

Will They Listen Anyway?  
Viral Marketing and the Effectiveness  
of Online Word-of-Mouth Referrals

**Arnaud De Bruyn\***  
The Pennsylvania State University

January 2003

Submitted to the **Marketing Management, Technology, and Innovation** track

**2003 AMA Summer Marketing Educators' Conference**

---

\* Doctoral Student, 701 Business Administration Building, Smeal College of Business Administration, The Pennsylvania State University, University Park, PA 16802. Tel.: (+1) (814) 865-4091. Fax: (+1) (814) 865-3015. Email: adebruyn@psu.edu. The author gratefully acknowledges the e-Business Research Center at the Pennsylvania State University for its financial support.

**WILL THEY LISTEN ANYWAY?**

**VIRAL MARKETING AND THE EFFECTIVENESS**

**OF ONLINE WORD-OF-MOUTH REFERRALS**

Despite an abundant literature, little is known about how word-of-mouth communications influence behaviors at different stages of the decision-making process. Fortunately, the Internet has given researchers new opportunities to study such communications as they occur, unobtrusively and in real-time. In this paper, we report the results of an experiment where the reactions of 1,200 recipients were observed after they received by e-mail an unsolicited referral from one of their acquaintances. As expected, characteristics of the relationship with the source influenced recipients' behaviors, but the strength and antecedents of such influence greatly varied at different stages of the decision process.

## INTRODUCTION

Word-of-mouth (hereafter WOM) communications have received extensive attention in the past from both academics and practitioners. Since the early 1950s, researchers have demonstrated that personal conversations and informal exchange of information among acquaintances not only could influence consumers' choices and purchase decisions (see for instance Arndt, 1967, and Whyte, 1954), but could also shape consumers' expectations (Zeithaml and Bitner 1996), pre-usage attitudes (Herr et al. 1991), and even post-usage perceptions of a product or service (Bone 1995; Burzynski and Bayer 1977). WOM communications have been cited as one of the most important sources of influence in the purchase of basic consumption products or the adoption of personal services, as well as one of the most influential forces in the marketplace (Henricks 1998; Marney 1995; Silverman 1997). WOM has also been found more influential than print ads, personal selling and radio advertising (Engel et al. 1969; Feldman and Spencer 1965; Katz and Lazarsfeld 1955). It is therefore not a surprise that so many efforts have been dedicated to better understand antecedents and consequences of WOM.

Despite this tremendous interest, little is known about *how* WOM communications influence behaviors, and especially what stages of the decision process (e.g., awareness, information search, consideration, final decision) are the most influenced. This is especially true for *unsolicited* WOM communications, that is, communications about a product or service that occur although the receiver is not actively seeking information. When a consumer decides to "spread the word" to acquaintances who did not solicit information in the first place, literature provides few explanations on the circumstances under which such referrals will actually influence behaviors.

In the first section of this paper, we present a quick overview of the literature and explain why so little is known about the actual influence of unsolicited WOM communications. We also discuss how the advent of the Internet has created new opportunities –and a new necessity– to study the WOM phenomenon. In the second section, we present a field experiment in which we tracked in real-time the actual influence of email-based, unsolicited peer-to-peer referrals. We report data analyses in the third section, and conclude this paper by discussing the results and by suggesting directions for future research.

## **LITERATURE REVIEW**

The existing WOM literature can be classified into three streams of research. The first category focuses on the reasons why consumers proactively spread the word about products and services they have experienced, and factors such as extreme satisfaction or dissatisfaction (Dichter 1966; Richins 1983; Yale 1987), commitment to the firm (Dick and Basu 1994) or novelty of the product (Bone 1992) have been found particularly predictive of such behaviors.

The second stream of research tries to better understand information seeking behaviors, and more specifically under which circumstances consumers rely on WOM communications more than on other sources of information to make a purchase decision. Among other findings, consumers who had little expertise in a product category (Furse et al. 1984; Gilly et al. 1998), perceived a high risk in decision-making (Bansal and Voyer 2000; Kiel and Layton 1981), or were deeply involved in the purchase decision (Beatty and Smith 1987) have been found prone to seek the opinions of others for product advice.

