The Effects of Word-of-Mouth Communication on Consumer Healthful Lifestyle Change

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Abstract—Word-of-mouth (WOM) communication is a socially mediated pathway that helps people overcome perceived barriers to healthful behavioural change. A study was conducted in Singapore to examine the effects of person-to-person WOM communication on people's healthful lifestyle changes. The study draws from the interactional perspective of Social Cognitive Theory (SCT) [1–2], which posits that environmental (social and physical) and personal factors determine behaviour change in a prescribed sequence of operations. Focusing on positive valence, oral communication and the receiver's perspective, three key constructs underlying WOM were analysed for their contribution to behavioural change in physical activity and healthier diet: i) strong-tie social networks, comprising family, friends and a significant other; ii) interpersonal relational attributes, comprising trust, commitment, relationship quality and satisfaction; and iii) social support, comprising emotional, functional, companionship and informational supports. Using a survey (N=156) and follow-up interviews with a subset of 14 respondents, the study found that social networks, relational attributes and social support significantly influenced healthful behavioural change. Further, individual variables and their sub-components appeared to have varying effects on different people and different types of healthful behavioural change, suggesting that health promotion marketing should be highly differentiated to be effective.

Keywords—word-of-mouth communications, social cognitive theory, relational marketing, social network, social support, health promotion

I. INTRODUCTION

Unhealthy lifestyles have caused a rise in chronic diseases [3–4]. In Singapore, these diseases contribute to over 60 per cent of deaths annually [5] and a loss of over 360,000 years of 'healthy' lives per year [6]. While mass media has extensively sensitised the public to the need for healthy lifestyles as an effective way to avoid illnesses, individuals appear to be largely unmotivated regarding preventive health behaviours [7–8].

To overcome perceived physical, emotional and psychological barriers that may impede healthy lifestyle changes [9], researchers have advocated the use of socially mediated pathways, which link people to their social networks community settings and the social context, as an effective means to promote the adoption of these changes [10–11].

Word-of-Mouth (WOM) communication serves as one socially mediated pathway that affects people's rational and emotional assessments, which in turn changes their attitudes and behaviours [12–13]. Defined as 'person-to-person oral communication concerning a brand, product or service between a perceived non-commercial communicator and a receiver who are known personally to one another' [14–18], these studies have shown that positive WOM from experienced and trustworthy sources is capable of helping people sort through complex information, the risks of possible adverse consequences and the discomfort of making a health/medical decision.

The antecedents of WOM, namely relationship quality, satisfaction, commitment, trust and perceived value (such as money, time and effort) [12], as well as the ability of WOM to create familiarity [19–20], are well-established factors that enhance consumers' ability to perceive and process information. As the content of a WOM message is richer, more intense and more vivid than, for example, printed information, these characteristics also weigh more heavily in cognitive judgments and thus behavioural responses [21].

As people are influenced by, and influence others through personal opinions, beliefs, behaviour, advice and support, healthcare experts believe that WOM communication could potentially enhance the effectiveness of health promotion strategies [2, 22–23]. However, there have been limited empirical insights into the effects of WOM on consumers' health attitudes and behavioral changes compared to the purchase of household goods and food products [14, 24]. There is also 'little agreement among researchers as to which individual or composite relational mediator best captures the key aspects of a relationship that most affect outcome' [25] (p. 13).

The objectives of our study are to examine the effects of WOM communication on consumers' healthful lifestyle change and to discover which properties are most influential in consumers' decision making. We have chosen to focus on physical activity and healthier eating as the two most basic lifestyle changes because they can result in significant improvements in the length and quality of life, and they can produce lasting positive effects [26]. These two lifestyle changes are also relevant for mitigating risks of diabetes mellitus and obesity, which are key health issues faced by many Singaporeans [6, 27]. Specifically, our study examines the influence of: i) strong-tie social networks (SN), comprising family (FA), friends (FR) and a significant other (SP); ii)

interpersonal relational attributes (RA), comprising trust (TR), commitment (CM), relationship quality (RQ) and satisfaction (RS); and iii) social support (SS), comprising emotional (ES), functional (FS), companionship (CS) and informational (IS) support. The three independent variables (IVs) and their components were evaluated for their contributions to healthful behavioural change (BCh) in physical activity (PA), healthier diet (HD) and a combination (Combi) of both PA and HD.

Shedding light in these areas will more finely explicate the mechanisms working behind WOM communications in the healthcare sector. This will help to advance the theory on the social cognitive perspective using WOM communication. In terms of practice, knowing more about which WOM communication properties would trigger healthful behavioural change will help policy makers to design better marketing models for disseminating important healthcare information.

II. CONCEPTUAL FRAMEWORK

Studies have suggested that family, friends and a significant other possess the relational qualities and social resources that are conducive to cooperation and participation in an *a priori* effect [28–30]. This leads to the first set of hypotheses:

H1: *WOM communication from an individual's social network (a) has a significant effect on the individual's healthful behavioural change and family, (b) provide the greatest contribution to the model.*

Inherent relational attributes in strong-tie social networks have also been shown to drive WOM acceptance and influence behaviour intentions [31–32], with relationship quality recorded as the most influential on performance in an empirical study on relationship marketing [25]. Thus, the second set of hypotheses:

H2: *Relational attributes (a) with the WOM source have a significant effect on healthful behavioural change and relationship quality, (b) provide the greatest contribution.*

Moreover, other studies have shown social resources, which operate as coping assistance, to have a positive relationship with cooperation and participation [33–34], with emotional support reported to be the most powerful predictor of behaviour [33]. This leads to the third set of hypotheses:

H3: *Social support (a) has a significant effect on healthful behavioural change and emotional support, (b) provides the greatest contribution.*

The research model is shown in Figure 1.

