The Pass-Along Effect: Investigating Word-of-Mouth Effects on Online Survey Procedures

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Email petitions to complete online surveys may be forwarded beyond the intended sample. We term this phenomenon the pass-along effect and investigate it as a factor that can influence the nature and size of survey samples in an online context. We establish the pass-along effect as a form of word-of-mouth communication and draw from the literature in this area to present and test a model of factors that influence the occurrence of this effect. The results of two studies provide empirical support for the existence and impact of the pass-along effect. Among the factors that lead to this effect are involvement and relationship with the survey topic, size of a participant's social network, and tie strength. The appropriateness of employing pass-along respondents as well as other implications for online sampling and survey research are discussed.

Introduction

As the use of the Internet for conducting academic research has increased (Taylor, 2000), numerous authors have attempted to establish a basic knowledge of Internet survey methodologies. Previous Internet-based survey research has focused primarily on the established variables of traditional survey methods (e.g., postal mail, phone, and intercept surveys) such as response rates, response speed, and various measures of response content and quality (Cobanoglu, Warde, & Moreo, 2000; Mehta & Sivadas, 1995; Truell, Bartlett, & Alexander, 2002; Tse, 1998). Because extant research has focused almost entirely on comparing online to off-line methods, factors unique to online survey research have received little, if any, attention. Recognizing these limitations, Sheehan and McMillan (1999) called for researchers to go beyond simple comparisons of online and traditional surveys and focus on why characteristics of

survey research vary within Internet survey methods. This challenge suggests that research not only explore commonly recognized factors affecting the survey process in an online context, but also consider factors that could exclusively impact Internet survey data collection (see Dommeyer & Moriarty, 2000).

The purpose of our research is to investigate the pass-along phenomenon, a factor that is unique to online survey research. That individuals receiving email messages of all types might forward them is a given. But it has been specifically recognized that petitions via email to complete a survey may be forwarded beyond the intended sample (Kaye & Johnson, 1999; Witte, Amoroso, & Howard, 2000). Such forwarded emails are known as pass-along emails (Phelps, Lewis, Mobilio, Perry, & Raman, 2004).

In order to investigate the impact of the pass-along effect, we first discuss the issues created by the distinctive characteristics of the Internet for online survey methods relative to traditional survey methods that provide for the occurrence of the pass-along effect. We then address the research question: What factors contribute to the occurrence of the pass-along effect in online survey research? We address this question through a theoretical and empirical inquiry into factors exclusive to online surveys that lead to the generation of pass-along effects. Finally, we discuss the appropriateness of using pass-along respondents as well as other implications of the pass-along effect for online sampling and survey research.

The Pass-Along effect

While we recognize that there are numerous methods for conducting surveys over the Internet, our investigation focuses on methods that incorporate an email message containing an invitation to complete a survey. This includes methods where the survey appears in the email as well as those that provide a link to a survey website. Such methods have become commonplace among online survey researchers. The common use of email as a survey communication tool is likely driven by the fact that emailing is the number one Internet activity, involving over 90% of Internet users, with 50% of the online population using email on an average day (Phelps et. al, 2004).

While it has been established that the pass-along effect can impact the distribution of email surveys, it is interesting to note that this effect has not been recognized as an issue of concern for traditional survey methods. That the forwarding of survey information occurs almost exclusively in an online context is likely due to unique characteristics of the Internet that distinguish online surveys from traditional surveys. Rogers and Hart (2002) note three such characteristics that are pertinent to the concept of the pass-along effect. The Internet facilitates communication by removing barriers created by spatial distance, social distance, and time. Additionally, incoming and outgoing email communications can be instantly duplicated as many times as the number of email addresses entered. This duplication characteristic applies to all facets of electronic communication, from simple messages to complex documents and media files. These characteristics of the Internet result in an environment where surveys can easily be forwarded.

Hypotheses: Factors Contributing To The Pass-Along Effect

We recognize that the use of pass-along respondents may not be orthodox for all types of research. This issue will be discussed at length at the end of this article. However, acknowledging that pass-along respondents are appropriate for some research objectives, we address the question: What factors contribute to the occurrence of the pass-along effect in online survey research? In order to address this question and identify pass-along effect factors, we consider the unique characteristics of the Internet as a communication medium.

In a commentary about the Internet's impact on the way people communicate, Rogers and Hart (2002) note that most communication scholars have divided communication into two main types: mass media and interpersonal communication. Interpersonal communication is characterized as one-to-one or one-to-few, face-to-face, and direct without any equipment or technology intervening between the sender and the receiver. In contrast, mass communication is characterized as one-to-many, impersonal, and is generally facilitated by some type of technology that results in the removal of the source individual from the space of the audience. Interpersonal communication is viewed as more intimate and affective than mass communication.