Finally, the third stream of research studies why certain personal sources of information have more influence than others. The literature in this area is particularly rich, especially since researchers have borrowed constructs from the social network theory to get a deeper understanding of interpersonal relationships. Various factors such as source expertise (Bansal and Voyer 2000; Gilly et al. 1998), tie strength (Brown and Reingen 1987; Frenzen and Nakamoto 1993), demographic similarity –also referred to as demographic homophily– (Brown and Reingen 1987) and perceptual homophily (Gilly et al. 1998) are usually cited as important antecedents of WOM influence.

Despite the abundant literature, why do we know so little about the ways unsolicited WOM communication influence consumers' choices? The reasons are twofold. First, as noted by Bristol (1990), many surveys are biased toward successful WOM communications, that is, exclusively report those communications that have actually influenced the decision maker (see for instance Brown and Reingen, 1987). Also, numerous studies only focus on recipients who were actively seeking for information, or in other words who were actively seeking to be influenced in their decisions. While these studies are invaluable to better understand information seeking behaviors and the flow of influence that spreads through social networks, they are inherently limited to examine unsolicited WOM communications, especially those that happen to have no or little influence.

Second, researchers who tried to identify and analyze day-to-day WOM communications were limited in their ability to collect relevant and exact information. In past research, data collection had typically to be performed after the communication had occurred (in some studies, several months or years later), and was potentially subject to erroneous recollection of the facts, post-interpretation, or bias. More importantly, the influence of WOM communications might differ at

various stages of the decision process (e.g., awareness, information search, consideration, final decision). To observe the final outcome only (i.e., purchase decision) of the WOM communication, however, is not sufficient to assess the role WOM played at different stages of the decision.

The advent of the Internet in general and of electronic communications in particular has facilitated WOM communications among consumers: viral marketing, e-mail referrals, online forums of users and newsgroups, as well as customer reviews encouraged by merchant websites have allowed consumers to “spread the word” and share information more easily than ever before, which in turn has triggered a renew of interest in WOM.

Fortunately, the Internet has also created new ways of collecting data. In the next section, we describe how we adapted Stanley Milgram’s “small world methodology” (1967) to the context of the Internet, and how we used such experiment to study the influence of unsolicited WOM communications at different stages of the decisions – and the antecedents of such influence. Thanks to the available technology and the electronic nature of the communications, we were able to observe, unobtrusively and in real-time, the actual influence of email-based WOM communications.

## **EMPIRICAL STUDY**

### **Small world methodology**

In 1967, Stanley Milgram conducted a field experiment that would become the first of its kind (Milgram 1967; Travers and Milgram 1969). He asked 296 participants in Nebraska and Boston to send a package to a previously chosen target person in Massachusetts. They were asked to

send the package to one of their own acquaintances only, who would in turn send the package, and so on. The process was continued until the target person received the package. Sixty-four acquaintance chains eventually reached the target person. The mean number of intermediaries between starters and targets was 5.2. This experiment was the first experimental demonstration of the small world phenomenon, also known since then as the "six-degree of separation".

Researchers have recently attempted to replicate Milgram's experiment on the Internet (Kleinfeld 2000; Stern and Faber 1997). Participants were asked to send an e-mail to one of their friends, colleagues or relatives (usually via a website for control purpose), who would in turn send an e-mail to another acquaintance, and so on, replicating Milgram's methodology online. However, no successful attempt has been reported so far (i.e., targets were never reached), mainly due to recipients' defiance and low response rates.

Despite the difficulty to successfully replicate the small world experiment on the Internet, such experiments present unique opportunities for marketing researchers to study the actual influence of unsolicited WOM referrals. First, in a small world experiment, participants actually engage in "spreading the word" via e-mails to their acquaintances. They invite their "next link" to read their invitation, click on a link, visit a website, and participate in a study. A small world study is therefore a very natural candidate to study WOM referrals, in our case electronic referrals, because it inherently relies on their success.

