use LINE to lower extent for texting as a conversation.

2.3 Digital Health, Digital Health Literacy, and Senior Citizens

The World Health Organization (2015) and the United Nations, Department of Economic and Social Affairs, Population Division (2017) revealed the requirement of public health systems and policy to adapt in order to meet the growing number of

the senior people and their need for age-appropriate care, such as long-term care, health care, services, technologies for prevention, treatment, and social support to lead healthy and productive lives. Thus, it is significant to improve information, analyze data, and study senior people for enhancing their good health. A fundamental policy for senior people must invest and promote older people to both national and international partners, both government and non-government organizations, academic, and other relevant stakeholders to build up practices in terms of a global platform (United Nations, Department of Economic and Social Affairs, Population Division, 2017). The actions from the connecting health partners and stakeholders will help develop senior people for attaining equal knowledge and skills in healthy aging and improving health literacy, which will in turn help promote better health, social connectivity, skills, and knowledge (World Health Organization, 2020).

The United Nations has proclaimed 2021–2030 the Decade of Healthy Ageing. Healthy ageing is developing and maintaining the functional ability that enables well-being in older age ("Decade of healthy ageing", 2020). World Health Organization (2020) showed the value of the decade of healthy ageing in 2030 should be able to provide on an information platform and promote use of digital communication technologies, that allow senior people to access information on activities, facilitate learning, and exchange information that supports the success of health activities and services. World Health Organization (2020) believes that the engagement of many health partners and stakeholders, both national and international, not only can help senior people in healthy ageing, but also help themselves in developing interconnection between health organizations, improving of the health

care system, health digital content, health information, and information and communication technology (ICT).

Digital technology brings many potential benefits for health, especially the prevention and treatment of non-contagious diseases (NCDs). World Health Organization (2020) mentioned that digital health is “the use and scale up of digital health solutions that can revolutionize how people worldwide achieve higher standards of health, and access services to promote and protect their health and well-being.” Digital health supports the Sustainable Development Goals (SDGs) for human rights of all people, including senior people (World Health Organization, 2020).

This is an opportunity of health care organizations and digital health technologies for the development of new connected digital health technologies that can be available for senior citizens and everyone in general (Hackett, 2020). Today, many senior citizens including Thai senior citizens continue to adopt digital health as it becomes essential role of serving health care and health information to senior citizens, which it can help them stay healthy (Hackett, 2020; Sardis, 2018).

Many health care organizations, medical care institutions, government and stakeholders involve with digital health company and focus on digital health for the improved services, development of tools, and reduction of costs for the healthcare of senior citizens (Hackett, 2020; Sardis, 2018). For example, the U.S. government showed that many medical devices that were already approved by the Food and Drug Administration (FDA) can get connected and communicate with other devices by adding digital features such as mobile application that can monitor their health (Sardis, 2018). Hackett (2020) also showed that digital health developments can help senior

people to select effective health care plan and services by addressing the determinants of their health, and programs that support senior people with accessible health care.

Digital health is useful for senior citizens as new technologies and devices can collect valuable information of users' activities in order to predict problems for timely detection, and can help improve and develop health services of digital health to serve senior citizens' needs in the future (Hackett, 2020; Sardis, 2018). Thus, digital health has been developed and improved in order to help senior citizens staying healthy by assisting them with health care service and health information needs (Sardis, 2018).

"Digital health literacy" refers to "the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem" (Norman & Skinner, 2006). As with many other health advances, elderly people who are those with the most need benefit least (Rowlands, Protheroe, & McElhinney, 2006). Due to lacking digital media skills and limited access to digital technology, majority of senior citizens are less able to manage personal health and care issues, comparing to other younger generations (Hamm, et al., 2013; Olson, et al., 2011; Somwatson, 2016; Tennant, et al., 2015; Thackeray, et al., 2013). Accordingly, improving digital health literacy among the senior citizens through digital health message strategy becomes increasingly vital in the current time.

2.4 Health Messages Strategies

There are various strategies for persuasive online health messages in terms of content. Persuasive strategies of content include informational message, narrative

message, language, example of stories, personal online diaries, explanations, and message framing (gain-loss). Review of persuasive strategies of content on health online messages is presented as the following:

2.4.1 Types of Online Message

The content of these messages exchanged is an important factor for persuading an audience (Hovland, Janies, & Kelley, 1953; Pettigrew, Miller-Day, Krieger, & Hecht, 2011). There are two major types of online health message content on the Internet: medical informational and narrative messages (De Wit, Das, & Vet, 2008; Greene & Brinn, 2003; Miller, & Pole, 2010; Wang, Walther, Pingree, & Hawkins, 2008). The informational messages present a multitude of cases: statistical evidence, abstract data, facts, and evidence/proof, while narrative messages present personal information based on individual experiences, e.g., specific situations, appealing details, characters, and stories (Bente & Feist, 2000; Greene & Brinn, 2003; Zillmann & Brosius, 2000).

To enhance the effectiveness of online health messages, it is necessary to understand content types. Greene and Brinn (2003) mentioned that both informational and narrative messages can be used as evidence to prove and constitute the argumentative factors to support messages and conclusions. A lot of online health messages feature heavily on text/article, followed by links, audio, and video (Miller & Pole, 2010). Recently, a study showed popular features of messages for advertising and campaigns for the elderly (“Knowing silver age”, 2018). The most popular feature of advertising and campaigns in Thailand is TVC followed by clips, pictures, article (text), and infographics (“Knowing silver age”, 2018).

2.4.1.1 Informative Messages

Medical informational messages use statistical data as proof and evidence (Greene & Brinn, 2003). Some online health informational messages present statistical data evidence as a persuasive strategy. Statistical informational messages present a summary of numbers as the persuasiveness of a message (Greene & Brinn, 2003). For example, informational messages can present a number of the population who died from unhealthy behavior (Greene & Brinn, 2003). Greene and Brinn (2003) also found that information evidence messages were more effective on information value and persuasive impact on health behavior. Braverman (2008) suggested that informational messages are more effective than narrative message when a person perceives high personal involvement. De Graaf, et al. (2017) also found that informational messages are more persuasive and effective than narrative messages in smoking education for low-educated adolescents. Additionally, Allen and Preiss (1997) and Kopfman, Smith, Yun, and Hodges (1998) indicated that information messages were more persuasive than narrative messages. However, Preece and Ghozati (1998) and Taylor and Thompson (1982)'s studies showed that factual information is less effective and less important than the narrative messages.

2.4.1.2 Narrative Messages

Narrative messages are one of the persuasive communication for strategies changing behaviors, especially in health-related topics, when a person responds to the recommended health behaviors change with less resistance (Flynn, 2015). Many studies of persuasive communication are often referring narrative messages as stories or storytelling (Flynn, 2015). A reader can engage with the story and the deeper a reader gets into the story, the more he/she is away from resistance of

the message (Bente & Feist, 2000; Green & Brock, 2000; Greene & Brinn, 2003; Keer, et al., 2013; Zillmann & Brosius, 2000). The followings are three examples of narrative messages.

1) Stories

One persuasive strategy of content used in online health message is providing a real story especially the success one. The narrative information or case study will provide both positive and negative experiences of a person, example of an event, appealing detail, characters, and stories to online readers (Bente & Feist, 2000; Greene & Brinn, 2003; Zillmann & Brosius, 2000). Narrative, case study, or stories are another form of narrative in online health messages to be persuasive and memorable to online participants (Greene & Brinn, 2003). The case studies and success stories of a person in communication can be highly motivating, especially when it is difficult to practice or follow for example, (Ruck, et al., 2017). Neubaum and Kramer (2015) found that personal blog messages about HIV on the Internet used personal narratives to generate positive attitudes of using condoms over a government website.

2) Personal Online Diary

Online health messages can present health information in a personal format (Arneson & Query, 2001). Media producers write about personal case stories or exemplified content about their issues to get attention from readers (Bente & Feist, 2000; Bennett, 2006; Zillmann & Brosius, 2000). Neubaum and Kramer (2015) showed the superiority of user-generated health diaries online for persuasiveness, and found persuasive advantages of online bloggers who write about health messages in a form of personal health diaries, which allowed bloggers to write in their personal tone

of their own experiences as an exemplar. Miller and Pole (2010) also found that many health information blogs used personal narratives in the journaling form of blogging to share their own experiences with readers or other online users. Personal experience demonstrated persuasiveness to increase self-awareness. A study by Kam, Krieger, Basinger, and Figueroa-Caballero (2016) found that communication among friends is likely to describe their experiences of substance use in positive ways.

3) Explanation

The explanation strategy has been used in the examination of the real typology and adolescent smoking (Greene & Banerjee, 2008). Researchers found that the explanation strategy in a narrative form can provide participants with stories, valid reasonings, and can express fearful outcomes of smoking (Greene & Banerjee, 2008). For health messages, the most convincing message is when the message explains "why," the readers should do or change their behavior (Sherman, et al., 2008). Miller-Day and Dodd (2004) found that some parents discussed substance use with their children about their past experiences and negative outcomes from using substances.

Health narrative messages are a powerful strategy for motivating and supporting behavior change as narrative messages allow readers to engage with stories/messages that make a greater emotional response (Hinyard & Kreuter, 2007; Yoo, Kreuter, Lai, & Fu, 2013). Lundell, Niederdeppe, and Clarke (2013) found that narrative messages were more effective to communicate complex causality and interactivity than statistical images (data/information). Studies of narrative messages show effectiveness for changing beliefs and attitudes with less counter-arguing to health messages on the cause of obesity (Niederdeppe, Shapiro, & Porticella, 2011). Kreuter, et al. (2010); McQueen, Kreuter, Kalesan, and Alcatraz (2011) found that

narrative videos are more effective on attitude change toward mammography than informational videos.

2.4.2 Message Framing

Many studies have used prospect theory as a framework on gain and loss message framing approaches to either positive or negative consequences (Kahneman & Tversky, 1979; Kim, 2014; Wyllie, Baxter, & Kulczynski, 2015). Lueck (2017); Rothman, Bartels, Wlaschin, and Salovey, (2006) and Rothman, Stark, and Salovey (2006) demonstrated that framing choices of gain and loss framing can result in behavior change, as many studies refered message framing as a useful persuasive communication strategy for promoting health campaigns that can motivate people to change their behaviors.

Lueck (2017) found that specific message in terms of gain or loss framing is another important factor to use in message design for persuasive health communication campaigns to connect with each group of people and individual level of behaviors, to change their beliefs and practices. Sherman, et al. (2008) mentioned that health messages should be framed for different people. A review of the literature has studied on message framing effects on behaviors intentions on adults, college students, adolescence, and young children, with limited research conducted on seniors (Camenga, et al., 2014; Kareklas, Carlson, & Muehling, 2012; Kim, 2006; Churchill & Pavey, 2013; Schlottman & Tring, 2005).

Message framing in health campaigns contains benefits of engaging in health behavior (gain-framed) or negative consequences or problems if one does not engage in health behavior (loss-framed) (Quick & Bates, 2010; Rothman, et al. 2006; Rothman, et al., 2006; Sherman, et al., 2008).

2.4.2.1 Gain-Framed Messages

A gain-framed message presents the benefits of engaging in activities (Rezai, et al., 2017; Sherman, et al., 2008). The gain frame in a health message presents promotional messages for promoting the benefits of health behavior/activities (Rezai, et al., 2017; Sherman, et al., 2008). Many studies showed gain-framed messages are more effective when targeting prevention behaviors with low risk disease, for example, sunscreen use and dental flossing (Gallagher & Updegraff, 2012; Latimer, et al., 2008; Rothman, et al., 2006). As for gaining or benefit frame, the content mentions that an individual will have healthier teeth if he/she flosses your teeth regularly (Sherman, et al., 2008). Maguire, et al. (2010) also mentioned that gain-framed messages use positive outcomes in terms of motivation. For example, "you could save your life" and "you will have healthier teeth."

2.4.2.2 Loss-Framed Messages

A loss frame (prevention message) presents the consequences of failure to engage in health activities (Rezai, et al., 2017; Sherman, et al., 2008). Maguire, et al. (2010) mentioned that loss-framed messages use negative outcomes in terms of motivation; for example, "you could die." Loss-framed messages also present the risks of not engaging in healthy activities and show how those risks can be prevented (Rezai, et al., 2017; Sherman, et al., 2008). For loss frame, the message shown to readers that if they do not floss their teeth regularly, and then their teeth are at risk of heightened decay (Sherman, et al., 2008). Kalichman and Coley (1995) illustrates that a loss-framed message increases the probability of a reader/person to engage in health activities, because a person perceives a life-threatening illness.

Sherman, et al. (2008) mentioned that some people are easier to persuade and are receptive to change by reading gain frame of health messages because they are sensitive to approach cues, but some groups of people are sensitive to avoidance cues, so they use loss frame of health message. Rothman, et al. (2006) found that loss framed messages should be used when targeting detection behaviors with risky disease, for example, breast screening, HIV testing, and cancer screening. Wyllie, et al. (2015) found loss-framed messages are more effective and produce positive attitudes than a gain frame toward health promotional message. Schneider (2006) mentioned that loss framing messages are more motivating and more effective than gain framing message toward promoting detection behaviors.

2.4.3 Risk Information

Greene and Brinn (2003) mentioned that there are messages focusing on problems and risk of using tanning beds and information about skin cancer. Renner, et al. (2008) mentioned risk communication and health behavior regarding when people think they might be able to get diseases from unsafe sex, they prevent risk behavior and protect themselves by using condoms. Lueck (2017) found that negative loss framed messages with risk avoidance is more effective to health activities.

However, Maguire, et al. (2010) found no significant differences between gain and loss framed for the behavioral intention and behavior outcomes. Moreover, some studies showed little differences between gain and loss framed when comparing the effects of promoting health behaviors (O'Keefe & Jensen, 2007; O'Keefe & Jensen, 2009; O'Keefe & Nan, 2012; O'Keefe & Wu, 2012). Due to the mixture of results, O'Keefe and Jensen (2007, p. 634) mentioned that "one cannot expect that using a gain-framed appeal rather than a loss-framed appeal will make much

difference to the success of such messages" Latimer, et al. (2008), and Lithopoulos, Bassett-Gunter, Ginis, & Latimer-Cheung (2017) also mentioned a mixed-framed message. A mix-framed message presents both gain-framed and loss-framed message for health-related activities (Heather, et al., 2012; Latimer, et al., 2008). A research showed that gain framed and mixed framed messages are more effective than loss framed for the increase of self-efficacy such that middle-aged adults have the confidence to engage in health activities (Lithopoulos, et al., 2017). The researcher mentioned earlier that gain and loss framing related health messages should be designed and framed for different groups of people in order to change their behaviors (Lueck, 2017; Sherman, et al., 2008).

2.5 Health Belief Model (HBM)

During the early of 1950's, HBM has been studied and developed for public health service concern on the prevention and treatment of disease, which is the major study to explain preventive health behavior (Glanz, et al., 2008). Rosenstock (1974) created the first original version of the Health Belief Model (HBM), and it has been developed and used as a model to explain the relationship between health beliefs to predict health behaviors. Becker, Haefner, Kasl, et al. (1977) developed the Health Belief Model from Rosenstock (1974), applying it to preventive behaviors, to identify the relationship between health advice to health service and practice. The Health Belief Model provided key of health beliefs, which is a useful framework for understanding people's differences in beliefs that lead toward each person's health behaviors including prevention and treatment of health behaviors (Becker, Haefner, Kasl, et al., 1977; Rosenstock, 1974; Shojaei, et al., 2016). Glanz, et al. (2008)

illustrated that when people perceived the benefit of performing on health behaviors, their perception of benefit would lead them to be more likely to act.

Similar to McClenahan, Shevlin, Adamson, Bennett and O'Neill (2007) who mentioned that health belief model is used to predict behavior on their research. Abraham and Sheeran (2005) and Shojaei, et al. (2016) stated that the HBM is a health-specific model, which suggests that health behaviors are a result of a set of core beliefs and it has been used to guide and predict many health behaviors. Abraham and Sheeran, (2005); Becker, Haefner, Kasl, et al. (1977) and Glanz, et al. (2008)'s studies showed that the relationship between health beliefs and health behaviors can be explained by the Health Belief Model (HBM) as shown in Figure 2.1. Abraham and Sheeran, (2005) and Glanz, et al. (2008) also said that the HBM focused on two constructs of a person's perceived threat (susceptibility & severity).

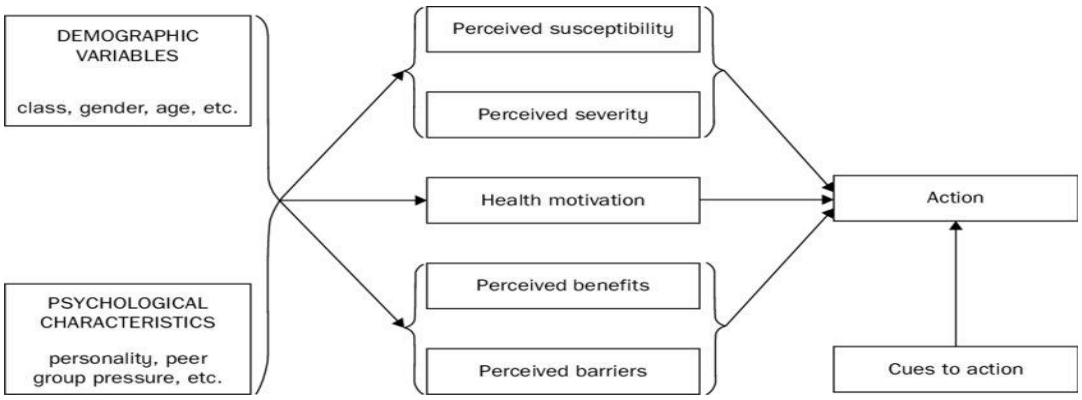


Figure 2.1: The Health Belief Model

Source: Abraham, C., & Sheeran, P. (2005). The health belief model. In M. Connor, & P. Norman (Eds.), *Predicting health behaviour: Research and practice with social cognition models* (2nd ed., pp. 28-80). Buckingham, UK: Open University.

Moreover, Shojaei, et al. (2016)'s studies showed the four main constructs of the HBM that include: 1) a perceived risk and threat by combined perception susceptibility (belief one can get sick through risk), perceived severity (belief about and its result) of health condition. 2) a person's perceived benefits or values of engaging in actions to reduce the threat/risk, 3) a person's perceived barriers about the low potential of one-self to take action, and 4) cue to action could be either external cues (news, articles, or advice from others) or internal cues (pain or illness) that can persuade a person to make a decision to take a particular action (Shojaei, et al., 2016). This refers to a person who will see the cost and benefits, or pros and cons of participating in health behavior changes (Corcoran, 2007; Naidoo & Wills, 2000).

Moreover, Corcoran (2007); Razmara, Aghamolaei, Madani, Hosseini, and Zare (2018)'s studies mentioned that the construct of HBM has added self-efficacy, which refers to a person's confidence in ability to take action for successful healthy behavior. Glanz, et al. (2008) showed the relationship between individual four main beliefs (perceived threat, benefits, barriers, and self-efficacy) that leads to behaviors by the Health Belief Model component and linkages as shown in Figure 2.2.

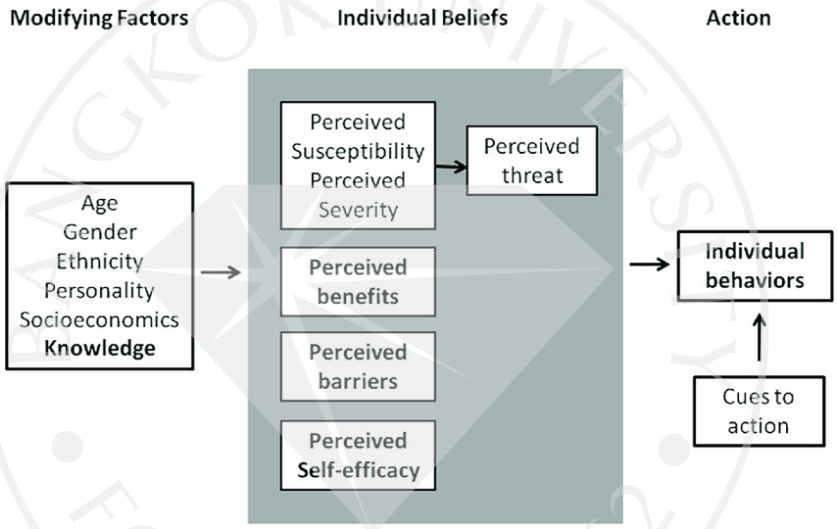


Figure 2.2: Health Belief Model Component and Linkages

Source: Glanz, K., Rimer, B. K., & Viswanath, K. (2008). Health behavior and health education: Theory, research, and practice. San Francisco, CA: Jossey-Bass.

Similar to Abraham and Sheeran (2005); Becker and Maiman (1975); Becker, Haefner, Kasl, et al. (1977); Corcoran (2007); Glanz, et al. (2008); Rosenstock (1974) and Shojaei, et al., (2016) supported that the HBM is the model used to explaining

and predicting health behavior, preventive health behavior, sick-role, and illness behavior as people perceive the threat of unhealthy behavior and benefit of healthy behavior. Later, researchers have been using the HBM to study on the purpose of a relationship of health belief and behavior that identify factors underlying the decision to action (Abraham & Sheeran, 2005; Glanz, et al., 2008; Hochbaum, 1958; Shojaei, et al., 2016). Becker and Maiman (1975) and Rosenstock (1974) also illustrated the HBM is the model that tries to predict health behavior and also health-related behavior based on people's belief. Moreover, the researchers' studies have included the link of the HBM to individual health motivation, individual health behaviors, individual practices, and individual uses of health services.

The main purpose of the Health Belief Model is to explain the relationship of and predict the health behavior of people by the terms of belief factors. Becker and Maiman (1975) and Rosenstock (1974) said that the HBM has been used to study many types of the health behavior prediction. Abraham and Sheeran (2005) research has classified health behaviors in three areas for definition in HBM. The first area is the preventive health behaviors, including health-promotion such as eating clean or healthy food, diet food, exercise; preventing from health-risks such as smoking; and preventing behaviors by doing vaccination and contraceptive practices. The second area is the sick role behaviors, particularly adherence to recommended medical regimens. The third area is the clinic use that includes patients visit clinic for a variety of reasons.

Becker, Haefner, Kasl, et al. (1977) mentioned about the cues of people to perform healthy behavior that can include a personal concern, individual's health status, individual ability such as their potential to perform, and socialization such as

family, friend, social communication that can give health care information. Corcoran (2007) mentioned that there are four factors in the HBM that a person needs to have for changes in his/her behavior: 1) a person needs to have an incentive/a reason for behavioral change 2) a person must feel there is a risk of his/her current unhealthy behavior 3) a person believes there are benefits of changing behaviors, and 4) a person has confidence that he/she can make the change. The likelihood of action is when an individual sees the threat of illness and likely to take the recommendation of how to preventing the illness (Abraham & Sheeran, 2005). This framework of the HBM relates to health behavior that will make an individual gives the appropriate action on health behavior in order to preventing the sickness (Abraham & Sheeran, 2005).

The concept of health belief course of health behavior is based on the prediction and motivation of the HBM (Abraham & Sheeran, 2005; Glanz, et al., 2008; Shojaei, et al., 2016). An individual's perceptions are perception on the sickness, either the serious illness or just the general sickness (Abraham & Sheeran, 2005; Corcoran, 2007), while another perception is on the benefit of performing healthy behavior (Corcoran, 2007; Glanz, et al., 2008). Individual perceptions are the keys for telling one how important of health to oneself, and that an individual will have to deal with the illness or disease based on his/her experience and social background. Then, modifying behaviors will occur after the individual sees the threat of illness or the benefit of taking action then he/she sees a few obstacles and his/her ability to perform, which will lead to the cues to action of behavior (Abraham & Sheeran, 2005).

Glanz, et al. (2008) mention the list of potential cues to action that included both internal and external factors. External factors for cues of actions in health

behavior can be interpersonal communication among family and friends by advising or from mass media communication that can motivate behavior changing (Becker, Haefner, Kasl, et al., 1977). This research, however, will focus on LINE social media communication which is one of the external factors.

2.6 Impacts of Health Messages (Effect)

There are two stages of effects: (1) cognitive effects and health belief; which include self-awareness, sharing intimate thoughts, and readers' perceived risk or threat, perceived benefit, perceived barriers, and self-efficacy; and (2) affective effects; which are readers' share emotions, and sharing of feelings (Abraham & Sheeran, 2005; Glanz, et al., 2008; Rosenstock, 1974). Past studies showed that these effects of health messages have relationships to behavior change.

2.6.1 First Stage–Cognitive Effects and Health Belief

Participants of similar symptoms in online discussion groups are the determining factor for evaluation of health information and drives credibility (Wang, et al., 2008). Some studies showed that people will believe a health message as credible until they get a message confirmed by their interpersonal contacts (Eith, Spence, & Lachlan, 2011; Fothergill, Maestas, & Darlington, 1999; Lachlan, Burke, Spence, & griffin, 2009; Lachlan & Spence, 2011; Lindell & Perry, 2004; Spence, Lachlan, & Burke, 2011; Spence, Lachlan, & Griffin, 2007). Spence, et al. (2013) found that some people believe in health information through interpersonal contacts on social media.

The content of messages, both informational/statistical and narrative/personal message exchange can produce persuasive effects (Greene & Brinn, 2003; Pettigrew,

et al., 2011). Braverman (2008) and De Graaf, et al. (2017) found that informational messages have more impact on health behavior than narrative messages in their study. Informational messages are effective when a reader perceives high personal involvement (Braverman, 2008). Greene and Brinn (2003) also found that statistical messages were more effective than narrative messages in their study of reducing the use of tanning beds. Furthermore, Allen and Preiss (1997), and Kopfman, et al. (1998) presented that informational messages were more persuasive than narrative messages.

Several researchers showed that online health contents use the narrative form to produce personal narratives by sharing individual experiences to influence the audience's attention, belief, and behaviors, rather than being informational or statistical (De Wit, et al., 2008; Greene & Brinn, 2003; Miller & Pole, 2010; Preece & Ghozati, 1998; Wang, et al., 2008; Zillmann & Brosius, 2000). Moreover, Lueck (2017); Rothman, et al. (2006) and Rothman, et al. (2006) stated that message framing (gain and loss) can be used for persuasive health communication campaigns and individual level of behaviors, to change their beliefs and practices. As mentioned earlier, message framing presents the problems and risks of unhealthy behaviors, especially loss-framed messages, which readers can perceive risks via the message that they might get diseases from unhealthy behaviors (Green & Brinn, 2003; Renner, et al., 2008). Mixed- framed messages and gain-framed messages are effective for increasing self-efficacy (Lithopoulos, et al. (2017). The effectiveness of message framing is able to influence cognitive responses, which is a factor mediating the relationship between message strategies and behavioral responses (Frazier, Tix, & Barron, 2004; Latimer, et al., 2008). Bandura (1997) and Sallis and Owen (1998) also

mentioned that cognitive responses such as self-efficacy, perceived benefit, and outcome expectancies are important factors that influence behavioral responses.\

Bennett (2006); Miller and Pole (2010) and Trammell and Keshelashvili, (2005) stated that narrative message of content is a strategy to get attention, self-awareness from readers. Miller and Pole (2010) also stated this increases reader's self-awareness, which can be used to create effective health behavior. Neubaum and Kramer (2015) found that personalized health messages can influence readers' beliefs and attitudes. Hillan (2003) said that using personal narrative health messages from providers of information is useful to make readers understand more of their mental and physical state of conditions. Kam, et al. (2016) mentioned how relational messages refer to wording, such as: code words and jokes that are used to represent relationships between friends that they shared. Relational messages can increase liking and relational closeness, and that can enhance the credibility and believability of health information and campaigns (Kam, et al., 2016). Accordingly, the first research hypothesis regarding the effect of health messages on audiences' cognition is proposed.

Hypothesis 1: Health message strategies sent via LINE have a direct effect on Thai senior citizens' cognitive responses.

As mentioned earlier, several researchers found that informational messages have a persuasive impact on health behavior (Braverman, 2008; De Graaf, et al., 2017). The narrative form on online health contents showed an influence to an audience's attention, belief, and behaviors (De Wit, et al., 2008; Greene & Brinn, 2003; Miller & Pole, 2010; Preece & Ghozati, 1998; Wang, et al., 2008; Zillmann & Brosius, 2000). Moreover, Lueck (2017); Rothman, et al. (2006), and Rothman, et al.

(2006) stated that message framing (gain and loss) can be used for persuasive individual health behaviors, to change his/her beliefs and practices. As a result, the next research hypothesis regarding the impact of health messages on audiences' behaviors is proposed.

Hypothesis 2: Health message strategies sent via LINE have a direct effect on Thai senior citizens' behavioral responses.

In addition, there are effects of online health messages on health beliefs and health behaviors. Beliefs have been playing an important role that shows a link and relationship between socialization and behaviors (Abraham & Sheeran, 2005). Everyone has his/her own belief, thus each person's beliefs shape his/her individual behaviors (Abraham & Sheeran, 2005). As mentioned earlier, the Health Belief Model (HBM) has been used as a model to explain the relationship between health beliefs to predict health behaviors, which is the understanding of individual differences in beliefs toward his/her health behaviors (Glanz, Rimes, & Viswanath, 2008; Rosenstock, 1974; Shojaei, et al., 2016). The researchers also mentioned that the Health Belief Model is used to guide and predict many health behaviors on their researches (Abraham & Sheeran, 2005; McClenahan, et al.; Shojaei, et al., 2016).

According to Bandura, (1997); Latimer et al. (2008) and Sallis and Owen (1998) indicated that cognition is an important factor, which include self-efficacy, perceived benefit, and outcome expectancies, to influences behavioral responses especially for health activities. Corcoran (2007) stated that one of the important factors that a person needs for a behavior change to occur is when a person believes that change will have benefits more than barriers for them. For example, a person may believe that the benefits of having soy milk when drinking coffee latte means they are

less likely to have a serious health problem. Glanz, et al. (2008) also supported that a person sees the benefit of practicing healthy behavior to protect the health problem, which is the cue to action of health behavior. Moreover, Dillow, Walsh, Spellman, and Quirk (2015)'s studies found general support of risk perception and risk attitude on persuasive messages, and interaction through efficacy beliefs to influence health behavior. Based on the above rationale, the next research hypothesis regarding the impact of audiences' cognition on their behavior is developed.

Hypothesis 3: Thai senior citizens' cognitive responses have a direct effect on their behavioral responses.

