

**Electronic Commerce and World Wide Web Apprehensiveness: An Examination of Consumers'
Perceptions of the World Wide Web**

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Abstract

Through a telephone survey of 204 residents from a northeastern state, participants' perceptions of the World Wide Web usage were investigated. In a path model, the relationships between perceptions and attitudes toward World Wide Web (WWW) use and manifest usage behaviors were tested. Through the analyses distinct differences between general communication-related and commerce-related apprehensiveness toward the WWW were found. Specifically the findings indicated that participants' general WWW apprehensiveness was notably related to the amount of time they spent online. Additionally, the findings indicated that general WWW apprehensiveness (WA) and the misuse of personal information were strongly related to participants' WWW purchasing apprehensiveness for commercial transactions, but the findings were inconsistent with the hypothesis that a need for interpersonal contact while shopping would also influence WWW purchasing apprehensiveness (WA-P). The outcome variables of time and dollars spent online were both well predicted by both WA and WA-P, with WA showing a strong negative influence upon time spent online, and WA-P showing a moderate, negative influence on time spent online, and a stronger negative influence upon dollars spent online, supporting the model of WWW apprehensiveness presented and tested.

Introduction

The Internet continues to diffuse as a communication medium and a channel for commercial transactions. In a report provided by the United States Department of Commerce (Atrostic, Gates, & Jarmin, 2000), e-commerce was estimated at 0.5 percent or \$15 billion, of total retail sales in 1999. This figure is consistent with 2001 Forrester data that predicted worldwide e-commerce—including both business-to-business and business-to-consumer—will reach \$6.8 trillion in 2004, with North American business-to-business representing the majority of this commercial activity (Forrester Research Group, 2001). Despite recent market shifts in the information technology sector, the demand for online services and products continues to grow. While the popularity of the Internet as an informational resource and commercial transaction medium has grown significantly over the past several years, communication-based theory and research designed to better describe WWW use, particularly for electronic commerce, has not entirely grown in pace.

This is not to say that research has not been conducted in this area. In particular, a number of marketing and communication researchers have made significant contributions to our understanding of WWW users and the role the WWW plays along with traditional communication and transactional media (cf. Burke, 2002; Hoffman & Novak, 1996; Papacharissi & Rubin, 2000; Susskind, Bonn, & Dev, 2003; Swaminathan, Lepkowska-White, & Rao, 1999). These researchers over the past several years have presented a number of good “road maps,” which identified potential challenges and have proposed process-based approaches to provide a better understanding of WWW consumerism.

With online spending representing less than one percent of the total retail market (Atrostic, et al., 2000), it is obvious that Internet commerce is still in its infancy, with tremendous potential for growth. Therefore, it seems inadequate for research efforts to focus only on the characteristics of WWW adopters. Instead, I argue that it is equally important to assess the factors that block consumers'

adoption of the WWW for retail-related activities, following previous research that studied factors that influence innovation resistance (Jarvenpaa & Todd, 1996/1997; Ram, 1987, 1989; Sheth, 1981; Swaminathan, et al., 1999). In this article, I present a study of consumers' resistance to use the WWW, testing a conceptual model that draws from McCroskey's work on communication apprehension (1977, 1982) and integrates relevant insights from research on innovation resistance (Jarvenpaa & Todd, 1996/1997; Ram, 1987, 1989; Sheth, 1981; Swaminathan, et al., 1999), electronic commerce (Compeau & Higgins, 1995; Compeau, Higgins, & Huff, 1999; Jarvenpaa & Todd, 1996/1997), Media Richness Theory (Daft & Lengel, 1984, 1986; Kraut & Rice, 1998; Trevino, Lengel, & Daft, 1987) and models of social influence (Fulk, 1993; Fulk, Steinfield, Schmitz, & Power, 1987; Kraut & Rice, 1998; Salancik & Pfeffer, 1978).

Through the path model presented as Figure 1, a series of linear relationships are proposed and tested that capture consumers' perceptions of the WWW as a communication medium and a retail transaction medium. Figure 1 begins with hypothesized positive relationships between: (a) WA and WA-P (Hypothesis 1), (b) a concern over WWW merchants' misuse of personal information and WA-P (Hypothesis 2), and (c) a desire for interpersonal contact while shopping and WA-P (Hypothesis 3). Furthermore Figure 1 shows negative relationships between: (a) WA and time spent online (Hypothesis 4), (b) WA-P and time spent online (Hypothesis 5), and (c) WA-P and dollars spent shopping online. Lastly, the model is controlled for potential influences from the age, sex, income, education, and geographic location of the participants. The paper proceeds by first offering a description of the theoretical foundations offered by the research on communication apprehension and innovation resistance and then moves into a description of each variable in the model and the proposed relationships among them.

INSERT FIGURE 1 HERE

Figure 1

Hypothesized model of the antecedents and consequents of World Wide Web apprehensiveness.

Theory and Hypotheses

Several existing streams of research in the communication, psychology, and marketing literature offer some insight into how perceptions of WWW use might develop. It is proposed that one's resistance to using the WWW for communication-related and commerce-related activities is influenced by several forces, including anxiety toward using the communication medium, as well as the perceived lack of trust in and perceived support from WWW merchants (Hoffman, Novak, & Peralta, 1999; Tan & Thoen, 2000/2001).

