Using Media Dependency Theory and Theory of Rational Action: Predicting Public Health Behavior

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Background

The outbreak of covid-19 has renewed concerns about the health and risk communication. In the context of a global pandemic, people in every country are being threatened by the virus and their normal lives are being affected. At this point, countries have adopted virus containment strategies and encouraged compliance to prevent disease. However, in the early stages of the outbreak, many people were reluctant to wear masks or cooperate with home quarantine, which in turn caused the spread of the virus and aggravated the epidemic in the society. At the same time, individuals do not do a good job in time to prevent health and infection, involving their families. Thus it can be seen that healthy behaviors not only affect the physical health of individuals, but also affect the governance of public health events.

Health behavior refers to "any activity taken by an individual who is conscious of being healthy or without any symptoms of disease in order to prevent illness or maintain health". These activities generally refer to general or non-medical daily activities, such as regular health check-up, sports and recreation, relaxation, nutrition, sleep, and non-smoking. The name and definition of health behavior are quite extensive and diversified. Health behavior usually has the function of prevention and protection. People attach importance to the purpose of health behavior in order to maintain or promote the current state of health and reduce the occurrence of diseases (Weimin Huang & Guanrui Su, 2013). Gochman (1988) believes that health behavior refers to personal attributes, personality characteristics, behavior patterns, actions and habits. When these characteristics are related to personal health maintenance, health recovery and health promotion, they can be included in the category of health behavior.

However, there is little literature to analyze the factors that influence people's healthy behaviors in a risk society. However, there are few literatures to analyze the influencing factors of people's health behaviors in the risk society. According to the Theory of Rational Action(TRA), people will evaluate the risks and benefits caused by behaviors before they make behaviors, which can be divided into behavioral attitudes and subjective norms. Zhou (2018) used TRA to analyze the motivation of college students to share on social media. At the same time, the theory of media dependence also puts forward a framework of influence on behavior and attitude, that is, the more people rely on the media for information, the more their attitude and behavior will be affected by the media. Some scholars use the theory of media dependence to predict the relationship between media dependence and citizens' environmentally friendly behaviors, and the research results are significant (Shirley S.

Ho et al，2015). Therefore, this study will combine these two theories to explore the influencing factors of health behaviors:

RQ1: Can theory of rational action and media dependence theory explain public health behaviors?

RQ2: What is the relationship between the different influencing factors in the two theories?

Literature Review

1. Relevance

Cognitive psychology researchers have proposed a dual system model of human information processing in which people evaluate information from both analytical and emotional perspectives (Taggart & Robey, 1981). Tsung-jen Shih and cheng-yu Lin (2017) used this model to measure the influence of topic relevance and emotion on people's environmental actions, and found that the higher the topic relevance, the stronger people's willingness to take action. Aldoory and Van Dyke (2006) also proposed that personal relevance is very important in the public perception of risks, because the public perception of the relevance of issues is an important prerequisite for problem identification. When the public believes that an event has nothing to do with it, their perception of risk is reduced, thereby ignoring the seriousness of the problem and refusing to take action or change their attitude. For example, young people are more physically fit than older people, and they pay less attention to the knowledge of health maintenance, so they are less likely to forward these messages. So relevance is also important for public participation, and if young people think the health crisis is far away from them, they may not be able to focus on healthy behavior. Thus, the relevance of the issue can not only expose the public to the issue, but also arouse public participation and action.

Relevance can also affect the susceptibility of the public. Noel t. Brewer et al. (2007) in discussing the risk awareness and health behavior research in the relation between the susceptibility said personal resistance and physical weaknesses, think that when people have susceptibility on health problems, people are more inclined to take action. For example, when a person suffers from a disease, he or she will begin to pay more attention to the disease for treatment and prevention after recovery, and will be more susceptible to such messages. Natascha DE Hoog et al. (2007) believed that susceptibility would affect people's processing and acceptance of fear-induced information transmission. They conceptually defined susceptibility as the possibility of experiencing or perceiving the negative consequences of an action. In other words, susceptibility is an important part of risk perception, and people are more likely to take health-related actions when they believe that a health message involves a serious health problem and will affect their own health or that of others. So this study assumes that:

H1: The relevance of public and health issues is related to health behavior. The higher the relevance is, the more frequent the behavior is.