Second, since participants are aware that the experiment is designed to better understand social networks in general and social relationships in particular, they are usually willing to answer very specific questions about the acquaintance they send the message to: nature of the relationship, social ties, closeness, intimacy, demographic similarities, frequency of contacts, etc. Such information turns to be invaluable to study the effectiveness of WOM referrals.

Also, since the aim of a small world experiment is to reach a remote target person, participants not only spread the word to their closest friends but also to a variety of recipients (e.g., a former colleague who lives in the same town as the target person), which in turn is likely to enhance the diversity of the sample and the external validity of the results.

Finally, thanks to today's technology, every step of the experiment can be electronically traced: one can know whether or not an e-mail has been opened, who visited the experiment's website, and who completed the survey. Therefore, the researcher can observe how WOM influences various decisions of the recipients (and not only the final outcome), directly and in real time.

### **Research design**

During September and October 2002, we conducted an online version of Milgram's small world experiment. Participants received an e-mail from one of their acquaintances and were invited to participate in an online survey. The e-mail contained a brief description of the study, a personalized message wrote by the sender, and a link that redirected the visitor to a website dedicated to the study. Participation was rewarded by a chance to win a \$1,000 cash prize. The link to the experiment's website contained in the e-mail was unique to each participant, and those who clicked on the link and visited the website were therefore automatically identified (visitors who could not be identified for technical reasons were asked to login using their e-mail address). Furthermore, the opening of the e-mail triggered a request to our Web server, a technique commonly used by online marketers to identify which e-mails have been actually opened.

Once on the website, visitors received more detailed information about the study (research goal, privacy policy, informed consent form, etc.), and were invited to continue the chain and answer a

few additional questions. Only if they agreed to participate were they informed of the identity of the target person (an international student in a southern university). They were then invited “to send a message to a personal acquaintance of yours who is more likely than you to know the target person”. The name and e-mail address of their “next link” were requested, and they were invited to write a personalized message to be sent via e-mail to the recipient, along with other information<sup>1</sup>. The website would then send an e-mail on behalf of the participant and the chain of e-mails would continue.

After receiving confirmation that the e-mail had been sent, participants were asked to answer a few questions about the acquaintance they had chosen to be their “next link” (the questions were personalized with the next link’s name) and about themselves. The survey was composed of 6 additional web pages containing 40 items in total. 20 items were related to the relationship the sender had with his or her next link: nature of the relationship, demographic similarities, closeness, overlap of social networks and perceptual homophily. The last 20 questions tapped on various aspects of the sender’s self-reported opinion leadership, personality strength and technology expertise.

After completing the survey, participants were asked to identify themselves for the purpose of the cash prize drawing, and were also invited to “spread the word” to more persons and initiate more chains. In such an event, no additional questions (e.g., nature of the relationship) were asked, and these additional invitations, representing 35.7% of the e-mails sent by participants, were therefore not included in the data analysis.

---

<sup>1</sup> The following message appeared by default in the box: “Hello: I've just participated in a study conducted by researchers at [name of the university]. They are studying the 'small world' phenomenon and are trying to link two strangers through a chain of acquaintances via e-mails. I'm inviting you to be my 'next link'. Would you agree to participate and to continue the chain, like I did? If you participate you can win a \$1,000 cash prize. It takes only 5 minutes to complete. Check it out, maybe it will be of some interest to you! Best regards, [name of the participant].”

The experiment was seeded by inviting 4,500 business students from a large northeastern university, 634 of whom agreed to participate and initiate a chain of e-mails (a 14% response rate). After an eight-week period of time, a total of 2,198 e-mails had been sent by 1,414 participants, with an average response rate of 25.8%. The target person was never reached.