Over the past two decades, scholars have questioned this two-category view of communication as the explosive use of the Internet has created a third type of communication that has some aspects of interpersonal and some aspects of mass communication. Computer-mediated communication (CMC) is considered to be one-to-one, one-to-few, or one-to-many, depending on how an email message is sent. While early research on CMC characterized the medium as impersonal (Rice & Shook, 1990; Turoff, 1991), more current research has illuminated that communication via the Internet can be just as personal as face-to-face communication. In fact, because CMC can offer heightened levels of intimacy, solidarity, and liking, it is possible for such communication to become "hyperpersonal," surpassing the personal nature of face-to-face communication (Walther, 1996). The forwarding of a survey via email is a form of CMC and can, therefore, be personal in nature.

Taking into consideration the nature of email communication, we propose a conceptual two-stage flow of effects model (see Figure 1), identifying factors that lead to the forwarding of survey information, and hypothesize relationships involving such factors. This model is tested empirically in the following section.

Word-of-Mouth Communication

Since the forwarding of a survey is a form of communication that can take on interpersonal characteristics, we turn to interpersonal communication literature to identify factors that would explain why individuals would share such information. Consumer research has studied the impact of word-of-mouth communication (WOMC) extensively as it relates to how people perceive, purchase, and consume products. Defined simply as interpersonal communication regarding consumer
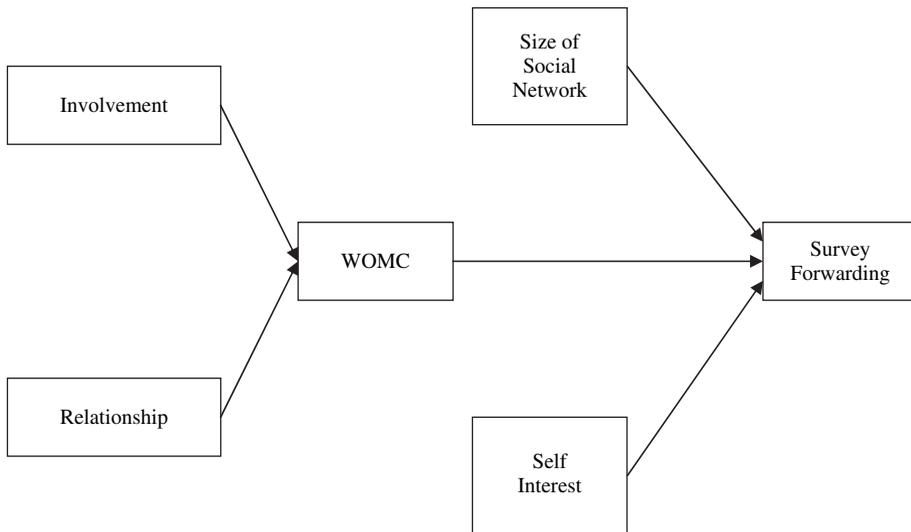
Figure 1 Two-stage model of factors leading to the forwarding of a survey.

information (Godes & Mayzlin, 2004), WOMC has been applied broadly in consumer contexts, covering a range of "products" from tangible goods or services to people and ideas. Additionally, most WOMC research is anchored in theories of the transmission of information throughout social networks (Brown & Reingen, 1987; Frenzen & Nakamoto, 1993; Granovetter, 1973) and is therefore applicable to all types of information, not just traditional product-related information.

We assert that a survey can also be considered the topic of communication and that the literature on WOMC can be used to explain the forwarding of Internet surveys. Viewed as a specific type of WOMC, a correlation between a survey pass-along and the amount of WOMC surrounding the topic of a survey should be apparent.

> **Hypothesis 1:** As the degree to which a survey respondent engages in WOMC regarding the survey topic increases, the likelihood that the respondent will pass the survey along to another individual also increases.

The literature on WOMC has identified various factors that affect the likelihood and the degree to which such WOMC will occur; these same factors should influence the act of passing a survey along. Having proposed a direct relationship between WOMC and survey forwarding, we now identify additional factors relevant to the pass-along effect: those that are mediated by WOMC, as well as those that have a direct impact on survey forwarding.