In this stage, many researchers argued that perception of risk can influence individual belief and behavior. Researches of risk perception attitude toward health behavior have been conducted in many health contexts such as cancer and HIV prevention, but they showed mixed results (Turner, Rimal, Morrison, & Kim, 2006; Rimal, Bose, Brown, Mkandawire, & Folda, 2009; Rimal & Juon, 2010). Loewenstein, Weber, Hsee, and Welch (2001) mentioned about risk as related to emotions and that people emotional responses are related to risk perception, such as worry, and fear. Corcoran (2007) mentioned that a person must feel there is a risk for a behavior change to occur. For example, a person would feel fear that he/she would be at a risk of diabetes if he/she is continuing their current behavior (eating sweet/ fatty food, and exercise). Accordingly, the next research hypothesis regarding the impact of audiences' cognitions on their affective emotion is proposed.

Hypothesis 4: Thai senior citizens' cognitive responses have a direct effect on their affective responses.

Ruiz and Sicilia (2004) stated that cognitive and affective can work independently as well as work together. However, a study showed that using both cognitive and affective in advertisement got a better outcome on behavior intention (Ruiz & Sicilia, 2004). Loewenstein, et al. (2001) mentioned that people responded to risk perception, which includes behavioral responses from direct emotional influences. Moreover, Sherman, et al., (2008) used loss framing message by presenting risk and fear appeal in their study to promote health behaviors and found that it was effective to motivate college students to change their behaviors. Corcoran (2007) and Glanz, et al. (2008) mentioned about the influencing of health behavior. Their study discussed factors of the individual perception of personal health behavior threat. The first factor started with people's perception on general health values, which include individual interest, concern, worry, and belief of health problems. For example, a woman believes she might have a chance to get breast cancer, as she perceives risk and feels fear of getting sick or feeling pain so she will find the way to reduce the risk and illness. After seeing their health problem and the benefit of action to prevent illness, people will make their decision of taking action (Glanz, et al., 2008). Based on this rationale, the following research hypothesis regarding the indirect impact of audiences' cognition on their behavior is proposed.

Hypothesis 5: Thai senior citizens' cognitive responses have an indirect effect on behavioral responses as mediated by their affective responses.

2.6.2 Second Stage – Affective Effects

Affective refers to emotionality. Senders' communication involves sharing information with emotional tones that can share feelings and thoughts with readers (Neubaum & Kramer, 2015). Information through emotional tones makes readers

involved in the feeling, sharing of intimate thoughts, and creating of affective connection with the writer (Miller & Pole, 2010; Neubaum & Kramer, 2015). Health messages with personal narratives of experiences might help readers seeking to better understand mental, emotional, and physical illnesses (Miller & Pole, 2010). Personalized narrative message of content is a strategy to get attention, self-awareness, affection, and create the impression of intimacy from readers (Bennett, 2006; Miller & Pole, 2010; Trammell & Keshelashvili, 2005). Sherman, et al. (2008) used loss framing messages by presenting fear of emotional appeal in health messages for promoting health campaigns and found that it can motivate people to change their behavior. For example, messages with clear explanation of fearful outcomes of unhealthy behavior such as smoking, can lead readers to fear emotion (Greene & Banerjee, 2008). As a result, the following research hypothesis regarding the impact of health messages on audiences' emotion is developed.

Hypothesis 6: Health message strategies sent via LINE have a direct effect on Thai senior citizens' affective responses.

Neubaum and Kramer (2015) mentioned an advantage of emotionalized content to persuasion that could be used to change people's attitudes based on affective messages that are more influential than rational messages. As mentioned previously, information through emotional tones makes readers not only involved in the feeling, but also understanding the creation of affective connection with the message (Miller & Pole, 2010; Neubaum & Kramer, 2015). Green (2006) and Shen (2010) also mentioned another advantage of emotionalized content as a subtle form of persuasion by absorbing impact and reducing cognitive from against persuasion attempts.

As mentioned earlier, loss framing message has been used in the study for promoting flossing oral health campaigns and showed that it can motivate college students to change their behaviors (Sherman, et al., 2008). However, Shen (2010) stated that many of these public health campaigns were websites that used fear of emotional appeal in messages that were not always successful.

Similarly, Shen (2010) and Wang, et al. (2008) mentioned empathy as an example of emotion involving affective influence. Empathy in a health message is closely related to emotion, that a message's expression of emotion can persuade readers' perception to action. Shen (2010) described 'state empathy' as a personal understanding of others and response to messages. There are two dimensions of state empathy -- affective and cognitive dimensions (Shen, 2010). 'Affective' dimension refers to reactions of an individual to others' expression of feeling and experiences (Decety & Jackson, 2006; Lazarus, 1991; Shen, 2010; Smith, 2006; Zillmann, 2006a). Affective is the understanding and sharing of others' feeling; both negative and positive feelings (Decety & Jackson, 2006; Jabbi, Swart, & Keysers 2007; Lazarus, 1991; Preston & de Waal, 2002; Shen, 2010; Smith, 2006; Zillmann, 2006a). The second dimension is 'cognitive,' which refers to "perspective-taking and involved recognizing, comprehending, and adopting another person's point of view" (Shen, 2010, p. 399). A person is taking another person's perspective by sharing cognitive, as a person imagines oneself in the same situation of another person (Lazarus, 1991; Shen, 2010). Both affective empathy and cognitive empathy dimensions are related and overlap with each other (Shen, 2010). Based on this linkage between persuasive health messages and audiences' belief and emotion, the following two hypotheses are developed.

Hypothesis 7: Health message strategies sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses.

With cognitive and effective dimensions, the process in persuasive messages can influence readers' perception to action (Decety & Jackson, 2006; Decety & Lamm, 2006; Shen, 2010). Shen (2010) and Wang, et al. (2008) also mentioned that message's expression of emotion can also persuade readers' perception to action. Moreover, Shen (2010) stated about effects of message that the cognitive and emotional are two factors that can be considered as results of in persuasion message and communication (e.g., sympathy, empathy, concern, and worry).

As mentioned earlier that emotional persuasive message involves reader's understanding and sharing feeling on writers' story (Decety & Jackson, 2006), cognitive refers to a reader's taking another person's perspective by sharing cognitive, as a person imagines oneself in the same situation of another person (Lazarus, 1991; Shen, 2010). Hence, affective is more likely to occur when readers perceived the message as realistic of others' experiences or expression of emotions both positively and negatively (Shen, 2010). Persuasive messages with cognitive and affective responses can influence readers' perception to action.

Furthermore, personal story may tell about a person's own experience of diseases and explain how to get treatment (Neubaum & Kramer, 2015). Neubaum and Kramer (2015)'s study show that readers perceived severity of illness but in the same time they had more positive attitude and increase their self-efficacy toward practicing health behavior. The results of personal narratives and positive attitudes created an affective attitude and communication with readers to perform positive health behavior (Neubaum & Kramer, 2015). This reminds the research by Shen (2010), who

mentioned that affective responses can be shared with both positive and negative views, but only a few studies resulted in positive settings.

Hypothesis 8: Health messages strategies sent via LINE have an indirect effect on Thai senior citizens' behavioral responses as mediated by their cognitive and affective responses.

Miller and Pole (2010); Neubaum and Kramer (2015); Wang, et al. (2008) and Zillmann and Brosiusm (2000) mentioned that health messages with individual experiences as content can provide a personal tone and emotional tone that can affect readers' belief and behavior. Expression of personal experiences and emotions can create a mutual feeling of intimacy, and thoughts that can affect readers' feeling, attitude, belief, and behavior (Decety & Jackson, 2006; Lazarus, 1991; Neubaum & Kramer, 2015; Smith, 2006; Trammel & Keshelashvili, 2005; Zillmann, 2006b). One factor that makes behavior change is when a person feels there is a risk of his/her current behavior so they will change their behavior by joining healthy activities (Corcoran, 2007). Accordingly, the next research hypothesis regarding the impact of audiences' emotion on their behavior is proposed.

Hypothesis 9: Thai senior citizens' affective responses have a direct effect on their behavioral responses.

Lieberman, Wizlenberg, Golant, and Di Minno (2005) also mentioned that participant similarity of members of the health information online groups, are significantly more attracted and committed to the group such that they showed positive change of participants. Perception of similarity and involvement among members in the online group creates the role of similarity/trustworthiness of social influence to the online members of the groups (Wang, et al., 2008). People are more

likely to seek health information online from people who are similar in health problem or experiences and health outcomes (Wright & Bell, 2003). Flanangan, Elek-Fisk, and Gallay (2004) suggested that peers share interests, development, and cohort experiences that represent frequent and lengthy interaction, which may affect peers' belief and behaviors.

Moreover, Wright and Bell (2003) mentioned that there is lacking of theoretical framework about online support groups communication. There are only a few studies on health content analytics with two major types of health messages -- informational and narrative exchanging on the Internet discourse (Wang, et al., 2008). The following topic involves the development of the new theoretical framework for this study.

2.7 Theoretical Framework

Becker, Haefner, and Maiman (1997)'s study of the HBM and showed the link between individual health beliefs to health behaviors. Becker, Haefner, and Maiman (1997) was the first researchers who consolidated the HBM and published the main importance of health behavior. Their paper discussed many approaches of health understanding and the social influence toward individual health decision to action and health behavior which supported the HBM framework.

Abraham and Sheeran (2005) and Corcoran (2007) mentioned the advantage and significance of the HBM researches. The authors said that the benefits of the HBM could be applied to the studies of many health behaviors, especially in preventive behavior such as physical activity, dietary change, and vaccinations (Abraham & Sheeran, 2005; Corcoran, 2007). Corcoran (2007) mentioned that the

Health Belief Model can be used for both one-on-one and groups of people. Moreover, this model has given a common sense for public health to shape public health behavior and train the professional health care providers in order to give information and deal with patient's perceptions of preventing sickness, treatment benefit, and the threat of illness (Abraham & Sheeran, 2005; Corcoran, 2007).

2.8 Conceptual Model

This study applied the Health Belief Model as a theoretical framework to provide a conceptual model that explains and predicts the potential influences of health message strategies (content type and message framing) on an audiences' cognitive, affective, and behavioral responses. This conceptual model was developed to propose the hypothesized relationships between health message strategies and audiences' three types of responses.

As for the cognitive responses, the conceptual model proposed that the health messages via LINE will have a direct effect on audiences' cognition including self-awareness, self-efficacy, perceived risk, and perceived benefits.

As for the affective responses, the conceptual model proposed that the health messages via LINE will have a direct effect on audiences' affection including fear and empathy. It also proposed that the health messages via LINE will have an indirect effect on audiences' affective responses via their cognition.

In terms of the behavioral responses, the conceptual model proposed that the health messages via LINE will have a direct effect on audiences' behaviors. It also proposed that audiences' behaviors will be indirectly influenced by their cognitive and/or affective responses.

In addition, the conceptual model also predicts that audiences' cognition will have a direct impact on their affection and behaviors. Audiences' cognition will have an indirect impact on their behaviors via their affection.

Figure 2.3 presented the conceptual model of this study describing the hypothesized relationship between health message strategies via LINE and audiences' cognitive, affective, and behavioral responses.

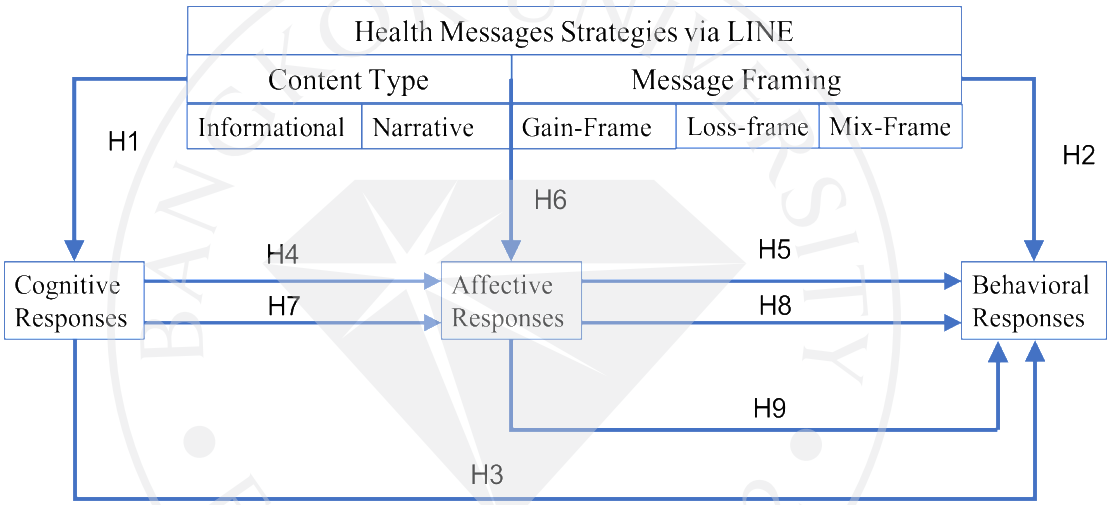


Figure 2.3: Conceptual Model

2.9 Research Hypotheses

Nine research hypotheses are formulated based on RQ # 3-11: Health message strategies (content type and message frame) sent via LINE have both direct and indirect effects on Thai senior citizens regarding their cognitive, affective, and behavioral responses.

Hypothesis 1: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' cognitive responses.

Hypothesis 2: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' behavioral responses.

Hypothesis 3: Thai senior citizens' cognitive responses have a direct effect on their behavioral responses.

Hypothesis 4: Thai senior citizens' cognitive responses have a direct effect on their affective responses.

Hypothesis 5: Thai senior citizens' cognitive responses have an indirect effect on behavioral responses as mediated by their affective responses.

Hypothesis 6: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' affective responses.

Hypothesis 7: Health message strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses.

Hypothesis 8: Health messages strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' behavioral responses as mediated by their cognitive and affective responses.

Hypothesis 9: Thai senior citizens' affective responses have a direct effect on their behavioral responses.

CHAPTER 3

METHODOLOGY

This study aimed to investigate the perceived influences of health messages sent via LINE Application, especially on receivers' cognitive, affective, and behavioral responses. The focus will be on investigated what content type and message framing of the health messages were sent among senior Thai citizens via LINE, and whether and how these message strategies influence the Thai senior citizens in terms of cognitive, affective, and behavioral responses. Therefore, the following sections described the research design, population and sample, research instrument, instrument pretest, data collection procedure, and data analysis plan for both phases of the study. This chapter covered the followings:

3.1 Research Design

The study used convergent parallel design mixed-methods, combining both quantitative and qualitative methods. It consists of two methods the first method is qualitative method (content analysis) and the second method is quantitative method (survey research). Lincoln and Guba (2000) and Tracy (2013) mentioned that mixed methods, or two methods, can perform the job well enough in order to give the best data for both tools. Triangulative mixed methods will use two methods-qualitative and quantitative, which is useful because of its reliability and formal generalizability (Lincoln & Guba, 2000; Tracy, 2013). The mixed research methods will be used to find out the link between health message strategies sent via Line application among

Thai senior citizens and their potential influences on cognitive, affective and behavioral responses of the seniors.

The mixed-method research described whether and how health message strategies sent among Thai senior citizens via LINE, influences their health cognitive, affective, and behavioral responses to achieve more effective outcomes. This study consists of two phases. The followings provide details of how both research methods are designed.

3.1.1 Content Analysis

According to Lindlof and Taylor (2002, p. 214), content analysis is "categorization and coding that are essential to making sense of qualitative data" Tracy (2013) said that qualitative research is useful for understanding society/cultural with a particular issue and understanding text-messages, mediated material, virtual context, such as a study of young self-presentation (Facebook, Instagram, Youtube, Twitter, and Blogs). Bortree (2005) also said that, in order to understand a group of people about their communication strategies, the best way to collect data and study is through text-messages. Frey, Botan, and Kreps (1999) indicated that the purpose of content analysis is involved in analyzing content, structure, and functions of messages. Content analysis is a useful method for this research because textual analysis can be used to study types of texts (Frey, et al., 1999).

3.1.1.1 Key texts/Documents

The target text was health messages sent via LINE application. The official accounts of senior groups were identified from keyword searches in the LINE search engines' official account and recommended accounts (see list of official accounts on LINE in Appendix A). This study began by viewing the top rankings of

official accounts of senior groups users on LINE application from September 8, 2018 to March 9, 2019.

The texts/documents to study were purposively selected from health messages for six months from September 8, 2018 to March 9, 2019. The plan is to collect health messages as many as possible. This study began by the researcher joining the top rankings of official accounts of senior groups users on Line application on September 8, 2018. The LINE official accounts of senior groups based on its amount of coverage on health were purposively selected. As for the characteristics of health message samples, the inclusion criteria of LINE messages are those that contain: (1) texts or articles, (2) pictures with texts, (3) videos, (4) health topics/issues or healthy living, (5) discussion of diseases such as how to treat, and (6) persuasion to join activities. For the exclusion criteria; the LINE messages containing the attached links of video and photos and message selling products (health products) would be excluded from the sampling.

3.1.1.2 Research Instrument

As the secondary data were used as materials for textual analysis, health messages on LINE application were collected and saved in computer files. LINE official accounts for Thai senior citizens were used to get access to the relevant health messages. This research used coding of latent content of communication. It is the researcher's judgment to decide and identify the emerging themes on what the important concepts are after reading health messages on LINE senior groups (Babbie, 2010).

Materials for assessment to be used was textual analysis of health messages on LINE application from LINE official accounts. Health messages in LINE

were identified based on the proposed themes (see list of health message themes base on literature in Table 3.1) in terms of two message strategies (content type and message framing). Holsti's Inter-coder reliability check of textual analysis was used. To test the reliability of the coding, 20 percent of original work were coded by the second coder with a minimum of two coders or experts (advisors) to get more than 80 percent of agreement. Table 3.1 presents five proposed themes from literature reviews about health messages.

Table 3.1: Proposed themes based on literature reviews about health messages

Proposed Themes	Health Messages
1. Informative message	1. Present statistical data /statistical images. 2. Summary of number of population who died/got sick from unhealthy behavior. 3. Number of patients who use medicine/ treatment/died, etc. 4. Proofs and evidence of data, pictures, and endorsement. 5. Information from government (e.g. government website).
2. Narrative message	1. Real stories of patients. 2. Case study or case stories of people. 3. Example of event. 4. Example of people's health experiences.

(Continued)

Table 3.1 (Continued): Proposed themes based on literature reviews about health messages

Proposed Themes	Health Messages
2. Narrative message	5. Provide positive experiences of a person. 6. Provide negative experiences of a person. 7. Describe health experiences in positive ways. 8. Present success stories of patients. 9. Personal tone in his/her health story. 10. Personal health diaries. 11. Explain why the reader should change their behavior. 12. Past experiences with positive outcomes. 13. Past experiences with negative outcomes. 14. Express fearful outcomes of unhealthy behaviors.
3. Gain-Framed message	1. Promote benefit/advantages of engaging in health behavior. 2. Provide positive experiences of a person. 3. Describe health experiences in positive ways. 4. Present success stories of patients.
4. Loss-Framed message	1. Provide negative experiences of a person. 2. Past experiences with negative outcomes. 3. Express fearful outcomes of unhealthy behaviors.

(Continued)

Table 3.1 (Continued): Proposed themes based on literature reviews about health messages

Proposed Themes	Health Messages
4. Loss-Framed message	4. Present negative consequences of failure to engage in health activities. 5. Present problems/disadvantages of not engaging in health behavior. 6. Present the risks of not engaging in healthy activities. 7. Show risks and how to prevent them. 8. Messages are focusing on problems and risk of engaging in unhealthy activities. 9. Message telling readers that they might be able to get diseases from unhealthy behaviors. 10. Show readers how to prevent and protect themselves from risk behaviors.
5. Mix-Framed message	1. Promote both benefit/advantages of engaging in healthy behavior and negative/disadvantages consequences of failure to engage in healthy activities. 2. Provide both positive and negative experiences of a person.

(Continued)

Table 3.1 (Continued): Proposed themes based on literature reviews about health messages

Proposed Themes	Health Messages
5. Mix-Framed message	3. Describe health experiences in both positive and negative ways. 4. Present both success stories of patients and past experiences with negative outcomes.

3.1.1.3 Data Collection Procedure

The first phase of study started with identifying official accounts for Thai senior citizens by using keyword (including elderly, senior people, and take care elderly people) searches in LINE search engines official account. Then, the researcher joined the recommended accounts of official accounts of senior groups on LINE application. The group selection was based on its volume of coverage on health messages for 6 months from September 8, 2018 to March 9, 2019.

After the LINE group was selected, health messages in a variety of forms such as texts, pictures, and videos were purposively sampled. The sampled messages of each official senior group were to have their own file and were saved in the computer as secondary data for textual analysis. Finally, all the sampled health messages on LINE application were textually analyzed based on two message types and two message frames.

3.1.1.4 Data Analysis Plan

During the reading of the data, for the convenience of future data coding theme and comparison, the sampled data were classified and labeled into several main themes in relation to the research variables and questions. Coding is an important process of identifying emerging themes and sorting data. It serves as a shorthand for devices to label, separate, and organize data in themes (Baxter & Babbie, 2004). During the coding process, an analytic memo in which the emerging themes and their meanings were identified would be created.

Emerging themes were identified based on two message strategies -- message type and message framing. In terms of message type, there are two types of message conditions: 1) narrative message, having history of someone, explanation of someone's story, or examples of stories from others, and 2) informational message, having statistical proof or evidence, information about disease, description, location, and contact. In terms of message framing, there are three frames: 1) gain-framed messages, 2) loss-framed messages, and 3) mix-framed messages. The gain-framed condition would focus on the benefits or advantages of engaging in health activities. In the loss-framed condition, the focus would be on the negative consequences of not engaging in health behaviors. For mix-framed condition, a combination of gain-framed and loss-framed were used.

These emerging themes were classified into several sub-themes depending on relevancy; each theme was then labeled and used in developing an online questionnaire for the second phase of the study. The last step was checking by the second coder or triangulation, which was the process that many researchers need

to check on their analysis at all points of the data collecting process; in order to meet the criteria of confirmability and credibility.

3.1.2 Survey Research

A survey research is an older technique that includes the use of a questionnaire as an instrument to collect data from people who can provide useful data for analysis (Babbie, 2010). Surveys with the use of a questionnaire is probably the best method for measuring attitudes and orientation, that allows researchers to collect data that can describe large populations (Babbie, 2010). Lately, online survey research has been very popular for collecting data (Babbie, 2010). In this study, survey research was conducted both through online method and face-to-face method.

An online survey was used as a research tool for this study. Online surveys have been a popular method of survey research that can be useful to describe characters of a large population (Babbie, 2010). Surveys can be conducted online since LINE is an online application that Thai senior citizens use. Wilson (1999) indicated that some populations are suitable to do surveys online, especially those who use the Internet with particular website/applications.

3.1.2.1 Population and Sampling

As for the survey, target population is Thai senior citizens who are 60 years and over (National Statistical Office of Thailand, 2014), who have used LINE application for a minimum of 6 months. The participants were invited to participate in this project through the association for senior citizens, club for seniors, school for seniors, senior care housing, nursing home for seniors, online or chat rooms for Thai senior citizens.

The sample size of this study was calculated by using G*power 3.1, which will determine the number of the samples for conducting the survey. Based on G*power 3.1 with input number of predictors are 5, type one error is 0.05, and the power of a hypothesis test is 0.95, the suggested sample size is 138 samples for the online survey or face-to-face survey.

However, this study used the Variance-Based Structural Equation Modeling (VB-SEM) by applying the Partial Least Squares (PLS) technique for data analysis, and 303 samples were used for the online survey or face-to-face survey. Hair, Hult, Ringle, and Sarstedt (2014, p. 23) mentioned PLS-SEM is another approach of SEM, and "PLS-SEM can estimation of complex models and can measure both formative and reflective constructs".

Hair, et al. (2014, p.23) stated that for the PLS-SEM analysis, the minimum sample size should be, "10 times the largest number of structural paths directed at a particular construct in the structural model". The largest number of structural paths directed at a particular construct (behavioral responses) in the structural model is 5. The minimum sample size of this study is 50 samples, which is 10 times the largest number of structural paths directed at a particular construct (behavioral responses) in the structural model. Therefore, this study used 303 samples, which is 60 times the required amount. This meets more than the minimum of sample size, to the largest number of structural paths directed at a particular construct for making the result more concrete.

The cluster sampling was used to select participants due to the specific focus of this research. Selection of the sample is based on five criteria as follow: (a) Thai citizens who are over 60 years old; (b) Thai senior citizens who have been using

the LINE application for a minimum of 6 months and at least access LINE application once a day; (c) he/she has been using LINE application for seeking health-related messages; (d) The willingness and availability to participate in this study; and (e) diversity in gender and location of residency (in Bangkok metropolitan, and rural areas). These requirements are also described in the online survey invitation statement.

3.1.2.2 Research Instrument

Online questionnaires were used as research instruments for this phase. The questionnaire of this study consists of five parts:

1) Personal information

Participants' demographics were asked in terms of age, gender, education, family income, duration of LINE use, communication topics on Line messages, and general health status.

2) Frequency of receiving health messages based on message type and message framing

This variable was measured on a 6-point Likert scale, in which the respondents rate the frequency of reading a particular message type (informational versus narrative messages) and a particular message frame (gain-framed versus loss-framed messages versus mix-framed messages) of online health messages via LINE from 1) Never, 2) Seldom, 3) Sometimes, 4) Often, 5) Very frequently, to 6) Most frequently. In case the subjects identified the high level of gain and loss, they were considered receiving the mix-framed message.

3) Cognitive responses

Four dimensions of this variable 1) self-awareness, 2) perceived risk, 3) perceived benefits, and 4) self-efficacy were measured by using the 5-point Likert scale, in which the respondents rate the degree of change in terms of their cognitive responses of health message for relevant questionnaire items from 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree, to 5) Strongly agree.

4) Affective responses

Two dimensions of this variable 1) fear and 2) sympathy were measured by the 5-point Likert scale, in which the respondents rate the degree of change in terms of their affective responses for relevant questionnaire items from 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree, to 5) Strongly agree.

5) Behavioral responses (intention/component)

This variable was measured on a 5-point Likert scale, in which the respondents rate the degree of change in terms of their behavioral responses for relevant questionnaire items from 1) Strongly disagree, 2) Disagree, 3) Neither agree nor disagree, 4) Agree, to 5) Strongly agree.

Each part of the questionnaire had at least a minimum of three questions in order to attain reliability. Survey questions were translated into English or Thai. The translation from English to Thai and backwards translation from Thai to English were conducted by two linguistic experts in both Thai and English, to translate the questionnaire from English to Thai, and another two experts backward translated the instruments. The purpose of back-translation is to check for congruency in terms of semantics between the English and the translated Thai version.

3.1.2.3 Instrument Pretest

In this phase, an online questionnaire was developed. The researcher started investigating types of message and message framing from two active groups of LINE official accounts for Thai senior citizens (September 8, 2018 to March 9, 2019). Each of the sampled health messages was read. The first step included collecting health messages via LINE and comparing health messages for similarities and differences between each health messages so that a common theme in the same category name could be identified. This step was done to develop a questionnaire that is relevant to most respondents.

In terms of the instrument pretest, the Index of Item-Objective Congruence (IOC) was conducted by five communication scholars to make sure the content is valid for measurement. Then, the researcher modified some questions of the questionnaire based on feedback from communication scholars, and got approved from the researcher's advisor (see Appendix E). After that, the questionnaire was pretested with 35 Thai senior citizens before the final version of the questionnaire would be developed for data collection. Moreover, for reliability test to determine correlations among items measuring the same variable by using Cronbach's alpha should be 0.70 or higher.

The result of reliability test of measurement, Cronbach's alpha was used to provide an evaluation of reliability. As Cronbach's alpha in Behavioral responses section is lower than 0.70 (Table 3.2), questions number 40 and 41 in the fifth section of questionnaire were modified. Although Cronbach's alpha in Behavioral responses section is 0.66 which is lower than 0.70 (Table 3.2), Hair, et al. (2017) mentioned that Cronbach's alpha at 0.60-0.90 is acceptable. Thus, Cronbach's alpha in Behavioral

responses section can be identify as of moderate. After modifying and changing the problematic questions, the researcher began data collection for both online and face to face surveys.

Table 3.2: Reliability Cronbach statistics of variables

Measurement	N of Items	Cronbach's Alpha (N = 35)
Informational Message	3	0.85
Narrative Message	3	0.84
Gain-Framed Message	3	0.82
Loss-Frames Message	3	0.86
Cognitive Responses	12	0.84
Affective Responses	6	0.83
Behavioral Responses	6	0.66

3.1.2.4 Data Collection Procedure

The survey was conducted with specific people who are over 60 years old and have experience in using LINE application setting for achieving the research objectives. This project began by contacting all participants via phone or online (email) to explain the research objectives and ask for assistance in distributing online survey questions to participants, Each participant was purposively selected, who was asked to fill out an informed consent form that would ensure confidentiality of results,

and was asked to fill in the questionnaire by self-administration. The participants were asked to answer all questions in the five sections of the questionnaire.

In actual data collection, all headlines of question items in the questionnaire were deleted to avoid priming effect on the respondents.

3.1.2.5 Data Analysis

The next step of analysis in this study is to test each of the research hypotheses. Variance-Based Structural Equation Modeling (VB-SEM), Partial Least Squares (PLS) methods as the statistical analysis method was used to test those hypotheses. Variance-Based Structural Equation Modeling (VB-SEM), Partial Least Squares (PLS) is one of the advanced statistics to analyze and calculate the relationship between many variables. Results of the data analysis from participants helped identify whether and how different content types and message framing of the health messages via LINE influence the participants' responses as predicted.

CHAPTER 4

RESULTS

This chapter provided results of the study, including content analysis of 31 health messages sent via LINE official accounts, descriptive statistics of participants and variables, together with results of inferential statistics used to test research hypotheses. This study used content analysis to investigate what health message strategies were sent via LINE application on Thai senior citizen official accounts. Moreover, both self-administered and paper and pencil questionnaires were used with Thai senior citizens to conduct an investigation and develop an understanding of what influences health messages in LINE application have on Thai senior citizens' cognition, affection, and behaviors. This chapter covers the followings:

4.1 Results of Content Analysis

4.2 Demographic Profile of Participants

4.3 Findings of the Study

4.4 Results of the Hypothesis Testing

4.1 Results of Content Analysis

As Frey, et al. (1999) indicated, the purpose of content analysis is involved in analyzing content, structure, and functions of messages. Content analysis is a useful method for this research because this research method can be used to study types of texts. Health messages were identified based on two message strategies message type and message framing.