## DATA ANALYSIS

### Dataset

After data cleaning and exclusion of incomplete surveys, a total of 1,174 responses were used for data analysis. The measured constructs were as follows:

Closeness, or tie strength, is a combination of the emotional intensity, the intimacy, and the reciprocal services that characterizes a relationship (Granovetter 1973). It was measured by a 5-item version (Chronbach's  $\alpha=.93$ ) of the scale developed by Frenzen and Davis (1990).

Demographic homophily (or demographic similarity) between the sender and the recipient was measured on 4 dimensions: sex, level of education, age and occupation<sup>2</sup>.

Perceptual homophily was measured on a 4-item scale ( $\alpha=.87$ ). While demographic homophily refers to similarities of age, gender, education and occupation, perceptual homophily is defined as a person's similarity of values and experience with another person (Gilly et al. 1998; Wolfinger and Gilly 1993). To incorporate such measure follows Brown and Reingen's suggestion (1987) to measure attitudinal/lifestyle measures of homophily in future researches.

The overlap of social network was measured by a 2-item scale ( $\alpha=.74$ ), and was designed to get a sense of whether or not the sender and his or her recipient shared the same network of

---

<sup>2</sup> Since this is a formative scale, no coefficient alpha is reported.

acquaintances (e.g., “Think about your best friends. How many of them are actually good friends of [name of the recipient]?”).

Four additional items measured the geographical proximity between the sender and the receiver (from “live in the same house” to “live in different countries”), the frequency of physical encounters and the frequency of e-mail communications (from “several times a day” to “never during the past six months”), and the nature of their relationship (e.g., “barely an acquaintance”, “best friend”, “neighbor”, etc.). The latter was only used for validation purpose.

In addition to these 20 relationship-related items, a series of 20 dichotomous items ( $\alpha=.82$ ) measured various traits of the sender usually associated with the broader concept of opinion leadership: expertise (in this particular context Internet-related expertise), personality strength, sociability, social leadership, proneness to voice one’s opinion, self-confidence, and whether or not the respondent considered himself an innovator and/or early adopter. Two behavioral traits occasionally found correlated with opinion leadership were also included, namely the habit to travel a lot and to stay informed (listen to the news, read newspapers, etc.).

### **Data reduction**

To avoid multicollinearity problems, two principal component analyses were performed on the 20 relationship-related items and on the 20 personality-related items using SPSS. The analysis of the screeplot and the eigenvalue-greater-than-one rule both suggested a 4-factor solution for the first, and a 5-factor solution for the later. Table 1 shows the factor loadings after rotation.

**{ Insert Table 1 Here }**

The 4 principal components related to the sender-receiver relationship were labeled closeness, perceptual homophily, social overlap, and demographic homophily. The 5 components related to the sender's personality were labeled technology leadership, personality strength, social leadership, opinion-voicer (proneness to voice one's opinion) and social exposure (lifestyle characteristics occasionally cited as indicative of opinion leadership).

Despite a few overlaps (e.g., people who are very close tend to share the same network of acquaintances, respondents who listen to the news and read newspapers are more likely to voice their opinions in a conversation, etc.), the initial constructs remained well identified.

### **Response models**

Each survey completed by participants was associated with an ongoing e-mail sent to one of their acquaintances, whose responses at different stages of the study were observed, namely (1) whether or not the recipient opened the e-mail<sup>3</sup>, (2) clicked on the link to visit the website, (3) began to answer the survey, and (4) completed it.

Four different Logit models were fitted to the observations using maximum likelihood estimation. Each model had 10 parameters: an intercept and the 9 principal components previously identified. Since the experiment was designed as a funnel of 4 successive decisions (e.g., only those who opened the e-mail could click on the link and go to the website, etc.), each model was fitted on a shrinking number of observations. Table 2 reports the ML estimations of the 4 models.

**{ Insert Table 2 Here }**

## Data analysis

Closeness was found to significantly influence the likelihood that the recipient would open the sender's e-mail ( $p < 0.01$ ), but did not affect the decision to visit the website or to participate in the study. In contrast, if the recipient opened the e-mail, the probability that he would be willing to learn more and visit the website was positively influenced by his perceptual homophily (similarities in tastes and interests) with the sender ( $p < 0.01$ ), but this dimension did not influence any other decision.