Antecedent of WOMC: involvement
Previous research has identified several constructs likely to affect the degree to which people engage in WOMC. The first is the construct of involvement. Defined as the perceived relevance of an object by a person based on his or her inherent needs,

values, and interests (Zaichkowsky, 1985), involvement acts as a stimulant to the transmission of WOMC. Previous research shows that the higher the level of product involvement, the more likely an individual is to share information about that product with others (Westbrook, 1987). One reason cited for this dynamic is that involvement elicits strong emotions, both positive and negative, and these emotions drive a person to do more than just use the product for their own consumption. As Dichter (1966) notes, "experience with the product (or service) produces a tension which is not eased by the use of the product alone, but must be channeled by way of talk, recommendation, and enthusiasm…" (p. 148). Richins and Root-Schaffer (1988) further noted that any form of product excitement may result in WOMC.

We assert that the same emotional process that drives the diffusion of product information through WOMC applies to the diffusion of surveys as well. Specifically, a person's level of involvement with a survey or the topic of a survey will influence how much the person engages in WOMC relating to the topic of the survey.

> **Hypothesis 2:** As a person's level of involvement with the topic of an online survey increases, so does the degree to which that person engages in WOMC regarding the survey topic.

Antecedent of WOMC: Relationship with the survey topic
Research has also established that consumers develop relationships with all types of branded products (Escalas, 2004), which can apply to a wide range of items including, goods, services, and ideas. The literature on consumer-brand relationships suggests that a person's level of commitment to a branded product influences various aspects of that person's existence and identity. Social interactions are no exception and, whether through formal organizations or informal conversations, strong consumer-brand relationships are known to stimulate socialization (McAlexander, Schouten, & Koenig, 2002) and positive WOMC (Morris & Martin, 2000). Research based on television programs, for instance, has shown that individuals who have developed strong relationships with a particular program are more likely to engage in WOMC around that program (Russell, Norman, & Heckler, 2004). The concept of a relationship between an individual and a product or even a topic is distinct from involvement, in that any given individual can maintain a high level of involvement with a particular topic or activity but not necessarily develop the deeper bonds that emerge through consumer-brand relationships. The literature on consumer-brand relationships therefore suggests that:

> **Hypothesis 3:** As a person's relationship with the topic of an online survey intensifies, so does the degree to which that person engages in WOMC regarding the survey topic.

Number of Social Ties
Another factor influencing the forwarding of survey information is the number of social ties that a person has with others who hold a common interest in the topic. In consumption contexts, groups of individuals who interact with one another based

on the commonality of brand use have been studied extensively. Subcultures of consumption form around various types of activities and even around brands (McAlexander et al., 2002; Schouten & McAlexander, 1995) or television shows (Kozinets, 2001). Brand communities form based on the social relations of admirers of a brand (Muniz & O'Guinn, 2001; Muniz & Schau, 2005). Affiliation with such groups can influence a person's social interactions. The more attached a person is to a particular item, the more likely that person is to interact with individuals who also share that affinity, whether through formal organizations (e.g., fan clubs, owner's clubs) or through informal conversation.

In the context of WOMC, two conditions are necessary in order for information to be transmitted from one individual to another (Frenzen & Nakamoto, 1993). First, a structural condition is fulfilled when a social relation between individuals is present so that information *can* be transmitted. Second, a cooperative condition is fulfilled when an individual is willing to transmit the information regardless of private interests. The degree to which information will disseminate throughout a social system depends upon both of these conditions. On an individual level, the likelihood that an individual will share key information with others depends not only on how willing the person is to share the information with each social relation, but also on the number of social relations the person holds.

In the context of an online survey, a recipient's social structure can be determined by how many people they know. In order for the survey to be transmitted, however, the recipient must be motivated by a willingness to transmit. We propose that when a recipient's social relations share a common interest in the survey topic, this cooperative willingness will be present. Thus:

> **Hypothesis 4:** As a survey recipient's number of social ties based on a common interest in the survey topic increases, the likelihood that the respondent will pass the survey along also increases.

Self-Interest

The literature on WOMC identifies self-interest as another factor that should affect an online survey recipient's decision to pass a survey along. Economic theory asserts that individuals are active decision makers who, when given a choice, will make decisions that maximize their own interests (Frenzen & Nakamoto, 1993). More specifically, contributions from agency theory (Alchain & Demsetz, 1972) and game theory (Axelrod, 1984) establish that the extent to which an individual will act in his or her own best interest, rather than in the interest of another individual or group, depends on the size of the moral hazard that results when rewards for withholding the information exceed rewards for sharing that information (Bergen, Dutta, & Walker, 1992). Thus, the degree to which self-interest impedes the flow of WOMC depends upon the value of the information relative to its cost.