Communication Apprehension

To examine consumers' perceptions of WWW use for online information seeking and purchasing activities some basic principles from communication apprehension are applied, but it should be noted that the application of communication apprehension (McCroskey, 1970, 1977, 1978) to the context of the WWW is a nontraditional application of the concept. Communication apprehension is defined as the anxiety or discomfort that is experienced by a communicator as he or she engages in communication behavior (McCroskey, 1970). Oral communication apprehension has been mostly studied in settings involving public speaking, stage fright, and participation in groups (Allen & Bourhis, 1996) and has traditionally been identified as a physiological response to engaging in communication behaviors (McCroskey, 1970, 1977). Therefore, communication apprehension surrounds specific communication behaviors, and influences the perceptions of, and desire to, engage in those behaviors.

Communication apprehension can be described as a trait-based anxiety that transcends communication events for the respondent (McCroskey, 1970) or as state-based, where anxiety is tied to reactions to stimuli at a particular point in time (McCroskey & Beatty, 1998). When anxious reactions occur consistently across series of communication events (i.e., states), trait anxiety is said to exist. More specifically, if respondents consistently experience anxiety in a specific context, such as while engaging in online information seeking or online retail commerce, situational apprehension is believed to exist. A number of researchers have also suggested that communication apprehension is often context-specific (Beatty & Friedland, 1990; McCroskey, 1982; McCroskey & Beatty, 1984, 1998). When considering traditional communication, such as public speaking or group interaction, the underlying premise behind apprehension is that the respondent resists engaging in the communication event because she or he lacks the self-efficacy and confidence to engage in the communication without experiencing anxiety.

This premise has been presented and tested in the communication literature and has been recently extended to Internet-based communication. Clarke (1991), Flaherty, Pearce, and Rubin (1998), Scott & Rockwell (1997) and Susskind, et al. (2003) report that that apprehension about WWW use can be treated similarly to communication apprehension. Given these newer applications of the concept of communication apprehension, it is possible to examine WWW-based communication and the influences that lead to anxiety surrounding WWW use and resistance to using the WWW. In terms of anxiety and resistance to WWW use, issues such as access, privacy, security and comfort surrounding WWW use introduce additional complexities to online communication and transactional exchanges (Hoffman, et al., 1999; Rust, Kannan, & Peng, 2002; Susskind, et al., 2003).

Resistance to Adopt and Use an Innovation

It is safe to say that the Internet has passed the early adoption phase in the diffusion of innovation cycle (cf. Rogers 1983). Therefore, at a macro level, it seems less compelling to study the characteristics of likely adopters. Instead it appears more useful to examine WWW usage within the framework of innovation resistance (Ram 1987; Sheth 1981; Swaminathan, et al., 1999) to understand more fully the attributes of those who choose not to use the WWW, given that not all consumers believe that the WWW is a valuable information source and transaction channel (Simpson, 2001). Taking this perspective, I propose the factors that block WWW adoption and use should be considered rather than the elements that lead to adoption.

The perceived risk of adoption and cognitive resistance to adoption influences respondents' adoption behavior (Ram, 1987, 1989; Sheth, 1981). Perceived risk is defined as the degree to which a respondent views adopting an innovation as risky. According to Ram (1989), perceived risk includes elements of functional risk (fear of performance uncertainty), economic risk (fear of financial costs associated with the innovation), social risk (fear of social ridicule surrounding the use of the innovation), and psychological risk (fear of psychological discomfort). Directly related to e-commerce, Jarvenpaa and Todd, (1996/1997) and Rust et al. (2002) suggest that privacy risk is a key factor that influences consumers' perceptions of the WWW. Perceived risks have been shown to influence cognitive resistance, which stems from a consumers' need for additional innovation-based information or exposure to affect an existing belief structure about a specific adoption (Ram, 1987, 1989; Rogers 1983). Compeau et al. (1999) in their study of reactions to computer use identified both positive and negative affect as possible influences on usage intentions, defining negative affect as "the feelings of apprehension or anxiety when using computers" (p. 148). Simply put, innovation resistance is the extent to which respondents remain apprehensive about using a new or different product. Many of the elements of innovation resistance are directly applicable to WWW use and adoption, as potential and

actual WWW users likely weigh the influence of perceived risk elements in thinking about using the Web.

A Model of WWW Apprehensiveness

Weiser reports that consumers use the WWW for two main reasons (Weiser, 2001): (a) social uses, termed “socio-affective regulation,” such as, e-mail, chat rooms, entertainment, and romance; and (b) practical uses, termed “goods and information acquisition,” such as, shopping and keeping up with current events. Susskind et al. (2003) further examined the dimensions of goods and information acquisition and identified two dimensions of practical WWW application, identifying general uses for information acquisition and exchange and uses for travel-related retail purchases. In so doing, Susskind et al. (2003) extended the work of Clarke (1991), Flaherty et al., (1998), Scott and Rockwell (1997) and Weiser (2001) through the presentation of a two-factor model of WWW use and apprehensiveness. The two-dimensional conceptualization of WWW apprehensiveness was labeled general Internet apprehensiveness that is not necessarily event-specific and transactional Internet apprehensiveness, which is related to Internet use in commercial transactions for goods and services. Here I adapt those concepts and re-label them as WWW Apprehensiveness and WWW Purchasing Apprehensiveness, respectively, as the Internet is the infrastructure that accommodates the various elements that makeup the WWW.