We should revisit the concept of social overlap to interpret its ambiguous influence. Typically, two colleagues who share an office are high on the "social overlap" dimension: they might live in the same vicinity, see each other all day long, and have many acquaintances in common. However, they are not necessarily close or intimate, nor do they necessarily share the same values and tastes. Furthermore, they might have very distinct demographics characteristics. As we can see by this simple illustration, social overlap is conceptually distinct from closeness, perceptual homophily and demographics homophily.

The influence of social overlap on recipients' decisions was twofold. At first, social overlap increased the likelihood of positive response (e-mails were more likely to be opened and read), but this influence became negative in further decisions (recipients were less likely to click on the link and visit the website).

Demographic homophily is the only dimension that had a significant impact in each 4 models. All parameters are negative and significant. WOM referrals from heterophilous ties had more influence than referrals from homophilous ones. Although this result might be context-specific

---

<sup>3</sup> It can be estimated that about 8% of the e-mails actually opened were not identified as such due to technical reasons (e.g., firewall, e-mail opened by the recipient while being offline, etc.). This limitation is however unlikely to have influenced the direction or the amplitude of the parameters of the model.

(i.e., WOM communications about an online survey), it is consistent with findings generally reported in the WOM literature (Brown and Reingen 1987; Gilly et al. 1998).

One of the most striking results is probably that almost none of the parameters related to the personality traits of the sender (expertise and opinion leadership) are significant. Only two parameters related to the construct of social exposure achieve significance, and their signs are contrary to expectations, that is, negative.

## CONCLUSIONS

In this paper, we have reported the results of an online experiment, inspired by Stanley Milgram's small world methodology, that allowed us to directly observe the actual influence of email-based, unsolicited WOM referrals, unobtrusively and in real-time.

Various dimensions of the relationship between the sender and the receiver of the message (closeness, perceptual homophily, demographic homophily and social overlap) influenced recipient's responses in ways consistent with expectations, although their influence occurred at various stages of the decision-making process. For instance, closeness only influenced the likelihood that the e-mail would be opened and read in the first place, but nothing else; while perceptual homophily only influenced the chance that the recipient would visit the website (but not that, once on the website, he or she would complete the survey). Social overlap was also found relevant to explain recipients' behaviors, although the effect signs varied: a high social overlap increased the chance that the e-mail would be opened, but decreased the likelihood of clicking on the link.

Surprisingly, almost none of the dimensions related to the sender's expertise, personality strength or opinion leadership seemed to matter, and when they did, the signs were contrary to expectations. This is a striking finding. One explanation might be found in the self-reported nature of the opinion leadership items. It might have been more relevant to measure how the recipient perceived the source quality, as opposed to how the source considered himself being an opinion leader or an expert. An alternative explanation could be that, due to the electronic nature of the communication, or due to the category in question (referral to participate in an electronic survey), opinion leadership of the sender might actually bear no influence. Finally, the way source expertise has been operationalized in this study (i.e., Internet-related expertise) might be irrelevant to predict recipients' behaviors, while other domain-specific expertise might have been more appropriate. In any cases, the few negative signs obtained on the social exposure dimension are puzzling. These results seem to offer new and promising research opportunities.

To conclude, it is important to note that if the intermediary decisions of the recipients (i.e., to read the e-mail, visit the website and begin to answer the survey) had not been measured, but only the final outcome of the WOM referral (i.e., decision of the recipients to participate and complete the survey), neither closeness, perceptual homophily nor social overlap would have been found significant in the decision model. This highlights the potential of the Internet as a promising research tool to study WOM communications, as well as the need to differentiate the antecedents of WOM influence at different stages of the decision-making process.