For instance, a person who has a high level of involvement with the topic of a survey may consider information about that topic, or even the opportunity to give

an opinion about the topic, to be very valuable. Yet it would not cost the person anything to share it. In this case, the respondent should not have any specific motive to withhold information about the survey from others. However, if sharing a survey imposes some kind of cost on the respondent, the situation changes.

To further illustrate, consider a survey that offers a monetary incentive for its completion. Such an incentive should not only motivate respondents to complete the survey, but also to pass the survey along to others. This should be the case so long as the incentive is considered valuable by the respondent and the incentive is given to everyone who completes the survey. However, if a lottery-type drawing is offered as an incentive, the possibility that any one respondent would win the lottery decreases as the total number of respondents increases. If this incentive is of great value to a respondent, then it would also cost that individual something to share the survey with others. The respondent would, therefore, be less likely to do so. However, if the lottery is of little value, the incentive would not have this impact and the respondent may be prompted to forward the survey based on some other aspect of value, such as interest in the topic. Thus, we posit the following relationship:

> **Hypothesis 5:** Respondents whose primary motive for completing a survey is entering a lottery drawing will be less likely to pass the survey along to others than respondents who have some other primary motive for completing the survey.

Tie Strength

In addition to the factors included so far in the conceptual model, we consider one additional factor pertaining to the nature of the relationship between the survey recipient and those to whom the survey is forwarded (when forwarding occurs). In a classic theory of social network structure, Granovetter (1973) identified the strength of dyadic ties as a key factor governing the flow of information. Granovetter defines tie strength as a combination of the amount of time, degree of emotional intensity, level of intimacy, and degree of reciprocity between two individuals. It is assumed that most individuals have a spectrum of social ties ranging from strong (close friends and family members) to weak (mere acquaintants). The concept of tie strength has been applied to various information-sharing contexts, including the flow of WOMC among consumers (Brown & Reingen, 1987; Frenzen & Nakamoto, 1993). In these studies and others, Granovetter's main premise has been supported: While information flows from strong tie to strong tie in densely knit social cliques, weak ties can serve as bridges between such cliques allowing information to flow to more individuals and travel greater social distances.

Thus, while tie strength certainly has implications for macro-level dynamics of social networks, it has also been instrumental in explaining motivations to share or withhold information at the micro-level. Most relevant to our discussion is the widely accepted principle that tie strength is related to the nature of information that is exchanged (Rindfleisch & Moorman, 2001). Specifically, it is held that information of a sensitive or personal nature is more likely to be shared by strong ties than

by weak ties (Frenzen & Nakamoto, 1993). Theoretical support for this dynamic is established by Sahlins's (1972) theory of social exchange. This theory considers not only self-interest as a motivating factor for sharing information, but also the strength of the tie that exists between the actors involved in the social exchange.

Sahlins describes various forms of exchange, including generalized exchange and balanced exchange. Generalized exchange takes place between strong ties. When two individuals have a strong relationship with each other, the spirit of the exchange is centered more on the relationship itself than on the content of the information. This type of exchange, therefore, is altruistic and personal in nature. As a result, moral hazards arising from the nature of the information itself do not have a significant effect on whether or not an individual will share information. Balanced exchange takes place amongst weak ties. Because there is less intimacy and trust between individuals who are merely acquaintances, the nature of the information has a greater impact on whether or not exchange will take place. Moral hazards are managed based on the likelihood that a resource (in this case, information) shared will be reciprocated in a timely manner with the sharing of an equivalent resource. In a weak-tie relationship, there is little expectation that information of a personally significant nature would be reciprocated with equal information. Thus, balanced exchanges tend to be less personal and more economic in nature.

In short, when an individual receives information considered to be personally significant, based on selfless motives and the desire to strengthen a relationship, he/she is more likely to share this information with strong ties than with weak ties. Thus:

> **Hypothesis 6:** As the topic of an online survey increases in personal significance, respondents will be more likely to share the survey with strong ties rather than weak ties.

Study 1

Study 1 was conducted on an Internet survey website with the purpose of investigating the consumption of television programming. While it is not the core purpose of this article to report on this research, the study revealed the impact of pass-along emails in the online survey process and therefore provided the context for Study 2, conducted to test H1-H6. As a means of establishing the context for the research in this article, we provide some background on the initial study that was conducted.