WWW Apprehensiveness

WWW apprehensiveness (WA) is defined as an individual's resistance to or fear of the WWW as a channel of communication in terms of online information seeking and communication exchanges that

are not context specific (Susskind, et al., 2003). WA does not include a specific referent, per se, but taps into the perception of using the WWW for a variety of communication and other online activities, ranging from asynchronous information seeking to synchronous information exchange. This form of WWW apprehensiveness is similar to McCroskey's (1982) description of generalized-context communication apprehension, where an individual's apprehensiveness is not necessarily indicative of apprehensiveness in or toward other communication media. This is consistent with Ram's (1989) elements of functional risk, social risk, and psychological risk, Jarvenpaa and Todd's (1996/1997) element of privacy risk, and Ram's (1989) concept of cognitive resistance.

WWW Purchasing Apprehensiveness

World Wide Web purchasing apprehensiveness (WA-P) is defined as an individual's resistance to or fear of engaging in commerce-related transactions over the WWW (Susskind, et al., 2003). WA-P assesses individuals' willingness to make online purchases, to use credit cards over the WWW, and their level of comfort or anxiety regarding spending specific dollar amounts on the WWW. Individuals are likely to report varying degrees of WA-P depending upon the involvement level required to complete the transaction. This type of WWW apprehensiveness is similar to McCroskey's (1982) description of situational apprehension, where an individual's apprehensiveness about using the WWW as a medium for conducting monetary transactions is a response to the situational constraints of the medium. Situational constraints can be WWW site-specific, such as a particular online merchant, or process-specific, for example with respect to security, privacy and/or the presentation of product attributes. As such, each of Ram's (1989) four perceived risk elements (functional, economic, social, and psychological) and his concept of cognitive resistance are relevant here in addition to Jarvenpaa and Todd's (1996/1997) element of privacy risk.

Because engaging in online transactions likely involves some amount of information exchange and information seeking activity prior to the initiation and completion of a transaction, it is likely that WA is related to WA-P. However, the two concepts are distinct in that a person can experience mixed of levels of WA and WA-P. An individual may report a high level of WA-P and not engage in commerce over the WWW, but use the WWW to gather and exchange information to make purchases off-line. In fact, a market research study conducted by Forrester Group reported that 29 percent of WWW users use the WWW as a product research tool to help them shop off-line, citing reasons such as wanting to see a product physically before purchasing it, wanting to talk to a sales person, not wanting to spend large dollar amounts online, and to save additional shipping and handling costs (Kelley & Bermont, 2000). In these instances, the users likely exhibit a low level of WA and a high level of WA-P. Likewise, an individual may also use the WWW for commerce-related activities, but not engage in other information seeking and gathering activities beyond the retail transactions. This is likely the case with lower priced convenience items, such as music, books, sporting goods, and clothing (Kelley & Bermont, 2000). In this case, the users probably require less information concerning the products, and are likely to exhibit moderate to high levels of WA, and moderate levels of WA-P, allowing them to make minor purchases online without much anxiety. Therefore:

Hypothesis 1. WA is positively associated with WA-P.

Misuse of Personal Information

While consumers may be apprehensive about making transactions over the WWW, (defined as WA-P above), a potential concern not explicitly addressed in the construct of WA-P is respondents' specific discomfort concerning the way in which WWW merchants handle users' personal information following

an online transaction. A number of researchers have reported that WWW consumers view a perceived lack of control over how secondary information is handled over the WWW as a potential problem of the medium (Hoffman, et al., 1999; Rust, et al., 2002; Simpson, 2001; Swaminathan, et al., 1999). As indicated by Swaminathan, et al. (1999), Simpson (2001) and Hoffman et al. (1999), a majority of online consumers examined reported that: (a) they did not like having their personal information sold or shared with third parties; (b) they were concerned about how their information is used after it is retrieved from them online, and (c) their privacy concerns often reduced their desire to make online purchases. The primary reasons cited for these concerns is a lack of trust in the WWW site providers, and the recognition that WWW site providers are using or selling consumers' information without their prior knowledge (Tan & Thoen, 2000/2001; Tweney, 1998). In fact, consumers reported fewer concerns about sharing their personal information over the WWW with merchants if the merchants were willing to disclose how the secondary information would be used (Hoffman, et al., 1999; Tweney, 1998), and those who used the WWW more frequently cited fewer concerns over privacy, but indicated that the creation of additional legislation protecting online security would be useful (Swaminathan, et al., 1999). While the issue of the security of personal information is tied somewhat to online credit card usage and security, the use of secondary information and credit card security are separate issues. The unauthorized use of credit cards is a crime, while the use and sale of consumer data is not currently illegal. It is also possible to engage in electronic commerce without surrendering personal information beyond credit card and billing information. Therefore, I propose that one's perception of WA-P is influenced by perceptions of how personal information is used by WWW merchants.

Hypothesis 2. Perceived misuse of one's personal information online is positively associated with WA-P.

A Need for Interpersonal Contact—Media Richness or Social Influence?