To gain an appreciation of the way these properties work to influence people's behavior in making healthful lifestyle changes, two research questions (Q) are raised:

Q1: *Why do sources of social networks, relational attributes and social support influence people's healthful behavioural change?*

Q2: *How do people respond to WOM messages on preventive health behaviours?*

Figure 1: Research model, adapted from [1] (p. 266)
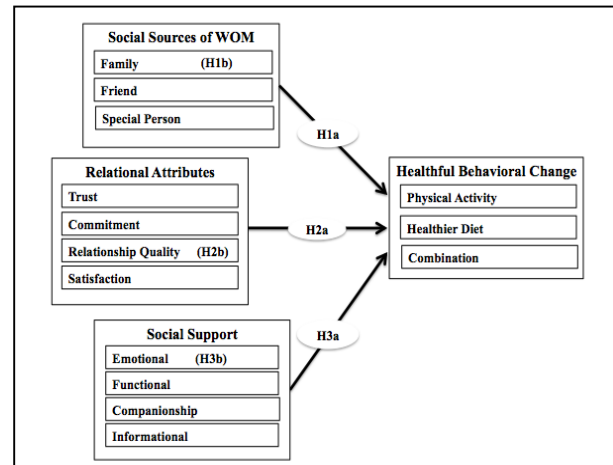
III. METHODOLOGY

Research Design

First, the current study used a survey to test the hypotheses put forth. Then, to address the two research questions, follow-up interviews were conducted on a subset of the survey's respondents to offer additional interpretation of the survey's quantitative results.

Survey

- *Recruitment of Sample*

As healthy lifestyle is not 'brand-specific'; that is, human physiology varies from person to person [35], convenience sampling was used to recruit research participants. Potential participants were invited via email and in person to volunteer for the survey. For a broader analysis of how different people may react differently to WOM, the study allowed for a wide scope of respondents, as long as they met the minimum age requirement of 21 years. However, to ensure that the collected data served the research purpose, only responses that met the two inclusion criteria were analysed: first, participants must have recently made a change to a healthier lifestyle, either by increasing their physical activity or improving their dietary habits; second, WOM must have been the main trigger for their decisions to make these changes. A total of 216 responses were received, but only 161 were usable.

- *Structure of the Questionnaire*

The questionnaire comprised three parts. The first part pre-qualified the responses so that only respondents who met the two research criteria were included in the data analysis. This part also captured the types of healthful behavioural changes made, as well as the duration of those changes, so that further differentiation between the activity types adopted and the sustainability of the changes could be assessed.

The second part gathered data on relational attributes, social support and the social sources of health-related communications. The first set of independent variables comprised key antecedents of Relational Marketing, namely

TR, CM, RQ and RS—collectively known as RA. These antecedents are evidence-based factors that have been demonstrated to affect exchange outcomes in meta-analyses [25, 36–37] and other studies in the marketing literature [16, 25, 31, 38–39]. There were five statements (A–E) under each of the above sub-variables (TR, CM, RQ, RS), where Statement E is designed to summarise the contribution of the four sub-variables to the behavioural change. Each statement was measured on a 7-point Likert scale ranging from 'strongly disagree' (1) to 'strongly agree' (7), upon which the measures of dispersion from the central tendency and magnitude were determined. The purpose was to obtain a measure of RA and its components towards healthful behavioural change. The second set of independent variables comprised four types of SS: ES, FS, IS and CS [34, 40–41]. Similarly, five statements (A–E) under each of the sub-variables were measured on a 7-point Likert scale to obtain a measure of SS and its components towards healthful behavioural change. The third set of independent variables comprised the social sources of WOM: FA, FR and SP. There were four statements each for FA, FR and SP. Measured on a 7-point Likert scale, respondents were asked to rate their perception towards the three social sources of WOM where health communication was concerned. The purpose was to obtain a measure of SN and its components towards healthful behavioural change.

The third part sought the respondents' demographic information and permission for a follow-up interview.

- *Reliability and Validity of the Questionnaire*

The questionnaire was constructed with scales adapted from other established studies (see Appendix 1–3). Although the research constructs from which the scales were obtained have satisfied reliability and validity and are psychometrically sound for use in other similar studies, Cronbach's alpha and Pearson's correlation tests were conducted again to ensure that the adapted statements satisfied internal reliability and content validity for the questionnaire. Cronbach's alpha test was first performed on the four statements (A–D) representing each of the sub-variables. They showed high coefficient alpha values of 0.86 and above. Pearson's correlation test was also conducted between the total scores of the four statements (A–D) that measure the value of a specific sub-variable and the fifth statement (E), which has a dual function to measure the sum of questions A–D and simultaneously measure the change attributable to WOM. Hence, content validity can be measured by conducting a correlation analysis between questions A–D and E. The correlations for all sub-variables were generally strong, at $r = 0.58$ and above, indicating that the questionnaire has strong content validity.

- *Data Analysis*

Prior to analysis, the data were examined using various techniques within SPSS for accuracy of data entry, missing values and outliers. It was tested for linearity, homoscedasticity, normality, multicollinearity, influential cases and independence of errors to ensure that none of the assumptions of multiple regressions were violated. These tests reduced the final sample size to 156 cases.