2. Theory of Rational Action

The theory of rational action was put forward by American scholars Fishbein and Ayez. It is mainly used to analyze how attitude consciously affects individual behavior. It assumes that people are rational, that is, people usually take all kinds of information into consideration to judge the possible meaning and consequences of their actions before making a decision(Zhang, 2019). By analyzing the motivation of the public to change health behavior with the Theory of Rational Action, we can clearly see the value judgment process before the behavior. This includes weighing the potential gains or losses from changing behavior, as well as assessing your ability to judge your own information and communicate it. The model of TRA is shown in figure 1.

Among them, behavioral attitude is the willingness and tendency shown by people when they engage in a certain target behavior. It is the emotion that an individual or an organization approves or disapproves of a certain behavior, including positive and negative attitude. It is determined by the individual or an organization's perception of the expected consequences of the behavior and the evaluation of these consequences. According to the TRA, the quality of attitude will affect whether an individual has behavioral intention and then lead to action. Therefore, this study assumes that:

H2: Behavioral attitude of the public is related to the health behavior. the more positive the attitude, the more frequent the health behavior.

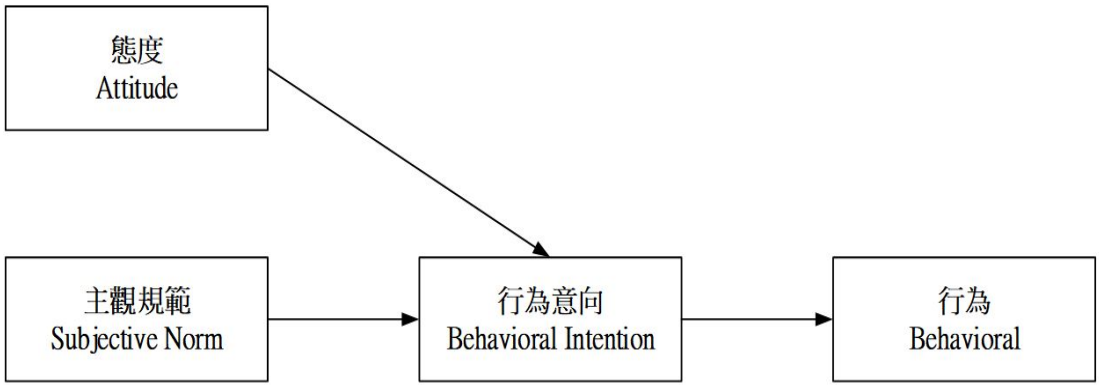

Figure 1

3. Media dependence theory

Media dependence theory (MDT) assumes that people will rely more on mass media for information under certain conditions (such as the availability of alternative sources of information at any time) (Ball-rokeach & Defleur, 1976; Loges, 1994). This dependence on the media has been shown to predict changes in people's attitudes and behavior (Lowrey, 2004). Therefore, this study will use the media dependence theory to predict people's attitude and behavior of health behavior.

Media dependence theory is divided into media use and media credibility. Media credibility is closely related to the whole social system, especially the political institutions. In fact, the public's evaluation of media credibility is to a large extent a part of social trust, which can also be said to be one of the results of social trust(Li, 2007). Trust in mass media is a modern trust and an institutional trust (Yu & Zhang, 2006).

Moore and Thorson (1996) believe that the problem of credibility involves both the source of the message and the channel through which the message is transmitted. In a narrow sense, media credibility refers to the credibility of media channels. Different media forms or communication channels have different credibility. Liao shengqing et al. (2007) found in Shanghai that TV was the most reliable, followed by radio and newspapers, and finally magazines and the Internet. The survey conducted by Shen Fei and Zhang Zhian (2012) also obtained similar results, with TV having the highest credibility, newspaper in the middle, and Internet having a low credibility. This shows that TV media still has the most advantages in the true, accurate and impartial evaluation of the information conveyed by media.

In contrast to the research on the influencing factors of media credibility, there are very few studies on the effect or influence of media credibility, and the research on the effect of media credibility is a field worthy of further development. Previous studies have found that media credibility can increase individuals' exposure to and dependence on media information and enhance the effect of agenda setting (WANTA W, & Hu Y W, 1994). In addition, media credibility is also a predictive variable of risk perception. Shen Fei and Zhang Zhian (2012) found that there was a weak positive correlation between the audience's credibility evaluation of TV and newspapers and their perception of the severity of social problems, but there was no significant correlation between the credibility evaluation of the Internet and the perception of the severity of social problems. Shen fei et al. (2011) found through a survey of 2,409 respondents in 4 cities in mainland China that media credibility evaluation affects audiences' views on whether the media can help solve people's practical problems, thus affecting their willingness to contact the media to report social problems.