There are two frameworks that have been presented to describe the influences upon individuals' selection and use of the WWW. First, Media Richness Theory suggests that individuals make objective decisions about the activities they need to conduct, and select the communication medium that is likely to best accomplish those activities. Theories of social influence, on the other hand, suggest that individuals' media choices are primarily influenced by their social environment and that they make subjective decisions about the communication medium they use, relative to that social influence. While some researchers (cf. Fulk, 1993; Fulk, et al., 1987) have questioned the utility of media richness and indicate that the socially driven models are superior (cf. Fulk, 1993; Fulk & Steinfield, 1990), others have shown that the two perspectives are “complementary, compatible, and reinforcing” (Kraut & Rice, 1998, p. 440). Consistent with Kraut & Rice's (1998) perspective, I propose that both media richness and social influence models affect individuals' selection and use of the WWW.

Media Richness

Daft and Lengel (1984) introduced Media Richness Theory as a guide for understanding the various communication modes available to organizational members who communicate with one another. The “richness” of each communication medium is characterized by four qualities of information-carrying ability: (a) the capability to provide feedback to the receiver of the message, (b) the number of communication channels and cues utilized to convey the message (such as verbal communication and non-verbal communication), (c) the use of natural language to convey the message, and (d) the source or focus of the communication (Daft & Lengel, 1984, 1986). Based on these four qualities, face-to-face interactions have been classified as the “richest” communication mode and the benchmark to which emerging communication forms have been compared (Daft & Lengel, 1984, 1986; Trevino, Lengel, & Daft, 1987). For instance, e-mail has been regarded as a relatively “lean” communication medium, more

similar to traditional letter correspondence with its pure text nature (Sproull & Kiesler, 1986). While the potential multimedia features of the WWW offer more “media-rich” exchanges for users than text-based e-mail, the interactions and exchanges that an average user can engage in online normally fall short of the richness that face-to-face interactions can offer.

While media richness is a well-cited perspective built initially around organizational communication, there has been mixed support for the theory in empirical studies. Media richness suggests that media choice should be aimed at reducing uncertainty and clarifying ambiguity in message delivery (Daft & Lengel, 1984, 1986; Trevino, et al., 1987). The media richness perspective also suggests that “richer” media are more capable of conveying multiple cues beyond words, enabling rapid feedback, and thereby facilitating efficient information seeking or communication. Respondents select communication media based on their perceptions, beliefs, usage of language and symbols, and situational constraints on information processing (Trevino, et al., 1987). Therefore, in principle, users ought to first examine the characteristics of the task, the available media choices and the context of information seeking or sharing, and then choose the communication channel—or the combination of channels—which can best meet their anticipated needs. In the specific context of electronic commerce, researchers have demonstrated that interpersonal contact is regarded as highly important even for people who shop online, but the need for interpersonal contact while shopping can be offset by factors such as channel utility in terms of accessibility and complexity (Burke, 2002; Li, Kuo, & Russell, 1999).

Social Influence

Consumers have been shown to have different shopping orientations, where they place importance on various factors in the purchasing process that influence how and where they shop (cf. Tauber, 1972;

Burke, 2002). Factors such as convenience, need for information, purpose, social interaction, and value while shopping have all been identified as elements that influence consumers' shopping behavior (Burke, 2002; Li, et al., 1999). This perspective is consistent with the uses and gratifications framework that considers the influences, motives, and outcomes that drive media usage (Newhagen & Rafaeli, 1996; Papacharissi & Rubin, 2000), in this case for commercial transactions. It appears that interpersonal contact is particularly important to consumers when the transactions that take place are complex, require a fair amount of information exchange between parties (Kraut, Steinfield, Chan, Butler, & Hoag, 1998), and the user is also interested in seeking social exchange (Fulk, 1993; Fulk, et al., 1987; Li, et al., 1999; Papacharissi & Rubin, 2000). Therefore, it is likely that consumers who indicate a desire for a “rich” communication channel to meet product and service requirements are likely to show less of a desire to use the WWW for commercial transactions (Kraut & Rice, 1998; Kraut, et al., 1998; Li, et al., 1999; Papacharissi & Rubin, 2000). For instance, the many elements that constitute the “personal touch” in a shopping experience, such as friendly, helpful, knowledgeable, reliable salespersons or being able to shop with companions, contribute to the need for a respondent to interact with a sales associate beyond the act of obtaining product-related information (Jarvenpaa & Todd, 1996/1997). Even if you consider video-streaming capabilities over the WWW intended to enhance the richness of an online shopping experience, they are not likely to substitute directly for the richness of a face-to-face physical shopping experience. For consumers who value a physical/social shopping experience the relative “leanness” of the WWW may limit retail use of the WWW.

Applying a media richness framework to WWW commerce, while recognizing that social elements also influence the online shopping experience, it is likely that those who have a high need for interpersonal contact while shopping for products and services will report a higher level of WA-P, as online shopping involves little if any, direct interpersonal interaction. Consumers' needs for direct

interpersonal contact in the consumer-supplier relationship is likely to lead to a preference for a richer transactional medium (i.e., face-to-face contact), making a preference for online transactions less desirable or likely. Therefore:

Hypothesis 3. A high need for interpersonal contact while shopping is positively associated with WA-P.