**Table 1** – A principal component analysis performed on the 20 relationship-related and the 20 personality-related items revealed a total of 9 principal components. Loadings with an absolute value smaller than .2 are not reported. The highest loadings for each line are in bold.

|              | <i>FACTOR 1</i>  | <i>FACTOR 2</i>             | <i>FACTOR 3</i>       | <i>FACTOR 4</i>              |
|--------------|------------------|-----------------------------|-----------------------|------------------------------|
|              | <b>Closeness</b> | <b>Perceptual homophily</b> | <b>Social overlap</b> | <b>Demographic homophily</b> |
| CLOSENESS1   | <b>0.806</b>     | 0.301                       |                       |                              |
| CLOSENESS2   | <b>0.795</b>     | 0.239                       |                       |                              |
| CLOSENESS3   | <b>0.847</b>     | 0.246                       |                       |                              |
| CLOSENESS4   | <b>0.818</b>     | 0.282                       |                       |                              |
| CLOSENESS5   | <b>0.788</b>     | 0.315                       | 0.282                 |                              |
| PERCHOMO1    | 0.327            | <b>0.785</b>                |                       |                              |
| PERCHOMO2    | 0.313            | <b>0.800</b>                |                       |                              |
| PERCHOMO3    | 0.332            | <b>0.733</b>                |                       |                              |
| PERCHOMO4    | 0.255            | <b>0.782</b>                |                       |                              |
| FRQMAIL      | <b>0.428</b>     |                             |                       | -0.210                       |
| FRQPHYS      |                  |                             | <b>0.843</b>          |                              |
| GEOPROXIMITY |                  |                             | <b>0.819</b>          |                              |
| OVERLAP1     | 0.329            |                             | <b>0.670</b>          |                              |
| OVERLAP2     | 0.243            | 0.219                       | <b>0.576</b>          |                              |
| SAMESEX      |                  |                             |                       | <b>0.228</b>                 |
| SAMEAGE      |                  |                             |                       | <b>0.810</b>                 |
| SAMEJOB      |                  |                             |                       | <b>0.530</b>                 |
| SAMEEDUC     |                  |                             | 0.225                 | <b>0.750</b>                 |

|            | <i>FACTOR 5</i>              | <i>FACTOR 6</i>             | <i>FACTOR 7</i>          | <i>FACTOR 8</i>       | <i>FACTOR 9</i>        |
|------------|------------------------------|-----------------------------|--------------------------|-----------------------|------------------------|
|            | <b>Technology leadership</b> | <b>Personality strength</b> | <b>Social leadership</b> | <b>Opinion voicer</b> | <b>Social exposure</b> |
| TECHNO1    | <b>0.724</b>                 |                             |                          |                       |                        |
| TECHNO2    | <b>0.855</b>                 |                             |                          |                       |                        |
| TECHNO3    | <b>0.875</b>                 |                             |                          |                       |                        |
| INNOVATOR  | <b>0.399</b>                 |                             | 0.370                    | 0.221                 |                        |
| EARLYADOPT | <b>0.626</b>                 | 0.294                       |                          |                       |                        |
| PERSOSTR1  |                              | <b>0.618</b>                |                          |                       |                        |
| PERSOSTR2  |                              | <b>0.603</b>                |                          |                       |                        |
| PERSOSTR3  |                              | <b>0.719</b>                |                          |                       |                        |
| PERSOSTR4  |                              | <b>0.304</b>                | 0.243                    |                       |                        |
| PERSOSTR5  |                              | <b>0.664</b>                |                          |                       |                        |
| SOCIAL1    |                              |                             | <b>0.708</b>             |                       |                        |
| SOCIAL2    |                              |                             | <b>0.752</b>             |                       | 0.340                  |
| LEADER1    |                              |                             | <b>0.544</b>             | 0.213                 |                        |
| LEADER2    |                              | 0.460                       | 0.318                    | <b>0.468</b>          |                        |
| OPINION1   |                              | 0.367                       | 0.214                    | <b>0.488</b>          |                        |
| OPINION2   |                              |                             |                          | <b>0.803</b>          |                        |
| OPINION3   |                              |                             | 0.280                    | <b>0.689</b>          | 0.223                  |
| SELFCNF    |                              | 0.401                       | 0.267                    | <b>0.431</b>          |                        |
| TRAVEL     |                              |                             | 0.314                    |                       | <b>0.736</b>           |
| NEWSEXPO   |                              |                             |                          | 0.242                 | <b>0.737</b>           |