In order to test the reliability of coding, more than 30 percent of the sampled health messages on the LINE official accounts, or 11 health messages, were coded by two coders. The first coder is a lecturer at the Faculty of Communication Arts, North Bangkok University. The second coder is who received a bachelor's degree in communication arts from Bangkok University with broadcasting major. Their coding results were consistent with the researcher at 81.82 percent (see reliability tests by two coders in Appendix D).

The content analysis of 31 health messages gathered from two LINE official accounts called "Young Happy," and "O-lun-la Club" revealed six emerging themes.

4.1.1 Informative message

The first emerging theme is "informative message." Health messages presented statistical data /statistical images, showing a summary of the number of the people who died or got sick from unhealthy behavior and the number of patients who used medicine, treatment, or died. For example, a health message presented information and evidences from global news warning senior ladies to be aware of taking too much calcium. There was a study and evidence that showed senior women who died due to calcium intake of more than their body needed (Figure 4.1). This health message showed that taking too much calcium can make elderly women get sick with heart disease and high-blood pressure (Figure 4.1).

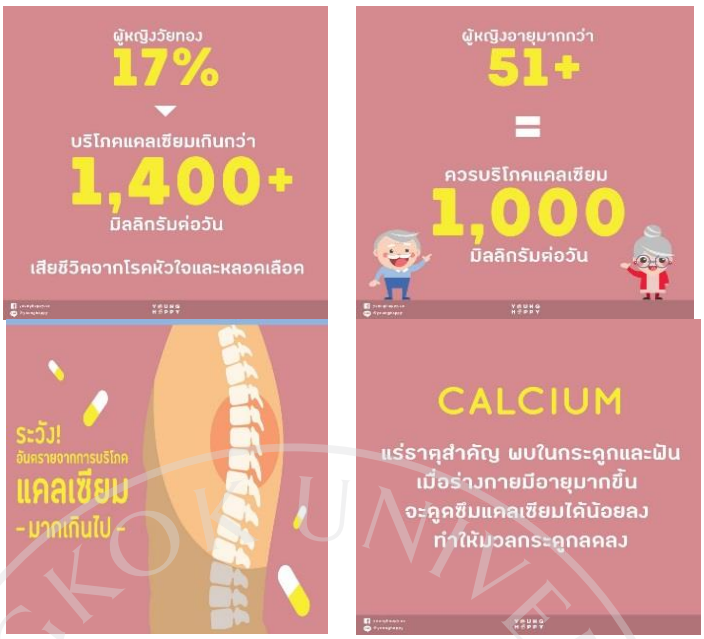


Figure 4.1: Cautions of Taking Too Much Calcium

Furthermore, another example of a health message presented information by showing a picture with details of ingredients contained within a super food smoothie for beauty. It contained green juice with apple celery and spinach, to help reduce high-blood pressure (Figure 4.2).

Figure 4.2: Superfood Smoothie Beauty

4.1.2 Narrative message

The second emerging theme is “narrative message,” a health message telling LINE users real stories and experiences of people. For example, health messages presented success stories of senior citizens, by using personal tone in storytelling techniques about long living of people who are older than 100 years old (Figure 4.3).

Figure 4.3: Age 100+ Telling Techniques of Long Living

In addition, the N 95 mask for PM 2.5 portrayed a real experience of a LINE user who got sick from dust and pollution of PM 2.5. She shared her experiences and warned people to use the N 95 mask, recommended by the Ministry of Public Health (Figure 4.4).

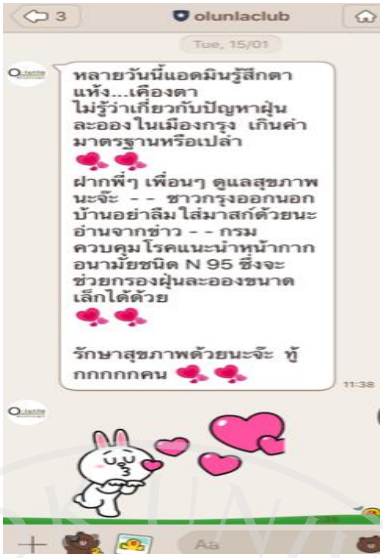


Figure 4.4: N95 Mask for PM 2.5

4.1.3 Mix of both informative and narrative message

The third emerging theme is “a mix of both informative and narrative message.” An example - the technique of shying away from depression in senior people, are pursuing health messages that presented facts and information regarding depressed senior citizens. This health message used personal tone to describe depression sickness, symptoms, factors, and reasons of unhealthy behavior. This message tells readers the techniques to get away from depression, and explains why the reader should follow their suggestions and follow healthy behavior (Figure 4.5).

Figure 4.5: Good Tips Away from Depression

4.1.4 Gain-framed message

The fourth emerging theme is “gain-framed message.” The health message promotes benefit/advantages of engaging in healthy behavior. For example, exercising in water/pool has promoted the benefits of engaging in working out in a swimming pool. Dr. Andrew Jones said exercising in the pool is very safe, because it reduces

injuries. This message also described how to work out in the pool for senior citizens (Figure 4.6).

Figure 4.6: Exercise in Water

4.1.5. Loss-framed message

The fifth emerging theme is “loss-framed message.” Health message about PM 2.5 presented information about problems with fearful and negative outcomes of PM 2.5 on people. It showed the risks of the elderly getting sick. This message presented negative consequences such as lung cancer, and other respiratory issues that can be prevented by wearing a mask. It also told readers how to protect themselves by using many kinds of mask, and avoid walking outside from 4:00 a.m. to 9:00 a.m. (Figure 4.7).

Figure 4.7: Prevention Dusty of PM 2.5

4.1.6. Mix-framed message

The sixth emerging theme is “mix-framed message.” Healthy food messages promote both benefits/advantages of eating five healthy foods (oats, banana, potato, dark chocolate, and berries) to reduce high-blood pressure and negative/disadvantage consequences of not eating healthy food. This message presented the risk of high-blood pressure and health-diseases. However, this message also gave readers information on how to prevent and reduce high-blood pressure by eating five types of healthy food. It presented the benefits and advantages of healthy food (Figure 4.8)

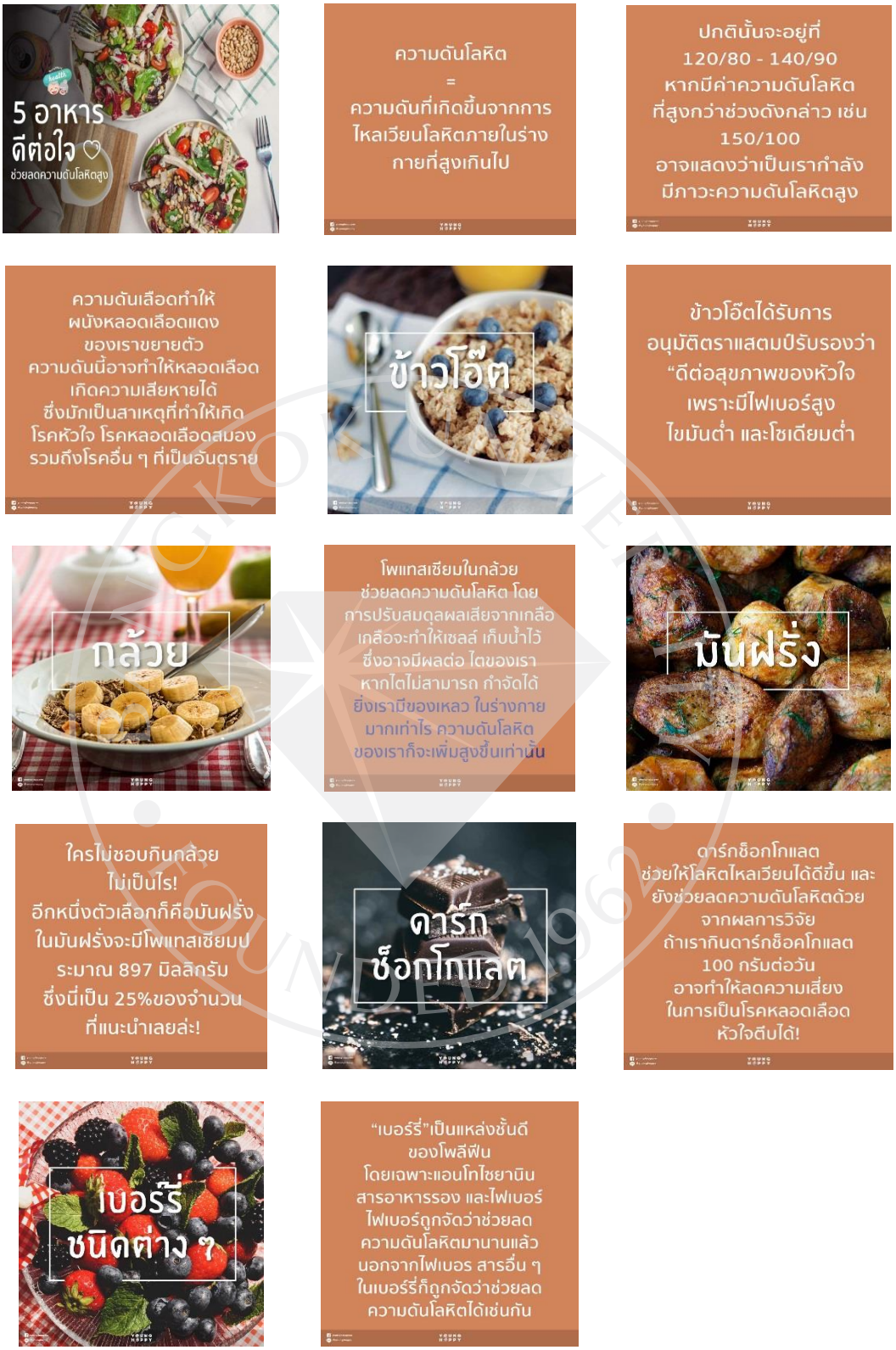


Figure 4.8: Five Healthy Foods

To summarize, the content analyses of 31 health messages on the LINE official accounts showed eight informative messages, 11 narrative messages, and 12 mixes of both informative messages and narrative messages. In terms of message framing from these 31 health messages, the results revealed 18 gain-framed messages, one loss-framed message, and 12 mix-framed messages. The content analysis of 31 health messages on the LINE official accounts found two main concepts of message strategies with six sub-concepts as follows:

In terms of "message type," there are three types of message conditions: 1) narrative message, having history of someone, explanation of someone's story, or examples of stories from others, 2) informational message, having statistical proof or evidence, information about disease, description, location, and contact, and 3) mix of both informative messages and narrative messages.

In terms of "message framing," there are three frames: 1) gain-framed messages, 2) loss-framed messages, and 3) mix-framed messages. The gain-framed condition would focus on the benefits or advantages of engaging in health activities. In the loss-framed condition, the focus would be on the negative consequences of not engaging in health behaviors. For mix-framed condition, a combination of gain-framed and loss-framed were used.

An online questionnaire was developed from the emerging themes derived from results of the content analysis. This is to measure the frequency of participants receiving health messages based on message types (narrative versus informational) and message framing (gain-framed versus loss-framed). In case the subjects identified the high level of narrative and informational, and gain-framed and loss-framed, they were considered receiving the mix types of message, and mix-framed message.

4.2 Demographic Profile of Participants

A total of 303 Thai senior citizens participated in either online or face to face survey. Before starting the survey, the participants were requested to sign the consent form to fulfill requirements by the IRB committee. This section begins by providing information about the demographic characteristics of the sample. Three hundred and three Thai senior citizens were contacted via 1) school of Thai senior, and 2) senior club, and then asked to participate in the survey in August, September, and October 2019. As shown in Table 4.1, 303 Thai senior citizens are of various regions of Thailand (127 from Bangkok, 35 from Central, 20 from North, 39 from North east, 21 from South, 27 from West, 26 from East, and 8 from online). They were asked four questions relating to their demographic characteristics: age, gender, education, and family's approximate monthly income.

For age, the participants were given an open text to write down their age. The target of participants' age needs to be 60 year and over, and their age range from 60 to 85 years was presented in Table 4.1. The average age of participants is 67.36 years.

Table 4.1: Mean and standard deviation of participants' age

	N	Minimum	Maximum	Mean	SD
Age	303	60.00	85.00	67.36	5.39

For gender, the participants were offered three choices: male, female, or others to indicate their gender. Among the 303 participants, 233 participants, about three quarters of the participants, are female (76.9%, n = 233) while 70 participants

are male (23.1%, n = 70). Table 4.2 presents the frequency and percentage of participants' gender.

For education level, the participants were given three choices from which to indicate their highest level of education: lower than bachelor's degree, bachelor's degree, or master's degree and above. Over half of the participants mainly had lower than bachelor's degree (57.8%, n = 175), followed by bachelor's degree (32.7%, n = 99), and master's degree and above (9.6%, n = 29), respectively. Table 4.2 presents the frequency and percentage of participants' highest education.

For family's approximate monthly income, the participants were offered five choices: less than 15,000 Baht, 15,000-29,999 Baht, 30,000-44,999 Baht, 45,000-59,999 Baht, or 60,000 Baht and above. The findings showed the largest group of participants had family monthly income of less than 15,000 Thai Baht (32.7%), followed by 15,000 to 29,999 Thai Baht (26.4%, n = 80), 30,000 to 44,999 Thai Baht (19.8%, n = 60), 45,000 to 59,999 Thai Baht (11.2%, n =34), and 60,000 Thai Baht and above (9.9%, n = 30), respectively. Frequency and percentage of family's approximate monthly income is presented in Table 4.2.

Table 4.2: Frequency and Percent of Participants' Gender, Education, and Family's Monthly Income

Gender	Frequency	Percentage
Male	70	23.1
Female	233	76.9
Total	303	100.0
Education level		
Lower than bachelor's degree	175	57.8
Bachelor's degree	99	32.7
Master's degree and above	29	9.6
Total	303	100.0
Family's approximate monthly income		
Less than 15,000 baht	99	32.7
15,000-29,999 baht	80	26.4
30,000-44,999 baht	60	19.8
45,000-59,999 baht	34	11.2
60,000 baht and above	30	9.9
Total	303	100.0

Note. n = 303

4.3 Findings of the Study

4.3.1 Participant's LINE usage

This part described the participant's LINE usage by providing a description of LINE usage and frequency of using LINE on average per day. As can be seen in Table 4.3, the participants were asked how long they have been using LINE application. They were given four choices to choose: 12 months, more than 12 to 18 months, more than 18 to 24 months, or more than 24 months. Table 4.3 showed that the participants have been using LINE application mostly for more than 24 months (65.3%, n = 198), followed by more than 12 to 18 months (12.9%, n = 39), twelve months (11.2%, n = 34), and more than 18 to 24 months (10.6%, n = 32), respectively.

For average time spent, the participants were asked how long they use LINE application per day on average. Seven possible choices were given: less than 30 minutes, 30 minutes - 1 hour, more than 1-1.5 hours, more than 1.5-2 hours, more than 2-2.5 hours, more than 2.5-3 hours, or more than 3 hours. Table 4.3 indicated the largest group of participants was those who use LINE between 30 minutes to 1 hour (31.0%, n = 94), followed by less than 30 minutes (17.5%, n = 53), more than 3 hours per day on average (14.9%, n = 45), more than 1 hour to 1.5 hours (12.5%, n = 38), more than 1.5 hours to 2 hours (12.2%, n = 37), more than 2 hour to 2.5 hours (5.9%, n = 18), and more than 2.5 to 3 hours (5.9%, n = 18), respectively (see Table 4.3)

Table 4.3: Participant's LINE Usage

Have been using LINE	Frequency	Percentage
12 months	34	11.2
More than 12 to 18 months	39	12.9
More than 18 to 24 months	32	10.6
More than 24 months	198	65.3
Total	303	100.0
Using LINE per day on average		
Less than 30 minutes	53	17.5
30 minutes - 1 hour	94	31.0
More than 1-1.5 hours	38	12.5
More than 1.5-2 hours	37	12.2
More than 2-2.5 hours	18	5.9
More than 2.5-3 hours	18	5.9
More than 3 hours	45	14.9
Total	303	100.0

Note. n = 303

4.3.2 Users' health status

For participants' health status, they were asked to select the answers that currently represent their health status/illness. Eight possible choices were given diabetes, high-blood pressure, heart disease/stroke, cancer, malnutrition, osteoporosis

in the elderly, obesity, and other health status. As shown in Table 4.4 high-blood pressure was the highest mentioned illness status (31.9%, n = 128), followed by other health status (25.4%, n = 102). The next most frequent illness was osteoporosis in the elderly (16.5%, n = 66), followed by diabetes (12.5%, n = 50), heart disease/stroke (6.2%, n = 25), obesity (4.0%, n = 16), cancer (2.7%, n = 11), and malnutrition (0.7%, n = 3), respectively.

Table 4.4: Users' Health Status

	Responses	
Currently health status/illness (Frequencies)	N	Percent
Diabetes	50	12.5%
High-blood Pressure	128	31.9%
Heart disease/stroke	25	6.2%
Cancer	11	2.7%
Malnutrition	3	0.7%
Osteoporosis in the elderly	66	16.5%
Obesity	16	4.0%
Others	102	25.4%
Total	401	100.0%

4.3.3 Health topics

For health topic(s) communicated via LINE, the participants were asked to select the health topics that they currently communicate via LINE application. Eight

possible choices were given -diabetes, high-blood pressure, heart disease/stroke, cancer, nutrition/diet, osteoporosis in the elderly, exercise/obesity, and other topics. Table 4.5 indicated the frequency of participants' communication on health message/topics via LINE application. They selected exercise/obesity was the number one health topic that they frequently communicate via LINE (22.5%, n = 209), followed by high-blood pressure (16.5%, n =153), nutrition/diet (15.0%, n = 139), osteoporosis in the elderly (12.6%, n = 117), diabetes (11.9%, n = 110), heart disease/stroke (9.7%, n = 90), cancer (7.9%, n = 73), and other health topics (3.9%, n = 36), respectively.

Table 4.5: Participant's communication on health topics

Health topic(s) that you currently communicate via LINE (Frequencies)	Responses	
	N	Percent
Diabetes	110	11.9%
High-blood Pressure	153	16.5%
Heart disease/stroke	90	9.7%
Cancer	73	7.9%
Nutrition/Diet	139	15.0%
Osteoporosis in the elderly	117	12.6%
Exercise/obesity	209	22.5%
Others	36	3.9%
Total	927	100.0%

4.3.4 Health message

As for the interpretation criteria to read and understand the MEAN value of 6-point Likert scale, with the lowest numeric value of 0 and the highest numeric value of 5, the following is how to interpret the 6-point scale value by setting the numeric value at 0.50:

0.00–0.50 = Never

0.51–1.50 = Seldom

1.51–2.50 = Sometimes

2.51–3.50 = Often

3.51–4.50 = Very frequently

4.51–5.00 = Most frequently

Regarding the 6-point Likert scale, the mean score 0.00 to 0.50 is considered never, 0.51 to 1.50 is seldom, 1.51 to 2.50 is sometimes, 2.51 to 3.50 is often, 3.51 to 4.50 is very frequently, and 4.51 to 5.00 is most frequently.

In terms of content types, the survey questions 9 through 14 were used to find the types of health message content that the participants received via LINE application per week. The means relevant to Thai senior citizens receive health messages via LINE revealed that Thai senior citizens "sometimes" received informational messages as health messages via LINE application per week (Mean = 1.85, S.D. = 1.07, see Table 4.6). Moreover, the participants "sometimes" received narrative messages as health messages via LINE application per week (Mean = 2.11, S.D. = 1.00, see Table 4.6).

Table 4.6 compared Thai senior citizens' receiving health messages via LINE application per week between informational and narrative messages. As shown in the

table, the mean score of receiving narrative message (Mean = 2.11) was higher than that of informational message (Mean = 1.85).

Table 4.6: Mean and standard deviation of content types

Content Type	Mean	S.D.	Interpretation
Info 1; health message that presents arguments, logic, or reason in the form of facts about diseases.	1.84	1.23	Sometimes
Info 2; health message that shows the number of patients related diseases with evidence support.	1.81	1.23	Sometimes
Info3; health message that shows the statistics of major diseases.	1.90	1.28	Sometimes
Info; information messages	1.85	1.07	Sometimes
Narrative 1; health message that presents health information based on patient's experiences.	2.16	1.14	Sometimes
Narrative 2; health message that gives example of an event or case study with providing appealing details, character, and actions.	2.00	1.16	Sometimes
Narrative 3; health message that tell stories about illness with interesting plot/situation.	2.16	1.16	Sometimes
Narrative; narrative messages	2.11	1.00	Sometimes

Note: n = 303

In terms of message framing, the survey questions 15 through 20 were used to find types of health message framing that participants receive via LINE application per week. Table 4.7 showed that the participants “sometimes” received loss-framed messages as health messages via LINE application per week (Mean = 1.99, S.D. = 1.05). Moreover, Table 4.7 revealed that the participants “often” received gain-framed messages as health messages via LINE application per week (Mean = 2.54, S.D. = 1.02).

Table 4.7 compared Thai senior citizens’ receiving health messages via LINE application per week between gain-framed and loss-framed messages. As shown in the table, the mean score of receiving gain-framed message (Mean = 2.54) was higher than that of loss-framed message (Mean = 1.99).

Table 4.7: Mean and Standard Deviation of Message Framing

Message Framing	Mean	S.D.	Interpretation
Gain 1; message about benefit and advantage of health activities.	2.79	1.16	Often
Gain 2; message that presents about positive/healthy experience/outcome of health activities.	2.48	1.13	Sometimes

(Continued)

Table 4.7 (Continued): Mean and Standard Deviation of Message Framing

Message Framing			
	Mean	S.D.	Interpretation
Gain 3; message that talks about reduced risk of illness in your life if you engage in health activities.	2.34	1.19	Sometimes
Gain; gain-framed messages	2.54	1.02	Often
	Mean	S.D.	Interpretation
Loss 1; message about cost and disadvantage of not engaging in health activities.	1.97	1.22	Sometimes
Loss 2; message that presents about negative/unhealthy experience/outcome of not engaging in health activities.	1.98	1.28	Sometimes
Loss 3; message that talks about increased risk of illness if you do not engage in health activities.	2.03	1.17	Sometimes
Loss; loss-framed messages	1.99	1.05	Sometimes

Note: n = 303

4.3.5 User's Responses

For the interpretation criteria to read and understand the value of 5-point Likert scale, with the lowest numeric value of 1 and the highest numeric value of 5, the followings indicate how to interpret the 5-point scale value by setting the numeric value at 0.50:

1.00– .50 = Very low level (Strongly disagree)

1.51–2.50 = Low level (Disagree)

2.51–3.50 = Moderate level (Neither agree nor disagree)

3.51–4.50 = High level (Agree)

4.51–5.00 = Very high level (Strongly agree)

The participants' cognitive responses after they received health messages via LINE application are reported in Table 4.8 The survey questions number 21 through 32 were used to examine four dimensions of cognitive responses 1) cognitive self-awareness, 2) cognitive threat risk, 3) cognitive benefits, and 4) cognitive self-efficacy.

As for the first dimension, the "cognitive self-awareness" was measured by three indicators. Table 4.8 revealed three indicators getting the above average score of the responses (>3.51). In other words, the participants had high level of responses on all indicators: receiving health messages via LINE made them interested in their current health condition/status (Mean = 4.26, S.D. = 0.67), contemplate on their current health behavior/lifestyle (Mean = 4.24, S.D. = 0.59), and aware of their health conditions (Mean = 4.09, S.D. = 0.65), respectively. In summary, the participants experienced high level of cognitive self-awareness (Mean = 4.20, S.D. = 0.55) (see Table 4.8).

As for the second dimension, the "cognitive threat risk" was measured by three indicators. The participants had high level of responses on two indicators: receiving health message via LINE made them concerned that they will get some diseases because of their age, lifestyle, and/or health condition (Mean 3.64, S.D. = 1.03), and that they have chances of getting diseases because of their ages, lifestyle,

and health condition (Mean = 3.55, S.D. = 1.01). Nevertheless, the participants had moderate level of responses on one indicator: receiving health message via LINE made them believe that they have a moderate risk of getting diabetes or blood-pressure due to their genetic factor (Mean = 3.34, S.D. = 0.99). In summary, the participants experienced high level of cognitive threat risk (Mean = 3.51, S.D. = 0.83) (see Table 4.8).

As for the third dimension, the "cognitive benefit" was measured by three indicators. The participants had high level of responses on all indicators: engaging in health activities communicated via LINE is to prevent themselves from some fatal diseases (Mean = 3.80, S.D. = 0.83), decrease the rate of getting diabetes or high-blood pressure (Mean = 3.77, S.D. = 0.85), and that completing activities may help them getting away from some fatal diseases (Mean = 3.76, S.D. = 0.84), respectively. In summary, the participants experienced high level of cognitive perceived benefit (Mean = 3.78, S.D. = 0.72) (see Table 4.8).

As for the fourth dimension, the "cognitive self-efficacy" was measured from three indicators. The participants had high level of responses on all indicators: receiving health activities recommended via LINE made them confident that they can follow health-related advices (Mean = 3.79, S.D. = 0.85), be able to find time to follow and engage in health activities (Mean = 3.74, S.D. = 0.83), and have ability to follow, engage in, and complete health activities (Mean = 3.65, S.D. = 0.81), respectively. In summary, the participants had high level of cognitive self-efficacy (Mean = 3.73, S.D. = 0.73) (see Table 4.8).

Table 4.8: Mean and Standard Deviation of Cognitive Responses

Cognitive Responses	Mean	S.D.	Interpretation
CogSelfAwareness1; receiving health messages via LINE make me aware of my health conditions.	4.09	0.65	High level
CogSelfAwareness2; receiving health messages via LINE makes me interested in my current health condition/status.	4.26	0.67	High level
CogSelfAwareness3; receiving health messages via LINE makes me contemplate on my current health behavior/lifestyle.	4.24	0.59	High level
CSA; Cognitive self-awareness	4.20	0.55	High level
CogThreatRisk1; after receiving health messages via LINE, I am concerned that I will get some diseases (e.g. diabetes or high-blood pressure) because of my age, lifestyle, and/or health condition.	3.64	1.03	High level

(Continued)

Table 4.8 (Continued): Mean and Standard Deviation of Cognitive Responses

Cognitive Responses	Mean	S.D.	Interpretation
CogThreatRisk2; after receiving health messages via LINE, I think that I have chances of getting diseases (e.g. diabetes or high-blood pressure) because of my ages, lifestyle, and health condition.	3.55	1.01	High level
CogThreatRisk3; after receiving health messages via LINE, I believe that I have a moderate risk of getting diabetes or blood-pressure due to my genetic factor.	3.34	0.99	Moderate level
CTR; Cognitive Threat Risk	3.51	0.83	High level
CogBenefit1; If I engage in health activities communicated via LINE, I am doing something to prevent myself from some fatal diseases.	3.80	0.83	High level
CogBenefit2; engaging health activities communicated via LINE decreases the rate of getting diabetes or high-blood pressure.	3.77	0.85	High level
CogBenefit3; engaging/Completing in health activities communicated via LINE may help me getting away from some fatal diseases.	3.76	0.84	High level
CB; Cognitive perceived benefit	3.78	0.72	High level

(Continued)

Table 4.8 (Continued): Mean and Standard Deviation of Cognitive Responses

Cognitive Responses	Mean	S.D.	Interpretation
CogSelfEfficacy1; I am confident that I can follow health-related advices sent via LINE.	3.79	0.85	High level
CogSelfEfficacy2; I am able to find time to follow and engage in health activities recommended via LINE.	3.74	0.83	High level
CogSelfEfficacy3; I have an ability to follow, engage in, and complete health activities recommended via LINE.	3.65	0.81	High level
CSE; Cognitive self-efficacy	3.73	0.73	High level

Note: n = 303

In terms of participants' affective responses after they received health messages via LINE application. The survey questions number 33 through 38 were used to examine two dimensions of affective responses 1) Affective fear and 2) Affective sympathy.

As for the first dimension, the "affective fear" was measured from by indicators. The participants had moderate level of responses on all indicators: receiving health message via LINE made them afraid to think about diabetes or high-blood pressure (Mean = 3.41, S.D. = 1.06), fear that they will get diabetes or high-blood pressure sometimes during their life (Mean = 3.33, S.D. = 1.08), and thought of

diabetes or high-blood pressure scares them (Mean = 3.31, S.D. = 0.99), respectively. In summary, the participants experienced moderate level of affective fear (Mean = 3.35, S.D. = 0.99) (see Table 4.9).

As for the second dimension, the "affective sympathy" was measured by three indicators. The participants had high level of responses on two indicators: receiving health message via LINE made their heart ache for those who have suffered from serious illness (Mean = 4.27, S.D. = 0.70), and sympathize those who get diabetes or serious illness (Mean = 4.10, S.D. = 0.72). However, they had moderate level of responses on one indicator: imagine if they were people who are sick, they would have a miserable life (Mean = 3.26, S.D. = 1.16). In summary, the participants experienced high level of affective sympathy (Mean = 3.87, S.D. = 0.69) (see Table 4.9).

Table 4.9: Mean and Standard Deviation of Affective Responses

Affective Responses	Mean	S.D.	Interpretation
AffectiveFear1; after I received health messages via LINE, I am afraid to think about diabetes or high-blood pressure.	3.41	1.06	Moderate level
AffectiveFear2; after I received health messages via LINE, I am fear that I will get diabetes or high-blood pressure sometime during my life.	3.33	1.08	Moderate level

(Continued)

Table 4.9 (Continued): Mean and Standard Deviation of Affective Responses

Affective Responses	Mean	S.D.	Interpretation
AffectiveFear3; After I received health messages via LINE, the thought of diabetes or high-blood pressure scares me.	3.31	1.13	Moderate level
AF; affective fear	3.35	0.99	Moderate level
AffectiveSympathy1; after I received health messages via LINE, I imagine if I were people who are sick (diabetes or high blood pressure), I will have a miserable life.	3.26	1.16	Moderate level
AffectiveSympathy2; after I received health messages via LINE, I sympathize those who get diabetes or serious illness.	4.10	0.72	High level
AffectiveSympathy3; after I received health messages via LINE, my heart aches for those who have suffered from serious illness (e.g. diabetes or high blood pressure).	4.27	0.70	High level
AS; affective sympathy	3.87	0.69	High level

Note: n = 303

In terms of participants' behavioral responses after they received health messages via LINE application. The survey questions number 39 through 44 were used to examine behavioral responses, which were measured by six indicators.