Time and Money Spent On-line

In order to understand fully the impact of both WA and WA-P, the connection between individuals' perceptions and behaviors related to this communication mechanism should be examined. Based on the premise that respondents can choose the extent to which they use the Internet for both general information exchange and for conducting transactions, respondents who are more apprehensive about using the WWW will likely spend less time using it. This proposition is consistent with the findings of Compeau et al. (1999) who found that perceived anxiety toward computer use was negatively correlated ($r = -.44$) with reported computer use. This relationship is nomological and should hold true for both WA and WA-P, as they are both indicators of user anxiety toward WWW use. Therefore:

Hypothesis 4. WA is negatively associated with time spent online.

Hypothesis 5. WA-P is negatively associated with time spent online.

Likewise, respondents who report a high level of WA-P will not only spend less time online, as suggested in H5 above, but also will spend fewer dollars through online transactions. In an investigation of consumers' self-reported online spending behavior, Susskind, et al. (2003) found WA-P was significantly related to dollars spent online ($\beta = -.30$, $p < .001$), while WA in the same equation was not shown to be a significant influence ($\beta = -.10$, $p = .07$). These results suggest that WA-P is notably associated (inversely) with the amount of dollars consumers reportedly spend online. Therefore:

Hypothesis 6. WA-P is negatively associated with dollars spent online.

The proposed model (see Figure 1) represents an extension of research in: (a) communication apprehension presented by McCroskey and colleagues; (b) innovation resistance by Ram (1987, 1989), Sheth (1981) and Swaminathan, et al. (1999); (c) electronic commerce by Hoffman, et al. (1999) particularly in WWW merchants' use of consumer personal information as examined by Swaminathan, et al. (1999), (d) media richness by Daft and Lengel (1984, 1986) and Trevino, et al. (1987) and (e) theories of social influence by Fulk (1993) and Fulk, et al. (1987), as applied in the context of electronic commerce (Li, et al., 1999).

Methods

Procedure

Phone interviewers contacted residents of two northeastern cities, using a computer-assisted telephone interviewing (CATI) system. The first city was located in the rural part of the state with a population of approximately 25,000 at the time of the survey administration and the second was a major metropolitan city. The sample cities were located approximately 250 miles apart from each other, making it unlikely that the respondents of the rural city commuted to and/from the larger city. The rural-urban contrast was deliberately included to be able to control for the impact of consumers having other available functional alternatives to shopping on the WWW, mainly physical stores. That is, having easy access to "brick and mortar" merchants might serve as a disincentive for the urban city residents to shop online. Conversely, the WWW might offer the rural residents a venue to obtain goods and services previously difficult to get because of a lack of physical sellers in the local area.

Participants were contacted over the telephone via random digit dialing. This procedure was chosen to maximize randomness in the sampling process and to avoid a biased sample resulting from using a phone book or other published sampling frames that might exclude unlisted numbers. Of the valid numbers dialed, 104 respondents were secured from the rural city, along with 127 refusals and 391 numbers that yielded no response (i.e., either no answer or answering machine). For the large city, 100 respondents were secured among 251 refusals and 368 numbers that yielded no response. These represented response rates of 17 percent and 14 percent for the rural and urban cities, respectively, and refusal rates of 20 percent and 35 percent. These response rates are reflective of the state of telephone surveying and polling, which has been negatively affected by the telemarketing industry's driving the public to screen calls and to refuse to talk with anyone they suspect to be a telemarketer (O'Brien, 1999).

Participants

The participants were 47 percent male ($n = .93$) and 53 percent female ($n = .107$). During the data collection process the callers failed to record the sex for two of the participants. In terms of education, three percent reported less than a high school education ($n = .4$), 27 percent reported a high school diploma ($n = .53$), 37 percent reported a bachelor's level college education ($n = .73$), and 33 percent reported a graduate level degree ($n = .64$). Eight participants refused to provide data about their education. Respondent age was collapsed into three categories: thirty-nine percent reported their age to be between 18 and 30 ($n = .74$), 33 percent reported their age to be between 31 and 45 ($n = .63$), and 28 percent reported their age as greater than 46 ($n = .54$). One participant did not provide his/her age. Respondents' income was also collapsed into three categories: twenty-three percent reported an income under 30,000 dollars ($n = .46$), 21 percent reported an income between 30,001 and 60,000

dollars ($n = .42$), and 29 percent reported an income greater than 60,000 dollars ($n = .59$). Twenty-seven percent of the respondents did not provide answers to this question, suggesting that it was a more sensitive question compared to the other socio-demographic items presented. An analysis of the missing income data using one-way ANOVA showed no discernable pattern among the variables of interest in the study, beyond what was accounted for when the missing data was excluded. A series mean replacement of the missing values was applied to the data except for the sex variable, which was treated listwise, to preserve the sample size for the analysis at $N = 202$.

Measurements

During the phone survey, the participants responded to queries from a questionnaire that addressed specific details concerning their perceptions of WWW commerce, WWW usage and activity (including online spending) and their socio-demographic profile as reported above. To eliminate question order effects, the items constituting each construct were randomized by the CATI system. The participants' WA was assessed using a 3-item scale and WA-P was assessed with a 7-item scale both specifically adapted for this investigation from Susskind, et al. (2003). Importance of Interpersonal Contact while shopping (IPC) was measured using 7 items created specifically for this investigation based on the work of Daft and Lengel (1984, 1986) and Trevino, et al. (1987). Attitudes toward WWW merchants' misuse of personal information received online (PI) was measured using 5 items created specifically for this investigation based on the work of Hoffman et al. (1999). All the items were presented on a five-choice Likert-type metric asking the participants to indicate their level of agreement with each statement.