**Table 2** – Parameters of the 4 Logit models linking recipients’ responses to 4 characteristics of the sender-recipient relationships, and to 5 personality traits of the senders. Parameters significant at  $p < 0.1$  are in bold. Statistical significance: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

|                                 |                          | Open<br>e-mail<br><i>N</i> =1174 | → | Visit<br>website<br><i>N</i> =851 | → | Begin<br>survey<br><i>N</i> =522 | → | Complete<br>survey<br><i>N</i> =432 |
|---------------------------------|--------------------------|----------------------------------|---|-----------------------------------|---|----------------------------------|---|-------------------------------------|
| Relationship<br>characteristics | <b>Closeness</b>         | <b>0.18</b> ***                  |   | 0.00                              |   | 0.00                             |   | 0.06                                |
|                                 | Perceptual homophily     | 0.02                             |   | <b>0.25</b> ***                   |   | -0.16                            |   | 0.00                                |
|                                 | <b>Social overlap</b>    | <b>0.11</b> *                    |   | <b>-0.13</b> *                    |   | -0.17                            |   | 0.04                                |
|                                 | Demographic homophily    | <b>-0.14</b> **                  |   | <b>-0.20</b> ***                  |   | <b>-0.26</b> **                  |   | <b>-0.21</b> *                      |
| Sender<br>characteristics       | Technology leadership    | 0.00                             |   | 0.03                              |   | -0.09                            |   | 0.13                                |
|                                 | Personality strength     | 0.10                             |   | 0.02                              |   | 0.03                             |   | -0.08                               |
|                                 | <b>Social leadership</b> | -0.09                            |   | 0.05                              |   | -0.20                            |   | -0.08                               |
|                                 | Opinion-voicer           | 0.07                             |   | -0.05                             |   | -0.01                            |   | 0.05                                |
|                                 | Social exposure          | -0.05                            |   | <b>-0.13</b> *                    |   | <b>-0.41</b> ***                 |   | 0.02                                |
| Intercept                       |                          | <b>0.99</b> ***                  |   | <b>0.35</b> ***                   |   | <b>1.63</b> ***                  |   | <b>1.06</b> ***                     |

## REFERENCES

- Arndt, Johan (1967), "Role of Product-Related Conversations in the Diffusion of a New Product," *Journal of Marketing Research*, 4 (August), 291-95.
- Bansal, Harvis S. and Peter A. Voyer (2000), "World-of-Mouth Processes within a Services Purchase Decision Context," *Journal of Service Research*, November.
- Beatty, Sharon and Scott Smith (1987), "External Search Effort: An Investigation Across Several Product Categories," *Journal of Consumer Research*, 14 (June), 83-95.
- Bone, Paula Fitzgerald (1992), "Determinants of Word-of-Mouth Communications During Product Consumption," in *Advances in Consumer Research Vol. 19: John F. Sherry and Brian Sternthal, eds.*
- (1995), "Word-of-Mouth Effects on Short-term and Long-term Product Judgments," *Journal of Business Research*, 32, 213-23.
- Bristor, Julia M. (1990), "Enhanced Explanations of Word of Mouth Communications," in *Research in Consumer Behavior*, E. C. Hirschmann, Ed. Greenwich, CT: JAI.
- Brown, Jacqueline Johnson and Peter H. Reingen (1987), "Social ties and word-of-mouth referral behavior," *Journal of Consumer Research*, 14 (3), 350-62.
- Burzynski, Michael H. and Dewey J. Bayer (1977), "The Effect of Positive and Negative Prior Information on Motion Picture Appreciation," *Journal of Social Psychology*, 101, 215-18.
- Dichter, Ernst (1966), "How Word-of-Mouth Marketing Works," *Harvard Business Review*, 44 (6), 148.
- Dick, Alan S. and Kunal Basu (1994), "Customer Loyalty: Toward an Integrated Conceptual Framework," *Journal of the Academy of Marketing Science*, 22 (Spring), 99-113.
- Engel, James E., Roger D. Blackwell, and Robert J. Kegerreis (1969), "How Information is Used to Adopt an Innovation," *Journal of Advertising Research*, 9, 3-8.
- Feldman, Sidney P. and Merlin C. Spencer (1965), "The Effect of Personal Influence in the Selection of Consumer Services," in *Fall Conference of the American Marketing Association*, Peter D. Bennett (Ed.). Chicago: American Marketing Association.
- Frenzen, Jonhatan K. and Harry L. Davis (1990), "Purchasing Behavior in Embedded Markets," *Journal of Consumer Research*, 17.