Regarding the behavioral responses, the participants had high level of responses on all indicators: receiving health activities recommended via LINE made them engaged in activities for disease detection (Mean = 4.04, S.D. = 0.86), engaged in activities for disease prevention, e.g. exercising and eating healthy food (Mean = 3.94, S.D. = – 0.78), forward/share the health messages (online) they received to friends and family (Mean = 3.89, S.D. = 0.85), talk (offline) about health messages they received with family and friends (Mean = 3.85, S.D. = 0.75), and discuss with friends and family about health-related issues communicate on LINE (Mean = 3.84, S.D. = 0.78), respectively. However, they had moderate level of responses on one indicator: ask doctor about health message they received (Mean = 3.45, S.D. = 1.04). In summary, the participants experienced high level of behavioral responses (Mean = 3.83, S.D. = 0.62) (see Table 4.10).

Table 4.10: Mean and Standard Deviation of Behavioral Responses

Behavioral Responses	Mean	S.D.	Interpretation
Behavioral1; I forward/share the health messages I received via LINE to friends and family (online).	3.89	0.85	High level
Behavioral2; I discuss with friends and family about health-related issues communicated via LINE (online).	3.84	0.78	High level

(Continued)

Table 4.10 (Continued): Mean and Standard Deviation of Behavioral Responses

Behavioral Responses	Mean	S.D.	Interpretation
Behavioral3; I talk about health messages I received via LINE with family and friends (offline).	3.85	0.75	High level
Behavioral4; I ask my doctor about the health message I received via LINE (offline).	3.45	1.04	Moderate level
Behavioral5; I have engaged in activities for disease prevention recommended in LINE (e.g. exercising and eating healthy food).	3.94	0.78	High level
Behavioral6; I have engaged in activities for disease detection recommended in LINE (e.g. have an annual medical check to find out if something is wrong and follow the steps for checking health status).	4.04	0.86	High level
BR; behavioral responses	3.83	0.62	High level

Note: n = 303

Table 4.11: Mean and Standard Deviation of All Types of Responses

Responses	Mean	S.D.	Interpretation
Cognitive Responses			
Cognitive Self-Awareness: CSA	4.20	0.55	High level
Cognitive Threat Risk: CTR	3.51	0.83	High level
Cognitive Benefit: CB	3.78	0.72	High level
Cognitive Self-Efficacy: CSE	3.73	0.73	High level
Affective Responses			
Affective Fear: AF	3.35	0.99	Moderate level
Affective Sympathy: AS	3.87	0.69	High level
Behavioral Responses: BR	3.83	0.62	High level

Note: n = 303

4.4 Results of the Hypothesis Testing

This study also tested nine research hypotheses as follow:

Hypothesis 1: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' cognitive responses.

Hypothesis 2: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' behavioral responses.

Hypothesis 3: Thai senior citizens' cognitive responses have a direct effect on their behavioral responses.

Hypothesis 4: Thai senior citizens' cognitive responses have a direct effect on their affective responses.

Hypothesis 5: Thai senior citizens' cognitive responses have an indirect effect on behavioral responses as mediated by their affective responses.

Hypothesis 6: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' affective responses.

Hypothesis 7: Health message strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses.

Hypothesis 8: Health messages strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' behavioral responses as mediated by their cognitive and affective responses.

Hypothesis 9: Thai senior citizens' affective responses have a direct effect on their behavioral responses.

To test the above nine research hypotheses, Variance-based SEM (VB-SEM) or Partial Least Square (PLS-SEM) was used as it can help a new study to focus on construct's prediction and theory exploration. Variance-based SEM (VB-SEM) or Partial Least Square (PLS-SEM) is suitable for a research that has limited questions and limited theory support (Hair, et al., 2017; Soonthorndhai, personal communication, April 19, 2019). Variance-based SEM (VB-SEM) or Partial Least Square (PLS-SEM) supports both reflective and formative measurement model.

4.4.1 Steps of evaluation VB-SEM model

Structural equation modeling (SEM) is a multivariate statistical tool that syndicates correlation, regression, covariance, and causality. There are of two types of evaluation of Structural equation modeling (SEM): (1) covariance-based (CB-SEM), and (2) variance-based (VB-SEM) (Hair, et al., 2017).

CB-SEM is the most commonly used SEM type to focus on covariance and provide goodness-of-fit measures to explain the items' relationship between model and data. CB-SEM supports only reflective constructs in the model (Soonthorndhai, personal communication, November 21, 2019).

VB-SEM is rather a new approach that relies on variances and focuses on maximizing the explained variance such as R-squared, F-squared, and Path Coefficient effect size value. VB-SEM supports both reflective and formative contracts in the model (Hair, et al., 2017; Soonthorndhai, personal communication, November 21, 2019).

To evaluate the measurement model of VB-SEM, the systematic evaluation of criteria is set as follows:

1) Analyze measurement model or conceptual model.

2) There are 2 types for evaluation quality of results from (1) reflective model, and (2) formative model.

- Reflective model: in order to evaluate results from VB-SEM the researcher must consider the following factors:

- Evaluate internal consistency reliability, which included (1) Cronbach's alpha, and (2) composite reliability, 0.60–0.90 is acceptable. Use of Cronbach's alpha is to identify the relatedness of items/questions as a group, which is used for scale reliability (Hair, et al., 2017).

- Evaluate convergent validity, it can be identified by (1) factor loading should be higher than 0.70, (2) indicator reliability should be higher than 0.50, and (3) average variance extracted (AVE) should be higher than 0.50. Hair, et al.

(2017) mentioned that AVE was used to measure variances that is captured by a construct about the amount of variance due to measurement error.

- Discriminant validity tests can be accessed by Heterotrait-Monotrait (HTMT) confidence in PLS-SEM (Hair, et al., 2017).

- Formative model: the researcher must have solidity of the data that can be identified by (1) convergent validity, (2) collinearity between indicators, and, (3) significance and relevance of outer weights (Hair, et al., 2017; Soonthorndhai, personal communication, November 21, 2019)

3) Evaluation of structural model

There are five statistically significant data that academia must identify which are: (1) coefficients of determination (R-squared), (2) predictive relevance (Q-squared), (3) size and significance of path coefficients, (4) f^2 effect sizes, and (5) q^2 effect sizes (Hair, et al., 2017; Soonthorndhai, personal communication, November 21, 2019).

In this study, the statistics for analyzing results that researcher used are (1) internal consistency, (2) convergent validity, (3) discriminant validity (HTMT), (4) f^2 effect sizes, (5) coefficients of determination (R^2), and (6) size and significance of path coefficients, to identify construct validity and reliability. As Hair, et al. (2017) mentioned, the researcher should make sure of data for construct reliability and validity by identifying internal consistency reliability, convergent validity, and discriminant validity, in order to analyze results from PLS-SEM in the reflective model.

4.4.2 Statistics of correlations between variables

The results of Table 4.12 analysis confirmed that the HMS, AR, and CR had a positive direct influence on BR at 0.01 ($p < .01$). However, for analyzing the multiple regression of BR as dependent variable, if it did not have problem of multicollinearity, all variables of HMS, AR, and CR, should have positive influence to BR at 0.01 as well.

As stated in Table 4.12, CR had the most direct influence on BR ($r = 0.65$), followed by AR ($r = 0.41$), and HMS ($r = 0.34$). All variables of HMS, AR, CR, showed that every pair of variables had direct influence on BR at 0.01.

Table 4.12: Correlations coefficients between variables

Variables	HMS	AR	CR	BR
Health Message Strategies (HMS)	1.00	0.20**	0.39**	0.34**
Affective Responses (AR)		1.00	0.45**	0.41**
Cognitive Responses (CR)			1.00	0.65**
Behavioral Responses (BR)				1.00

** Correlation is significant at the 0.01 level (2-tailed).

4.4.3 Measurement Model

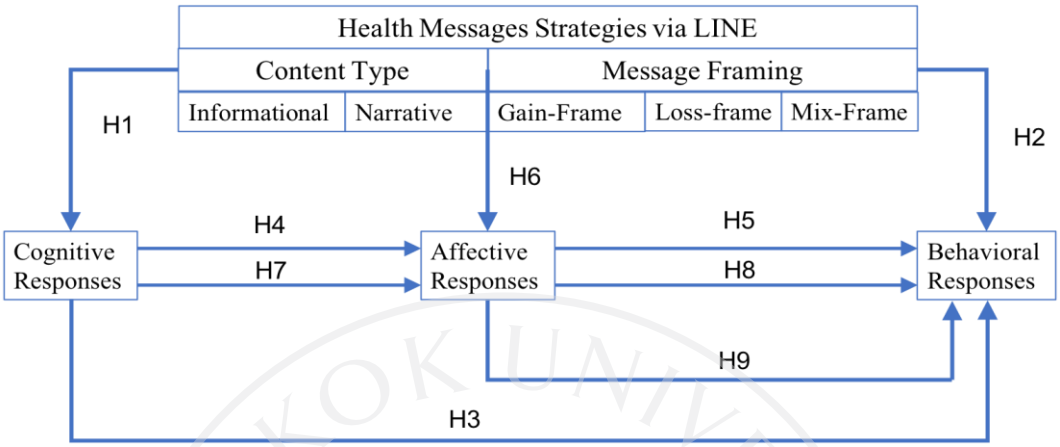


Figure 4.9: Measurement Model

From the conceptual framework, it can be developed to be the measurement model as below:

The independent variable in this study, “Health Message Strategies via LINE” (HMS), consists of two variables, which are Content type (CT) and Message Framing (MF).

1) Content type (CT) consists of two types which are Informational (Info) and Narrative (Nar). Informational is indicated by info1, Info2, and Info3, and Narrative is indicated by Nar1, Nar2, and Nar3.

2) Message Framing (MF) consists of gain-frame (Gain), loss-frame (Loss), and mix-frame. Gain-frame is indicated by Gain1, Gain2, and Gain3. Loss-Frame is indicated by Loss1, Loss2, and Loss3. For mix-framed, the subjects

identified the high level of both gain and loss, so they will be considered receiving the mix-framed message.

The latent variables are Info, Nar, Gain, and Loss which are directly indicated by indicators (Info1-Info3, Nar1-Nar3, Gain1-Gain3, and Loss1-Loss3). Indicators are the result from the reflective of Info, Nar, Gain, and Loss. Therefore, these latent variables are the first order constructs (FOC) in the Reflective model. The content type (CT) variable as indicated by Info and Nar, is the first order constructs (FOC); consequently, content type (CT) is the second order constructs (SOC) in the Formative model as the indicator of content type (CT) resulting from the indicator of Info and Nar (Figure 4.10).

For message framing (MF) variable, measurement from indicator of Gain and Loss is the First Order Constructs (FOC), while message framing (MF) is the Second Order Constructs (SOC) in the Formative model (Figure 4.10). For HMS latent variable, measurement from CT and MF variables is the Second Order Constructs (SOC). Therefore, HMS is the Third Order Constructs (TOC) in the formative model (Figure 4.10).

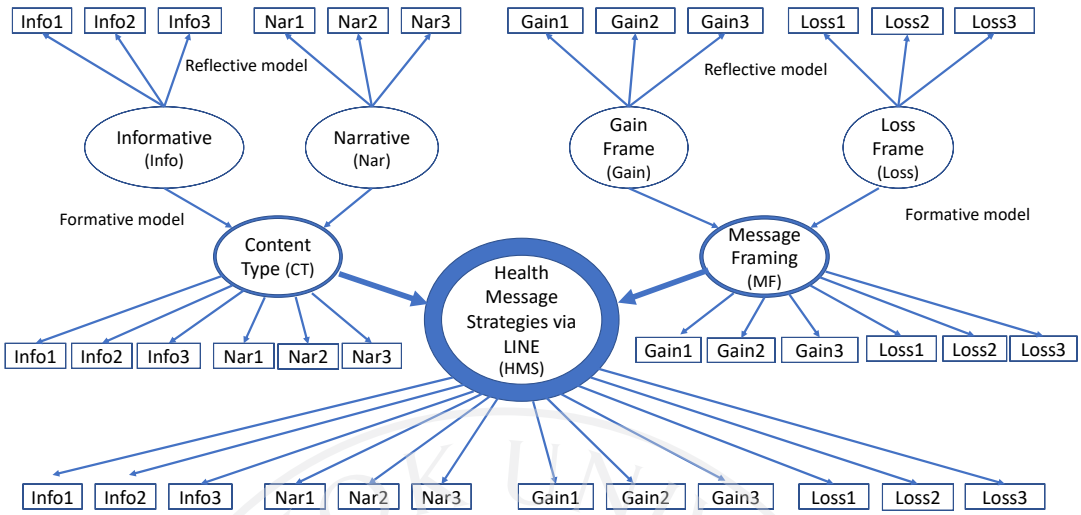


Figure 4.10: Health Message Strategies via LINE Measurement Model

In this study, there are two mediators which are Cognitive Responses (CR) and Affective Responses (AR)

Cognitive Responses (CR) consists of four elements which are (1) cognitive self-awareness (CSA) as indicated by CSA1-CSA3, (2) cognitive threat risk (CTR) which as indicated by CTR1-CTR3, (3) cognitive benefit (CBF) as indicated by CBF1-CBF3, and (4) cognitive self-efficacy (CSE) as indicated by CSE1-CSE3 (Figure 4.11). CSA, CTR, CBF, and CSE variables are reflected by cognitive responses (CR), in which CSA, CTR, CBF, and CSE is first order construct (FOC) in the reflective model (Figure 4.11). Therefore, CR is the second order construct (SOC) in the reflective model (Figure 4.11).

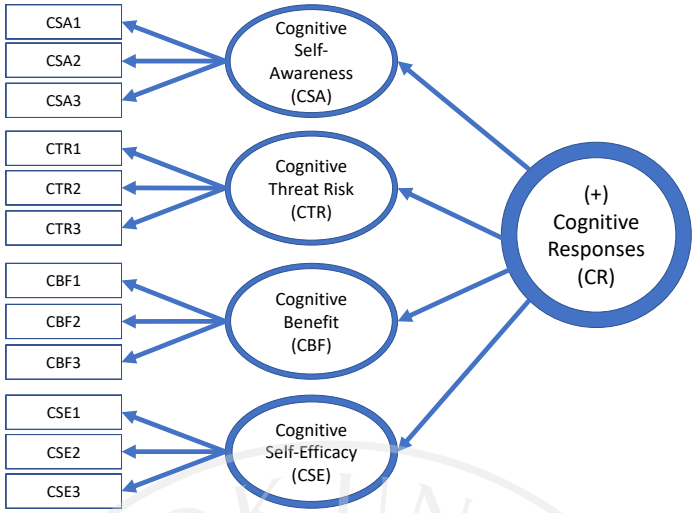


Figure 4.11: Cognitive Responses Measurement Model

Affective Responses (AR) consists of two elements which are (1) affective fear (AF) as indicated by AF1-AF3, and (2) affective sympathy (AS) as indicated by AS1-AS3 (Figure 4.12).

The variables of affective fear (AF) and affective sympathy (AS) are reflected by the affective responses (AR), in which AF and AS is the first order constructs (FOC) in the reflective model (Figure 4.12). Therefore, AR is the second order constructs (SOC) in the reflective model (Figure 4.12).

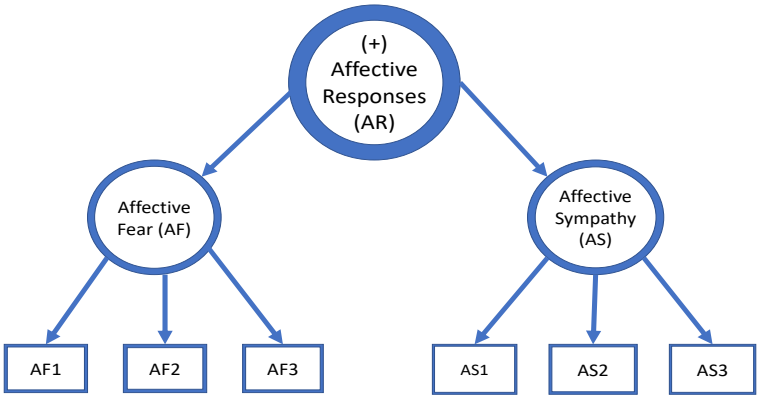


Figure 4.12: Affective Responses Measurement Model

The dependent variable or Endogenous in this study is "Behavioral Responses" (BR), and is measured by six indicators which are Beh1-Beh6. Therefore, BR is a type of reflective model (Figure 4.13).

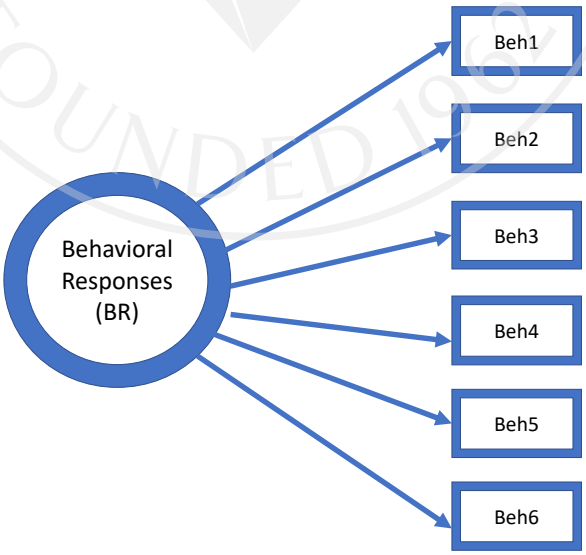


Figure 4.13: Behavioral Responses Measurement Model

4.5.3 Analysis of instrument reliability and validity and VB-SEM model testing

This study used the PLS-SEM technique to analyze the acquired data. Firstly, the researcher examined the solidity of the data, and Kurtosis and Skewness can explain the data and quality of observed variables and latent variables. The results showed that the data passed the standard of kurtosis and skewness which means the equation of structure/framework model are ready to be analyzed. The researcher also examined the following: loadings, composite reliability (CR), Cronbach's Alpha, average variance extracted (AVE), and discriminant validity by using the Heterotrait-Monotrait (HTMT) criterion.

The results revealed that the observed variables and latent variables passed the quality criteria of reliability and validity. However, sub-latent variable "cognitive threat risk" (CTR) that reflects latent variable "cognitive responses" (CR) was found to be below the standardized value (> 0.70). Therefore, CTR was taken off the model. Next, the results were reanalyzed. After analyzing the model for the second time, the result showed every observed variable and latent variable passed the quality criteria as shown in Figure 4.14 and Table 4.13

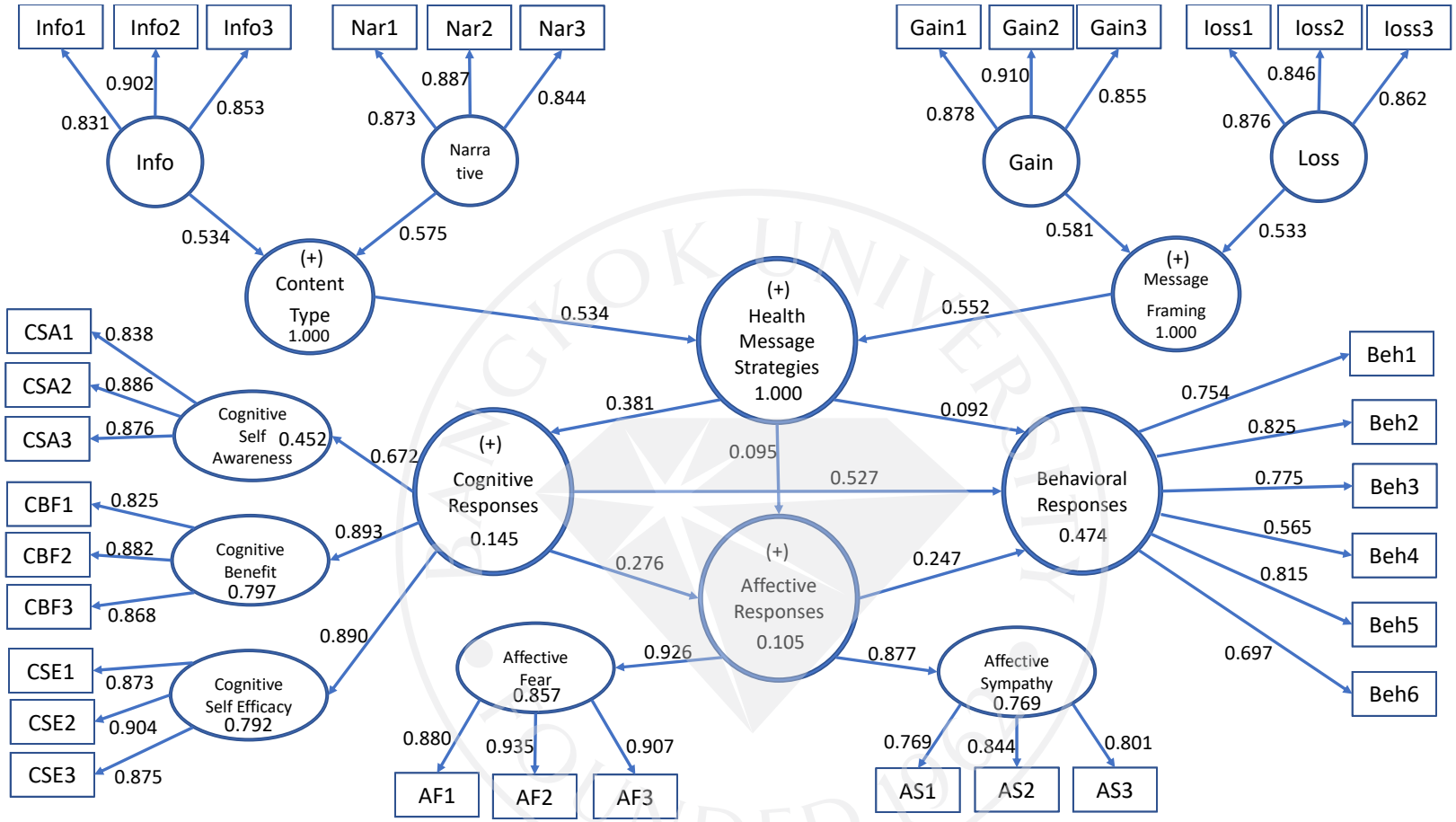


Figure 4.14: Result of Analysis Model VB-SEM testing

Table 4.14 displayed the results of the loading that estimated the relationship between the reflective latent variables and their indicators which are between the value of 0.57–0.93. The loading (L) of Beh4 with a value of 0.57 is lower than 0.07 (Loading > 0.70). However, the value of Beh4's based on AVE, CR, and Alpha is well above the suggested threshold value criterion. Therefore, Beh4 was kept in order to maintain the value of content validity. The loading of AF2 has the highest value at 0.93, which makes its indicators reliability (L^2) having the value between 0.32–0.86. The indicators reliability (L^2) of Beh4 with a value of 0.32 is lower than 0.50 (L^2 > 0.50). Therefore, Beh4 was kept with the same reason as mentioned earlier that Beh4 having value of AVE, CR, and Alpha being well above the suggested value criterion.

In terms of Average Variance Extracted (AVE), Table 4.13 displayed the results of AVE between 0.55–0.82 which are well above the required minimum level of the value at 0.50. In terms of composite reliability (CR), Table 4.13 showed the CR values between 0.85–0.93f, which are well above the required minimum level of the criterion value (Quality criteria 0.60 for exploratory research and 0.70 or confirmatory research).

For internal consistency, both Cronbach's Alpha and composite reliability value of 0.60 to 0.90 are acceptable (Hair, et al., 2017). As Hair, et al. (2017) mentioned, "value above 0.90 (and definitely above 0.95) are not desirable because they indicated that all the indicators are measuring the same phenomenon and are therefore not likely to be a valid measure of the construct. Specifically, such composite reliability values occur if one uses semantically redundant items by slightly rephrasing the very same question" (p.112).

In terms of Cronbach's Alpha, Table 4.13 displays the results of the Cronbach's Alpha between 0.73–0.89, which are well above the required minimum level of the criterion value (Quality criteria 0.60 for exploratory research and 0.70 for confirmatory research). In terms of discriminant validity, this study used the Heterotrait-Monotrait (HTMT) criterion. Table 4.13 displays the results of all pairwise values of the HTMT which are below 0.90, and that is well under relevant threshold level (Henseler, Ringle, & Sarstedt, 2015).

Consequently, statistical assumptions of the measurement quality of the variables were met as the variables have met the required value level for reliability and validity. Table 4.13 shows the results reporting all variables having sufficient quality to be analyzed in structure/framework model and hypotheses.

Table 4.13: Result summary for reliability and validity of reflective measurement model

Latent Variables			Convergent Validity			Internal Consistency Reliability		Discriminate Validity
2nd Order	1st Order	I	L	L^2	AVE	CR	Alpha	HTMT
			>0.70	>0.50	>0.50	0.60-0.90	0.60-0.90	
		Indicators	Loading	Indicator Reliability	Average Variance Extracted	Composite Reliability	Cronbach's Alpha	Heterotrait-Monotrait
CR	CSA	CSA1	0.84	0.71	0.75	0.90	0.83	Yes
		CSA2	0.89	0.79				
		CSA3	0.88	0.77				
	CBF	CBF1	0.82	0.68	0.74	0.89	0.82	Yes
		CBF2	0.88	0.78				
		CBF3	0.87	0.75				

(Continued)

Table 4.13 (Continued): Result summary for reliability and validity of reflective measurement model

Latent Variables			Convergent Validity			Internal Consistency Reliability		Discriminate Validity
2nd Order	1st Order	I	L	L^2	AVE	CR	Alpha	HTMT
			>0.70	>0.50	>0.50	0.60-0.90	0.60-0.90	
		Indicators	Loading	Indicator Reliability	Average Variance Extracted	Composite Reliability	Cronbach's Alpha	Heterotrait-Monotrait
CR	CSE	CSE1	0.87	0.76	0.78	0.91	0.86	Yes
		CSE2	0.90	0.81				
		CSE3	0.87	0.76				
AR	AF	AF1	0.88	0.77	0.82	0.93	0.89	Yes
		AF2	0.93	0.86				
		AF3	0.91	0.83				

(Continued)

Table 4.13 (Continued): Result summary for reliability and validity of reflective measurement model

Latent Variables			Convergent Validity			Internal Consistency Reliability		Discriminate Validity
2nd Order	1st Order	I	L	L^2	AVE	CR	Alpha	HTMT
			>0.70	>0.50	>0.50	0.60-0.90	0.60-0.90	
		Indicators	Loading	Indicator Reliability	Average Variance Extracted	Composite Reliability	Cronbach's Alpha	Heterotrait-Monotrait
AR	AS	AS1	0.77	0.59	0.65	0.85	0.73	Yes
		AS2	0.84	0.71				
		AS3	0.80	0.64				

(Continued)

Table 4.13 (Continued): Result summary for reliability and validity of reflective measurement model

Latent Variables			Convergent Validity			Internal Consistency Reliability		Discriminate Validity
2nd Order	1st Order	I	L	L^2	AVE	CR	Alpha	HTMT
			>0.70	>0.50	>0.50	0.60-0.90	0.60-0.90	
		Indicators	Loading	Indicator Reliability	Average Variance Extracted	Composite Reliability	Cronbach's Alpha	Heterotrait-Monotrait
AR	BR	Beh1	0.75	0.56	0.55	0.88	0.83	Yes
		Beh2	0.82	0.67				
		Beh3	0.77	0.59				
		Beh4	0.57	0.32				
		Beh5	0.81	0.66				
		Beh6	0.70	0.49				

4.5.4 Discriminant validity (HTMT)

"Discriminant validity is the extent to which a construct is truly distinct from other constructs by empirical standards. Thus, establishing discriminant validity implies that a construct is unique and captures phenomena not represented by other constructs in the model" (Hair, et al., 2017, p.115). Henseler, et al. (2015) proposed heterotrait-monotrait (HTMT) for examining the correlations, which is the most common use and the statistical basis for discriminant validity of the measurement. Henseler, et al. (2015) recommended a threshold value of HTMT at .85 or lower. Franke and Sarstedt (2019); Hair, et al. (2017) and Henseler, et al. (2015) also suggested a threshold value of HTMT at 0.85 or 0.90 to indicate an acceptable level of discriminant validity. The HTMT value of 0.90 and lower means that the variables have discriminant validity of reflective model (Franke & Sarstedt, 2019; Hair et al., 2017; Henseler, et al., 2015).

HTMT examines variables in the same level constructs of correlations (Hair, et al., 2017; Henseler, et al., 2015). Hair, et al. (2017), and Henseler, et al. (2015) mentioned that "HTMT is the ratio of the between-trait correlations to the within-trait correlations" (p. 118). Therefore, variables with lower or higher levels of constructs that used the same indicator do not need to examine HTMT for discriminant validity (Hair, et al., 2017; Soonthorndhai, personal communication, November 21, 2019). Table 4.5.3 shows HTMT values by using 0.90 as the relevant threshold level. All values lower than the threshold value of 0.90 means the measurement have discriminant validity (See Table 4.14). The results of the HTMT analysis shown in Table 4.14 have confirmed that the value is lower than 0.90. Hence, discriminant

validity has been established between two reflective constructs in each relationship in the same level of constructs.

Table 4.14: Discriminant validity (HTMT)

	Affective Fear (AF)	Affective Responses (AR)	Affective Sympathy (AS)	Behavioral Responses (BR)	Cognitive Benefit (CBF)	Cognitive Responses (CR)	Cognitive Self-Awareness (CSA)	Cognitive Self-Efficacy (CSE)
Affective Responses (AR)	1.03							
Affective Sympathy (AS)	0.73	1.11						
Behavioral Responses (BR)	0.45	0.51	0.48					
Cognitive Benefit (CBF)	0.33	0.38	0.36	0.72				
Cognitive Responses (CR)	0.29	0.37	0.41	0.74	1.02			
Cognitive Self-Awareness (CSA)	0.20	0.33	0.44	0.49	0.49	0.85		
Cognitive Self-Efficacy (CSE)	0.20	0.24	0.25	0.66	0.88	0.99	0.46	

4.5.5 Multicollinearity

Multicollinearity in a formative measurement model is a phenomenon of correlation among independent variables in a high level and to be tested with variance inflation factor (VIF) (Hair, et al., 2017). Hair, et al. (2017) identified a VIF value of 5 and lower is a moderate collinearity, without a collinearity problem (See Table 4.15). The Table 4.15 reveals VIF value (all correlations between variables) is lower than 5. Therefore, the measurement model and structure model of this study have no collinearity problem.