To confirm the hypotheses, multiple regression analyses were first performed between the independent variables (RA, SS, SN) with behavioural change (BCh) (total scores of all E statements) as the dependent variable (DV). Then, to understand how the IVs contribute to different behavioural changes, the data were split into three behavioural outcome groups: PA, HD and Combi. Multiple regression analysis was conducted within each group (not between groups). Finally, to ascertain if people with different profiles also supported the hypotheses, multiple regression analysis was performed between the key demographics such as gender, age group, educational level and occupational level, as well as each of the IVs. Where theoretical bases that provided *a priori* ordering were available, hierarchical multiple regressions were performed between the sub-components such as RQ, RS, CM and TR (in their respective order), with BCh as the DV. To identify the variables that are most influential in consumers' decision making at the micro level [19, 25], the relative contribution of these properties to behavioural change subsequently formed the marketing model(s) that could best predict the desired behavioural outcome. Insights into these socially mediated qualities could help healthcare marketing to focus its resources and sharpen its strategies.

Interview

- *Recruitment of Interviewees*

Of the 40 survey respondents who agreed to be interviewed, 14 subsequently made it to the interviews. The rest could not make it due to work and family commitments. Nonetheless, as the interview was exploratory in nature and sought only an appreciation of how people might make sense of WOM communication and why WOM might trigger healthful behaviour, the 14 interviewees offered acceptable representation because they came from different backgrounds.

- *Purpose and Structure of the Interview*

Interviews were conducted to gain an understanding of the rationale and context of the quantitative results. The brief structured interview had 14 questions. The first three questions helped the interviewees to focus on the type of behaviour change they had indicated in their earlier survey responses, gauged their perspectives on the influence of WOM (compared to mass media and healthcare professionals) and segregated events that might have triggered the outcomes. Eight questions were directed towards understanding why and how certain sources of SN, RA and SS had a greater influence on triggering the healthful behavioural change. The last three questions sought to understand the interviewees' self-efficacy towards healthful behaviour before and after WOM influence, assess if there was any spill-over effect from the WOM communication and assess their views on using WOM for healthy lifestyle communications in their social circles.

- *Reliability and Validity of the Qualitative Data*

To enhance confidence in the interview findings, a strategy of verification [42] was used. Mechanisms throughout the research process were implemented to contribute incrementally to reliability and validity. First, for methodological coherence, the qualitative investigation was

planned to reconfirm and supplement the quantitative study. This ensures congruence between the hypotheses to be tested, the research questions asked and the methods used. Second, during the interview, the researcher reiterated what was heard and understood as a means to confirm or correct the information with the interviewees before it was transcribed for analysis. Third, systematic coding and categorisation approaches were created to capture and organise the key themes and belief statements that emerged, which were checked by the supervisor. Fourth, although the interviewed sample was small, it covered a good spread of the research respondents' profiles. Sampling adequacy was also evident, as indicated by the saturation and replication of the themes shared during the interviews. According to [42], this indicates that sufficient data were obtained to account for all aspects of the phenomenon under examination. By seeking the interviewees' opinions on the concept of using WOM for healthy lifestyle communications, the researcher also provided the opportunity for less obvious negative sentiments to emerge. Finally, data from the reference material were not taken for granted; rather, they were reconfirmed by the new primary data so that the theory could continue to be validated and developed.

- *Content Analysis*

The interviews were audio-recorded and transcribed. A theme coding system was developed to organise the interview data. Content analysis of the interview transcripts was conducted using a system to identify, codify, categorise and compare themes. To facilitate reporting, the main themes were categorised according to the research components (WOM versus other factors; SN—BCh, RA—BCh, SS—BCh and opinions towards WOM). Notes were taken on what each interviewee said about each variable. Non-parametric measurements of each of the evaluated themes were used to report this information. This was followed by context analysis, which was achieved by identifying, coding and categorising the content into primary patterns. As the volume of collected data was manageable, a manual decision support system was used to conduct the content analysis [43] (p. 171).

IV. RESULTS

Quantitative Results from Survey

The 156 usable cases had a good mix of genders, age groups, class levels and household incomes. There was also a reasonable spread of respondents who had made changes to PA, HD or Combi. Apart from the prominently Chinese-based, educated and affluent profiles, the other characteristics were seemingly balanced. The profile of the respondents was generally consistent with the population distribution of Singapore [44], which consists of more Chinese than Malay and Indian, and a denser distribution of the 36–50 age group compared to the 21–35 and 51–65 age groups. They also appear to fit the target audience of Singapore's healthy lifestyle interventions, which noted that the highest prevalence of hypertension tends to fall on the Chinese, people who are aged 30–69, and on females (as they are physically less active) [27]. Table 1 provides an overview of the participants' profiles by the types of behavioural changes.

Of the three groups, PA had the largest number of males, while HD had the largest number of females. A chi-square test was performed to determine if males and females were distributed differently across the three behavioural outcome (BO) groups. The test was significant, $X^2 (2) = 6.67$, $p < .05$. Three 2 x 2 chi-square analyses were performed to locate the difference in the distribution of genders across the three BO groups. Analysis between the PA and HD groups was significant, $X^2 (1) = 6.46$, $p < .05$. There were more males in the PA group (25 males *v*. 16 females), while there were more women in the HD group (40 females *v*. 22 males). The other two 2 x 2 contingency tables—between the PA and Combi groups, and the HD and Combi groups—yielded statistically insignificant results. Similar analyses were conducted on educational levels, age groups and management levels against the BO groups, and the chi-square was insignificant.

A. WOM from an Individual's Social Networks on Healthful Behavioral Change

- At the macro level, the result showed that the contributions of FA and FR to BCh were positive and significant. FA alone could predict for 24 per cent of the change with WOM communication; together with FR, the prediction increased to 30 per cent. SP did not make a contribution because the term was vague.