To provide a basic user profile of the respondents, they were first asked how often they used a computer ranging from never (coded to 0) to very frequently (coded to 5). Fifty-six percent of the

respondents indicated that they never use a computer ($M = .1.98$, $SD = 1.39$). Respondents were further asked how many hours per day they used the WWW on a five-choice metric spaced by 30-minute intervals (ranging from less than 30 minutes coded as 1, to greater than 2 hours coded as 5). While it is possible that addressing this question categorically may have restricted the range of responses on this variable, among the sample 25 percent of the respondents reported they used the WWW for 30 minutes or less per day, and 26 percent reported that they used the WWW for more than 2 hours per day, with the remaining 49 percent falling in between the two anchor categories. This distribution suggests that the range selected to represent the respondents' WWW usage appropriately captured the respondents' usage, without underestimating the magnitude of their online interaction. Lastly, the participants were asked whether or not they had ever made an online purchase; fifty-five percent of the respondents indicated that they had never made an online purchase ($n = .110$). If the participants indicated they had made an online purchase, they were questioned further concerning their online spending behavior. Online spending was reported as dollars spent on: (a) Internet-related services (e.g., online access and set-up, subscriptions, software, and hardware); (b) tangible consumer goods (e.g., books, grocery products, appliances, furniture, etc.); and (c) intangible consumer goods (e.g., airfare and travel-related packages, rental cars, hotels, and restaurants). Total spending from the three categories was aggregated into a single variable labeled dollars spent online ($M = \$919.17$, $SD = \$2208.75$). The respondents showed a consistent pattern of relationships regarding their WWW and computer use. The participants' frequency of computer use was strongly correlated with whether or not they had ever made an online purchase ($r = .77$, $p < .01$) and moderately correlated with their reported online spending in dollars ($r = .55$, $p < .01$).

Control Variables

Socio-demographic Influences

A series of t-tests and regression analyses were conducted to identify any socio-demographic variables that should be controlled for in the path model. Regression analyses revealed that among the participants, age was significantly related to WA ($\beta = .30, p < .001$), significantly related to their attitudes toward Web merchants' misuse of personal information ($\beta = .17, p < .02$), and negatively, but not significantly related to time spent online ($\beta = -.12, p = .15$). Likewise, education was negatively related to a desire for interpersonal contact while shopping ($\beta = -.21, p = .004$) and income level was negatively related to WA-P ($\beta = -.34, p < .001$). As determined by t-tests, females reported a higher level of WA ($t [198] = -2.33, p = .02; r = .16, p < .05$) and spent less money online ($t [198] = 2.96, p = .003; r = -.21, p < .01$) than their male counterparts. These noted significant socio-demographic effects were added to the test of the model, with sex coded as a dummy variable with female set equal to one to account for the influence of sex on WA and dollars spent online.

Sub-sample Congruity

To ensure that the two independent samples (rural versus urban) represented the same population, the Mann-Whitney U test was applied to the data. This procedure requires ordinal data and is more powerful than a median test, as it uses the rank order of the data to determine sample congruity (Norusis 1993). Given the requirements of the U test, it was only possible to consider the respondents' education, income, and age in this particular set of analyses. Results indicated that the two independent samples represented the same population as they were not statistically different on each of the three socio-demographic dimensions ($U = 4224, z = -1.31, p = .19; U = 2319.5, z = -1.55, p = .12; U = 4511.5, z = -.01, p = .99$, for education, income, and age, respectively). Because of the nominal/categorical nature of the sex variable, the Mann-Whitney U test is not an appropriate test for this effect; a chi-square analysis of sex by rural/urban location was conducted and revealed a nonsignificant result indicating the

distribution of male and female respondents from both cities was not significantly different ($\chi^2[1] = 1.44, p = .23, n = 202$).

To further ensure that the rural and metropolitan samples did not differ on the variables of interest a series of t-tests was conducted to detect differences between the two samples. No significant differences were found for: (a) misuse of personal information ($t [200] = 1.24, p = .22$); (b) interpersonal contact ($t [200] = .56, p = .58$) (c) WA-P ($t [200] = .92, p = .36$); (d) time spent online ($t [200] = 1.62, p = .11$); and (e) dollars spent online ($t [200] = -.46, p = .64$). A significant difference existed among the rural and urban populations for WA ($t [200] = 2.76, p < .01$; $M = 1.72, SD = .87$ and $M = 2.12, SD = 1.02$, respectively), indicating that the rural participants reported a lower level of WA when compared to the metropolitan participants ($M_{\text{difference}} = -.40, SE_{\text{difference}} = .14$). This variable was dummy coded and added to the path model with the rural designation set equal to one in the analyses.