Respondents for the television consumption survey were contacted by email and directed to the survey webpage via a hotlink embedded in the message. A professional online survey website was used to program the survey and collect the data. Invitations to complete the survey were sent out to 45,833 email addresses by an email list broker. The conditions of this service allowed for only a single emailing without providing direct access to the addresses. While this method did limit the use of the sample, the list service also allowed us to obtain a diverse sample selected from a large population of Internet users. The email addresses were selected from lists of people who had indicated an interest in television and entertainment as well as people who had indicated an interest in responding to surveys.

The email message stated the purpose of the survey, specified that the survey was being conducted by university professors for academic purposes, and announced a $500 lottery-type drawing offered to all who would complete the survey. In no way did the instructions mention that the recipient should or should not forward the survey. The survey consisted of a variety of questions, including scale items (Likert, semantic differential, and multiple choice), open-ended short response, and open-ended long response.

It should be noted here that sending unsolicited emails is considering spamming and has been identified as an unethical practice, particularly for research purposes. It has been suggested that one way of avoiding this issue is to send a pre-notification message allowing for respondents to opt in (Mehta & Sivadas, 1995). Yet, even a pre-notification qualifies as an unsolicited email. The list broker used for this study is classified as a 100% opt-in email service, signifying that all addresses pertain to individuals who signed up to receive commercial email messages about topics of interest when registering for membership in any of a vast network of partner websites. A double opt-in system, as used by this broker, ensures that no Internet user is ever signed up without their knowledge or consent. A double opt-in system also results in a very low rate of obsolete email addresses (less than 1% for each list made available by this list broker).

A total of 13,587 individuals completed the Study 1 survey (see Table 1 for descriptive statistics of the sample). Reports available through the email list broker identified two categories of respondents: pass-along respondents and email list respondents. Pass-along respondents are respondents who were not on the original mailing list. These respondents are generated when mailing list members forward messages to non-list members. Of the 13,587 respondents to this survey, 4,132 (9.02% of the original sample and 30.4% of the total respondents) were individuals from the original email list, while 9,455 (69.6% of the total respondents) were pass-along respondents. The online mailing list service provided only aggregate numbers of pass-along respondents and would not identify a given respondent as an original sample respondent or a pass-along effect respondent.

We recognize that the number of pass-along respondents relative to the number of original sample respondents is quite large in this case. Indeed, this issue provided the initial motivation for a more focused investigation of the factors leading to the pass-along effect. In the following section, we report on a study designed to test H1-H6. Study 2 provides an explanation for why Study 1 yielded such a large pass-along effect.

Study 2

Method

Study 2 followed a procedure similar to that of Study 1. A web-based survey was again employed with potential respondents being contacted by email and directed to the survey webpage via hotlink. The same online survey software was used to

Table 1 Comparison of descriptive statistics

Variable	Study 1	Study 2
N	13,587	4,531
Male	15.7%	15%
Female	84.3%	85%
Caucasian	86.4%	89%
African-American	5.6%	4.6%
Hispanic	2.6%	2.3%
Asian-American	2.0%	1.6%
Native-American	1.1%	.7%
English 1st Language	97.2%	97.4%
In U.S.	93.2%	92.8%
Age	$M = 39.57$	$M = 40.92$
Education	$M = 13.91$	$M = 14.06$
Income	$M = 51,951.58$	$M = 48,738.63$

program the survey and collect the data for Study 2. Because the email list used in Study 1 could only be employed for a single mailing, only those respondents who had completed the survey for Study 1 could be contacted. Each respondent of the Study 1 survey was asked to provide an email address. Of the 13,587 respondents of Study 1, a total of 10,747 provided email addresses as a means of contact. This subset of the total number of respondents served as the sample for Study 2.

The invitation email referenced the survey from Study 1 and informed recipients that additional information was being sought with respect to their responses to that survey. They were asked to respond only if they had completed the original survey and were told that a $100 lottery-type drawing was offered to all who would complete this follow-up survey. After proceeding to the survey website, these basic details were restated. The first question asked respondents if they had personally responded to the original survey and only those who responded "yes" were allowed to complete the follow-up survey.

Dependent measures
The first five hypotheses sought to establish factors affecting the likelihood of forwarding an online survey. Thus, our main dependent measure was a dichotomous variable, equal to 1 if respondents indicated that they had forwarded the survey and 0 if they indicated they had not. Tie strength, the dependent variable for our sixth hypothesis, was collected only from those individuals who had forwarded the survey and it was measured based on Granovetter's (1973) definition as a combination of the amount of time, degree of emotional intensity, level of intimacy, and degree of reciprocity between two individuals. A seven-point semantic differential scale ($\alpha = .83$) included a measure of the closeness to the tie (not at all close/extremely close) and one of the frequency of interaction with the tie (never/very frequently).