- By behaviour groups, none of the SN made a significant contribution to BCh in the PA group. But for the HD group, both FA and FR made a significant contribution. However, for the Combi group, only FA made a significant contribution (see Table 2).

- At the micro level, the results appeared to be more differentiated: more men and people in the middle age group (36–50 years) reported that FR had more influence on them (see Table 5). As this age group is likely to be active in the workforce, it is possible that they would spend more time dining out or engaging in physical activities with their friends or colleagues. Conversely, women and those from the younger (21–35 years) and older (51–65 years) age groups reported that FA had a stronger influence on them. Traditional Asian values, where Asian women tend to be more family oriented, could have contributed to this phenomenon. From the qualitative data, the younger and older generations also appeared to be more reliant on FA, especially where meal preparation was concerned. People with lower education (college and below) and those who held non-managerial jobs also reported that they were more inclined towards the FA influence. In contrast, people who were more educated (university and above) and successful (managerial levels) attributed their behaviour change to FR.

As most SN were positive and significant to BCh, and as FA made a significant contribution to the model most of the time, it is concluded that H1 (a) and (b) are mostly supported.

B. Relational Attributes on Healthful Behavioral Change

- The results suggest that RA components had a positive and significant effect on healthful behavioural change, with RQ having the greatest accountability for BCh. RQ alone accounted for 51 per cent of the variance of BCh, while RS improved the model to 55 per cent and CM further improved the model to 57 per cent. Of the four RA components, only TR did not make a significant contribution to the model. Hence, the study concludes that H2 (a) is mostly supported, as almost all relational attributes that were evaluated had a positive and significant effect on healthful behavioural change.

- By behaviour groups, RQ was the most important and consistent relational attribute to predict BCh. RS was a significant contributor only for the HD and Combi groups, and at the overall level. For the PA group, RQ was the only single relational attribute component that had a significant effect on BCh. These results imply that H2 (b) is mostly supported, as RQ made the greatest and most significant contribution to the model across the three behavioural groups, followed by RS. However, CM and TR did not contribute to the model (see Table 3).

- By demographics, RQ was the most consistent and important relational component across the age groups, educational and occupational levels, except for the males, who attributed their BCh more to CM (Adj R2 = .55, β = 0.75, t = 9.14, p < .01). People who held management positions reported the highest attribution to RQ (67 per cent). RQ also accounted for 65 per cent of the BCh in women. The results affirm that H2 (b) is mostly supported, even at the micro level (see Table 5).

C. Social Support on Healthful Behavioral Change

- As hypothesised, ES made the greatest contribution to the predictability of healthful BCh, at 61 per cent, $p < 0.01$. With FS, the model improved to 74 per cent. CS and IS also contributed significantly to the model. Collectively, these four components of SS could significantly predict 78 per cent of the variance of healthful BCh. Hence, H3 (a) is supported, as SS from WOM sources has a positive and significant effect on an individual's healthful BCh.

- By behaviour groups, the results show that SS had the highest accountability to BCh in the Combi group (84 per cent), followed by the HD group (80 per cent) and the PA group (72 per cent). ES had the greatest and most consistent effect across the behavioural groups, followed by FS. Thus, H3 (b) is mostly supported. However, CS and IS did not consistently have a significant effect on BCh. For instance, IS did not contribute to the model in the PA group, and CS did not contribute to the model in the Combi group (see Table 4).

- By demographics, the results showed that both ES and CS were important components that could contribute to BCh for certain people. ES could account for 60 per cent of the BCh for women, 72 per cent of the older age group (51–65) and 75 per cent of those with lower education (college and below). Conversely, CS could account for 68 per cent of the BCh for men and 55 per cent for those who are more educated (university and above), and it could explain 57 and 62 per cent of the BCh of the younger age groups (21–35 and 36–50 respectively). The results are all significant and imply that, while H3 (b) is mostly supported, different social support components play different roles for different people with different needs (see Table 5).

D. Qualitative Findings from the Interview

There was an equal distribution of seven females and seven males. Among those interviewed, six (43 per cent) had changes made in HD, five (36 per cent) in their level of PA and three (21 per cent) in both their diet and level of physical activity. Of these, only two (14 per cent) had made the change for less than six months, and twelve (86 per cent) for more than six months earlier. The age groups were fairly inclusive, with two (14 per cent) below 30 years old, five (36 per cent) between 31 and 40, three (21 per cent) between 41 and 50, and four (29 per cent) between 51 and 60. However, 85 per cent of the male respondents were skewed towards the management level and had a university-level education or above. Although the majority of the female respondents also had a university-level education or above, they either held non-management roles, were homemakers or had retired.

- *Sources of Health Communication*

Table 1: Overview of participants' profiles by types of behavioural changes

Variable	Physical Activity Group n=44			Healthy Diet Group n=70			Combination Group n=42		
	Frequency	%	Missing	Frequency	%	Missing	Frequency	%	Missing
GENDER			3			8			0
Male	25	56.8		22	31.4		21	50	
Female	16	36.4		40	57.1		21	50	
AGE			6			9			3
21-35	14	31.8		23	32.9		14	33.3	
36-50	14	31.8		25	35.7		14	33.3	
51-65	10	22.7		13	18.6		11	26.2	
EDUCATION			3			8			1
Pre-U & below	13	29.5		22	31.4		19	45.2	
University & above	28	63.6		40	57.1		22	52.4	
EMPLOYMENT			5			9			1
Non-mgmt	22	50		23	32.9		18	42.9	
Mgmt	17	38.6		38	54.3		23	54.8	

Table 2: Regression coefficients of social networks on healthful behavioural change.