Analyses

Exploratory Factor Analysis

To examine the factor structure of the perceptual and attitudinal measures, principal components analysis with varimax rotation was applied to the data. This particular combination of factor analytic techniques was selected to maximize the amount of variance explained by the variables through the formation of uncorrelated linear combinations of the variables (Norusis, 1993). Factor and item retention were based on: (a) a scree plot, (b) items not displaying cross-loadings greater than .30, and (c) items having minimum factor loadings above .50. Any items that did not meet the statistical and evaluative criteria set forth were removed from consideration in the final factor solution.

The initial principal components analyses suggested a six-factor solution. Two of the seven items from the interpersonal contact scale loaded as single-item factors, a third item from the interpersonal contact scale and one item from the use of personal information scale loaded on the WA factor, and one WA-P item cross-loaded with the PI factor. These five items were excluded from further analyses (IPC5, IPC6, IPC7, PI1, and WA-P7). The remaining items were reanalyzed and the new scree test suggested that four factors be retained. A complete listing of the items is presented in Appendix A.

The final factor solution consisting of 19 items was obtained by specifying a four-factor solution following the removal of the non-consistent items identified above. Ultimately, WA was represented by the three original items (Cronbach's $\alpha = .75$), WA-P was represented by the six out of the original seven items (Cronbach's $\alpha = .81$), IPC was represented by four out of the seven original items (Cronbach's $\alpha = .71$), and PI was represented by four of the five original items (Cronbach's $\alpha = .68$). The rotated sum of squared loadings from the final four-factor solution explained 54 percent of the variance. The final factor loadings are reported in Table 1, along with the eigenvalues and the percentage of variance explained for each final factor in the solution.

Table 1. Factor loadings from the factor analysis of the final retained items.

INSERT TABLE 1 HERE

Note: N = 202 using listwise deletion. Each factor's principal loadings are presented in boldface.

Path Analysis

Following the factor analyses, the model presented as Figure 1 was examined using least squares static path analysis (Hunter & Hamilton, 1995) to examine the modeled direct and indirect effects of variables

based upon the proposed hypotheses and the noted control variables. In this case the socio-demographic variables (i.e., age, education, income, sex, and city), WA, PI, and IPC were treated as the exogenous variables, and WA-P, time spent on the WWW and dollars spent online were treated as the endogenous variables. WA-P was presented as a mediator of the relationships between WA, misuse of personal information, interpersonal contact and time spent online and dollars spent online. WA was modeled to have a direct and indirect effect (through WA-P) on time spent online. The path model was assessed for fit based on the recommendations that: (a) the global χ^2 test for the sum of squared error for the model be non-significant and (b) each path linkage be tested for significance by calculating a confidence interval around the observed path coefficient.

Results

To aid in the interpretation of the relationships among the variables, the descriptive statistics and correlations of the final scale variables are reported first (see Table 2), followed by the tests of the path model. The pattern of observed relationships is consistent with what was anticipated. WA, misuse of personal information, and interpersonal contact were all positively correlated with WA-P and negatively related to both time spent online and dollars spent online.

Figure 2. Descriptive statistics and correlations of the final scale variables

INSERT FIGURE 2 HERE

Note: Cronbach's alpha appear in the brackets along the diagonal and were not calculated for time spent on line, dollars spent on line, or the socio-demographic variables, as denoted by –; means and standard deviations were not calculated for the categorical variables as denoted by –; and dollars online were rounded to the nearest whole dollar, *= $p < .05$, **= $p < .01$

Tests of the Path Model

The initial path analysis revealed that the hypothesized model did not produce an acceptable fit to the data ($\chi^2 [31] = 44.96$, $p = .05$, $n = 202$), despite a number of significant path linkages in the model. While five of the six hypothesized paths in the model were significant, the model could not support the data as presented due to sampling error. Sampling error analysis revealed a significant deviation in the model due to two links that were not specified a priori: the link between time spent online and dollars spent online (difference = $-.44$, $z = -4.50$, $p < .001$) and the link between interpersonal contact and WA (difference = $.29$, $z = 2.15$, $p = .03$). Based on these findings, the model was subsequently revised to include the two unspecified links and re-tested in an attempt to better model the data.

Post-Hoc Analyses

Initially, I hypothesized that WA would influence WA-P and time spent online and WA-P would influence both time spent on line and dollars spent online, leaving the relationship between time spent online and dollars spent online unspecified in the model. The results indicated that respondents who spent more time online showed lower levels of WA and WA-P, indicating that they are less apprehensive about using the WWW for both general uses and to make purchases online. It therefore makes sense that consumers who spend more time on line spend more money online as well. Similarly, respondents who spend less time online are less likely to make online purchases. Subsequently a post-hoc test was conducted with the link between time spent online and dollars spent online added to the model.

The second mis-specified link in the model, between interpersonal contact and WA, appears to be less intuitive, but still can be justified in the model. Among this group of respondents, the connection between interpersonal contact and WA-P (Hypothesis 3) was significant at the $p < .10$ level, not the p

<.05 level, showing a weaker link than anticipated between the two variables. Given that 55 percent of the respondents reported that they had not made online purchases, they had no reference point to consider relative to WA-P or online purchases. However the fact that a significant relationship emerged between a need for interpersonal contact while shopping and WA suggests that the respondents were able to make a connection between a desire for more rich interaction while shopping and the generally lean characteristics of the WWW as represented by WA. Subsequently a post-hoc test was conducted with the link between interpersonal contact while shopping and WA added to the model. The revised test of the model is presented as Figure 2.