Independent measures

Many of our independent measures were collected in the survey for Study 1, which focused on the topic of television consumption. In that survey, the majority of the questions related to a television program that had been self-selected by the respondent. Thus, the television program was considered the topic of that survey.

Respondents' level of WOMC relating to the topic of the survey was measured on a two-item scale where respondents indicated how often they talk about their self-selected show with other people (very often/never) and the degree to which they agree with the statement "I enjoy talking about ___ with others," both on a 5-point Likert scale (α = .77). Involvement with the topic was assessed using the Personal Involvement Inventory (Zaichkowsky, 1994), a 10-item 7-point semantic differential scale (see Appendix A). Given that the context of Study 1 was television programming, the intensity of the relationship between the respondent and the survey topic was measured using the television connectedness scale, a 16-item scale designed to measure the intensity of the relationship(s) that a viewer develops with a television program (Russell et al., 2004; see Appendix B). Both involvement and relationship scales are well-established. Scores on each were thus averaged to create an overall indicator for involvement (α = .90) and one for relationship (α = .88).

The number of social ties sharing a common interest in the survey topic was measured by the open-ended question, "how many people do you know personally who also watch this TV show?" Respondents then indicated their main reason for completing the survey ("I wanted to enter the $500 lottery," "I thought the topic of TV watching was interesting," and "other") as a means of assessing whether the primary motive was self-interest. This variable was dummy-coded, with 1 indicating that the lottery was mentioned as a motivation (self-interest motive) and 0 if it was not.

Results

Of the total sample of 10,747, a total of 5,104 (47.83%) individuals completed the Study 2 survey. Individual survey responses from Study 1 and Study 2 were matched using the respondent's email address as the identifier. Some of the respondents email addresses for this second survey did not match those provided by respondents of the first survey, which reduced the number of usable responses from 5,104 to 4,531 (42.16%). As indicated in Table 1, the demographic characteristics of the Study 1 and Study 2 samples were similar.

Tests of the Two-Stage Flow of Effects Proposed in H1–H5

Since the proposed two-stage flow of effects begins with the effects of involvement and relationship on WOMC, a regression analysis was conducted to test hypotheses 2 and 3. Given the large sample size, we adopted a significance level of .01 to provide a more robust test. As predicted, both involvement and relationship were significantly and positively related to WOMC (standardized Betas: .37 and .30 respectively,

p < .01) and the model yielded a respectable fit. (R^2 = 33.5%). Thus, in line with hypothesis 2, the more involved someone is with the subject of the survey, the more likely he or she is to engage in word of mouth communications regarding that topic. And, in line with hypothesis 3, the deeper the relationship someone experiences with a particular product, the more likely he or she engages in WOMC.

In order to test the hypotheses related to the second stage, logistic regression was used to analyze the effects of WOMC (H1), the number of social ties (H4), and self-interest motive (H5) on the likelihood of forwarding a survey. In the model, which yielded appropriate fit (χ^2 (3) = 27.56, p < .01), all parameter estimates were significant at the .01 level except for self-interest motive (p = .465). Per hypothesis 1, WOMC significantly affected the likelihood of forwarding the survey (Beta = .32, Wald = 6.88). Indeed, respondents who forwarded the survey had engaged in prior communication about the topic more often than those who did not forward the survey (M = 3.85 vs. M = 3.34; t (3970) = 6.145, p < .01). Per hypothesis 4, the likelihood that the respondent passed along the survey also increased with the size of the respondent's social network in the domain of the survey topic (Beta = .03, Wald = 16.76). Indeed, those who forwarded the survey had a significantly higher number of ties with individuals who watched the same TV program that they had chosen than those who did not forward the survey (M = 11.91 vs. 6.87; t (3886) = 6.090, p < .01).

The data thus provide evidence for the two-stage flow of effects, with involvement and relationship first influencing WOMC and, second, WOMC and social network size affecting survey pass along. The indirect effect of involvement and relationship on the pass-along effect are further evident in the differences in means between those who forwarded the survey and those who did not: the former exhibited a higher level of involvement than the latter (M = 5.90 vs. 5.71; t (3967) = 2.747, p < .01) and a stronger relationship to the survey topic (M = 2.89 vs. 2.57; t (3965) = 6.24, p < .01).