Variable	Physical Activity Group			Healthy Diet Group			Combination Group		
	M1	M2	M3	M1	M2	M3	M1	M2	M3
Family	0.14	0.31	0.09	0.67	0.47	0.46	0.60	0.45	0.44
t-value	0.90	0.16	0.37	6.90**	4.54**	4.35**	4.75**	3.00**	2.89**
Friend		0.19	0.20		0.38	0.37		0.27	0.29
t-value		0.96	1.02		3.71**	3.19**		1.85	1.66
Special Person			-0.10			0.02			-0.03
t-value			-0.10			0.18			-0.17
Adj R²	-0.01	-0.01	-0.03	0.43	0.53	0.53	0.35	0.38	0.37
**p<.05									

Quantitative results showed that WOM from social sources only accounted for 39 per cent of the magnitude of the change. While interviewees cited trust, realism and selfless sharing by people with whom they had an ongoing relationship or similar interests as the reasons for the effectiveness of WOM, the trust towards doctors' professionalism and authority also had a strong influence on their decision to change. The perceivably higher trust they placed in doctors compared to WOM could be the reason why TR did not make a significant contribution to the research model.

Among those interviewed, the Internet, specifically Google, is a popular venue where they would get 'an outline' before they approached their social circles 'for a better idea'. This implies that, while the mass media is an important source of initial information gathering, it is the WOM with their FA and FR, and in other cases doctors, that triggered the behaviour change. A few respondents attributed their BCh to self-motivation.

- *Settings of Health-related Communication*

Consistent with the findings of Mazzarol, Sweeney and Soutar (2007), most WOM communication is generated by an associated health-related word or event that arises during an interaction, with the giver offering advice mainly through altruism. Nonetheless, a small percentage initiated such communications when they were 'given the health report' or 'started to pant and broke out in a cold sweat'.

- *Rationale for Family as the Most Effective Source of Influence*

Where FA is concerned, health-related communications were initiated out of interpersonal care and concern. In addition to long-standing relationships, which were captured by the quotes 'family is the closest knit for me' and 'they are always there for me', the frequency of interactions between the interviewees and their families, compared to the time they spent with their FR, was a major factor that might have resulted in the FA having a greater effect on BCh than FR. For those who felt that FR played a larger role in their behaviour change, their families were either 'very sedentary' or did not share the same priorities; for example, 'my husband does not eat healthily'. This might explain why the beta of FR is sometimes higher than the beta of FA.

- *The Role of Relational Attributes in Behavioral Changes*

The most frequently mentioned attributes that affected the interviewees' decisions to change to a healthier lifestyle were RQ, RS and TR respectively. RQ was often described in the forms of 'bond', 'trust' and 'closeness', while RS had two different aspects—with the relationship and the content, for instance, 'I have to be pretty satisfied with what they have told me'. Generally, interviewees did not expect anyone to be 'committed' to their wellbeing, which explained why CM was relatively less significant than the other components. Where TR was concerned, doctors came across more strongly than SN, as they are more 'professional and authoritative'. However, 'if I trust them (FA/FR), I will [adopt the recommended behaviour] myself'. The insights are consistent with the quantitative findings in H2 (b) and explain why TR did not contribute to the model.

- *The Role of Social Support in Behavioural Changes*

Quantitative results showed that SS contributed more to the model than RA (78 per cent *v.* 57 per cent). The most frequently mentioned social resource that was said to have influenced interviewees' decisions to adopt the recommended behaviours was ES. Given in the form of 'pep talks', 'advice', 'support' and 'encouragement', ES was said to have 'inspired' them; without it, they 'would have given up'.

Although FS, CS and IS were mentioned less often, they were nonetheless credited with having helped the interviewees to begin and persevere with healthful behaviours. There was a pattern between the types of SS and the types of BCh. Where PA was concerned, CS was more desirable than other types of SS to the extent that 'if he/she does not go with me to exercise then I will not go'. To another, 'companionship is everything to me…besides a lot of exercises need partners'. Where HD was concerned, IS and FS played a more important role: 'information helps a lot' and 'my mum/wife is the one who does all the cooking'. This explained the relative contributions in the quantitative findings.

- *Opinions on Using WOM communication for Healthy Lifestyle Discussion within One's Social Circles*

Having benefitted from WOM, most of the interviewees opined that WOM could be a very effective and convincing means of conveying a health message because 'the feedback and motion behind WOM communication is very powerful'. It often carries with it 'real-life experiences', 'sincerity', 'trust' and 'encouragement'. As it is provided face-to-face, people can also 'see the difference' and determine whether one 'practices what he preaches'. The 'web of support' was also thought to be important: 'there is someone to talk to you, motivate you, even accompany you'.

Most respondents were thankful for the WOM communication, without which they would not 'know where to go to seek advice and how to do these things', 'have started' or 'persevered'. Without it, they would have 'succumbed to temptations'. Interviewees claimed that WOM communication had 'motivated' them 'to try harder', given them 'examples' they 'can follow', made them 'feel more secure knowing that someone is supporting me' and 'increases my confidence'. To 85 per cent of the interviewees who had made the change for over six months, these behavioural changes had become a way of life. Others had started to 'do the same [WOM] for other people'. However, it was also suggested that some people might not be open to discussing health issues in this way, as 'they may not like to disclose their [health] conditions', while others may be 'very sceptical'. An interviewee proposed that WOM communication should be 'impromptu' and not be engineered, or it would come across as 'superficial'.