Table 4.15: Statistical VIF

VIF	AF	AR	AS	BR	CBF	CR	CSA	CSE	Content Type (CT)	Gain	HMS	Info	Loss	Message Framing (MF)	Narrative
AF															
AR	1.000		1.000	1.118											
AS															

(Continued)

Table 4.15 (Continued): Statistical VIF

VIF	AF	AR	AS	BR	CBF	CR	CSA	CSE	Content Type (CT)	Gain	HMS	Info	Loss	Message Framing (MF)	Narrative
BR															
CBF															
CR		1.170		1.255	1.000		1.000	1.000							
CSA															
CSE															
CT											1.937				
Gain														1.600	
HMS		1.170		1.180		1.000									
Info									1.645						

(Continued)

Table 4.15 (Continued): Statistical VIF

VIF	AF	AR	AS	BR	CBF	CR	CSA	CSE	Content Type (CT)	Gain	HMS	Info	Loss	Message Framing (MF)	Narrative
Loss														1.600	
MF											1.937				
Narrative									1.645						

Note: AF = Affective fear; AR = Affective responses; AS = Affective sympathy; BR = Behavioral responses; CBF = Cognitive benefit; CR = Cognitive responses; CSA = Cognitive Self-awareness; CSE = Cognitive self-efficacy; CT = Content type; Gain = Gain-frame msg; HMS = Health message strategies; Info = Informative msg; Loss = Loss-frame msg; MF = Message framing; Narrative = Narrative msg.

In terms of effect size (f^2), Table 4.16 showed an evaluation of structural model with the effect size of HMS varying between small and medium f^2 of CR = 0.170 (medium), f^2 of AR = 0.009 (small), and f^2 of BR = 0.014 (small).

Regarding CR effects on AR and BR with size effect (f^2) in Table 4.16, it showed f^2 of AR = 0.073 (small) and f^2 of BR = 0.420 (large). AR with the effect size of BR is f^2 of BR= 0.104 (medium). Therefore, the variable CR had the largest effects on BR variable.

R-square is used in SEM to present the percentage of the variance for a dependent variable that can be explained by an independent variable(s) in simple regression or multiple regression (Soonthorndhai, personal communication, November 21, 2019). The result on coefficients of determination (R-squared) presented HMS is the only variable effects on CR with (beta = R) at 0.381 which is R^2 = 0.145 which means 14.50 percentage (small), or 14.50 percentage of variances of CR can be explained by HMS.

Effects of HMS on AR (beta) is 0.095. In addition, effects of CR on AR (beta) is 0.276. Combining HMS and CR together and the result of R^2 is equal to 0.105 which is 10.50 percentage (small), or 10.50 percentage of variances of AR can be explained by HMS and CR.

Beta of HMS, CR, and AR on BR is 0.092, 0.527, and 0.247 respectively. When combining them together (HMS, CR, and AR) the R^2 is 0.475 which is 47.50 percentage (medium), or 47.50 percentage of variances of BR can be explained by HMS, CR, and AR. Therefore, BR variable has the highest R^2 value, which means the effect level of HMS, CR, and AR is medium.

Table 4.16: Result for f^2 effect sizes and coefficients of determination r-squared

Variables	f^2		
	Cognitive responses (CR)	Affective responses (AR)	Behavioral responses (BR)
Health message strategies (HMS)	0.170 (medium)	0.009 (small)	0.014 (small)
Cognitive responses (CR)		0.073 (small)	0.420 (large)
Affective responses (AR)			0.104 (medium)
R^2	0.145 (small)	0.105 (small)	0.475 (medium)

Remark: Cohen (2013) regulated $f^2 = 0.02$ is small, $f^2 = 0.15$ is medium, and $f^2 = 0.35$ is large. Hair, et al. (2017) and Henseler, et al. (2015) regulated $R^2 = 0.25$ is small, $R^2 = 0.50$ is medium, and $R^2 = 0.75$ is large.

Regarding the effects between variables, for independent variables, HMS has a direct effect on CR at .381. HMS effect on CR with no indirect path also has the total effects at .381 with 0.01 significance level (See Table 4.17 and Figure 4.15).

Additionally, HMS has no direct effect on AR at .095 (f^2>.05), and consequently the total effects is .200 with 0.01 significance level (See Table 4.17 and Figure 4.15).

Moreover, HMS has a direct effect on BR at .092 with 0.05 significance level, and have indirect effect on BR at .251 with 0.01 significance level. Therefore, the total effect is .343 with 0.01 significance level (See Table 4.17 and Figure 4.15).

As for the mediator, cognitive responses (CR) has significantly direct effect on AR at 0.01 level (DE =. 276) without indirect path effect. Moreover, affective responses (AR) has significantly direct effect on BR at .0.01 level (DE = .247) without indirect path effect. Direct effect of CR is slightly higher than that of AR.

Health Message Strategies (HMS) has a direct effect on behavioral responses (BR) at .092 with 0.05 significance level, and have indirect effect from health message strategies (HMS) on behavioral responses (BR) is 0.251. Health Message Strategies (HMS) has a total effect on behavioral responses (BR) at 0.343 (See Figure 4.15).

Table 4.17: Effects between Variables

Independent variables	Dependent variables								
	Cognitive Responses (CR)			Affective Responses (AR)			Behavioral Responses (BR)		
	DE (Path Coefficients)	IE (Specific Indirect Effects)	TE (Total Effects)	DE (Path Coefficients)	IE (Specific Indirect Effects)	TE (Total Effects)	DE (Path Coefficients)	IE (Specific Indirect Effects)	TE (Total Effects)
Health Message Strategies (HMS)	.381**	----	.381**	.095	.105**	.200**	.092*	.251**	.343**
Cognitive Responses (CR)	----	----	----	.276**	----	.276**	.527**	.068*	.595**
Affective Responses (AR)	----	----	----	----	----	----	.247**	----	.247**

Remark 1) *, ** = Significance of 0.05, 0.01, respectively

2) DE is Path Coefficients, IE is Specific Indirect Effects, and TE is Total Effects.

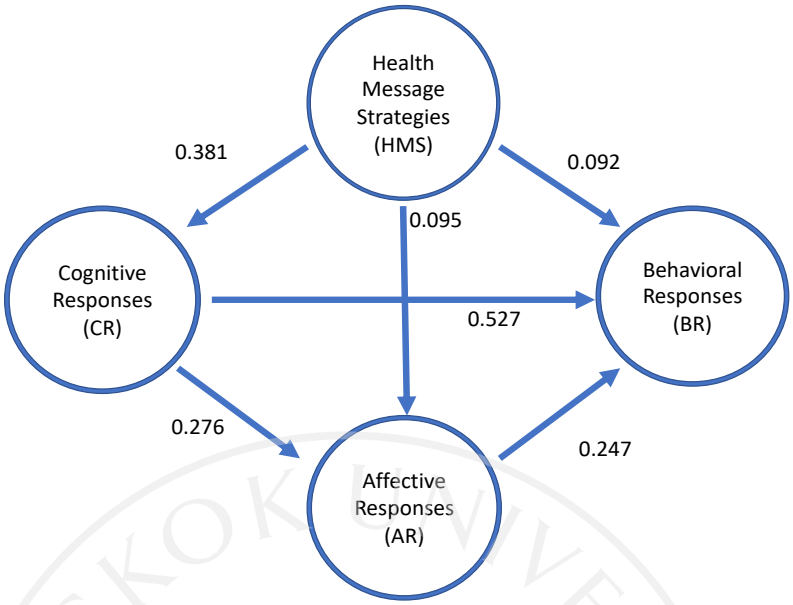


Figure 4.15: Result of Effects from Path in Measurement Model

4.5.6 Summary of hypothesis results

The results of hypotheses testing can be summarized as follows:

Hypothesis 1: Health message strategies (content type and message frame) sent via LINE application have a direct effect on Thai senior citizens' cognitive responses.

The analysis results of Table 4.18 confirmed that the health message strategies (HMS) variable had a direct effect with a medium effect size on the cognitive responses (CR) variable (t = 5.890, p = 0.000, Path Coefficient = 0.381, f^2 = 0.170). Hypothesis 1 is therefore supported, as shown in Table 4.18.

Hypothesis 2: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' behavioral responses.

The analysis results of Table 4.18 confirmed that the health message strategies (HMS) variable had a direct effect with a small effect size on the behavioral responses (BR) variable (t = 2.029, *p* = 0.043, Path Coefficient = 0.092, f^2 = 0.014). Hypothesis 2 is therefore supported, as shown in Table 4.18

Hypothesis 3: Thai senior citizens' cognitive responses have a direct effect on their behavioral responses.

The analysis results of Table 4.18 confirmed that the cognitive responses (CR) variable had a direct effect with large effect size on the behavioral responses (BR) variable (t = 9.953, p = 0.000, Path Coefficient = 0.527, f^2 = 0.420). Hypothesis 3 is therefore supported as shown in Table 4.18.

Hypothesis 4: Thai senior citizens' cognitive responses have a direct effect on their affective responses.

The analysis results of Table 4.18 confirmed that the cognitive responses (CR) variable had a direct effect with a small effect size on the affective responses (AR) variable (t = 4.127, *p* = 0.000, Path Coefficient = 0.276, f^2 = 0.073). Hypothesis 4 is therefore supported, as shown in Table 4.18.

Hypothesis 5: Thai senior citizens' cognitive responses have an indirect effect on behavioral responses as mediated by their affective responses.

The analysis results of Table 4.18 confirmed that the cognitive responses (CR) variable had an indirect effect on behavioral responses (BR) variable as mediated by affective responses (AR) variable (t = 3.081, *p* = 0.002, Path Coefficient = 0.068). Hypothesis 5 is therefore supported, as shown in Table 4.18.

Hypothesis 6: Health message strategies (content type and message frame) sent via LINE have a direct effect on Thai senior citizens' affective responses.

The analysis results of Table 4.18 showed that relationship between health message strategies (HMS) and affective responses (AR) was not significant. The health message strategies (HMS) variable had no direct effect on the affective responses (AR) variable (t = 1.412, p = 0.158, Path Coefficient = 0.095, f^2 = 0.009). Hypothesis 6 is therefore not supported, as shown in Table 4.18.

Hypothesis 7: Health message strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses.

The analysis results of Table 4.18 confirmed that the health message strategies (HMS) variable had an indirect effect on affective responses (AR) variable as mediated by cognitive responses (CR) variable (t = 2.964, p = 0.003, Path Coefficient = 0.105). Hypothesis 7 is therefore supported, as shown in Table 4.18.

Hypothesis 8: Health messages strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' behavioral responses as mediated by their cognitive and affective responses.

The analysis results of Table 4.18 confirmed that the health message strategies (HMS) variable had an indirect effect on behavioral responses (BR) variable as mediated by cognitive responses (CR) and affective responses (AR) variable (t = 2.390, p = 0.017, Path Coefficient = 0.026). Hypothesis 8 is therefore supported, as shown in Table 4.18.

Hypothesis 9: Thai senior citizens' affective responses have a direct effect on their behavioral responses.

The analysis results of Table 4.18 confirmed that the affective responses (AR) variable had a direct effect with a medium effect size on behavioral responses (BR)

variable (t = 5.420, p = 0.000, Path Coefficient = 0.247, f^2 = 0.104). Hypothesis 9 is therefore supported, as shown in Table 4.18.

Table 4.18: Summary of Hypothesis Testing Results

Hypothesis	Path-Coefficients	T-value	P-value	Hypothesis Testing Results
H1: HMS->CR	0.381	5.890	0.000	Supported
H2: HMS->BR	0.092	2.029	0.043	Supported
H3: CR->BR	0.527	9.953	0.000	Supported
H4: CR->AR	0.276	4.127	0.000	Supported
H5: CR->AR->BR	0.068	3.081	0.002	Supported
H6: HMS->AR	0.095	1.412	0.158	Not supported
H7: HMS->CR->AR	0.105	2.964	0.003	Supported
H8: HMS->CR->AR->BR	0.026	2.390	0.017	Supported
H9: AR->BR	0.247	5.420	0.000	Supported

Note: HMS = health message strategies; CR = cognitive responses; AR = affective responses; BR = behavioral responses.

In this chapter, the results of this study were presented. Based on the valid measurement model and structure model and after running PLS-SEM on hypotheses,

almost all hypotheses were supported based on significant statistics reported, except for the sixth hypothesis (H6).

CHAPTER 5

DISCUSSION

During the past few years, many Thai senior citizens used LINE application as a primary online media source to share information, especially on health, which is the number one content among Thai senior citizens (Angkulanon, 2018; “Insight the way”, 2018; “Knowing silver age”, 2018; Mahidol University, 2018). The objectives of this study are to investigate what content type and which message framing of health messages were sent to Thai senior citizens in LINE application. Furthermore, the intent of this study was to examine the potential effects of health message strategies (content type and message framing) sent via LINE application on Thai senior citizens’ cognitive, affective, and behavioral responses. This chapter provided conclusion and discussion of the study, and covers the following:

5.1 Summary of Research Findings

5.2 Discussion on Health Message Strategies

5.3 Discussion on Participants’ Health Status

5.4 Discussion on Hypothesis Testing

5.5 Limitations of the Study

5.6 Recommendation for Future Research

5.7 Implications for Further Application

5.1 Summary of Research Findings

This research aimed to investigate the strategies of health messages sent to Thai

senior citizens in LINE application, and to investigate whether health message strategies sent via LINE directly influence Thai senior citizens' responses.

The research used parallel design mixed-methods, combining both qualitative method (content analysis) and quantitative method (survey research). As for content analysis, the 31 selected documents are health messages sent via LINE application, derived from LINE search engines' official account and recommended accounts of senior groups. The texts/documents were purposively selected from health messages for six months from September 8, 2018 to March 9, 2019. Based on three themes regarding content type: mix of both informative and narrative messages were found the most (12), followed by narrative messages (11), and informative messages (8). As for three themes regarding message frame, gain-framed messages (18) were found the most, followed by mix-framed messages (12), whereas loss-framed message (1) was hardly found.

As for survey research, the sample consists of Thai senior citizens who are 60 years and over, who have used LINE application for a minimum of 6 months. The results showed the majority of the participants were females, having the average age of 67.36 years, obtaining a lower than bachelor's degree, with family monthly income of less than 30,000 Thai Baht. Data were collected using a questionnaire.

This study showed that Thai senior citizens used the LINE application for health information. The top three frequent topics communicated via LINE application were exercise/obesity (22.5%), high-blood pressure (16.5%), and nutrition/diet (15%). The survey research tested nine hypotheses and confirmed all except one. The findings revealed that health message strategies (content type and message frame) sent via LINE application have a direct effect on Thai senior citizens' cognitive and

behavioral responses. Thai senior citizens' cognitive responses were found to have a direct effect on their behavioral and affective responses, together with an indirect effect on behavioral responses as mediated by their affective responses.

Moreover, health message strategies (content type and message frame) sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses, and on their behavioral responses as mediated by their cognitive and affective responses. Lastly, Thai senior citizens' affective responses have a direct effect on their behavioral responses. However, health message strategies (content type and message frame) were found to yield no direct effect on their affective responses.

5.2 Discussion on Health Message Strategies

This part addresses the first two research questions of this study RQ#1, what content types of health messages were sent to Thai senior citizens in LINE application and RQ#2 which message framing of health messages were sent to Thai senior citizens in LINE application. Based on the findings from the content analysis of the LINE official accounts for Thai seniors' citizens, health information was presented in six themes. The findings confirmed that health message strategies (content types and message frames) were used to communicate health issues with Thai senior citizens in LINE application. The findings show health message strategies (content types and message frame) in LINE application have an impact on changing samples' health responses. This study found that health messages combining both content types and message frame in one health message are an effective strategy on LINE application for persuading Thai seniors' citizens. Thus, combining both content type and message

frame in one health message is considered influential health message strategies for influencing Thai seniors' citizens in terms of cognition, affection, and behaviors.

5.2.1 Content Type

Some past research found that informative messages were more persuasive, as it has a more effective impact on health responses than narrative messages (Allen & Preiss', 1997; Braverman, 2008; De Graaf, et al., 2017; Kopfman, et al., 1998). However, some researchers argued that narrative messages are more effective on audience responses than informative messages (Preece & Ghozati, 1998; Taylor & Thompson, 1982).

The evidences on content types of health messages on LINE official accounts for Thai senior citizens', comparing between informative and narrative messages, showed that there are more narrative messages used (11 messages) than informative messages (8 messages) in health messages in LINE application. Nevertheless, the evidence on content types indicated that 12 out of 31 health messages have a mix of both informative and narrative messages in one message. Hence, the mix of both informative and narrative types of online health messages strategies is an important factor for persuading Thai senior citizens' responses. As Green and Brinn (2003) mentioned, the effective online health messages used both informational and narrative messages. In this study, a mix of both informative and narrative messages was the most popular strategy found in LINE application official accounts for persuading Thai seniors' citizens.

The health informational messages with the cognitive responses have become the preferred content types in health messages, as the average age of participants is 67.36, early elderly age (active seniors). In this stage of active aging seniors (Age: 60-

69 years), they are still in good health. They prefer health messages in the form of informational/facts and cognitive responses to take care and maintain their health, so that they are able to fully socialize, travel, and enjoy their life longer. Moreover, they are more likely to keep up to date with new ideas/trends that can impact their health. They generally have more free time so they can take care of themselves more thoroughly and be able to travel and do many activities. The lifestyle of active aging senior's nowadays show that they care about their image and health, such as posting their pictures in many activities and places, and using up-to-date health products, skin care, services, and trends ("Knowing silver age", 2018).

However, many narrative forms of content types in health messages come with serious health topics such as cancer, stroke, and heart disease that can create affective responses. Yoo, et al. (2014) showed an effective narrative health message designed with emotions in breast cancer. McQueen, et al. (2011) found narrative and emotions to be more effective by using video communication for various issues such as treatment, healthcare experience to increase attention, reducing counter-arguing, attitude change and perceived mammograms. Neubaum and Kramer (2015) together with Petraglia (2009) showed that many HIV/AIDS programs use narrative persuasion in the form of personal experiences, stories, and drama to communicate on HIV prevention and treatment. Furthermore, Miller-Day and Hecht (2013) stated that narrative health messages will be useful with the social value of particular groups by promoting a deeper understanding. This study focused and examined content on LINE without links of video clips or television. If this study includes links of video clips or TV and samples include more equal proportion of three aging levels, it is believed that health message strategies might yield a direct effect on affective responses.

5.2.2 Message Framing

The findings showed that gain-framed messages were the most used message framing, followed by mix-framed messages, then loss-framed messages. Based on our findings, health topics that Thai seniors' citizens communicated the most via LINE application, are those with regards to exercise/obesity. From the previous research findings, the content of health behavior showed that gain framed messages were more effective to persuade participants to change their health behaviors when targeting prevention behavior with low-risk disease (Gallagher & Updegraff, 2012; Latimer, et al., 2008; Rothman, Bartels, et al., 2006).

In this study, it was found that the gain-framed and mix-framed messages were used as an effective message framing for seniors to engage in health activities more than the loss framed ones. In a similar vein, previous research findings confirmed that gain-framed and mix-framed messages are more effective than the loss framed ones for middle-aged adults, in terms of having the confidence to engage in health activities (Lithopoulos, et al., 2017).

Based on the findings, gain-framed messages were the most used message framing to persuade Thai seniors' citizens for present-day benefits of engaging in health activities. The health topic that the participants communicate the most via LINE application is exercise/obesity for a healthier living. Gain-framed or benefit-framed health messages, as mentioned by past researchers, promote the benefits of health behavior, and that an individual will attain a healthier lifestyle (Gallagher & Updegraff, 2012; Latimer, et al., 2008; Maguire, et.al., 2010; Rothman, Stark, et al., 2006; Sherman, et al., 2008).

5.3 Discussion on Participants' Health Status

The results presented that the majority of the participants has high-blood pressure as their problematic health status. It appeared that exercise/obesity was the number one health topic that the participants communicated on LINE application. The majority of the participants ages are in the stage of active seniors with good health. The results supported existing reports that high-blood pressure and diabetes were high and increasing among Thai senior citizens (Department of Elder Persons of Thailand, 2017), and the number one content that Thai senior citizens often seek and share is the perceived useful information regarding messages from doctors, hospitals, health organizations, healthy food, health brands, health products, and health services, for healthy living and preventing sickness ("Knowing silver age", 2018; "Insight the way", 2018).

These results also supported the global digital report 2020 that LINE application has been a very popular application among Thai citizens to communicate with their network (Kemp, 2019), with the participants having used LINE application for more than 24 months, and with an average time spent on using LINE application per day of 30 minutes to one hour. Thus, LINE is an important tool for disseminating health communication among Thai senior citizens.

Health message strategies may have impacted the participants' responses. Most of the participants indicated that they have received health informational messages sometimes per week via LINE application. Similarly, the participants also showed the same frequency for receiving narrative messages. In this case, this study showed some interesting outcomes as the subjects indicated a similar frequency level of receiving both informational and narrative messages, which may be considered as

receiving the mix content types of messages. The researcher believes that using both types of informational and narrative messages in LINE application (social media) tends to be more effective than using only one type of message to influence the elderly for health responses. The majority of participants also showed that they often received gain-framed messages on a weekly basis.

The majority of participants felt that, after they received a health message, they experienced a cognitive self-awareness as a response. Most participants indicated that they have experienced sympathy as affective response after receiving health messages. Most participants felt that both informational and narrative messages with gain-framed messages of health message strategies affected them in terms of perceived sympathy, which also influenced their behavioral response. The study confirmed that gain-framed message is more effective in motivation (Gallagher & Updegraff, 2012; Latimer, et al., 2008; Maguire, et.al., 2010; Rothman, Bartels, et al., 2006), and message's expression of emotion including sympathy and empathy can also persuade readers' perception to action (Shen, 2010).

5.4 Discussion on Hypothesis Testing

5.4.1 Direct Effects of Health Message Strategies (Content Type and Message Frame) on Audiences' Responses

5.4.1.1 Cognitive Responses

The research findings confirmed that the health message strategies had a direct effect on the cognitive responses. This finding is similar to the literature review of previous research findings; that is, content types of message (informational and narrative) can produce persuasive effects and influence the reader's attention and

belief (De Wit, et al., 2008; Greene & Brinn, 2003; Miller & Pole, 2010; Preece & Ghozati, 1998; Wang, et. al., 2000). Message framing is able to influence cognitive responses, which is a factor mediating the relationship between message strategies and behavioral responses (Frazier, et al., 2004; Latimer, et al., 2008). Based on the findings of this study, it can be confirmed that message framing is able to influence Thai senior citizens' cognitive responses, especially mixed framed message and gain-framed message, which are more effective for increasing audiences' self-efficacy (Frazier, et al., 2004; Latimer, et al., 2008; Lithopoulos, et al., 2017).

5.4.1.2 Affective Responses

The results showed that the health message strategies had no direct effect on the affective responses. However, there was a relationship between health message strategies and affective responses. Health message strategies had a positive direct influence on the affective responses. This result provided additional insights into the previous research findings that communicators share information with emotional tones, and appeal makes readers involved in the creation of affective responses (Miller & Pole, 2010; Neubaum & Kramer, 2015; Shen, 2010). This result reveals that cognitive responses had higher influence than affective responses, which reinforces previous research findings showing that the health campaigns that used emotional appeal were not always successful (Shen, 2010).

There are some particular literature reviews that can explain the no-effect findings above. Different types of messages may have different impacts on Thai senior citizen's affective responses. Raghunathan and Trope (2002) mentioned in their study the harmful effects of caffeine, with messages and relevance regarding the self. This information has low self-relevance to the reader and does not influence the

reader's emotion on persuasion. Therefore, Cho, Lee, & Lee (2012) stated that between informative media (news media and news message) and entertainment media, informative media has been found to be less effective in arousing self-relevant emotional responses than entertainment media. Sundar, Rice, and Kim (2010) also mentioned that audiences need information more than emotion from messages, which mean they care about communicating and sharing information. This showed that information is more significant and more effective in influencing cognitive responses than emotional responses.

Informative media (news media and news message) are more likely to be described and explained as messages with less influence for audiences to imagine and feel associated with (Cho, et al., 2012). Entertainment media (e.g., dramas or movies on television) have a stronger influence on audience's emotional responses (So, Cho, & Lee, 2011). Flynn (2015) mentioned persuasive communication that uses narrative types of persuasive messages was more effective and successful at changing beliefs, attitudes, and behaviors with no resistance to the message. Narrative persuasion message is a powerful strategy for generating audiences' acceptance and understanding as it can directly influence audiences' cognitive responses with less opposition to the message (Meisel & Karlawish, 2011; Miller-Day & Hecht, 2013).

Different types of media may have different impacts on Thai senior citizen's affective responses. LINE application offers users a private chat and allows them to send and receive text, audio, pictures and video messages. Its main features allow LINE users to send and receive instant message in the form of texts. This study also focused and examined content on LINE application without links of video clips or links of television. The researcher believes that if this study includes links of video

clips or links of television, health message strategies sent via LINE might be found to yield a direct effect on Thai senior citizens' affective responses.

5.4.1.3 Indirect Effects of Health Message Strategies (Content Type and Message Frame) Sent via LINE on Thai Senior Citizens' Affective Responses

The findings confirmed that health message strategies sent via LINE have an indirect effect on Thai senior citizens' affective responses as mediated by their cognitive responses. The findings revealed that cognitive responses were a significant mediator between health message strategies to influence Thai senior citizens' affective responses. This finding found the influence of cognitive responses on affective responses, which adds more insights into the previous research findings (Miller & Pole, 2010; Neubaum & Kramer, 2015; Shen, 2010) which mentioned that communicators who share information with emotional aspects, will make readers more involved in affective responses. Past research showed that both affective and cognitive dimensions are related to and overlap with each other (Shen, 2010). This study found the effect of health message strategies on Thai senior citizens' affective responses, as mediated by their cognitive responses, such that health message strategies significantly influenced affective responses when used with cognitive responses.

5.4.1.4 Behavioral Responses

Health message strategies were found to have a direct effect on the behavioral responses. The finding confirms that health message strategies sent via LINE have a direct effect on Thai senior citizens' behavioral responses. These findings supported several previous studies that informational and narrative forms on online health messages have a persuasive impact on health behavior (Braverman,

2008; De Graaf, et al., 2017; De Wit, et al., 2008; Greene & Brinn, 2003; Miller & Pole, 2010; Preece & Ghozati, 1998; Wang, et al., 2008; Zillmann & Brosius, 2000). The literature review of previous research also showed that message framing can be used for persuasive health communication campaigns and affect an individual's behavior to different degrees (Lueck, 2017; Rothman, Bartels, et al., 2006; Rothman, Stark, et al., 2006).

Health message strategies were also found to have an indirect effect on behavioral responses as mediated by cognitive responses and affective responses. Both cognitive responses and affective response are considered valid message strategies on Thai senior citizens' behavioral responses. The survey findings revealed that cognitive responses and affective responses were significant mediators, especially the cognitive responses, between health message strategies in influencing Thai senior citizens' behavioral responses.

The findings confirmed that health message strategies influenced Thai senior citizens' behavioral intention when they had both cognitive responses and affective responses. This is supported by the study of Decety and Jackson (2006), Decety and Lamm (2006) and Shen (2010)'s, showing that the process in persuasive messages can influence readers' perception to action.

5.4.2 Relationships between Different Types of Responses

5.4.2.1 Cognitive Responses on Affective Responses

The results confirmed that the cognitive responses had a direct effect on the affective responses. The finding showed that there is a direct effect of health messages on Thai senior citizens' cognition and their feeling. That is, health messages via LINE have increased knowledge and self-awareness of Thai senior citizens' health

conditions. Moreover, the participants also share their emotion and feeling with health message/stories. Self-awareness is therefore considered significant for influencing affective responses of Thai senior citizens.

As Richards, Campenni, and Muse-Burke (2010) mentioned, "self-awareness is awareness or knowledge of one's thoughts, emotions, and behaviors" (p. 250). Thus, health messages in narrative form demonstrated persuasiveness to increase self-awareness (Miller & Pole, 2010), and show effectiveness for changing beliefs and attitudes (Niederdeppe, et al., 2011). Moreover, the explanation strategy in a narrative message can make a greater emotional response (Hinyard & Kreuter, 2007; Yoo, et al., 2013)

5.4.2.2 Cognitive Responses on Behavioral Responses

The cognitive responses were found to have a direct effect on the behavioral responses. The finding confirmed that there is a direct effect of online health messages strategies on Thai senior citizens' health beliefs and health behaviors. Previous research has used the Health Belief Model (HBM) as a model to explain the audiences' health beliefs to predict health behaviors (Glanz, et al., 2008; Rosenstock, 1974; Shojaei, et al., 2016). According to the HBM theory, a set of core belief responses has been used to guide and predict many health behavioral responses (Abraham & Sheeran, 2005; Shojaei, et al., 2016).

This finding confirmed that cognition is an important factor, including a personal concern, individual's health status, individual ability, self-efficacy, perceived benefit, and outcome expectancies, which influenced behavioral responses, especially for health activities (Bandura, 1997; Becker, Haefner, Kasl, et al., 1977; Corcoran, 2007; Latimer, et al., 2008; Sallis & Owen, 1998). The result of this study also

provided additional supports for the significance of cognitive factors in the HBM's previous research findings. That is, the participants' cognition such as self-awareness can influence their health behavior responses. Self-awareness is thus considered significant for influencing behavioral responses of Thai senior citizens.

In the past research of the HBM, although threat and risk were found to influence behavioral responses, it did not emerge in this research; such that threat and risk did not significantly influence behavioral responses among Thai senior citizens. The result provided additional insights into previous research findings by Corcoran (2007) and Dillow, et al. (2015), who found efficacy and risk perception attitudes on persuasive messages, and interaction through efficacy belief to influence health behavior. This finding confirmed the audiences' concern of their health on persuasive health message for a health behavior change. Moreover, this study reinforces previous research that cognitive self-efficacy has stronger effects on behavior intention than the threat and risk perception (Dillow, et al., 2015).

5.4.2.3 Cognitive Responses on Affective and Behavioral Responses

The participants' cognitive responses were found to have an indirect effect on behavioral responses as mediated by affective responses. The findings confirmed that after the participants received health messages via LINE application, they had cognitive self-awareness, cognitive benefit, and cognitive self-efficacy to action and to protect the illness as they showed concern of health problems and fear of illness (Corcoran, 2007; Glanz, et al., 2008; Sherman, et al., 2008).