In addition, media dependence also affects attitudes. Thomas et al. (2000) found that the higher the media dependence of the homosexual community was, the more positive their attitude towards safe sex was. Based on this, we form the following hypothesis:

H3: Media dependence affects health behaviors. The higher the media dependence, the more frequent the health behaviors.

H4a: There are interaction effects between media dependence, behavioral attitude and healthy behaviors.

H4b: Attitude mediates the relationship between media dependence and healthy behaviors.

The research framework:

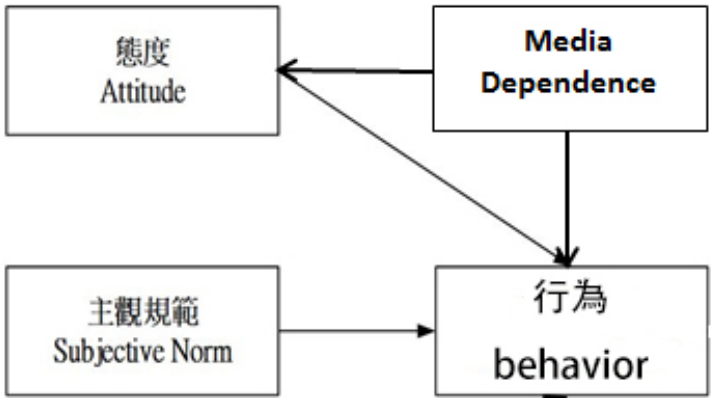

Figure 2

Variable

In this study, the survey results of the fifth TCS Phase I in 2016 were used as the analysis data.

1. Dependent variable: health behavior

The health behavior question was "When you watch TV, read newspapers, listen to the radio or use the Internet for health-related information, how often do you refer to the advice in the messages to adjust your behavior (e.g. lifestyle)?" The answer items were calculated by Likert four-point scale and were divided into four levels: "1 = never", "2 = rarely", "3 = sometimes" and "4 = often" (M=2.6877, SD=.77220).

2. Independent variables:

2.1 media dependence

Media dependence includes "media use" and "media credibility". Media use is entitled "how often do you get health-related information from television, newspapers, radio, and the Internet?" The answer items were calculated by likert four-point scale and were divided into four levels: "1 = never", "2 = rarely", "3 = sometimes" and "4 = often". The media credibility is entitled "do you trust the health-related information provided on TV, in newspapers, on the radio, and on the Internet?" The answer items were calculated by likert four-point scale, and they were divided into four levels: "1 = most don't believe", "2 = less believe", "3 = some believe", and "4 = most believe" (Cronbach's alpha=.652，M=2.7607，SD=.49021).

2.2 behavior attitude

Behavior attitude is entitled “Do you agree that it is important for you to live as healthy a life as possible?” and “Do you agree or disagree that you will try your best to keep yourself healthy?” A five-point likert scale was used to calculate the answer items, which were divided into five levels: "1 = strongly disagree", "2 = disagree", "3

= ordinary", "4 = agree", and "5 = strongly agree"（Cronbach's alpha=.866, M=4.3101, SD=.60609）.

2.3 Relevance

Relevance is entitled “How many times have you seen your doctor in the past year?” Answer is divided into "1 = 0", "2 = 1-5 times", "3 = 6-10 times", "4 = 11-15 times", "5 = more than 16 times(M=2.4880, SD=.96026).

3. Covariance

In this study, gender, age and education level were set as covariables.

Results

In this study, ordinary least squares hierarchical regression analysis was first carried out in SPSS. In the regression model, health behaviors and four sets of predictive variables were analyzed. The predictive variables of the four groups were (a) demographic variables; (b) Relevance; (c) Media dependence; (d) Theory of rational behaviour -- attitudes towards behavior; Secondly, this study also analyzes the interaction among media dependence, attitude and health behaviors, and use Bootstrapping to explore the mediating role of attitude between media dependence and behavior.