- *New Themes that have Emerged*

While most people changed their behaviours due to external persuasion, a small number claimed that internal

motivation was responsible for their decisions. It was initially (p. 75). Interviewees felt that they could relate better to people

Table 3: Regression coefficients of relational attributes on healthful behavioural change by behavioural group

Variable	Physical Activity Group				Healthy Diet Group				Combination Group			
	M1	M2	M3	M4	M1	M2	M3	M4	M1	M2	M3	M4
R. Quality	0.67	0.56	0.44	0.43	0.72	0.44	0.37	0.35	0.75	0.59	0.43	0.44
t-value	5.88**	3.77**	2.49**	2.48*	8.53**	3.71**	2.77**	2.61*	7.14**	4.89**	3.20**	3.25**
R. Satisfaction		0.18	0.14	0.16		0.37	0.29	0.27		0.28	0.21	0.15
t-value		1.24	0.90	1.05		3.11**	2.19*	1.90		2.34*	1.75	1.10
Commitment			0.21	0.24			0.18	0.16			0.30	0.29
t-value			1.25	1.42			1.31	1.16			2.30*	2.22*
Trust				-0.12				0.06				0.12
t-value				-0.92				0.50				1.06
Adj R²	0.44	0.45	0.45	0.45	0.51	0.57	0.57	0.57	0.55	0.60	0.64	0.64

**p<.0.05

Table 4: Regression coefficients of social support on healthful behavioural change by behavioural group

Variable	Physical Activity Group				Healthy Diet Group				Combination Group			
	M1	M2	M3	M4	M1	M2	M3	M4	M1	M2	M3	M4
Emotional Support	0.73	0.59	0.49	0.49	0.81	0.68	0.58	0.41	0.82	0.47	0.40	0.31
t-value	6.71**	6.19**	5.14**	5.14**	10.73**	9.56**	8.15**	4.71**	9.13**	4.85**	3.70**	3.11**
Functional Support		0.41	0.22	0.22		0.32	0.16	0.04		0.50	0.45	0.22
t-value		4.29**	2.08*	1.95		4.55**	1.94	0.47		5.15*	4.39**	1.93
Companionship Support			0.36	0.35			0.31	0.36			0.15	0.23
t-value			3.12**	2.88**			3.54**	4.22**			1.36	2.32*
Informational Support				0.01				0.27				0.32
t-value				0.07				2.94**				3.32**
Adj R²	0.52	0.66	0.73	0.72	0.65	0.73	0.78	0.80	0.67	0.80	0.80	0.84

**p<.0.05

Table 5: Regression coefficients of WOM constructs by highest contributing variable to demographic

WOM CONSTRUCTS	GENDER		AGE			EDUCATION		EMPLOYMENT	
	Male	Female	21-35	36-50	51-65	Pre-U & below	Uni & above	Non-mgmt	Mgmt
SOCIAL NETWORKS									
Family		0.60	0.51		0.57	0.71		0.53	
t-value		6.41**	4.63**		2.48**	7.32**		4.82**	
sample size		77	51		34	54		63	
Friend	0.54			0.40			0.44		0.54
t-value	5.20**			3.16**			4.53**		5.65**
sample size	68			53			90		78
Adj R²	0.28	0.35	0.29	0.15	0.31	0.5	0.18	0.26	0.29
RELATIONAL ATTRIBUTES									
R. Quality		0.81	0.80	0.76	0.74	0.79	0.77	0.68	0.82
t-value		12.02**	9.17**	8.30**	6.17**	9.23**	11.44**	7.17**	12.57**
sample size		77	51	53	34	54	90	63	78
Commitment	0.75								
t-value	9.14**								
sample size	68								
Adj R²	0.55	0.65	0.62	0.57	0.53	0.61	0.59	0.45	0.67
SOCIAL SUPPORTS									
Emotional Support		0.78			0.85	0.87		0.74	0.82
t-value		11.94**			9.30**	12.74**		8.50**	12.57**
sample size		77			34	54		63	78
Companionship Support	0.83			0.76	0.79		0.75		
t-value	11.94**			8.16**	9.22**		10.51**		
sample size	68			51	53		90		
Adj R²	0.68	0.60	0.57	0.62	0.72	0.75	0.55	0.54	0.67

**p<.0.05

unclear whether social influence had caused or reinforced self-motivation. However, from the quantitative results, it appeared likely that social–contextual events had induced feelings of competence [45] that resulted in the change. This supports the research proposition that the social environment can facilitate personal efficacy and motivate people to overcome their perceived barriers.

The second theme that emerged prominently was that of vicarious experience. Defined as 'learning that occurs through observation of events and/or other people', the 'observation of a model master situation which has been feared or seen as difficult can enhance one's own expectation of mastery' [46]

who were 'very engaged in the sport', 'have similar experience to mine', 'are very health conscious', 'look good', 'have tried this before', 'have the same lifestyle [as me]', 'have been reading up a lot', 'are practicing healthy living' and 'have the passion for it'. They felt they could obtain more in-depth detail, inspiration and factual information, thus mitigating their own risks through these peoples' experiences.

V. DISCUSSION

This study has several interesting findings and important implications for managers in the healthcare industry.