Analysis of Hypothesis 6
Hypothesis 6 focused on the role that tie strength plays in people's willingness and tendency to share survey information. We anticipated that the more sensitive or personally relevant the survey topic was to the respondent, the more likely he/she would be to share that survey with a strong tie. A tie strength score was computed by combining the measures of closeness and frequency of interaction. Through analysis-of-variance, we compared tie strength levels based on a median split of involvement scores (reflective of personal relevance) and connectedness scores (reflective of the depth of the relationship between respondents and the survey topic). These tests revealed that tie strength levels were indeed higher for respondents who were more involved (M = 6.33; t (172) = 2.354, p = .02) and experienced a deeper relationship (M = 6.31; t (171) = 2.178, p = .03) than for those who were less involved (M = 5.97) or had a weaker relationship (M = 5.96). Thus, Hypothesis 6 is supported.

Investigation of Unsupported Hypothesis

We conducted additional analyses to investigate possible reasons for the lack of support of the self-interest motive hypothesis. When asked about their motivations for completing the survey, 56.3% of the respondents listed the topic of TV as the reason they engaged in the survey. Thirty eight point nine percent of the responses listed lottery as one of the reasons. While this alone does not explain the lack of significance of self-interest as a motive for forwarding the survey, we reasoned that the self-interest (defined by completing the survey for the primary purpose of entering the lottery) could have had an indirect effect through some of the other variables in our model. Further investigation indeed revealed that respondents who entered the survey because of the lottery were significantly less involved ($M = 5.64$ vs. 5.79; t (4217) = 28.19, p <.001) and felt a lesser relationship with the TV program ($M = 2.83$ vs. 2.89; t (4215) = 8.328, p <.001) than respondents who entered the survey because they liked the television topic. Since involvement and relationship were both significant antecedents of WOMC, this suggests that the self-interest motive may have indirectly affected the process of forwarding.

Discussion

The research reported here makes a contribution to the literature on Internet survey methodology in that the phenomenon of recipients of an online survey forwarding that survey to individuals who were not a part of the original survey sample has not been formally addressed in previous literature. We have identified this phenomenon as the pass-along effect and have provided empirical evidence to document the factors that lead to the occurrence of said effect. We have shown that the occurrence of the pass-along effect is related to WOMC behavior, and that it is affected by involvement and relationship with the survey topic, size of social network, and tie-strength.

The occurrence of the pass-along effect has significant implications for the collection of survey data through online methods. As reviewed previously, factors affecting survey completion are one of the most investigated areas of online survey methodology, if not survey methodology in general. Such attention is understandable given the implications of survey completion and response rates on the cost of collecting data and the statistical power of datasets. Considering that online survey response rates are declining in a manner similar to most survey methods (Sheehan, 2001), research that determines ways to maximize the number of completed surveys is important.

The research presented in this article has shown that the pass-along effect *can* increase the total number of individuals who respond to a survey, via a mechanism similar to snowball sampling, which results in a larger sample. Although, technically, the pass-along effect does not increase the response rate, which should be calculated based on the initial sampling frame, the additional respondents do increase the pool of survey participants, thereby achieving the benefit of attaining more respondents for less cost and effort (Groves, 1989). Given that pass-along respondents tend to

have similar characteristics and demonstrate a similar interest in the survey topic, reaching additional pertinent respondents via the pass-along effect could be especially beneficial in the case of hard-to-reach populations (Teitler, Reichman, & Sprachman, 2003).

Given that the pass-along effect can and does occur, the issue of whether or not pass-along respondents are appropriate must be addressed. It has been recognized that the passing along of Internet surveys and survey information can have undesirable effects on the sampling process. Specifically, allowing individuals who are not part of the original sample to access and even participate in a survey introduces randomness and sampling bias, thereby negatively affecting representativeness (Kaye & Johnson, 1999; Witte et al., 2000). Such an assertion assumes that the objectives of the research in question require probability sampling or even representativeness. When these conditions are mandatory and it is imperative that surveys be completed only by individuals who are part of an identified sample, technology makes this possible, even when incorporating email and other online methods of distribution. For example, respondents may be required to enter a password. Software can also be employed to verify that individuals are part of the sample by checking email, ISP address, or some other identifier.

Much has been written about the appropriateness of different sampling methods for different types of research. Debating when, where, and how probability and nonprobability samples should be used is beyond the scope of this article. However, we acknowledge that, for certain research objectives, true randomness may not be required and varying degrees of representativeness may be welcome. Such requirements are fitting for various types of nonprobability sampling, including convenience samples and judgment samples. When survey methods call for convenience, judgment, or even quota samples, pass-along respondents might very well meet the sample criteria. In such cases, not only are pass-along respondents appropriate, they may even be desirable. One of the main advantages to obtaining and using pass-along respondents is the significant increase in the number of respondents without additional costs.