Variable	Model 1		Model 2		Model 3		Model 4	
	B(SE)	β	B(SE)	β	B(SE)	β	B(SE)	β
Block 1: Demographics								
Age	.007(.001)	.164***	.008(.001)	.170**	.003(.001)	.077**	.003(.001)	.057*
Gender(male=1,female=0)	-.246(.033)	-.160***	-.251(.033)	-.163***	-.204(.032)	-.132***	-.173(.032)	-.112***
Education	.101(.019)	.146***	.101(.019)	.145	.072(.018)	.104***	.073(.018)	.106***
△R²（%）		.042***						
Block 2: relevance								
Relevance			-.025(.017)	-.033	-.019(.016)	-.025	-.020(.016)	-.026
△R²（%）				.001				
Block 3： rational behavior								
attitude					.365(.027)	.285***	.345(.027)	.269***
△R²（%）						.075***		
Block 4: Media								
Media dependency							.214(.027)	.164***
△R²（%）								.025***
Total R²								.143***

Note: *p < .05. **p < .01. ***p < .001.

Table 1

Table 1 shows the hierarchical regression model for predicting health behavior. This paper reports the coefficients of the final model and the change in R^2 at each step. There was a significant positive correlation between age and health behavior (β=.164, p<.001）. Women were more likely to take health behavior than men （β=-.160, p<.001）. And a significant positive correlation exists between education level and health behavior (β=.146, p<.001). Demographic variables accounted for 4.2% of the variance of health behaviors.

The relevance variable (β=-.033, p>.05) was not associated with health behavior and H1 was not supported. In the model of rational action theory, behavioral attitude

（β=.285, p<.001） is positively correlated with healthy behaviors, supporting H2. Attitude explains 7.5% of variance of health behaviors. Finally, there is the media dependency variable（β=.164, p<.001）, which is positively correlated with the health behavior, supporting H3. Media dependency theory explains 2.5% of variance of health behaviors.

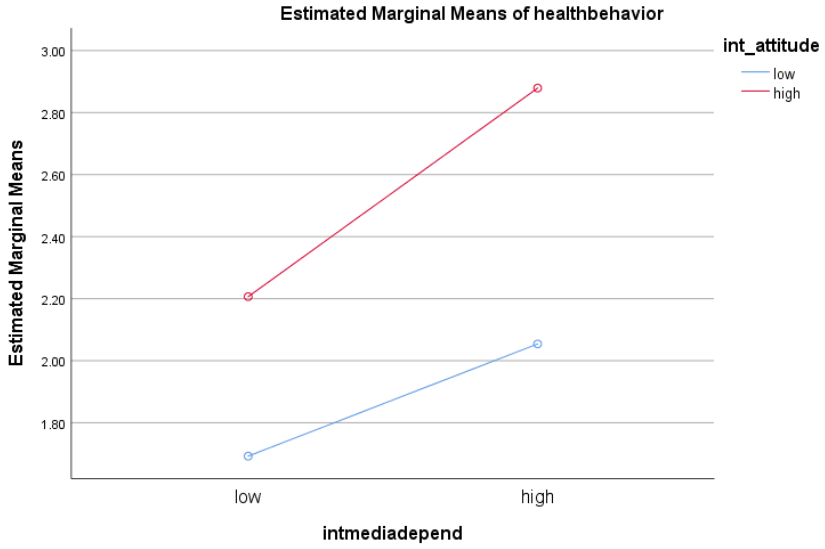

Table 2

Table 2 examines the interaction between media dependence and behavioral attitude. The results showed that the interaction between media dependence and behavioral attitude in the effect of health behavior is not significant (p =.061), rejecting H4a. Finally, the mediating effect of behavior and attitude is tested in Table 3. The results show that although the mediating effect of behavioral attitude is obvious, the influence of media dependence on health behavior is still significant, but it is lower than before(from .2727 to .2225). Therefore, behavioral attitude has only a partial mediating effect on media dependence and health behaviors, and H4b holds true.

Media dependency→attitude→health behavior		
	Regression Coefficients	Confidence Intervals
Total Effect X on Y	.2727	.2178~
	(.0280)	.3276*
Direct Effect X on Y	.2225	.1697~
	(.0269)	.2753*
Indirect Effect X on Y	.0502	.0325~
	(.0093)	.0683*

Notes: Values in parentheses are standard errors of the regression coefficients.*p<.05

Table 3

Discussing

In this study, media dependence and rational action theories were combined to make a contribution to the current research on health behavior. The results showed that age, education level, behavioral attitude and media dependence were positively correlated with health behavior. Behavioral attitude plays an intermediary role in the influence of media dependence and health behaviors. Women also take more health behavior than men.