First, it adds to SCT [1] by confirming that WOM communication is able to bring about significant positive cognitive assessments to determine personal factors by increasing self-efficacy that result in behaviour change. Defined as the perceived ability of the person to actually carry out the recommended behaviour [60], Self-Efficacy (SE) has been hailed as the most important variable in influencing one's motivational, cognitive, and affective processes in recent years [60-61]. SE has been the most robust, most consistent, and strongest correlate with all the protection motivation variables [62], so much so that it dominates decision-making process [63-64], determines if coping behaviour will be initiated, which behaviour will be chosen, how much effort will be expended, and how long it will persist [61, 65-66]. By extending the concept of human agency to collective agency [67] in which a group of people share their beliefs, knowledge, skills in an interactive, coordinative and synergistic way, the collective efficacy have motivated people to set goals, plan courses of actions, and mobilize their resources, skills, and efforts to fulfill desirable outcomes [66-68]. Collective agency, collective aspirations and motivational investment are capable of strengthening the resolve to overcome perceived barriers towards the health performance as evident in the research results.

Second, the findings suggest that health interventions should start among family members at home, and with dietary changes. Health care marketers could leverage on the family and its connectedness, collective behaviors and efficacies (such as cohesion, adaptation, resiliency and problem solving) to build on the strengths, resources, and relationships that exist within communities of identities when addressing communal health concerns. This could be particularly meaningful in families with higher health-risk profiles. For example, health studies have shown that individuals whose first-degree relatives (parents, siblings, offspring) [69] have history of diabetes faced an increased risk of two to six folds [70]. Healthcare marketing could target people whose families have such a history as a significant predictor of risks for genetic susceptibility [47-48] and introduce family-centered approaches to understand and prevent common chronic diseases such as diabetes and coronary heart diseases. The closeness, interpersonal care, concern and frequency of interactions that exist within the family could provide an ideal platform for encouraging person-to-person socialization and ownership of health-related communications and practices that empower people over decisions affecting their lives. The focus on a relatively smaller subsets of the population that account for majority of prevalent cases in the population would also allow for more cost-effective and intensive interventions [48, 59, 70]. By enhancing the awareness of shared disease risk and promoting family-based changes in lifestyle - family support mechanisms, family education and referral, and collective efficacies could potentially encourage more at-risk individuals to step forward for early detection and medical therapy capable of preventing or delaying common chronic diseases [69-70], thus leading to decreased long-term health risk and improved quality of life [48].

Third, by identifying the types of social characteristics that best promote healthful outcomes, the study offers marketing managers several plausible ways to improve the promotion of healthy lifestyles. Social variables affect lifestyle changes differently, so managers must differentiate their marketing strategies according to the target audience's profile to facilitate healthful lifestyle change. At a micro level, health promotions could target mothers and wives who spend the most time in the kitchen to aid them in meal planning and preparation. This could help to address the needs of younger (21–35) and older (51–65) family members. Healthy culinary classes could also be organised in social settings such as community centres for them. As socialisation is an important part of an individual's lifestyle, marketers could also suggest mutual encouragement of healthy food choices between individuals and their friends or colleagues when dining out, since the effect of friends on the HD group is significant. Where PA is concerned, a different marketing strategy could be conceptualised to encourage more involvement among family members and friends to engage in regular sporting activities. In an increasingly consumer-led economy, public and private healthcare marketers must change their product- or disease-focused approach to a customer-centred approach for marketing investments to generate higher behavioural outcomes.

Fourth, WOM may have longer-term implications on people's motivation to sustain healthful changes. More than 85 per cent of the interviewees who had made the change reported that they are still continuing the new behaviour, suggesting that the effects of WOM could go beyond the initial behaviour change. If this is true, then the potential of using WOM and the social network as persuasive channels may not be limited to motivating people to adopt a recommended behaviour. It is possible that verbal persuasion and vicarious experience communicated through WOM could facilitate one's internalisation of intrinsic motivation, performance accomplishments and physiological state, resulting in persistence of the new behaviour [45–46]. By maneuvering through more personal network, this partnering with the social community could pave the way for a more integrated, effective and sustainable health promotion strategy for population-level impact. Managers could use mass media marketing to disseminate, educate and increase knowledge relating to health, while actual behavioural changes can be promoted via WOM within one's social network. Relational approaches should add to action tendencies and contribute to 'direct exchanges' or formal 'doctor–patient encounters' [36].

Fifth, the theme of self-motivation emerged from the qualitative data. From the majority who attributed their change to WOM and the minority who attributed it to additional self-motivation, WOM communication enhanced existing motivation to embark on the lifestyle change. As the PA group was more self-motivated, marketers could conceptualise communications that target people who were already physically active to encourage their families and friends to live

a less sedentary lifestyle (e.g. by taking regular walks after dinner and playing sports on weekends). Consumers use a variety of recommendation sources depending on their motivation [28]. Depending on the product being considered, the perceived task difficulty level and the type of evaluative cues sought, the consumer may go through an independent or 'own-based' decision process, a dependent or 'subcontracted' decision process, a hybrid decision or a 'recommendation-based' process. Friends would be an important alternative or additional source for communal PA, especially in sports that require partners.

Finally, some respondents who benefitted from WOM were receptive to becoming givers. Thus, WOM could trigger a chain of consumer-to-consumer promotion and maintenance of healthy lifestyles. Evidence has shown that WOM givers do so mainly out of altruism, and people react positively to the giver's sharing of his or her experience. Policy makers could explore working in the private sector to appeal to people's altruism to actively share their health-changing experiences with their immediate social network as a means of contributing to the community. As satisfaction with WOM content had a significant effect on people's assessments and decision-making, marketers could empower the WOM sources with relevant and tailored information pertaining to physical fitness and healthier diets. Quality evidence-based information should be made widely accessible. Empowering communities with knowledge and skills for advocacy will enable them to play an important role in determining their health [49–50].