Whether or not to allow pass-along effects depends on the purposes of research. In this respect, the distinction of effects versus theory application offered by Calder, Phillips, and Tybout (1981) is helpful because it implies different guidelines for sampling. Research for the purpose of effects application should be based on a sample that is representative of a given population. For this reason, an online survey conducted with this purpose that allows for pass-along respondents must include measures to validate the factors used to establish the representation of the sample and match the pass-along effect respondents against these criteria.

Pass-along respondents are especially suited to exploratory research where snowball sampling would be appropriate. In employing a true snowball sample, a researcher would begin with a known sample selected randomly from a given population. Then, each respondent would be asked for references to other individuals who possess a certain desired characteristic (Goodman, 1961; Sudman, 1976).

A sample affected by pass-along effects exhibits characteristics of a snowball sample. As such, a survey sample in which pass-along effects occur would be considered a non-probability sample and a type of judgment sample. In this context, appropriate guidelines for such samples should be followed (Sudman, 1976).

While the advantages of the pass-along effect are evident, researchers collecting survey data through online methods should consider such effects with caution. Because the pass-along effect brings respondents from outside the original sample, sample control could be negatively affected and bias could be introduced. If a sample has been selected from a given population and the pass-along effect produces survey respondents that were not a part of the original sample, the nature of these additional respondents could compromise the validity of the data. This validity issue was not a major concern in the case of the research presented in this article because the broad topic of television consumption called for a demographically and psychographically diverse consumer sample.

However, because the pass-along effect reduces the degree of researcher control over sampling characteristics, it could have a detrimental impact on the quality of research. It is therefore crucial for online survey researchers to be aware of the pass-along effect and, whenever possible, to distinguish original sample respondents and pass-along effect respondents. If pass-along respondents are appropriate, it is imperative that studies be designed to incorporate such respondents properly. If pass-along respondents are not appropriate, they can be eliminated or even prevented from responding. The propositions and results discussed in this article can then help guide researchers interested in obtaining and intentionally trying to incorporate the pass-along effect in their sampling strategy to obtain a snowball type of sample.

Beyond the factors contributing to the pass-along effect identified in this exploratory study, other factors certainly exist, such as relationship orientation, which has been shown to affect online behavior, and thus potentially the pass-along effect (Mathwick, 2002). Additional research comparing original respondents and pass-along effect respondents is also needed, as network effect respondents might, for example, differ on issues of response rate and response speed. We encourage future research to more extensively examine online survey methods in general and the pass-along effect in particular, using sophisticated respondent tracking systems and even to explore the dynamics of each tier of a survey network (McMellon & Schiffman, 2001).

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Appendix A

Personal Involvement Inventory (Zaichkowsky, 1994)

Important	___	___	___	___	___	___	___	unimportant
Boring	___	___	___	___	___	___	___	interesting
Relevant	___	___	___	___	___	___	___	irrelevant
Exciting	___	___	___	___	___	___	___	unexciting
means nothing	___	___	___	___	___	___	___	means a lot
Appealing	___	___	___	___	___	___	___	unappealing
fascinating	___	___	___	___	___	___	___	mundane
Worthless	___	___	___	___	___	___	___	valuable
Involving	___	___	___	___	___	___	___	uninvolving
not needed	___	___	___	___	___	___	___	needed

Appendix B

The Television Connectedness Scale (Russell, Norman, & Heckler, 2004)

	Strongly Disagree				Strongly Agree
Watching _____ is an escape for me.	1	2	3	4	5
_____ helps me forget about the day's problems.	1	2	3	4	5
If I am in a bad mood, watching _____ puts me in a better mood.	1	2	3	4	5
I like the clothes they wear on _____.	1	2	3	4	5
I like the hairstyles on _____.	1	2	3	4	5
I often buy clothing styles that I've seen in _____.	1	2	3	4	5
I imitate the gestures and facial expressions from the characters in _____.	1	2	3	4	5
I find myself saying phrases from _____ when I interact with other people.	1	2	3	4	5
I try to speak like the characters in _____.	1	2	3	4	5
I learn how to handle real life situations by watching _____.	1	2	3	4	5
I get ideas from _____ about how to interact in my own life.	1	2	3	4	5
I relate what happens in _____ to my own life.	1	2	3	4	5
I would love to be an actor in _____.	1	2	3	4	5
I would love to meet the characters of _____.	1	2	3	4	5
I have objects that relate to _____ (badge, book, picture, etc.).	1	2	3	4	5
I read books if they are related to _____.	1	2	3	4	5

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