5.4.2.4 Affective Responses on Behavioral Responses:

The results of the study confirmed that the affective responses had a direct effect on behavioral responses. Moreover, affective responses variable has direct

effect on behavioral responses without indirect path. This finding confirms and adds evidence on the past research findings that Thai senior citizens received health messages via LINE application with expression of personal experiences and emotion, and can provide a personal tone that have a direct effect on Thai senior citizens' behavioral responses (Decety & Jackson, 2006; Lazarus, 1991; Miller & Pole, 2010; Neubaum & Kramer, 2015; Smith, 2006; Trammel & Keshelashvili, 2005; Wang, et al., 2008; Zillmann & Brosiusm, 2000; Zillmann, 2006b).

5.5 Limitations of the Study

This study has some limitations that should be acknowledged. This study used mostly Thai senior citizens living in Bangkok (127 participants out of 303) and the majority was females (76.9%) to examine the influences of health messages in LINE application on Thai senior citizens' cognitive, affective, and behavioral responses. There were a small number of respondents from other regions. It should be noted that average age of samples is 67 years old, who are categorized in the early aging level. It is possible that their higher physical and social activities and lower health problems than other aging groups moderate to certain extent their responses to health messages in the survey.

Besides, the sample of survey research was selected from a school of Thai seniors and senior clubs from various regions of Thailand. Therefore, there is a limitation of this finding in terms of generalization to other regions of Thai populations and even to other countries. Due to non-random selection of the participants, the findings may be limited in terms of generalization.

This study has another limitation in terms of health message format being examined as it included only text messages. Video, photos or content in other digital format such as animation were excluded. Therefore, effects of the health message strategy via LINE application on Thai senior citizens' responses may be different if the health message format includes both sight and sound.

Moreover, the findings of this study showed the significance of impact on Thai senior citizens via health message strategies sent via the LINE application on their cognitive, affective, and behavioral responses. It should be noted that the majority of the samples received health messages through their friends, family, and LINE official account. This study would also like to indicate the different effects of a health message on LINE application between family, friends, and LINE official accounts.

5.6 Recommendation for Future Research

Samples of this study have an average age of 67.36 years old. Future studies should use an equal proportion of samples in senior aging levels and examine whether there are any differences in research findings between 1) Senior citizens early age (60-69 years old), 2) Senior citizens middle age (70-79 years old), and 3) Senior citizens latest age (80 years old and over). Comparing between these three groups of seniors using social media on health messages regarding their cognitive, affective, and behavior responses may yield not only interesting, but useful findings.

Moreover, future studies should use an equal proportion of samples in gender and examine whether there are any gender perception differences between female and male, since the female participants in this study outnumbered males. A future study

might conduct a research on comparing female and male senior users of using LINE application regarding health messages, due to the lack of research on gender differences in LINE application for health information and health activities, and the fact that many previous studies have focused mainly on Facebook (McAndrew & Jeong, 2012; Parida, et al., 2016; Thompson & Lougheed, 2012).

Additionally, future studies should be generalized to other regions of Thai populations, with equal proportion of samples in each region, and examine whether there are any regional differences in terms of senior citizens as LINE communicators. Moreover, future studies should also examine whether there are any differences of Thai senior citizens' education level towards cognitive, affective, and behavioral responses. With an equal proportion of sample characteristics, this future study would provide more understanding of health messages strategies sent via LINE application to Thai seniors' citizens to influence their cognitive, affective, and behavioral responses.

This study basically investigated the communication via LINE application by Thai senior citizens in terms of health messages. Currently the younger generation also have been using LINE application heavily and should be examined in future research. Other types of online communication such as Twitter, Instagram, and Facebook that are increasingly used among Thais should be also examined in future research. Continued studies on communication strategies can provide new strategies for effective health communication in digital media.

5.7 Implications for Further Application

This research findings can be used for scholars, communication practitioners, health organizations, policy makers and governmental offices, and Thai senior citizens. This study contributes in expanding our understanding of the influences of health message strategies in LINE application on Thai senior citizens' cognitive affective and behavioral responses.

5.7.1 Implications for Scholars

This finding provides an understanding of the influence of LINE application on Thai senior citizens' cognitive, affective, and behavioral responses in terms of receiving health messages. The researcher believes this study will also contribute to the body of knowledge on the use of significant mediators and influential factors between health message strategies and Thai senior citizens' behavioral responses. This study also showed that combining both content types and message frames in one health message are an effective persuasive health communication strategy on LINE application for influencing Thai seniors' citizens responses.

This finding also reveals the new body of knowledge that an effect of health messages is not always linear. Health messages via LINE application showed that LINE's official account is an effective media strategy to engage and communicate directly to senior citizen in Thailand. Moreover, LINE application allows users to interact with target groups. Thai senior citizens can send and share health messages directly among their friends and family. It is believed that LINE application could be one of the very important influences on Thai seniors' health behaviors. Moreover, the findings provided that social media effects of health messages are non-linear as they depend on various variables and mediating variables in order to influence senior

citizens' responses. Based on the conceptual model of this study, main concept, variables are arranged as health messages strategies lead to cognitive responses that lead to affective responses, and then lead to behavior responses. However, the findings of this study showed that an effect of health messages strategies are not always linear as health messages showed direct effect on cognitive responses and behavioral responses, but not affective responses. The findings also revealed indirect effects of health messages on behavioral responses through cognitive responses and through the combination of both cognitive and affective responses.

5.7.2 Implications for Communication Practitioners

The LINE application is mainly used for communication between users' family and friends, and less frequently as a health information media outlet. From this study, communication practitioners might consider LINE application as having some benefits for Thai senior citizens to disseminate health information and health activities, as they have a positive attitude toward LINE application. The findings also showed that LINE application is a good medium for health information among Thai senior citizens. These findings suggested communication practitioners to consider health context on LINE application as a channel for communicating effective health behavior with Thai senior citizens. The World Health Organization (2020) suggested digital health strategies on creating healthy aging for senior people by providing useful information and technical support on a digital platform for them to learn and exchange information/experience. LINE application would be a good supporter for Thai senior citizens to digitally learn useful information on health services/programs, and effectively interact with their friends and family via digital media.

These findings also suggested communication practitioners for health education and organizations to be able to design an appropriate health message targeting Thai senior citizens for generating desirable cognitive responses, affective responses, and behavioral responses. The World Health Organization (2020) mentioned the digital health plan strategies to help senior people with healthy living by developing and ensuring compliance in information and technologies. Health communication designers can also identify Thai senior citizens' need for cognitive responses, affective responses, and behavioral responses. Health communication messages designers can select the content type and framing that are persuasive among senior citizens. Furthermore, communication practitioners might study and examine LINE application's functions and services that could create communication tools that can activate trustworthy health information sources that can be shared. Communication practitioners can also provide digital education and social media knowledge/skills for Thai senior citizens through new platforms of communication and information on digital media.

5.7.3 Implications for Health Organizations

This study is up to date on a major trend of the elderly population ageing all around the world. The researcher believes that this study will aid health organizations to adapt quicker and upgrade their skills to serve the aging society. Moreover, it is believed that this study will help health organizations to understand Thai senior citizens, in order to improve health with greater longevity by using effective communication and information. The change of behaviors of the senior people in these days, tends to be more about taking care of their health, being up to date with

new things/trends that impact their health information via online channel due to their use of digital health messages.

The findings of this study can also be useful for health organizations to work on effective health online message campaigns, such as the Ministry of Public Health, hospital, and health care, to promote and get Thai senior citizens' attention and positively affect their beliefs. This finding shows that health messages via LINE application official accounts are mostly used with both content type and message framing, and that the participants received more health message strategies in narrative type and gain-framed messages. Hence, it might be useful for health organizations to consider using two strategies with both content types and gain-framed message when they want to communicate more effectively to their audience.

Health information was rarely communicated through LINE application by the official health organizations, Ministry of Public Health, official hospitals, and official health cares. This is a significant loss of opportunity for related government agencies to educate Thai senior citizens about health issues, as Thai senior citizens currently have consumed health information and news heavily via LINE application. Health organizations, both public and private, should be more active in using LINE application to promote accurate health information, and provide more services and communication on the LINE application. There is a growing number of Thai senior citizens that have been using Line application, especially for receiving and sharing health information ("Knowing silver age", 2018; "Insight the way", 2018). The researcher's belief is we can help reduce inaccurate health information.

Health organizations should have more support on health online messaging and technology. Thai senior citizens could receive accurate health information, news,

and articles with the effective strategies that influence their positive health behavior. It is therefore important that health organizations have LINE application active to promote health messages and deal with accurate health information. This will also benefit health organizations to create a positive image and relationship with Thai senior citizens. Thus, health organizations that include the Ministry of Public Health, hospitals, and health care, should use more the LINE application and other forms of online media to share information with Thai senior citizens.

5.7.4 Implications for Policy Makers and Governmental Offices

Policy makers and governmental offices should come out with policies for both health organizations and LINE or social media corporations to improve quality of health information. Moreover, governmental offices should build communication literacy skills for Thai citizens to be able to evaluate the quality of health messages on social media by themselves. Governmental offices may also inform Thai senior citizens about the issues of inaccurate health information on social media, and notify them how to prevent inaccurate health messages from being spread.

Based on the World Health Organization (2020), Digital Health is “the use and scale up of digital health solutions that can revolutionize how people worldwide achieve higher standards of health, and access services to promote and protect their health and well-being.” Thus, it is hoped that this study will help health organizations and stakeholders to improve seniors’ knowledge and skills in healthy aging and improving health literacy. This study supports the Ministry of Public Health and its health communication in order to improve digital health communication with better health care programs, which include health care (long-term), health services, technologies for treatment, prevention, and detection of diseases to adapt and meet the

increasing demand among Thai senior citizens (World Health Organization, 2020). Particularly towards helping develop health communication to create an effective health campaign/information to promote health (World Health Organization, 2020).

Furthermore, health communication policies should be created for filtering inaccurate health information on LINE application and other social media in Thailand. Policy makers and governmental offices should provide intelligent applications, websites, or call centers to filter content and the validity of information for Thai citizens. These implications can help reduce inaccurate health information and could improve the communication education and services of health information and citizens' lifestyle.

5.7.5 Implications for Thai Senior Citizens

This study is beneficial to Thai senior citizens who are using LINE application or other types of social media to have an awareness of health information and responsibility before they create, send, or share health messages via LINE application. This study could help Thai senior citizens to be healthier and live longer. The World Health Organization (2020) suggested ways to help seniors with healthy living, such as expanding and developing the network of aging society to be connected with its beneficial practices for all senior citizens, and providing useful information and technical support on the platform for senior people to learn and exchange information/experience. It is believed that government, health organizations, LINE, and stakeholders could work together in order to support Thai senior citizens to access and share useful information on health services/programs, and support Thai senior citizens to engage with health services and activities.

In addition, this study also provides some benefits to Thai senior citizens to monitor inaccurate information and to evaluate the quality of health messages on social media. This study suggests that Thai senior citizens should use LINE to communicate with health professionals or health organizations to acquire accurate information regarding health behaviors.

BIBLIOGRAPHY

Abraham, C., & Sheeran, P. (2005). The health belief model. In M. Connor, & P. Norman (Eds.), *Predicting health behaviour: Research and practice with social cognition models* (2nd ed., pp. 28-80). Buckingham, UK: Open University.

Agarwal, R., Gupta, A. K., & Kraut, R. E. (2008). Editorial overview: The interplay between digital and social networks. *Information Systems Research, 19*(3), 243-252.

Allen, M., & Preiss, R. W. (1997). Comparing the persuasiveness of narrative and statisticalevidence using meta-Analysis. *Communication Research Reports, 14*(2), 125–131.

Anderson, J., & Rainie, L. (2017). *The future of truth and misinformation online*. Retrieved from https://www.pewresearch.org/internet/2017/10/19/the-future-of-truth-and-misinformation-online/.

Angkulanon, R. (2018). *เจาะอินไซต์วัย 'ซิลเวอร์ เสพสื่อ-โฆษณา ไลน์-ทีวี ครองแชมป์* [Insite 'silver age' LINE-TV is crowned champion]. Retrieved from https://www.thebangkokinsight.com/40566.

Arneson, P.A., & Query, J. L. (2001). The case study: Revitalizing a nonprofit health organization. In S. L. Herndon & G. L. Kreps (Eds.), *Qualitative research: Applications in organizational life* (2nd ed., pp. 151-169). Cresskill, NJ: Hampton.

Babbie, E. R. (2010). *The practice of social research*. Belmont, CA : Wadsworth Cengage Learning.

Baltaretu, C.M., & Balaban, D.C. (2010). Motivation in using social network sites by Romanian students: A Qualitative approach. *Journal of Media Research*, *1*(6), 67-74.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Baxter, L. A., & Babbie, E. (2004). *The basics of communication research*. Belmont, CA: Wadsworth.

Becker, M. H., Haefner, D. P., Kasl, S. V., Kirscht, J. P., Maiman, L. A., & Rosenstock, I. M. (1977). Selected psychosocial models and correlates of individual health-related behaviors, *Medical Care*, *15*(5), 27–46.

Becker, M. H., Haefner D. P., & Maiman L. A. (1977). The health belief model in the prediction of dietary compliance: A field experiment. *Journal of Health and Social Behaviour*, *18*(4), 348–66.

Becker, M. H., & Maiman, L. A. (1975). Sociobehavioural determinants of compliance with health and medical care recommendations, *Medical Care*, *13*(1), 10–24.

Bennett, W. L. (2006). *News: The politics of illusion*. New York, NY: Longman.

Benoit, W. L. (1987). Argumentation and credibility appeals in persuasion. *Southern Speech Communication Journal*, *52*, 181–197.

Bente, G., & Feist, A. (2000). Affect-talk and its kin. In D. Zillman & P. Vorderer (Eds.). *Media entertainment: The psychology of its appeal* (pp. 113–134). Mahwah, NJ: Lawrence Erlbaum Associates.

Bortree, D. S. (2005). Presentation of self on the web: An ethnographic study of teenage girls'weblogs. *Education, Communication & Information*, *5*(1), 25-39.

Bounsanga, J., Voss, M. W., Crum, A. B., & Hung, M. (2016). The association between perceived health status and health information communication channels. *Journal of Health Communication, 21*(11), 1148-1152.

Braverman, J. (2008). Testimonials versus informational persuasive messages: The Moderating effect of delivery mode and personal involvement. *Communication Research*, *35*(5), 666-694.

Camenga, D. R., Hieftje, K. D., Fiellin, L. E., Edelman, E. J., Rosenthal, M. S., & Duncan, L. R. (2014). The use of message framing to promote sexual risk reduction in young adolescents: A pilot exploratory study. *Health Education Research*, *29*(2), 360-66.

Chaitrong, W. (2017). Risks grow for ageing population. *The Nation Thailand.* Retrieved from https://www.nationthailand.com/business/30333636.

Cho, H., Lee, J. S., & Lee, S. (2012). Optimistic bias about H1N1 flu: Testing the links between risk communication, optimistic bias, and self-protection behavior. *Health Communication, 28*, 146-158.

Chou, W. S., Hunt, Y. M., Hesse, B. W., Beckjord, E. B., & Moser, R. P. (2009). Social media use in the United States: Implications for health communication. *Journal of Medical Internet Research, 11*(4), e48.

Chua, A.Y.K., & Banetjee, S. (2013). Customer knowledge management via social media: the case of Starbucks. *Journal of Knowledge Management*, *17*(2), 237-249.

Churchill, S., & Pavey, L. (2013). Promoting fruit and vegetable consumption: The role of message framing and autonomy. *British Journal of Health Psychology*, *18*(3), 610–622.

Cline., R. J. W., & Haynes., K. M. (2001). Consumer health information seeking on the internet: The state of the art. *Health Education Research*, *16*(6), 671-692.

Cohen, B. H. (2013). *Explaining psychological statistics* (4th ed.). Hoboken, NJ: Willey.

Cohen, S. G. (2000). Social relationships and health. In S. Cohen, L. G. Underwood, & B. H. Gottlied (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 3-25). New York, NY: Oxford University.

Corcoran, N. (2007). *Communicating health: Strategies for health promotion*. Los Angeles: Sage.

Craigie, M., Loader, B., Burrows, R., & Muncer, S. (2002). Reliability of health information on the internet: An examination of experts' rating. *Journal of Medical Internet Research, 4*(1), e2.

Decade of healthy ageing: 2020–2030. (2020). Retrieved from https://www.who.int/docs/default-source/decade-of-healthy-ageing/final-decade-proposal/decade-proposal-final-apr2020-en.pdf.

Decety, J., & Jackson, P. (2004). The functional architecture of human empathy. *Behavioral and Cognitive Neuroscience Reviews*, *3*(2), 71-100.

Decety, J., & Jackson, P. (2006). A social neuroscience perspective on empathy. *Current Directions in Psychological Science*, *15(2)*, 54-58.

Decety, J., & Lamm, C. (2006). Human empathy through the lens of social euroscience. *Scientific World Journal, 6*, 1146-1163.

De Graaf, A., Van den Putte, B., Nguyen, M.-H., Zebregs, S., Lammers, J., & Neijens, P. (2017). The effectiveness of narrative versus informational smoking education on smoking beliefs, attitudes and intentions of low-educated adolescents. *Psychology & Health, 32*(7), 810-825.

De Wit, J. B. F., Das, E., & Vet, R. (2008). What works best: objective statistics or a personal testimonial? An assessment of different types of message evidence on risk perception. *Health Psychology, 27*(1), 110-115.

Department of Older Persons of Thailand. (2020). ***ภาพรวมสถานการณ์ผู้สูงอายุ*** [Overview of senior citizens' situation]. Retrieved from http://www.dop.go.th/download/knowledge/th1531117529-123_3.pdf.

Dillow, M. R., Walsh, A. G., Spellman, F., & Quirk, M. (2015). Testing the risk perception attitude framework in the context of texting while driving. *Communication Research Reports, 32*(2), 132–142.

Eith, C., Spence, P. R., & Lachlan, K. A. (2011). Social inequities and communicating during crisis. In D. Brunson, L. Lampl, & F. Jordan-Jackson, (Eds.), *Interracial communication: Contexts, Communities, and Choices* (pp. 174-185). Dubuque, IA: Kendall Hunt.

European Union. (2014). *European citizens' digital health literacy: Flash Eurobarameter 404*. Retrieved 2018, from http://ec.europa.eu/public_opinion/flash/fl_404_en.pdf.

Eysenbach, G., Powell, J., Kuss, O., & Sa, E. R. (2002). Empirical studies assessing the quality of health information for consumers on the World Wide Web: A systematic review. *Journal of the American Medical Association, 287*(20), 2691-2700.

Fernandez-Luque, L., & Bau, T. (2015). Health and social media: Perfect storm of information. *Healthcare Informatics Research, 21*(2), 67-73.

First Draft. (2018). *About First Draft*. Retrieved from https://firstdraftnews.org/about/.

Flanangan, C. A., Elek-Fisk, E., & Gallay, L. S. (2004). Friends don't let friends or do they? Developmental and gender differences in intervening in friends' AOD use. *Journal of Drug Education, 34*(4), 351-371.

Flynn, T. (2015). How narratives can reduce resistance and change attitudes: Insights from behavioral science can enhance public relations research and practice. *Institute for Public Relations*, *2*(2), 1-25.

Fothergill, A., Maestas, E. G. M., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: A review of the literature. *Disasters*, *23*(2), 156-173.

Fox, S. (2011). *The social life of health information, 2011*. Washington, DC: Pew Research Center's Internet & American Life Project.

Fox, S. (2014). *Health information online*. Retrieved from https://www.pewresearch.org/internet/2014/02/13/health-information-online-2/.

Fox, S., & Duggan, M. (2013). *Health online 2013*. Washington, DC: Pew Research Center's Internet & American Life Project.

Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: A comparison of four procedures. *Internet Research, 29*(3), 430-447.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*(2), 115-134.

Frey, L. R., Botan, C. H., & Kreps, G. L. (1999). *Investigating communication: An introduction to research methods* (2nd ed.). Boston, MA: Allyn & Bacon.

Gallagher, K. M., & Updegraff, J. (2012). Health Message Framing Effects on Attitudes, Intentions, and Behavior: A Meta-analytic Review. *Annals of Behavioral Medicine, 43*(1), 101-116.

Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice*. San Francisco, CA: Jossey-Bass.

Green, M. C. (2006). Narratives and cancer communication. *Journal of Communication*, *56*(1), 163-183.

Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology, 79*(5), 701-721.

Greene, K., & Banerjee, S. (2008). Adolescents' responses to peer smoking offers: The role of sensation seeking and self-esteem. *Journal of Health Communication*, *13*(3), 267-286.

Greene, K., & Brinn, L. S. (2003). Messages influencing college women's tanning bed use: Statistical versus narrative evidence format and a self-assessment to increase perceived susceptibility. *Journal of Health Communication*, *8*(5), 443-461.

Hackett, M. (2020). *An untapped market for digital health innovation exists among seniors hoping to age in place*. Retrieved from https://www.mobihealthnews.com/news/untapped-market-digital-health-innovation-exists-among-seniors-hoping-age-place.

Hair, J., Hult, T., Ringle, C., & Sarstedt, M. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM).* Thousand Oaks, CA: Sage.

Hamm, M. P., Chisholm, A., Shulhan, J., Milne, A., Scott, S. D., Given, L. M., et al. (2013). Social media use among patients and caregivers: A scoping review. *BMJ Open*, *3*(5), 1-9.

Head, K. J., Noar, S. M., Iannarino, N. T., & Harrington, N. G. (2013). Review: Efficacy of text messaging-based interventions for health promotion: A meta-analysis. *Social Science & Medicine*, *97*, 41–48.

Health and Trend. (2016). ***เช็คก่อนแชร์... ข้อมูลสุขภาพในโซเชียลมั่วเกินครึ่ง!*** **[**Check before share…More than half of health Information in social media are inaccurate!]. Retrieved from http://www.healthandtrend.com/healthy/what-the-health/health-social-wrong-more-than-half.

Heather L., G., Wei, C., & Amy, E. L.-C. (2012). Message framing and parents' intentions to have their children vaccinated against HPV. *Public Health Nursing*, *29*(6), 542-552.

Henseler, J., Ringle, C., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*, 115-135.

Hether, H. J., Murphy, S. T., & Valente, T. W. (2014). It's better to give than to receive: The role of social support, trust, and participation on health-related social networking sites. *Journal of Health Communication, 19*(12), 1424-1439.

Hillan, J. (2003). Physician use of patient-centered weblogs and online journals. *Clinical Medicine & Research, 1*(4), 333-335.

Hinyard, L. J., & Kreuter, M. W. (2007). Using narrative communication as a tool for Health behavior change: A conceptual, theoretical, and empirical overview. *Health Education & Behavior*, *34*(5), 777-792.

Hochbaum, G. M. (1958). *Public participation in medical screening programs: A socio-psychological study*. Washington, DC: United States Government Printing Office.

Hovland, C. I., Janies, I. L., & Kelley, J. J. (1953). *Communication and persuasion: Psychological studies of opinion change.* New Haven, CT: Yale University.

Hu, Y. (2015). Health communication research in the digital age: A systematic review. *Journal of Communication in Healthcare*, *8*(4), 260–288.

Humphreys, S., Rodger, D., & Flabouris, M. (2013). Understanding the role of medium in the control and flows of information in health communication. *Asia Pacific Media Educator*, *23*(2), 291-307.

Iacovetto, M. C., & Allen, L. A. (2015). Transitioning into a digital world: Time for provides to recommend Internet health information?. *American Heart Journal, 170*(1), 1-2.

Idriss, S. Z., Kvedar, J. C., & Watson, A. J. (2009). The role of online support communities: Benefits of expand social networks to patients with psoriasis. *Achives of Dermatology, 145*(1), 46-51.

Insight the way the elderly use "LINE-TV-Facebook popular media among the aging society. (2018). Retrieved from https://positioningmag.com/1186242.

Jabbi, M., Swart, M., & Keysers, C. (2007). Empathy for positive and negative emotions in the gustatory cortex. *NeuroImage*, *34*(4), 1744-1753.

Jirasevijinda, T. (2016). Reaching into our doctor's bag of tricks to help patients navigate health information technology. *Journal of Communication in Healthcare*, *8*(4), 255-257.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263-291.

Kalichman, S. C., & Coley, B. (1995). Context framing to enhance HIV-antibody-testing messages targeted to African American women. *Health Psychology, 14*(3), 247-254.

Kam, J. A., Krieger, J. L., Basinger, E. D., & Figueroa-Caballero, A. (2016). What do high school students say when they talk to their friends about substance use? Exploring the content of substance-use-specific communication with friends. *Health Communication*, *31*(5), 522–535.

Kareklas, I., Carlson, J. R., & Muehling, D. D. (2012). The role of regulatory focus and self view in "Green" advertising message framing. *Journal of Advertising*, *41*(4), 25–39.

Keating, R. T., Hendy, H. M., & Can, S. H. (2016). Demographic and psychosocial variables associated with good and bad perceptions of social media use. *Computers in Human Behavior*, *57*, 93-98.

Keer, M., Van Den Putte, B., De Wit, J., & Neijens, P. (2013). The effects of integrating instrumental and affective arguments in rhetorical and testimonial health messages. *Journal of Health Communication*, *18*(9), 1148–1161.

Kelleher, T., & Sweetser, K. (2012). Social media adoption among university communicators. *Journal of Public Relations Research*, *24*(2), 105-122.

Kemp, S. (2018). *Digital in 2018: World's internet users pass the 4 billion mark*. Retrieved from https://wearesocial.com/blog/2018/01/global-digital-report-2018.

Kemp, S. (2019). *Digital 2019 global digital yearbook*. Retrieved from https://datareportal.com/reports/digital-2019-global-digital-yearbook.

Kemp, S. (2020). *Digital 2020: Thailand*. Retrieved from https://datareportal.com/reports/digital-2020-thailand.

Khamis, R. M., & Geng, Y. (2020). Social media usage in health communication and its implications on public health security: A case study of Covid-19 in Zanzibar. *American Communication Journal*, *22*(2), 1-13.

Kim, H. J. (2014). The impacts of vicarious illness experience on response to gain- versus loss-framed breast cancer screening (BCS) messages. *Health Communication*, *29*(9), 854–865.

Kim, Y.-J. (2006). The role of regulatory focus in message framing in antismoking advertisements for adolescents. *Journal of Advertising*, *35*(1), 143–151.

Knowing silver age "cool people in elderly ages" with hot hit way to communication and content for elderly people to share in their network. (2018). Retrieved from https://www.brandbuffet.in.th/2018/09/cmmu-insight-content-marketing-for-silver-age/.

Kopfman, J. E., Smith, S. W., Yun, J. K. A., & Hodges, A. (1998). Affective and Cognitive reactions to narrative versus statistical evidence organ donation. *Journal of Applied Communication Research, 26*(3), 279–300.

Korda, H., & Itani, Z. (2013). Harnessing social media for health promotion and behavior change. *Health Promotion Practice*, *14*(1), 15-23.

Kortum, P., Edwards, C., & Richards-Kortum, R. (2008). The impact of inaccurate Internet health information in a secondary school learning environment. *Journal of Medical Internet Research, 10*(2), e17.

Kreuter, M. W., Holmes, K., Alcaraz, K., Kalesan, B., Rath, S., Richert, M., et al. (2010). Comparing narrative and informational videos to increase mammography in low-income African American women. *Patient Education and Counseling, 81(1),* S6-S14.

Lachlan, K. A., Burke, J., Spence, P. R., & Griffin, D. (2009). Risk perceptions, race, and hurricane Katrina. *Howard Journal of Communications*, *20*(3), 295–309.

Lachlan, K. A., & Spence, P. R. (2011). Crisis communication and the underserved: The case for partnering with institutions of faith. *Journal of Applied Communication Research*, *39*(4), 448–451.

Lachlan, K. A., Burke, J., Spence, P. R., & Griffin, D. (2009). Risk perceptions, race, and hurricane Katrina. *Howard Journal of Communications*, *20*(3), 295-309.

Lagu, T., Kaufman, E. J., Asch, D. A., & Armstrong, K. (2008). Content of weblogs written by health professionals. *Journal of General Internal Medicine*, *23*(10), 1642-1646.

Latimer, A. E., Rench, T. A., Rivers, S. E., Katulak, N. A., Materese, S. A., Cadmus, L., et al. (2008). Promoting participation in physical activity using framed messages: An application of prospect theory. *British Journal of Health Psychology*, *13*(4), 659–681.

Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University.

Lee, Y. J., Boden-Albala, B., Larson, E., Wilcox, A., & Bakken, S. (2014). Online health information seeking behaviors of Hispanics in New York city: A community-based cross-sectional study. *Journal of Medical Internet Research*, *16*(7), e176.

Lieberman, M. A., Wizlenberg, A., Golant, M., & Di Minno, M. (2005). The impact of group composition on Internet support groups: Homogeneous versus heterogeneous Parkinson's groups. *Group dynamics: Theory, Research, and Practice*, *9*(4), 239-250.

Lindlof , T. R., & Taylor, B. C. (2002). *Qualitative communication research methods* (2nd ed.). Thousand Oaks, CA: Sage.

Lincoln, Y. S., & Guba, E. G. (2000). Paradigmatic controversies, contradictions, and emerging confluences. In N. Denzin & Y.S Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 163-188.). London: Sage.

Lindell, M. K., & Perry, R. W. (2004). *Communicating environmental risk in multiethnic communities*. Thousand Oaks, CA: Sage.

Line Corporation. (2018). *LINE's philosophy*. Retrieved from https://linecorp.com/en/company/mission.

Line Corporation. (2020). *LINE ยืนหนึ่งแพลตฟอร์มในใจคนไทยตลอดปี เผยพฤติกรรมผู้ใช้ชาวไทยที่ติดอันดับโลก* [Line is number one platform for Thais]. Retrieved from https://linecorp.com/th/pr/news/th/2020/3168.

Lithopoulos, A., Bassett-Gunter, R., Ginis, K. M., & Latimer-Cheung, A. (2017). The effects of gain- versus loss-framed messages following health risk information on physical activity in individuals with multiple sclerosis. *Journal of Health Communication*, *22*(6), 523–531.

Liu, Y., & Shrum, L. J. (2009). A dual-process model of interactivity effects. *Journal of Advertising*, *38*(2), 53–68.

Loewenstein, G., Weber, E. U., Hsee, C. K., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, *127*(2), 267–286.

Lueck, J. A. (2017). Matching message design and depressed cognition: An exploration of attention patterns for gain-and loss-framed depression help-seeking messages. *Journal of Health Communication*, *22*(7), 593–603.

Lundell, H. C., Niederdeppe, J., & Clarke, C. E. (2013). Exploring interpretation of complexity and typicality in narratives and statistical images about the social determinants of health. *Health Communication*, *28*(5), 486–498.