In general, the results of this study partly support the positive prediction of public behavior by the theory of rational action and the theory of media dependency. However, relevance showed no significant correlation with health behavior. First of all, this may be because the measurement items of relevance selected in this study could not well reflect its meaning, When setting the questions, the study assumed that people who look doctor often were more related to health problems, so they would pay more attention to health information and thus be more likely to take health behavior. However, people who see their doctor regularly may have a particular medical condition, so they may focus on a particular topic of health and not be interested in other information. Second, people who regularly visit their doctors may already have a regimen that suits them and find it difficult to take other advice, let alone change their behavior based on information from the media. In addition, people who regularly visit their doctors have a higher perception of risk, which makes them choose to act more prudently and thus have a harder time changing their health behavior.

Age and education are positively correlated with health behavior, which indicates that in Taiwan society, middle-aged and elderly people do health behavior more often than young people. Middle-aged and elderly people have more social experience and face more health problems, so they are more concerned about the health of themselves and people around them. Many elderly people do not want their children to worry about them, more worried about the cost of seeing a doctor, so they are more willing to keep health.

Young people, on the other hand, are less likely to encounter health problems and pay more attention to study, work and entertainment, leaving no spare time for health behavior. In addition, some young people may feel that doing health behavior will make them look "not young" and thus interfere with their study and social life. On the other hand, people with more education are more likely to take health behavior. In a way, people with more education are more knowledgeable about health issues, have a stronger sense of risk when they experience health problems, and are therefore more willing to change their behaviors to keep themselves healthy. The society can improve people's health knowledge through richer health education, enhance their awareness and vigilance of health risks, so that they can better take health behavior when facing risks and prevent health problems in advance.

Both media dependence and behavioral attitude can positively predict health behavior, and the attitude plays the mediation role between media dependency and behavior. Thus, in terms of health communication, the media still have a strong effect on the public. Therefore, when encountering health risks, the media should report the risk status as much as possible, strengthen the media exposure of the public, and thus increase the public's vigilance. On the

other hand, because the occurrence of health risks is often accompanied by uncertainty, such as the lack of public understanding of the infectivity and lethality of COVID-19 in the early stages of an outbreak, the media should reassure and panic the public through more and more adequate rather than more cautious and less frequent reporting, The public will be more comfortable taking health advice. Although it is necessary to address public panic when health risks break out, it should not be done at the expense of the public's right to know, which will only make the public more fearful and generate more rumors. Positive media forecasting and presentation of health risks will lead to greater public participation in the management of health problems.

At the same time, the public's attitude towards health issues also affects whether they adopt healthy behaviors. First, their attitudes are influenced by media coverage, and if the media appears indifferent to health risks, the public will not take it seriously. Therefore, the media plays an indispensable role in promoting healthy behaviors. Secondly, the public should also strengthen their own concept of health. For example, society should encourage the public to put their health first instead of studying and working. For the reasons of study and work, many young people in modern times are suffering from late nights and lack of sleep, which will greatly affect the public health. During the coVID-19 outbreak, many people refused to be quarantined at home in order to go out to work and go to parties, indicating that the public has insufficient health awareness to feel the harm of the disease. Finally, the expression of media information will also influence the public's attitude towards information. The public's attitude towards information is better when it is more certain and accessible. Therefore, when the media carries out health communication, it is necessary to maintain the reliability of sources and fluency of writing, so as to provide reference for the public and motivate people to change their health behavior.

In the context of globalization, health risks originating in one country are enough to threaten people around the world. Therefore, it is imperative to carry out health communication in risk society and improve the public's health risk perception ability and coping ability. Not only do we need to work with the media to create a good health transmission pathway, but we also need to encourage the public to join us in maintaining health and creating a positive environment for health transmission. The more health-conscious and health-conscious people are, the more likely they are to be prepared for the next risk.

Limitation

This study predicts public health behavior, but does not measure specific health problems. Instead, it analyzes general public perceptions of health problems and how often they change their behavior based on media. Future research could design questionnaires for specific diseases and risks to explore whether the public has different attitudes towards different diseases. Second, in risk events, especially health-related risks, public risk perception and behavior change over time. For example, in the early days of COVID-19 outbreak, the number of people adopting healthy behaviors was small, but with the aggravating epidemic situation, more and more people were willing to adopt healthy behaviors. Future studies can analyze the causes of changes in public behavior on a timeline to find and compare the influencing factors. Finally, due to cultural differences, the public adopts different

health behaviors. During the COVID-19 outbreak, people in western countries were more reluctant to wear masks than people in eastern countries, who were more likely to choose home quarantine to prevent the spread of the epidemic. Therefore, future research can be based on two different cultures to explore the differences in their health behaviors and the reasons for these differences, so as to analyze the role of cultural factors in health communication.

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