VI. LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

The use of convenience sampling has caused a skew towards affluent Chinese Singaporeans responding to the questionnaire, making the findings applicable only to that segment of the population. This could affect the certainty of WOM on behavioural change, as these effects may be dependent on situation, social class, personality and the culture of each individual [51]. As Singapore is a multi-racial and multicultural country, future research should use stratified sampling to recruit a more representative study cohort.

The use of retrospective surveys to ask people to recall their change experience could be subject to a systematic bias that stems from their sampling schemes or that are inherent to the question-and-answer procedure [35]. Relying on people's memories of past events 'can also be very complex because of numerous potential and actual contributory factors' [52] (p. 287). The adoption of healthy behaviour is often a dynamic process involving a sequence of stages with different issues and prediction rules [53–54]. By using a static research model to assess the relationships between the properties of WOM on change rather than on the stages of change, the current study does not fully reflect the reality of healthful behaviour adoption or the varying effects of WOM in the different stages of the consumers' health decision process. As people who are at different life and health stages tend to be at different positions on the continuum of receptiveness or readiness, future research should assess the different stages of the decision-making process for a more dynamic evaluation.

Longitudinal research that collects data at more than one point in time will help to generate a more realistic picture of the relationship between WOM communication and behavioural change, enabling marketers to develop a more holistic approach to health promotion.

Further, although established instruments from other studies that had a goodness-of-fit for use in other marketing studies were subsequently tested to ensure the internal reliability and content validity of the questionnaire, there is still a potential lack of construct validity (convergent and discriminant validity of the multi-item measures used in the study). The suppressing or enhancing effects of some variables over others also could not be adequately identified or explained. Future studies should plan for a confirmatory or exploratory factor analysis to verify the factor structure of the set of variables observed and the relationships postulated so that the model fit can be reconfirmed.

The lack of a control group (people who did not change despite WOM) has also limited the accuracy of the predictability. Future research should be designed for two groups of participants: those who received WOM and did not change their health behaviour and those who received WOM and changed their health behaviour. The effects of these changes could be further segregated into the adoption and sustainability of new behaviours for improved accountability.

By not evaluating the effectiveness of WOM against other communication channels, the accuracy of the measurements of the magnitude of WOM in predicting change is also limited. A comparative study between person-to-person WOM, online WOM, mass media and healthcare professionals in their abilities to influence the adoption of physical activity and healthy eating habits is desirable. Another aspect worthy of future investigation is to collect the views of the givers of WOM so that the information in this study may be verified, its context better understood and differences in views reconciled.

Lastly, the possibility of using SCT and relational marketing to enact a cycle of person-to-person communication of healthy lifestyles would be an interesting concept for advancing the theory and practice of healthcare marketing.

VII. CONCLUSION

Given that there is limited existing framework for using WOM from people's immediate social networks to affect healthful behavioural change, these insights advance the theory in this area. Specifically, it offers new insights to the existing body of knowledge regarding the individual or composite relational attributes or social support that can best affect outcomes. The findings support the view that the social environment can facilitate personal efficacy and motivate people towards overcoming their perceived barriers as advised by Social Cognitive Theory.

This study has shown the significant influence of consumer-to-consumer (C-to-C) WOM communication on healthful behavioural change, with FA, RQ and ES being the key contributing properties despite some fluidity at the micro

level. It has reinforced that family is a critical touch point for helping to overcome perceived emotional, psychological and physical barriers and provided explanation as to how personal (self-efficacy), environmental (social circle), and behavioral (preventive health practices) factors could fortify each other in a reciprocal manner. While FA is the nucleus of individuals, their communities and countries, it is often taken for granted. With evidence showing FA and subsequently FR having a pivotal effect on a person's health and general wellbeing, policy makers can revisit these fundamental channels when planning a healthy lifestyle intervention. It also demonstrates that policymakers should address the root causes rather than the symptoms, as health issues tend to stem from personal and family levels before escalating to become a national concern.

The goal of identifying effective models for the person-to-person promotion of a healthy lifestyle was also achieved by distinguishing the variables and components underlying WOM constructs at the micro level that significantly influence change. This provides marketers with several options for customising their marketing programs to target different lifestyle changes and demographic profiles.

More importantly, conducting this study from a receiver's perspective has paved the way to allow marketers to design a more customer-centred approach to health communications, while the focus on evaluating BCh rather than intention or motivation has helped to address some of the questions regarding the intention–behaviour gap [55].

Finally, this research has also added to the Motivational Theories of Health Behaviour in terms of insights into family-based health intervention and how health care management can potentially raise response efficacy and self-efficacy for higher protection motivation.

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APPENDIX

[1] Statements for evaluating relationship quality were adapted from the Relationship Quality (RELQUAL) scale [56] (p. 1043), where the key statements regarding information sharing, communication quality, long-term relationship orientation and satisfaction with the relationship were rephrased. Statements for evaluating trust and commitment were adapted from the scale items proposed by [38] (p. 35) and [31] (p. 244), while statements for evaluating satisfaction were adapted from [31] (p. 244).

[2] To develop a measure of the different types of social support that influence one's behavioral change, the questionnaire content was adapted from the concepts and definitions in the widely used Inventory of Socially Supportive Behaviors (ISSB), which has been used to assess support from 40 socially supportive behaviors [34] (p. 2).

[3] The third set of independent variables used Social Networks Multidimensional Scale of Perceived Social Support (MSPSS) to investigate the social sources (SN) of WOM. The scale was originally designed to assess perceptions of social support adequacy from three specific sources (FA, FR and SP) [57] (p. 35); [58] (p. 757). The original 12 MSPSS statements were kept intact, apart from being reorganised into groups of four statements for FA, FR and SP.

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