Lynch, J. G., & Ariely, D. (2000). Wine online: Search costs affect competition on price, quality, and distribution. *Marketing Science*, *19*(1), 83-103.

Maguire, K. C., Gardner, J., Sopory, P., Jian, G., Roach, M., Amschlinger, J., et al. (2010). Formative research regarding kidney disease health information in a Latino American sample: Associations among message frame, threat, efficacy, message effectiveness, and behavioral intention. *Communication Education, 59*(3), 344–359.

McAndrew, F. T., & Jeong, H. S. (2012). Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behavior, 28*(6), 2359–2365.

McClenahan, C., Shevlin, M., Adamson,G., Bennett, B., & O'Neill, B. B. (2007). Testicular self-examination: A test of the health belief model and the theory of planned behavior. *Health Education Research, 22*(2), 272-284.

McQueen, A., Kreuter, M. W., Kalesan, B., & Alcaraz, K. I. (2011). Understanding narrative effects: The impact of breast cancer survivor stories on message processing, attitudes, and beliefs among African American women. *Health Psychology, 30*(6), 674-682.

Meisel, Z. F., & Karlawish, J. (2011). Narrative VS evidence-based medicine–and, not or. *Journal of the American Medical Association, 306*(18), 2022–2023.

Miller, E. A., & Pole, A. (2010). Diagnosis blog: Checking up on health blogs in the blogosphere. *American Journal of Public Health, 100*(8), 1514–1519.

Miller-Day, M., & Dodd, A. H. (2004). Toward a descriptive model of parent--offspring communication about alcohol and other drugs. *Journal of Social & Personal Relationships, 21*(1), 69–91.

Miller-Day, M., & Hecht, M. L. (2013). Narrative means to preventative ends: A narrative engagement framework for designing prevention interventions. *Health Communication, 28*(7), 657-670.

Mahidol University. (2018). **เปิดผลวิจัย"รุ่นใหญ่วัยสีเงิน" นิยมใช้** Line **แซงหน้า** Facebook [Release the research results of elderly silver ages, now they are using Line application more than Facebook]. Retrieved from https://today.line.me/th/v2/article/NZjV5p.

Muangtum, N. (2020). **วิเคราะห์** Digital Thailand 2020 We are social **เป็นอย่างไรเมื่อเทียบกับ** 2019 [Analyse digital Thailand 2020 we are social with comparing 2019]. Retrieved from https://www.everydaymarketing.co/trend-insight/digital-thailand-2020-we-are-social/.

Naidoo, J., & Wills, J. (2000). *Health promotion: Foundations for practice* (2nd ed.). London: Baillere Tindall and RCN.

National Committee for the Elderly. (2017). *Situation of the Thai elderly 2017*. Bangkok: Foundation of Thai Gerontology Research and Development Institute.

National Statistical Office of Thailand. (2014). *The 2014 survey of the older person in Thailand*. Bangkok: Population Statistic Group.

Neubaum, G., & Krämer, N. C. (2015). Let's blog about health! Exploring the persuasiveness of a personal HIV blog compared to an institutional HIV website. *Health Communication, 30*(9), 872–883.

Niederdeppe, J., Shapiro, M. A., & Porticella, N. (2011). Attributions of responsibility for obesity: Narrative communication reduces reactive counterarguing among liberals. *Human Communication Research, 37*(3), 295–323.

Nielsen Thailand. (2016). **พฤติกรรมใช้** Smartphone **คนไทยล่าสุด เม้าท์ทั้งวัน – คลั่งช๊อปปิ้ง – สูบเน็ต** Wifi [Nielsen mobile Thailand-behaviors]. Retrieved from http://www.brandbuffet.in.th/2016/08/nielsen-mobile-thailand-behaviors/.

Norman, C. D., & Skinner, H. A. (2006). eHealth literacy: Essential skills for consumer health in a networked world. *Journal of Medical Internet Research, 8*(2), e9.

Oh, J., & Sundar, S. S. (2015). How does interactivity persuade? An experimental test of interactivity on cognitive absorption, elaboration, and attitudes. *Journal of Communication, 65*(2), 213–236.

O'Keefe, D. J. (1990). *Persuasion: Theory and research.* Newbury Park, CA: Sage.

O'Keefe, D., & Jensen, J. (2007). The relative persuasiveness of gain-framed and loss-framed messages for encouraging disease prevention behaviors: A meta-analytic review. *Journal of Health Communication, 12*(7), 623-644.

O'Keefe, D. J., & Jensen, J. D. (2009). The relative persuasiveness of gain-framed and loss framed messages for encouraging disease detection behaviors: A meta-analytic review. *Journal of Communication, 59*(2), 296–316.

O'Keefe, D. J., & Nan, X. (2012). The relative persuasiveness of gain- and loss-framed messages for promoting vaccination: A meta-analytic review. *Health Communication, 27*(8), 776–783.

O'Keefe, D. J., & Wu, D. (2012). Gain-framed messages do not motivate sun protection: A meta analytic review of randomized trials comparing gain-framed and loss-framed appeals for promoting skin cancer prevention. *International Journal of Environmental Research and Public Health*, *9*(6), 2121-2133.

Olphert, C. W., Damodaran, L., & May, A. J. (2005). Towards digital inclusion – engaging older people in the "digital world". In *Accessible Design in the Digital World Conference 2005* (pp. 1-7). Loughborough, UK: Department of Information Science, Loughborough University.

Olson, K. E., O'Brien, M. A., Rogers, W. A., & Charness, N. (2011). Diffusion of technology for younger and older adults. *Ageing International*, *36*(1), 123-145.

Pantip. (2016, June). ***พ่อแม่ใครชอบเชื่อข้อมูลผิดๆที่แชร์ๆกันในไลน์ไหมครับ*** [Any of your parents who like to share wrong information via Line application?]. Retrieved from https://pantip.com/topic/35223587.

Pantip. (2017a, February). **มีใครเป็นบ้างคะ? ป๋า ๆ ลุง ๆ ที่บ้านเล่นไลน์แล้วชอบแชร์ภาพศพ ข่าวปลอม แถมยังเชื่อเป็นตุเป็นตะ เราเตือนก็โกรธเป็นวันๆ**!!! [Anyone of your..? Aunties uncles who use Line application and like to share death pictures, inaccurate news that they really believe in that information. They get angry when we tell them that is wrong information!!!]. Retrieved from https://pantip.com/topic/36115097.

Pantip. (2017b, April). **พ่อครับแม่ครับ!! สิ่งที่แชร์กันใน** Line Facebook **มันไม่ใช่เรื่องจริงทั้งหมด**!!Father and Mother!! [Not all of information that sharing on Line application and Facebook are true!!]. Retrieved from https://pantip.com/topic/36358852.

Pantip. (2017c, November,). **มีวิธีรับมือกับญาติผู้ใหญ่ที่ชอบแชร์ ข่าวปลอม ข่าวลือใน** LINE **กันยังไงบ้างครับ** [Any ways to deal with elderly people who share false information on Line application]. Retrieved from https://pantip.com/topic/37074816.

Parida, V., Mostaghel, R., & Oghazi, P. (2016). Factors for elderly use of social media for health-related activities. *Psychology & Marketing*, *33*(12), 1134-1141.

Patcharaarapa, P. (2016). *สถานการณ์ผู้สูงอายุผู้สูงอายุกับครอบครัว ชุมชน สังคม* [Situation of senior citizens with family, community, and social]. Retrieved from http://www.dop.go.th/download/formdownload/download_th_20162203134717_1.pdf.

Petraglia, J. (2009). The importance of being authentic: Persuasion, narration, and dialogue in health communication and education. *Health Communication*, *24*(2), 176-185.

Pettigrew, J., Miller-Day, M., Krieger, J., & Hecht, M. L. (2011). Alcohol and other drug resistance strategies employed by rural adolescents. *Journal of Applied Communication Research*, *39*(2), 103–122.

Pfeil, U., Arjan, R., & Zaphiris, P. (2009). Age differences in online social networking – A study of user profiles and the social capital divide among teenagers and older users in MySpace. *Computers in Human Behavior, 25*(3), 643-654.

Preece, J., & Ghozati, K. (1998). Empathic communities: Offering support and sharing information in a bulletin board community. Paper presented at *the Collaborative Virtual Environments Conference*, Manchester, UK: University of Nottingham.

Preston, S., & de Waal, F. (2002). Empathy: Its ultimate and proximate bases. *Behavioral and Brain Sciences, 25*(1), 1-72.

Purcell, G. P., Wilson, P., & Delamothe, T. (2002). The quality of health information on the internet: As for any other medium it varies widely. *British Medical Journal, 324*(7337), 557-558.

Quick, B. L., & Bates, B. R. (2010). The use of gain- or loss-frame messages and efficacy appeals to dissuade excessive alcohol consumption among college students: A test of psychological reactance theory. *Journal of Health Communication*, *15*(6), 603–628.

Rafaeli, S. (1988). Interactivity: From new media to communication. In R. P, Hawkins, J. M. Wiemann & S. Pingree (Eds.), *Advancing communication science: Merging mass and interpersonal processes* (pp.110-134). Newbury Park, CA: Sage.

Raghunathan, R., & Trope, Y. (2002). Walking the tightrope between feeling good and being accurate: Mood as resource in processing persuasive messages. *Journal of Personality and Social Psychology, 83*(3), 510-525.

Razmara, A., Aghamolaei, T., Madani, A., Hosseini, Z., & Zare, S. (2018). Prediction of safe driving Behaviours based on health belief model: The case of taxi drivers in Bandar Abbas, Iran. *BMC Public Health*, *18*(1), 1-8.

Renner, B., Schupp, H., Vollmann, M., Hartung, F.-M., Schmalzle, R., & Panzer, M. (2008). Risk perception, risk communication and health behavior change. *Journal of Health Psychology*, *16*(3), 151-153.

Rezai, L. S., Chin, J., Bassett-Gunter, R., & Burns, C. (2017). Developing persuasive health messages for a behavior-change-support-system that promotes physical activity. *Proceedings of the International Symposium of Human Factors & Ergonomics in Healthcare*, *6*(1), 89-95.

Rimal, R. N., & Juon, H.-S. (2010). Use of the risk perception attitude framework for promoting breast cancer prevention. *Journal of Applied Social Psychology*, *40(2)*, 287-310.

Rimal, R. N., Bose, K., Brown, J., Mkandawire, G., & Folda, L. (2009). Extending the purview of the risk perception attitude framework: Findings from HIV/AIDS prevention research in Malawi. *Health Communication*, *24*(3), 210–218.

Rimal, R. N., & Lapinski, M. K. (2009). Why health communication is important in public health. *Bulletin of the World Health Organization*, *87*(4), 247.

Richards, K. C., Campenni, C. E., & Muse-Burke, J. L. (2010). Self-care and well-being in mental health professionals: the mediating effects of self-awareness and mindfulness. *Journal of Mental Health Counseling*. 32*(3)*, 247-264.

Rosenstock, I. M. (1974) Historical origins of the health belief model. *Health Education Monographs*, *2*(4), 328–335.

Rothman, A. J., Bartels, R. D., Wlaschin, J., & Salovey, P. (2006). The strategic use of gain-and loss-framed messages to promote healthy behavior: How theory can inform practice. *Journal of Communication, 56*(1), S202–S220.

Rothman, A. J., Stark, E., & Salovey, P. (2006). Using message framing to promote healthy behavior: A guide to best practices. In J. Trafton (Ed.), *Best practices in the behavioral management of chronic diseases* (Vol. 3, pp. 31-48). Los Altos, CA: Institute for Disease Management.

Rowlands, G., Protheroe, J., & McElhinney, E. (2006). *Digital health literacy*. Retrieved from https://www.who.int/global-coordination-mechanism/activities/working-groups/17-s5-rowlands.pdf.

Ruck, K., Cooper, A., Hurley, A., Ashton, K., Lines, C., & Willson, A. (2017). Effective messages and media for employee health campaigns. *Journal of Communication in Healthcare*, *10*(3), 180-187.

Ruiz, S., & Sicilia, M. (2004). The impact of cognitive and/or affective processing styles on consumer response to advertising appeals. *Journal of Business Research*, *57*(6), 657-664.

Sallis, J. F., & Owen, N. (1998). *Physical activity and behavioral medicine*. Thousand Oaks, CA: Sage.

Sardis, B. (2018). *What is digital health*?. Retrieved from https://techforaging.com/digital-health-elderly/.

Schiffman, L. G., & Sherman, E. (1991). Value orientations of new-age elderly: The coming of an ageless market. *Journal of Business Research*, *22*(2), 187–194.

Schlottmann, A., & Tring, J. (2005). How children reason about gains and losses: Framing effects in judgement and choice. *Swiss Journal of Psychology*, *64*(3), 153-171.

Schneider, T. R. (2006). Getting the biggest bang for your health education Buck: message framing and reducing health disparities. *American Behavioral Scientist, 49*(6), 812-822.

Shen, L. (2010). Mitigating psychological reactance: The role of message-induced empathy in persuasion. *Human Communication Research, 36*(3), 397–422.

Sherman, D. K., Updegraff, J. A., & Mann, T. (2008). Improving oral health behavior: A social psychological approach, *Journal of the American Dental Associates, 139*(10), 1382-1387.

Shojaei, S., Farhadloo, R., Aein, A., & Vahedian, M. (2016). Effects of the health belief model (HBM)-based educational program on the nutritional knowledge and behaviors of CABG patients. *Journal of Tehran Heart Center, 11*(4), 181-186.

Smith, A. (2006). Cognitive empathy and emotional empathy in human behavior and evolution. *Psychological Record*, *56*(1), 3-21.

So, J., Cho, H., & Lee, J. (2011). Genre-specific media and perceptions of personal and social risk of smoking among South Korean college students. *Journal of Health Communication, 16*(5), 533-546.

Somwatson, K. (2016). ***การศึกษาพฤติกรรมการสื่อสาร กับการส่งต่อข้อมูล ผ่านแอพพลิเคชั่นไลน์ของผู้สูงอายุ*** [The study of communication behavior in Line application data sharing of elderly people]. Unpublished master's thesis, National Institute of Development Administration, Bangkok, Thailand.

Spence, P.R., Lachlan, K. A., & Burke, J. A. (2011). Differences in crisis knowledge across age, race, and socioeconomic status during Hurricane Ike: A field test and extension of the knowledge gap hypothesis. *Communication Theory, 21*(3), 261-278.

Spence, P. R., Lachlan, K. A., & Griffin, D. R. (2007). Crisis communication, race, and natural disasters. *Journal of Black Studies, 37*(4), 539-554.

Spence, P. R., Lachlan, K. A., Westerman, D., & Spates, S. A. (2013). Where the gates matter less: Ethnicity and perceived source credibility in social media health messages. *Howard Journal of Communications, 24*(1), 1–16.

Stanford, J., Tauber, E., Fogg, B. J., & Marable, L. (2002). *Experts vs. online consumers: A comparative credibility study of health and finance web sites*. Retrieved from http://www.ebusinessforum.gr/old/ content/downloads/comparativeCredibilityStudy.pdf.

Sundar, S. S., Kalyanaraman, S., & Brown, J. (2003). Explicating web site interactivity: Impression formation effects in political campaign sites. *Communication Research, 30*(1), 30-59.

Sundar, S. S., Rice, R. E., & Kim, H-S. (2010). Trends in online health information: New conceptualizations for a new medium. In *Health Communication Division of the International Communication Association at the annual conference in Singapore*. Singapore: International Communication Association.

Sweetser, K. D., & Lariscy, R. W. (2008). Candidated make good friends: An analysis of candidates' use of Facebook. *International Journal of Strategic Communication, 2(3),* 175-198.

Taylor,S. E., & Thompson, S. C. (1982). Stalking the elusive “vividness”; effect. *Psychological Review, 89*(2), 155–181.

Tennant, B., Stellefson, M., Dodd, V., Chaney, B., Chaney, D., Paige, S., et al. (2015). eHealth literacy and web 2.0 health information seeking behaviors among baby boomers and older adults. *Journal of Medical Internet Research, 17*(3), e70.

Thackeray, R., Crookston, B. T., & West, J. H. (2013). Correlates of health-related social media use among adults. *Journal of Medical Internet Research, 15*(1), 1-12.

Thompson, S. H., & Lougheed, E. (2012). Frazzled by Facebook? An exploratory study of gender differences in social network communication among undergraduate men and women. *College Student Journal, 46*, 88-98.

Tracy, S. J. (2013). *Qualitative Research methods: Collecting evidence, crafting analysis, communicating impact*. Chichester: Wiley-Blackwell.

Trammell, K. D., & Keshelashvili, A. (2005). Examining the new influencers: A self-presentation study of a-list blogs. *Journalism & Mass Communication Quarterly, 82*(4), 968-982.

Turner, M. M., Rimal, R. N., Morrison, D., & Kim, H. (2006). The role of anxiety in seeking and retaining risk information: Testing the risk perception attitude framework in two studies. *Human Communication Research, 32*(2), 130–156.

TWF Agency. (2020). *สถิติผู้ใช้ของ LINE ใน ประเทศไทยในปี 2020* [LINE users statistic in Thailand 2020]. Retrieved from https://www.twfdigital.com/blog/2020/04/line-user-stat-in-thailand-2020/

Ungkasuwapala, N. (2016). **ข้อมูลสุขภาพในโซเชียลมั่วเกินครึ่ง แชร์ไม่ยั้งเพราะคิดว่าได้บุญ!! แนะเทคนิครู้เท่าทัน** [Health information, more than half of information in social media are inaccurate, people keep sharing/forwarding because they think it is good things!! Suggest good tactics for knowing health information]. *Manager online*. Retrieved from https://mgronline.com/qol/detail/9590000096819.

United Nations, Department of Economic and Social Affairs, Population Division. (2015). *World population ageing 2015*. New York: United Nations.

United Nations, Department of Economic and Social Affairs, Population Division (2017). *World population ageing 2017*. New York: United Nations.

Volkman, J. E., Luger, T. M., Harvey, K. L., Hogan, T. P., Shimada, S. L., Amante, et al. (2014). The National Cancer Institute's Health Information National Trends Survey (HINTS): A national cross-sectional analysis of talking to your doctor and other healthcare provides for health information. *BMC Family Practice, 15*(1), 1-8.

Wang, Z., Walther, J. B., Pingree, S., & Hawkins, R. P. (2008). Health information, credibility, homophily, and influence via the internet: web sites versus discussion groups. *Health Communication*, *23*(4), 358–368.

Wilson, C. (1999). *The practice of social research*. Belmont, CA: Wadsworth Cengage Learning.

World Health Organization. (2015). *World report on aging and health*. Geneva, Switzerland: WHO.

World Health Organization. (2020). *UN decade of healthy ageing 2021-2030*. Retrieved from https://www.who.int/ageing/decade-of-healthy-ageing.

Wright, K., & Bell, S. (2003). Health-related support groups on the internet: Linking empirical findings to social support and computer-mediated communication theory. *Journal of Health Psychology*, *8*(1), 39-54.

Wyllie, J., Baxter, S., & Kulczynski, A. (2015). Healthy kids: Examining the effect of message framing and polarity on children's attitudes and behavioral Intentions. *Journal of Advertising*, *44*(2), 140–150.

Yoo, J. H., Kreuter, M. W., Lai, C., & Fu, Q. (2014). Understanding narrative effects: The role of discrete negative emotions on message processing and attitudes Among low-income African American women. *Health Communication*, *29*(5), 494–504.

Yzer, M. C., & Southwell, B. (2008). New communication technologies, old questions. *American Behavioral Scientist*, *52*(1), 8-20.

Zillmann, D. (2006a). Exemplification effects in the promotion of safety and health. *Journal of Communication*, *56*(s1), S221-S237.

Zillmann, D. (2006b). Empathy: affective reactivity to others' emotional experiences. In J. Bryant, & P. Vorderer (Eds.), *Psychology of entertainment* (pp.151-181). Mahwah, NJ: Lawrence Erlbaum Associates.

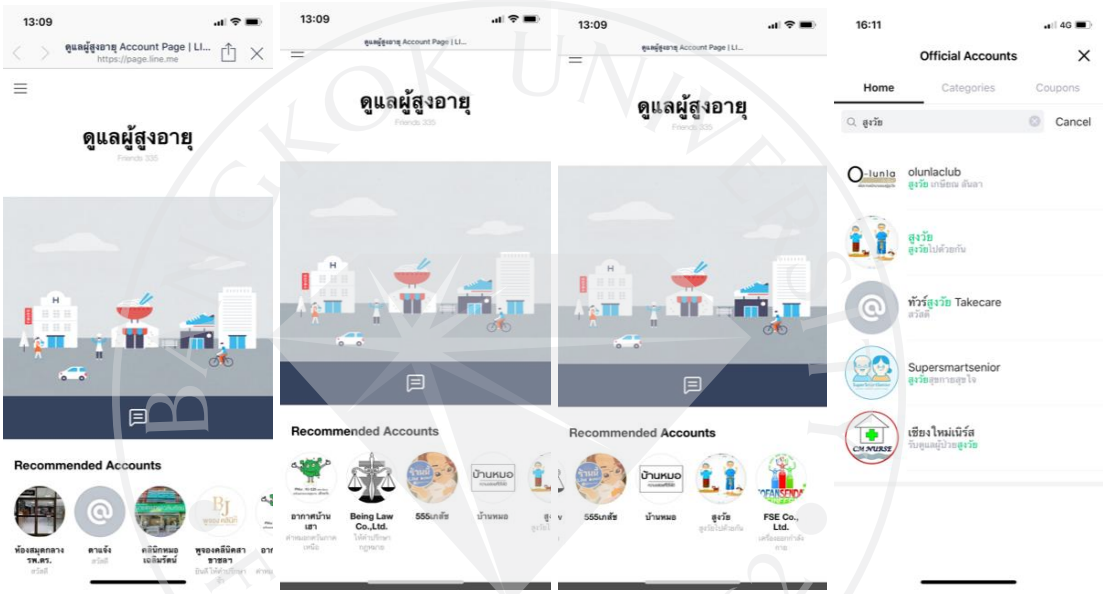
Zillmann, D., & Brosius, H.-B. (2000). *Exemplification in communication: The influence of case reports on the perception of issues*. Mahwah, NJ: Lawrence Erlbaum Associates.

APPENDICES

Appendix A

List of Official Accounts for Seniors

Recommended accounts: O-lunla, Senior, SuperSmartSenior, CM NURSE, FSC Co.,Ltd, and YoungHappy.



Appendix B

Questionnaire

Instruction: This survey is conducted as part of the academic requirements for Miss Opaporn Pasvekin, doctoral student in the Ph.D. Program in Communication Arts (International Program), Bangkok University. Aiming to study the Thai senior citizens' responses to different types of health messages sent via LINE Application, this questionnaire contains five sections (44 questions). It will take about 10 minutes to complete this survey. The researcher would like to ask your cooperation to answer all questions with your full ability and accuracy.

Section 1: Personal Information

This section contains some questions about you. Please write an answer or mark your answers with a check mark ☑ in the space provided.

1. Age: _____ years old

2. Gender:

_____ (1) Male _____ (2) Female _____ (3) Others

3. Education:

____ (1) Lower than Bachelor's Degree

____ (2) Bachelor's Degree

____ (3) Master's Degree and above

4. Family's approximate monthly income:

____ (1) Less than 15,000 Thai Baht

____ (2) 15,000 – 29,999 Thai Baht

____ (3) 30,000 – 44,999 Thai Baht

____ (4) 45,000 – 59,999 Thai Baht

____ (5) 60,000 Thai Baht and above

5. How long have you been using LINE application?

___ (1) 12 months

___ (2) More than 12 to 18 months

___ (3) More than 18 to 24 months

___ (4) More than 24 months

6. How long do you use line application per day on average? (Average time spend)

Average of time that you have spent on LINE application per day

____ (1) Less than 30 minutes

____ (2) 30 minutes -1 hour

____ (3) More than 1-1.5 hours

____ (4) More than 1.5-2 hours

____ (5) More than 2-2.5 hours

____ (6) More than 2.5-3 hours

____ (7) More than 3 hours

7. Please select the answer(s) that currently represent your health status/your illness (you can answer more than one item)

___ (1) Diabetes

___ (2) High-blood pressure

___ (3) Heart disease/stroke

___ (4) Cancer

___ (5) Malnutrition

___ (6) Osteoporosis in the elderly

___ (7) Obesity

___ (8) Others (please specify _____)

8. Please select the topic(s) that you currently communicate via LINE application any of the following health topics on LINE application? (you can answer more than one item)

___ (1) Diabetes

___ (2) High-blood pressure

___ (3) Heart disease/stroke

___ (4) Cancer

___ (5) Nutrition/Diet

___ (6) Osteoporosis in the elderly

___ (7) Exercise/obesity

___ (8) Others (please specify _____)

Section 2: Exposure to health messages

Please put the ☑ in the box that accurately represents you.

How many health messages do you receive via LINE application per week?

There are 6 answer choices: 0 = Never, 1-2 = Seldom, 3-4 = Sometimes, 5-6 = Quite often, 7-8 = Often, 9 and more = Very often.

Health Messages	Number of Health Messages Received per Week					
	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
Informational messages						
9. Health message that presents arguments, logic, or reason in the form of facts about diseases.						
10. Health message that shows the number of patients related diseases with evidence support.						
11. Health message that shows the statistics of major diseases in Thailand.						
Narrative messages						
12. Health message that presents health information based on patient's experiences.						

Health Messages	Number of Health Messages Received per Week					
	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
Narrative messages						
13. Health message that gives example of an event or case study with providing appealing details, character, and actions.						
14. Health message that tell stories about illness with interesting plot/situations.						
Gain-framed messages						
15. Message about benefit and advantage of health activities.						
16. Message that presents about positive/healthy experience/outcome of health activities.						
17. Message that talks about reduced risk of illness in your life if you engage in health activities.						
Loss-framed messages						
18. Message about cost and disadvantage of not engaging in health activities.						

Health Messages	Number of Health Messages Received per Week					
	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
19. Message that presents about negative/unhealthy experience/outcome of not engaging in health activities.						
20. Message that talks about increased risk of illness in your life if you do not engage in health activities.						

Section 3: Cognitive Responses

Please put the ☑ in the box that accurately represents you.

After you received health messages via LINE as stated in Section 2, please indicate your level of agreement/disagreement for the following responses.

There are 5 answer choices: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree.

Cognitive Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
Self-awareness					
21. Receiving health messages via LINE makes me aware of my health conditions.					
22. Receiving health messages via LINE makes me interested in my current health condition/status.					
23. Receiving health messages via LINE makes me contemplate on my current health behavior/lifestyle.					

Cognitive Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
Perceived Threat/Risk					
24. After receiving health messages via LINE, I am concerned that I will get some diseases (e.g. diabetes or high-blood pressure) because of my age, lifestyle, and/or health condition.					
25. After receiving health messages via LINE, I think that I have chances of getting diseases (e.g. diabetes or high-blood pressure) because of my ages, lifestyle, and health condition.					
26. After receiving health messages via Line, I believe that I have a moderate risk of getting diabetes or blood-pressure due to my genetic factor.					

Cognitive Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
Perceived Benefit					
27. If I engage in health activities communicated via LINE, I am doing something to prevent myself from some fatal diseases.					
28. Engaging health activities communicated via LINE decreases the rate of getting diabetes or high-blood pressure.					
29. Engaging/Completing in health activities communicated via LINE may help me getting away from some fatal diseases.					
Self-Efficacy					
30. I am confident that I can follow health-related advices sent via LINE.					
31. I am able to find time to follow and engage in health activities recommended via LINE.					

Cognitive Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
32. I have an ability to follow, engage in, and complete health activities recommended via LINE.					

Section4: Affective Responses

Please put the ☑ in the box that accurately represents you.

After you received health messages via LINE as stated in Section 2, please indicate your level of agreement/disagreement for the following responses.

There are 5 answer choices: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree.

Affective Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
Fear					
33. After I received health messages via LINE, I am afraid to think about diabetes or high-blood pressure.					

Affective Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
34. After I received health messages via LINE, I am fear that I will get diabetes or high-blood pressure sometime during my life.					
35. After I received health messages via LINE, the thought of diabetes or high-blood pressure scares me.					
Sympathy					
36. After I received health messages via LINE, I imagine if I were people who are sick (diabetes or high blood pressure), I will have a miserable life.					
37. After I received health messages via LINE, I sympathize those who get diabetes or serious illness.					
38. After I received health messages via LINE, my heart aches for those who have suffered from serious illness (e.g. diabetes or high blood pressure).					

Section 5: Behavioral Responses

Please put the ☑ in the box that accurately represents you.

After you received health messages via LINE as stated in Section 2, please indicate your level of agreement/disagreement for the following responses.

There are 5 answer choices: 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree nor disagree, 4 = Agree, 5 = Strongly agree.

Behavioral Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
39. I forward/share the health messages I received via LINE to friends and family (online).					
40. I discuss with friends and family about health-related issues communicated via LINE (online).					
41. I talk about health messages I received via LINE with family and friends (offline).					
42. I ask my doctor about the health message I received via LINE (offline).					

Behavioral Responses	Level of Agreement				
	(1)	(2)	(3)	(4)	(5)
43. I have engaged in activities for disease prevention recommended in LINE (e.g. exercising and eating healthy food).					
44. I have engaged in activities for disease detection recommended in LINE (e.g. have an annual medical check to find out if something is wrong and follow the steps for checking health status).					