Frenzen, Jonhatan K. and K. Nakamoto (1993), "Structure, Cooperation, and the Flow of Market Information," *Journal of Consumer Research*, 20 (December), 360-75.

Furse, David, Girish Punj, and David W. Stewart (1984), "A Typology of Individual Search Strategies Among Purchasers of New Automobiles," *Journal of Consumer Research*, 10 (March), 417-31.

Gilly, Mary C., John L. Graham, Mary Finley Wolfinbarger, and Laura J. Yale (1998), "A Dyadic Study of Interpersonal Information Search," *Journal of the Academy of Marketing Science*, 26 (2), 83-100.

Granovetter, Mark S. (1973), "The Strength of Weak Ties," *American Journal of Sociology*, 78, 1360-80.

Henricks, Mark (1998), "Spread the Word," *Entrepreneur*, 26 (2), 120-25.

Herr, Paul M., Frank R. Kardes, and John Kim (1991), "Effects of Word-of-Mouth and Product Attribute Information on Persuasion: An Accessibility-Diagnosticity Perspective," *Journal of Consumer Research*, 17 (4), 454-62.

Katz, Elihu and Paul Lazarsfeld (1955), *Personal Influence*. Glencoe, IL: The Free Press.

Kiel, G. C. and R. A. Layton (1981), "Dimensions of Consumer Information Seeking Behavior," *Journal of Marketing Research*, 18 (May), 233-39.

Kleinfeld, Judith (2000), "Could It Be a Big World After All? What the Milgram Papers in the Yale Archives Reveal About the Original Small World Study," Columbia University.

Marney, Jo (1995), "Selling in Tongues," *Marketing Magazine*, 100 (38), 14.

Milgram, Stanley (1967), "The Small World Problem," *Psychology Today*, 1, 61-67.

Richins, Marsha L. (1983), "Negative Word-of-Mouth by Dissatisfied Customers: A Pilot Study," *Journal of Marketing*, 47 (Winter), 68-78.

Silverman, George (1997), "How to Harness the Awesome Power of Word of Mouth," *Direct Marketing* (November), 32-7.

Stern, S. E. and J. E. Faber (1997), "The Lost e-Mail Method: Milgram's Lost-Letter Technique in the Age of the Internet," *Behavior Research Methods, Instruments and Computers*, 29, 260-63.

Travers, Jeffrey and Stanley Milgram (1969), "An Experimental Study of the Small World Problem," *Sociometry*, 32 (4), 425-43.

Whyte, William H., Jr. (1954), "The Web of Word of Mouth," in *Fortune* Vol. 50.

Wolfenbarger, Mary Finley and Mary C. Gilly (1993), "The Encoding and Decoding of Gift Symbolism," Working paper, University of California at Irvine.

Yale, Laura J. (1987), "An Empirical Study of Word of Mouth Behaviors: Antecedents, Processes and Outcomes," in Working paper: Graduate School of Management University of California-Irvine.

Zeithaml, Valarie A. and Mari Jo Bitner (1996), *Services Marketing*. New York: McGraw-Hill.