*** Thank you for your participation. ***

Appendix C

แบบสอบถาม

คำชี้แจง: แบบสอบถามนี้จัดทำขึ้นเพื่อเป็นส่วนหนึ่งของดุษฎีนิพนธ์โดยนางสาว โอภาพร ภาสเวคิน นักศึกษาปริญญาเอกของหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชานิเทศศาสตร์ (หลักสูตรนานาชาติ) มหาวิทยาลัยกรุงเทพ ซึ่งมีวัตถุประสงค์เพื่อการศึกษาพฤติกรรมของผู้สูงอายุไทยในการตอบสนองต่อข้อความเกี่ยวกับเรื่องสุขภาพในรูปแบบต่าง ๆ ที่ส่งผ่านไลน์แอปพลิเคชัน แบบสอบถามนี้ประกอบด้วยคำถาม 5 ส่วน รวมทั้งสิ้น 44 ข้อ และใช้เวลาในการตอบประมาณ 10 นาที ผู้วิจัยจึงใคร่ขอความร่วมมือจากคุณในการตอบคำถามอย่างเต็มความสามารถและตามความเป็นจริงให้ครบทุกข้อ

ส่วนที่ 1: ข้อมูลส่วนตัว

คำถามส่วนนี้ประกอบด้วยคำถามเกี่ยวกับตัวคุณ โปรดเขียนคำตอบของคุณ หรือใส่เครื่องหมาย ☑ ในช่องว่างหน้าคำตอบ

1. อายุ: _____ ปี
2. เพศ:

____ (1) ชาย ____ (2) หญิง ____(3) อื่น ๆ

3. การศึกษา:

____ (1) น้อยกว่าปริญญาตรี ____ (2) ปริญญาตรี

____ (3) ปริญญาโทและสูงกว่า

4. รายได้ของครอบครัวต่อเดือน:

____ (1) น้อยกว่า 15,000 บาท ____ (2) 15,000–29,999 บาท

____ (3) 30,000–44,999 บาท ____ (4) 45,000–59,999 บาท

____ (5) 60,000 บาทและสูงกว่า

5. คุณใช้ไลน์แอปพลิเคชันมานานเท่าไรแล้ว

___ (1) 12 เดือน ___ (2) มากกว่า 12 จนถึง 18 เดือน

___ (3) มากกว่า 18 จนถึง 24 เดือน ___ (4) มากกว่า 24 เดือน

6. ในแต่ละวันคุณใช้ LINE ไลน์แอปพลิเคชันเป็นระยะเวลาประมาณเท่าไร

____ (1) น้อยกว่า 30 นาที ____ (2) 30 นาที – 1ชม.

____ (3) มากกว่า 1 ชม. - 1.5 ชม. ____ (4) มากกว่า 1.5 ชม. - 2 ชม.

____ (5) มากกว่า 2 ชม. - 2.5 ชม. ____ (6) มากกว่า 2.5ชม. - 3 ชม.

____ (7) มากกว่า 3 ชม.

7. สถานะทางสุขภาพ/โรคของคุณในปัจจุบันมากที่สุด (ตอบได้มากกว่า 1 ข้อ)

___ (1) โรคเบาหวาน ___ (2) โรคความดันโลหิตสูง

___ (3) โรคหัวใจ ___ (4) โรคมะเร็ง

___ (5) โรคขาดสารอาหาร ___ (6) โรคเกี่ยวกับกระดูก ภาวะกระดูกพรุนในผู้สูงอายุ

___ (7) โรคอ้วน ___ (8) อื่น ๆ (โปรดระบุ _____)

8. โปรดเลือกหัวข้อสุขภาพและหรือโรคต่างๆ ที่คุณได้สื่อสารผ่านไลน์แอปพลิเคชัน (ตอบได้มากกว่า 1 ข้อ)

___ (1) โรคเบาหวาน ___ (2) โรคความดันโลหิตสูง

___ (3) โรคหัวใจ ___ (4) โรคมะเร็ง

___ (5) เรื่องเกี่ยวกับสารอาหาร/ควบคุมอาหาร

___ (6) โรคเกี่ยวกับกระดูก ภาวะกระดูกพรุนในผู้สูงอายุ

___ (7) ออกกำลังกาย ___ (8) อื่น ๆ (โปรดระบุ _____)

ส่วนที่ 2: การเปิดรับข้อความสุขภาพ

กรุณาใส่เครื่องหมาย ☑ ในช่องว่างที่แสดงข้อความที่ตรงกับตัวคุณมากที่สุด

โดยเฉลี่ยคุณได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์มากน้อยเท่าไรใน 1 สัปดาห์

คำตอบมี 6 ตัวเลือก ได้แก่ 0 = ไม่เคย, 1-2= นาน ๆ ครั้ง, 3-4 =บางครั้ง, 5-6 = ค่อนข้างบ่อย, 7-8 = บ่อย, 9 และมากกว่า = บ่อยมาก

ข้อความสุขภาพ	จำนวนข้อความสุขภาพและโรคต่าง ๆ ที่ได้รับในหนึ่งสัปดาห์					
	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
ข้อความเชิงข่าวสาร						
9. ข้อความสุขภาพที่เสนอข้อโต้แย้ง หลักความเป็นเหตุเป็นผล หรือตรรกะในรูปแบบของข้อเท็จจริงเกี่ยวกับโรค						
10. ข้อความสุขภาพที่แสดงจำนวนของผู้ป่วยด้วยโรคต่าง ๆ พร้อมหลักฐานสนับสนุน						
11. ข้อความสุขภาพที่แสดงสถิติของโรคหลัก ๆ ในประเทศไทย						
ข้อความเชิงการเล่าเรื่อง						
12. ข้อความสุขภาพที่แสดงข้อมูลสุขภาพบนพื้นฐานของประสบการณ์จริงของผู้ป่วย						
13. ข้อความสุขภาพที่ให้ตัวอย่างของเหตุการณ์หรือกรณีศึกษา พร้อมกับให้รายละเอียด บุคคล และพฤติกรรมที่ดึงดูดความสนใจ						
14. ข้อความสุขภาพที่เล่าเรื่องราวของอาการป่วยด้วยโครงเรื่องหรือสถานการณ์ที่น่าสนใจ						
ข้อความเชิงประโยชน์						
15. ข้อความเกี่ยวกับข้อดีและประโยชน์ของกิจกรรมเพื่อสุขภาพ						

ข้อความสุขภาพ	จำนวนข้อความสุขภาพและโรคต่าง ๆ ที่ได้รับในหนึ่งสัปดาห์					
	(0)	(1-2)	(3-4)	(5-6)	(7-8)	(9+)
16. ข้อความเกี่ยวกับประสบการณ์จริงของคนโดยนำเสนอประสบการณ์ที่ดีและผลลัพธ์ที่ดีเกี่ยวกับสุขภาพและกิจกรรมเพื่อสุขภาพ						
17. ข้อความที่นำเสนอการลดความเสี่ยงที่จะป่วยเป็นโรคต่าง ๆ หากคุณเข้าร่วมกิจกรรมเพื่อสุขภาพ						
ข้อความเชิงโทษ						
18. ข้อความเกี่ยวกับผลเสียและโทษของการที่ไม่ได้เข้าร่วมกิจกรรมเพื่อสุขภาพ						
19. ข้อความที่แสดงถึงประสบการณ์จริงด้านลบเกี่ยวกับสุขภาพของบุคคล เนื่องจากการไม่ได้ร่วมกิจกรรมเพื่อสุขภาพ						
20. ข้อความที่พูดถึงการเพิ่มความเสี่ยงที่จะเจ็บป่วยได้ ถ้าคุณไม่เข้าร่วมกิจกรรมสุขภาพ						

ส่วนที่ 3: การตอบสนองทางความคิด

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับความคิดของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2

คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

ความคิด	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
การตระหนักรู้ในตัวเอง					
21. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันมีความตระหนักรู้เกี่ยวกับสุขภาพของตัวเอง					
22. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันสนใจสุขภาพในปัจจุบันของตัวเอง					
23. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันคิดถึงพฤติกรรมทางสุขภาพและวิถีชีวิตของตัวเอง					
การรับรู้ถึงความเสี่ยงและอันตราย					
24. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันกังวลใจว่าตัวเองจะป่วยเป็นโรคต่าง ๆ (โรคเบาหวานหรือโรคความดันโลหิตสูง) เนื่องจากอายุ การใช้ชีวิต และสุขภาวะของฉัน					

ความคิด	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
25. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันคิดว่าฉันมีโอกาสที่จะป่วยเป็นโรคต่าง ๆ (โรคเบาหวานหรือโรคความดันโลหิตสูง) เนื่องจากอายุ การใช้ชีวิตและสุขภาวะของฉัน					
26. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันเชื่อว่าฉันมีความเสี่ยงระดับปานกลางที่จะป่วยเป็นเบาหวานหรือความดันโลหิตสูง เนื่องจากปัจจัยทางกรรมพันธุ์					
การรับรู้ถึงประโยชน์					
27. การที่ฉันเข้าร่วมกิจกรรมเพื่อสุขภาพจากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ บ่งบอกว่าฉันได้ทำอะไรบางอย่าง เพื่อปกป้องตัวเองจากการเจ็บป่วยโรคร้ายแรงบางโรค					
28. การเข้าร่วมกิจกรรมเพื่อสุขภาพจากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ช่วยลดโอกาสที่ฉันจะป่วยเป็นโรคเบาหวานหรือโรคความดันโลหิตสูง					
29. การเข้าร่วมกิจกรรมเพื่อสุขภาพและปฏิบัติตนอย่างต่อเนื่องจนจบกิจกรรม จากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ช่วยให้ฉันห่างไกลจากการป่วยโรคร้ายแรงบางโรค					
การรับรู้ถึงความสามารถของตัวเอง					

ความคิด	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
30. ฉันมั่นใจว่าฉันสามารถเข้าร่วมทำกิจกรรมเพื่อสุขภาพ จากข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์					
31. ฉันสามารถหาเวลาที่จะทำกิจกรรมเพื่อสุขภาพ โดยทำตามข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์					
32. ฉันมีความสามารถเข้าร่วมกิจกรรมเพื่อสุขภาพและทำได้สำเร็จ โดยทำตามข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์					

ส่วนที่ 4: การตอบสนองด้านความรู้สึก

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับความรู้สึกของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2 คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

ความรู้สึก	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
ความกลัว					
33. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันรู้สึกกังวลใจเวลาที่นึกถึงโรคเบาหวานหรือโรคความดันโลหิตสูง					

ความรู้สึก	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
34. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันกลัวว่าฉันจะป่วยเป็นโรคเบาหวานหรือโรคความดันโลหิตสูงในช่วงชีวิตของฉัน					
35. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ความคิดของฉันเกี่ยวกับโรคเบาหวานหรือโรคความดันโลหิตสูงทำให้ฉันกลัว					
ความเห็นอกเห็นใจผู้ป่วย					
36. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันจินตนาการว่า ถ้าฉันไม่สบายเหมือนคนที่เป็นโรคเบาหวานหรือความดันโลหิตสูง ฉันคงเป็นทุกข์ใจ					
37. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันสงสารคนที่ป่วยหนัก หรือคนที่เป็นโรคเบาหวาน					
38. หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ ฉันรู้สึกเห็นอกเห็นใจคนที่ทุกข์ทนทรมานจากโรคร้าย เช่นโรคเบาหวานและโรคความดันโลหิตสูง					

ส่วนที่ 5: การตอบสนองด้านพฤติกรรม

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับพฤติกรรมของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2 คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

พฤติกรรม	ระดับความเห็น				
	(1)	(2)	(3)	(4)	(5)
39. ฉันส่งต่อข้อความสุขภาพที่ฉันได้รับผ่านไลน์ไปยังเพื่อนและคนในครอบครัวของฉัน					
40. ฉันสนทนากับเพื่อนและครอบครัวของฉันเกี่ยวกับประเด็นทางสุขภาพที่ที่มีการสื่อสารอยู่ในไลน์					
41. ฉันพูดคุยกับครอบครัวและเพื่อนของฉันเกี่ยวกับข้อมูลทางสุขภาที่ฉันได้รับผ่านไลน์					
42. ฉันถามคุณหมอเกี่ยวกับข้อความที่ฉันได้รับผ่านไลน์					
43. ฉันได้ลงมือทำกิจกรรมเพื่อป้องกันโรคต่าง ๆ จากคำแนะนำที่ฉันได้รับผ่านไลน์ (เกี่ยวกับอาหารสุขภาพ/การควบคุมอาหาร/การออกกำลังกาย)					
44. ฉันร่วมทำกิจกรรมในการตรวจหาโรคที่แนะนำมาในไลน์ เช่น ไปตรวจร่างกายประจำปีเพื่อตรวจหาสิ่งผิดปกติ และทำตามขั้นตอนในการตรวจร่างกาย					

ขอบคุณสำหรับความร่วมมือในการตอบคำถาม

Appendix D

Reliability tests by two coders

The first coder is Dr. Tanawut Sekorarit, lecturer at Faculty of Communication Arts, North Bangkok University. The second coder is Natsarun Pharausa, who received a bachelor's degree in communication arts from Bangkok University with broadcasting major.

Data	Researcher	Coder # 1	Coder # 2
No.	Opaporn Pasvekin	Ph.D. Tanawut Sekorarit	Natsarun Pharausa
1	o	x	
2	o		o
3	o		o
4	o	o	
5	o		o
6	o		
7	o		o
8	o	o	
9	o	o	o
10	o	x	o
11	o		
12	o	o	
13	o		

Data No.	Researcher Opaporn Pasvekin	Coder # 1 Ph.D. Tanawut Sekorarit	Coder # 2 Natsarun Pharausa
14	o	o	
15	o	o	x
16	o		o
17	o		o
18	o		
19	o		o
20	o		
21	o		
22	o		
23	o	o	
24	o		
25	o		
26	o		
27	o	o	
28	o	o	x
29	o		
30	o		
31	o		
		9/11= 81.82%	9/11= 81.82%

Appendix E

การประเมินแบบสอบถามโดยผู้เชี่ยวชาญ

รายชื่อผู้เชี่ยวชาญที่ตรวจสอบคุณภาพเครื่องมือวิจัย (Communication scholar)

1. Nantida Otakum Ph.D. Full-time faculty at Public Relations major, Faculty of Management Science Suan Sunandha Rajabhat University
2. Napaphat Limvaraku Ph.D. CEO. Moon Rabbit.Co.Ltd
3. Paphajree Vajrapana Ph.D. Full-time faculty, Advertising Department, School of Communication Arts, Bangkok Universiy
4. Sawitree Cheevasart Ph.D. Full-time faculty at Public Relations major, Faculty of Management Science Suan Sunandha Rajabhat University
5. ผศ.ดร. Walakkamol Changkamol (Assoc. Prof. Dr. Walakkamol Changkamol)

เกณฑ์การประเมินความสอดคล้องถูกต้องตรงกับตัวแปรที่ต้องการวัด กำหนดค่าตัวเลขดังนี้

+1 ใช่ คือ เมื่อแน่ใจว่าข้อคาถามนั้นสอดคล้องกับวัตถุประสงค์

0 ไม่แน่ใจ คือ เมื่อไม่แน่ใจว่าข้อคาถามนั้นสอดคล้องกับวัตถุประสงค์

-1 ไม่ใช่ คือ เมื่อแน่ใจว่าข้อคาถามนั้นไม่มีความสอดคล้องกับวัตถุประสงค์

ส่วนที่ 1: คำถามเกี่ยวกับข้อมูลส่วนตัว

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
1 .อายุ :__ปี	1	1	1	1	1	5/5	1	สอดคล้อง
2. เพศ: __(1) ชาย __(2) หญิง __(3) อื่น ๆ	1	1	-1	1	0	2/5	0.4	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
3. การศึกษา: (1) น้อยกว่าปริญญาตรี (2) ปริญญาตรี (3) ปริญญาโทและสูงกว่า	1	1	1	1	1	5/5	1	สอดคล้อง
4. รายได้ของครอบครัวต่อเดือน: (1) น้อยกว่า 15,000 บาท (2) 15,000–29,999 บาท (3) 30,000–44,999 บาท (4) 45,000–59,999 บาท (5) 60,000 บาทและสูงกว่า	1	1	1	1	1	5/5	1	สอดคล้อง
5. คุณใช้ไลน์แอปพลิเคชันมานานเท่าไรแล้ว (1) 12 เดือน (2) มากกว่า 12 จนถึง 18 เดือน (3) มากกว่า 18 จนถึง 24 เดือน (4) มากกว่า 24 เดือน	1	1	0	1	0	3/5	0.6	สอดคล้อง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
6. ในแต่ละวันคุณใช้ LINE ไลน์แอปพลิเคชันเป็นระยะเวลาประมาณเท่าไร (1) น้อยกว่า 30 นาที (2) 30 นาที–1ชม. (3) มากกว่า 1 ชม.-1.5 ชม. (4) มากกว่า 1.5 ชม.-2 ชม. (5) มากกว่า 2 ชม.-2.5 ชม. (6) มากกว่า 2.5 ชม.-3 ชม. (7) มากกว่า 3 ชม.	1	1	1	1	1	5/5	1	สอดคล้อง
7. สถานะทางสุขภาพ/โรคของคุณในปัจจุบัน (ตอบได้มากกว่า 1 ข้อ) (1) โรคเบาหวาน (2) โรคความดันโลหิตสูง (3) โรคหัวใจ (4) โรคมะเร็ง (5) โรคขาดสารอาหาร (6) โรคเกี่ยวกับกระดูก ภาวะกระดูกพรุนในผู้สูงอายุ (7) โรคอ้วน (8) อื่นๆ (โปรดระบุ_____)	1	1	0	0	-1	1/5	0.2	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
8. โปรดเลือกหัวข้อสุขภาพและหรือโรคต่าง ๆ ที่คุณได้สื่อสารผ่านไลน์ แอปพลิเคชัน (ตอบได้มากกว่า 1 ข้อ) (1) โรคเบาหวาน (2) โรคความดันโลหิตสูง (3) โรคหัวใจ (4) โรคมะเร็ง (5) เรื่องเกี่ยวกับสารอาหาร/ควบคุมอาหาร (6) โรคเกี่ยวกับกระดูก ภาวะกระดูกพรุนในผู้สูงอายุ (7) ออกกำลังกาย (8) อื่นๆ (โปรดระบุ ____)	1	1	0	1	-1	1/5	0.2	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

ส่วนที่ 2: คำถามเกี่ยวกับการเปิดรับข้อความสุขภาพ

กรุณาใส่เครื่องหมาย ☑ ในช่องว่างที่แสดงข้อความที่ตรงกับตัวคุณมากที่สุด

โดยเฉลี่ยคุณได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์มากน้อยเท่าไรใน 1 สัปดาห์

คำตอบมี 6 ตัวเลือก ได้แก่ 0 = ไม่เคย, 1-2= นานๆ ครั้ง, 3-4 =บางครั้ง, 5-6 = ค่อนข้างบ่อย, 7-8 = บ่อย, 9 และมากกว่า = บ่อยมาก

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
9. ข้อความสุขภาพที่เสนอข้อโต้แย้ง หลักความเป็นเหตุเป็นผลและ/หรือข้อเท็จจริงเกี่ยวกับโรค	0	1	0	1	1	3/5	0.6	สอดคล้อง
10. ข้อความสุขภาพที่แสดงจำนวนของผู้ป่วยด้วยโรคต่าง ๆ พร้อมหลักฐานสนับสนุน	1	1	1	1	1	5/5	1	สอดคล้อง
11. ข้อความสุขภาพที่แสดงสถิติของโรคหลัก ๆ ในประเทศไทย	1	1	1	1	1	5/5	1	สอดคล้อง
12. ข้อความสุขภาพที่แสดงข้อมูลสุขภาพบนพื้นฐานของประสบการณ์จริงของผู้ป่วย	1	1	1	1	1	5/5	1	สอดคล้อง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
13. ข้อความสุขภาพที่ให้ตัวอย่างของเหตุการณ์หรือกรณีศึกษา พร้อมกับให้รายละเอียด เกี่ยวกับบุคคลและพฤติกรรมที่ดึงดูดมีเสน่ห์ ข้อความสุขภาพที่ให้ตัวอย่างของเหตุการณ์หรือกรณีศึกษา พร้อมกับให้รายละเอียด บุคคล และพฤติกรรมที่ดึงดูดความสนใจ	1	1	-1	1	1	3/5	0.6	สอดคล้อง
14. ข้อความสุขภาพที่เล่าเรื่องราวของอาการป่วยด้วยโครงเรื่องหรือสถานการณ์ที่น่าสนใจ	1	1	1	1	1	5/5	1	สอดคล้อง
15. ข้อความเกี่ยวกับข้อดีและประโยชน์ของกิจกรรมเพื่อสุขภาพ	1	1	1	1	1	5/5	1	สอดคล้อง
16. ข้อความเกี่ยวกับประสบการณ์จริงของคนโดยนำเสนอประสบการณ์ที่ดี ผลลัพธ์ที่ดีเกี่ยวกับสุขภาพ กิจกรรมเพื่อสุขภาพ	1	1	-1	1	1	3/5	0.6	สอดคล้อง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
17. ข้อความที่นำเสนอการลดความเสี่ยงที่จะป่วยเป็นโรคต่าง ๆ หากคุณเข้าร่วมกิจกรรมเพื่อสุขภาพ	1	1	1	1	1	5/5	1	สอดคล้อง
18. ข้อความเกี่ยวกับผลเสียและโทษของการที่ไม่ได้เข้าร่วมกิจกรรมเพื่อสุขภาพ	1	1	1	1	1	5/5	1	สอดคล้อง
19. ข้อความที่แสดงถึงประสบการณ์จริงด้านลบเกี่ยวกับสุขภาพของบุคคลเนื่องจากการไม่ได้ร่วมกิจกรรมเพื่อสุขภาพ (เช่น การไม่ตรวจสุขภาพแล้วมาพบว่าป่วยเป็นโรคร้าย)	1	0	1	1	1	4/5	0.8	สอดคล้อง
20. ข้อความที่พูดถึงการเพิ่มความเสี่ยงที่จะเจ็บป่วยได้ ถ้าคุณไม่เข้าร่วมกิจกรรมสุขภาพ	1	1	1	1	1	5/5	1	สอดคล้อง

ส่วนที่ 3: คำถามเกี่ยวกับการตอบสนองทางความคิด

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับความคิดของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2

คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
21. ฉันมีความตระหนักรู้เกี่ยวกับสุขภาพของตัวเอง	1	1	1	1	1	5/5	1	สอดคล้อง
22. ฉันสนใจสุขภาพในปัจจุบันของตัวเอง	1	1	1	1	1	5/5	1	สอดคล้อง
23. ฉันคิดถึงพฤติกรรมทางสุขภาพและวิถีชีวิตของตัวเอง	1	1	1	1	1	5/5	1	สอดคล้อง
24. ฉันกังวลใจว่าตัวเองจะป่วยเป็นโรคที่พบมากในผู้สูงอายุ เนื่องจากอายุ การใช้ชีวิต สุขภาวะของฉัน	1	1	-1	1	-1	1/5	0.2	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
25. ฉันคิดว่าฉันมีโอกาสที่จะป่วยเป็นโรคที่พบมากในผู้สูงอายุ เนื่องจากอายุ การใช้ชีวิตและสุขภาวะของฉัน	1	1	-1	1	-1	1/5	0.2	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
26. ฉันเชื่อว่าฉันมีความเสี่ยงที่จะป่วยเป็นโรคที่พบมากในผู้สูงอายุ เนื่องจากปัจจัยทางกรรมพันธุ์	1	0	0	1	0	2/5	0.4	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
27. การที่ฉันเข้าร่วมกิจกรรมเพื่อสุขภาพจากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ บ่งบอกว่าฉันได้ทำอะไรบางอย่าง เพื่อปกป้องตัวเองจากการเจ็บป่วยเป็นโรคที่พบมากในผู้สูงอายุ	1	1	1	1	1	5/5	1	สอดคล้อง
28. การเข้าร่วมกิจกรรมเพื่อสุขภาพจากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ช่วยลดโอกาสที่ฉันจะป่วยเป็นโรคที่พบมากในผู้สูงอายุ	1	0	0	1	1	3/5	0.6	สอดคล้อง
29. การเข้าร่วมกิจกรรมเพื่อสุขภาพและปฏิบัติตนอย่างต่อเนื่องจนจบกิจกรรม จากข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์ ช่วยให้ฉันห่างไกลจากการป่วยเป็นโรคที่พบมากในผู้สูงอายุ	1	1	1	1	1	5/5	1	สอดคล้อง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
30. ฉันมั่นใจว่าฉันสามารถเข้าร่วมทำกิจกรรมเพื่อสุขภาพ จากข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์	1	1	1	1	1	5/5	1	สอดคล้อง
31. ฉันสามารถหาเวลาที่จะทำกิจกรรมเพื่อสุขภาพ โดยทำตามข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์	1	1	1	1	1	5/5	1	สอดคล้อง
32. ฉันมีความสามารถเข้าร่วมกิจกรรมเพื่อสุขภาพและทำได้สำเร็จ โดยทำตามข้อความคำแนะนำเกี่ยวกับสุขภาพและโรคต่าง ๆ ที่ได้รับผ่านไลน์	1	1	1	1	1	5/5	1	สอดคล้อง

ส่วนที่ 4: คำถามเกี่ยวกับการตอบสนองด้านความรู้สึก

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับความรู้สึกของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2 คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
33. ฉันรู้สึกกังวลใจเวลาที่นึกถึงโรคที่พบมากในผู้สูงอายุ	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
34. ฉันกลัวว่าฉันจะป่วยเป็นโรคที่พบมากในผู้สูงอายุในช่วงชีวิตของฉัน	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
35. ความคิดของฉันเกี่ยวกับโรคที่พบมากในผู้สูงอายุทำให้ฉันกลัว	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
36. ฉันจินตนาการว่า ถ้าฉันไม่สบายเหมือนคนที่เป็นโรคที่พบมากในผู้สูงอายุ ฉันคงเป็นทุกข์ใจ	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
37. ฉันสงสารคนที่ป่วยหนัก จากโรคที่พบมากในผู้สูงอายุ	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
38. ฉันรู้สึกเห็นอกเห็นใจคนที่ทุกข์ทนทรมานจากโรคที่พบมากในผู้สูงอายุ	1	0	-1	0	-1	0/5	0	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

ส่วนที่ 5: คำถามเกี่ยวกับการตอบสนองด้านพฤติกรรม

กรุณาใส่เครื่องหมาย ☑ ในช่องคำตอบที่ตรงกับตัวคุณมากที่สุด

คำถามต่อไปนี้จะถามเกี่ยวกับพฤติกรรมของคุณ หลังจากที่ได้รับข้อความเกี่ยวกับสุขภาพและโรคต่าง ๆ ผ่านไลน์ในคำถามส่วนที่ 2 คำตอบมี 5 ตัวเลือก ได้แก่ 1 = ไม่เห็นด้วยอย่างยิ่ง, 2 = ไม่เห็นด้วย, 3 = ไม่แน่ใจ, 4 = เห็นด้วย, 5 = เห็นด้วยอย่างยิ่ง

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
39. ฉันส่งต่อข้อความสุขภาพที่ฉันได้รับผ่านไลน์ไปยังเพื่อนและ/หรือ คนในครอบครัวของฉัน	1	1	-1	1	1	4/5	0.8	สอดคล้อง
40. ฉันสนทนากับเพื่อนและ/หรือ ครอบครัวของฉันเกี่ยวกับประเด็นทางสุขภาพที่มีการสื่อสารอยู่ในไลน์	1	1	-1	1	-1	1/5	0.33	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้

	ผู้เชี่ยวชาญ					สูตร IOC	ค่า IOC	ผลการประเมิน
	คนที่ 1	คนที่ 2	คนที่ 3	คนที่ 4	คนที่ 5	IOC= (e1+e2+e3 +e4+e5)/5		
41. ฉันพูดคุยกับครอบครัว และ/หรือ เพื่อนของฉัน เกี่ยวกับข้อมูลทางสุขภาพที่ฉันได้รับผ่านไลน์	1	1	-1	1	-1	1/5	0.33	ไม่สอดคล้อง ผู้ทรงคุณวุฒิเสนอการปรับแก้
42. ฉันถามคุณหมอเกี่ยวกับข้อความที่ฉันได้รับผ่านไลน์	1	1	1	1	1	5/5	1	สอดคล้อง
43. ฉันได้ลงมือทำกิจกรรมเพื่อป้องกันโรคต่าง ๆ จากคำแนะนำที่ฉันได้รับผ่านไลน์ (เช่น เกี่ยวกับอาหารสุขภาพ/การควบคุมอาหาร/การออกกำลังกาย)	1	1	-1	1	1	4/5	0.8	สอดคล้อง
44. ฉันร่วมทำกิจกรรมในการตรวจหาโรคที่แนะนำมาในไลน์ เช่น ไปตรวจร่างกายประจำปี เพื่อตรวจหาสิ่งผิดปกติ และ/หรือทำตามขั้นตอนในการตรวจร่างกาย	1	1	-1	1	1	4/5	0.8	สอดคล้อง

BIODATA

Name - Surname: Opaporn Pasvekin

Email: opaporn.pasv@bumail.net,
nooplearn@gmail.com

Educational Background:

2001–2005: Bachelor Degree in Communication Arts, Bangkok University International College, Bangkok, Thailand.

2006–2007: Master Degree in Marketing, Texas A&M University Commerce, Texas, United States of America.

2009–2011: Master Degree in Communication Studies, University of Hawaii at Manoa, Honolulu, Hawaii, United States of America.

Work Experience: 2015–2017: NOPPARAT Fine jewelry, Bangkok, Thailand.

Bangkok University

License Agreement of Dissertation/Thesis/ Report of Senior Project

Day 29 Month April Year 2021

Mr./ Mrs./ Ms. OPAPORN PASVEKIN now living at 1559/2 ~~Soi~~ WaterMark Chaophraya River Condo Street Charoennakorn Rd. Sub-district Banglumphulang District Klongsarn Province Bangkok Postal Code 10600 being a Bangkok University student, student ID 9600300108

Degree level ... Bachelor ... Master .V. Doctorate

Program Ph.D. Department Communication Arts School Graduate hereafter referred to as "the licensor"

Bangkok University 119 Rama 4 Road, Klong-Toey, Bangkok 10110 hereafter referred to as "the licensee"

Both parties have agreed on the following terms and conditions:

1. The licensor certifies that he/she is the author and possesses the exclusive rights of dissertation/thesis/report of senior project entitled Health communication via LINE and Thai seniors : impacts of content type and message framing on audience's responses submitted in partial fulfillment of the requirement for Ph. D. in Communication Arts of Bangkok University (hereafter referred to as "dissertation/thesis/report of senior project").

2. The licensor grants to the licensee an indefinite and royalty free license of his/her dissertation/thesis/report of senior project to reproduce, adapt, distribute, lend the original or copy of the manuscript.

The licensee shall collect, use or disclose the personal data of the licensor, in accordance with the terms and conditions of the permission granted. I, the licensor, hereby consent to the collection, usage and storage of my personal data by the licensee.

3. In case of any dispute in the copyright of the dissertation/thesis/report of senior project between the licensor and others, or between the licensee and others, or any other inconveniences in regard to the copyright that prevent the licensee from reproducing, adapting or distributing the manuscript, the licensor agrees to indemnify the licensee against any

This agreement is prepared in duplicate identical wording for two copies. Both parties have read and fully understand its contents and agree to comply with the above terms and conditions. Each party shall retain one signed copy of the agreement.

[redacted] Licensor

([redacted])

Licensee

(Director, Library and Learning Center)

[redacted] Witness

(Program Director)

[redacted] Witness

(Dean, Graduate School)