Figure 2. Final model of the antecedents and consequents of World Wide Web apprehensiveness.

INSERT FIGURE 2 HERE

Note: The dashed arrows and boxes represent the demographic/control variables added to the model and the red arrows represent the post-hoc links added based upon the sampling error analysis.

'=P<.10

*=P<.05

**=P<.01

Hypothesized Influences

The revised model presented as Figure 2 demonstrated a very good fit to the data ($\chi^2 [29] = 18.38, p = .94, n = 202$). As noted above, WA was significantly related to WA-P (path coefficient = .26, $p < .01$), providing support for Hypothesis 1. PI was significantly related to WA-P (path coefficient = .30, $p < .001$), supporting Hypothesis 2. Hypothesis 3 was weakly supported in the model with IPC being marginally

related to WA-P (path coefficient = .16, $p < .10$). In support of Hypothesis 4, WA was negatively and significantly related to time spent online (path coefficient = -.32, $p < .001$). In support of Hypothesis 5 and Hypothesis 6, WA-P was negatively and significantly related to time spent online (path coefficient = -.22, $p < .01$) and dollars spent online (path coefficient = -.62, $p < .001$), respectively. The later relationship produced a stronger influence in the model, suggesting that WA-P is more closely related to online spending, but still shows a significant relationship to time spent online.

Socio-demographic Influences

Sex was not significantly related to WA at the $p < .05$ level, but was significant at the $p < .10$ level (path coefficient = .13), indicating that women reported a slightly higher level of WA than men among this sample. Likewise women reported that they spent less money online compared to their male counterparts (path coefficient = -.19, $p < .01$). Age was significantly related to PI and WA, indicating that older respondents reported higher levels of PI and WA (path coefficient = .19, $p < .01$ and path coefficient = .35, $p < .001$, respectively); age was not significantly related to time spent online, but older respondents did spend less time online (path coefficient = -.11). The respondents' level of income was negatively and significantly related to WA-P (path coefficient = -.21, $p < .01$), showing that higher levels of income are related to lower levels of WA-P. Education also was negatively and significantly related to IPC (path coefficient = -.20, $p < .01$), showing that respondents with higher levels of education reported a lower need for interpersonal interaction while shopping. Finally, sample location was significantly related to WA (path coefficient = .19, $p < .05$), showing that respondents from the rural location reported lower levels of WA compared to the metropolitan sample.

Post Hoc Links

The first post-hoc link between time spent online and dollars spent online was significant (path coefficient = .52, $p < .001$) when added to the model, showing that respondents who spend more time online also spend more money online. The second post-hoc link between time spent online and dollars spent online was also significant (path coefficient = .23, $p < .01$), indicating that a need for personal interaction while shopping is more strongly related to WA, rather than WA-P as initially hypothesized.

Web Users Versus Non-users

In this study, 56 percent of the participants reported that they do not use computers and 55 percent of the respondents indicated that they do not make online purchases. Because of this dynamic in the sample, it is possible that the results reported in Figure 2 are skewed as a result of the large proportion of non-users. Initially the non-users were included in the sample with the hope of providing greater variance in the responses based on the premise that if the model fits across the sample of users and non-users combined it will be more generalizable, and may help WWW marketers better understand the characteristics behind consumers' resistance to use the WWW in varying degrees. Recognizing that this is a potential limitation of the study, the model presented as Figure 2, was retested as Figure B1 with the non-users excluded from the analyses. These additional analyses are presented in Appendix B.

Discussion

Creating a better understanding of how respondents react to new and different channels of communication is an important task for communication scholars. In this study several antecedents and consequences of WWW apprehensiveness were examined among active and potential WWW users,

extending an existing communication-based theoretical construct to the realm of the WWW. The findings indicated that participants' general WA was notably related to the amount of time consumers spent online. Additionally, the study revealed that general WWW apprehensiveness and the perceived misuse of personal information were related to participants' perceptions of WA-P, but strong evidence that a need for interpersonal contact while shopping would influence WA-P was not found. The outcome variables of time and dollars spent online were both well predicted by WA and WA-P, with WA having a strong negative influence on time spent online, and WA-P having a moderate, negative influence on time spent online, and a stronger negative influence upon dollars spent online.

In support of Hypothesis 1, it was demonstrated that general WWW apprehensiveness was moderately related to WA-P. This relationship suggests that people's reluctance to use the WWW for information seeking and communication is connected to their desire to engage in e-commerce, and is consistent with prior research examining that very connection (cf. Susskind & Stefanone, 2001). Given the modest, yet statistically significant, relationship between the two variables (path coefficient = .26, $p < .01$), it is clear that WA is not the sole determinant of WA-P. However, it remains reasonable that a general fear of the medium influences other fears specific to contexts, events, or processes.

Hypothesis 2 showed that the perceived misuse of personal information was moderately related to WA-P, suggesting that consumers' perceived uncertainty surrounding the misuse of their personal information was related to their aversion to use the WWW for commerce-related activities. As noted by Swaminathan, et al. (1999), Hoffman, et al. (1999) and Salnoske (1997), consumers' lack of trust in how merchants handle their personal data is the more important issue, not whether or not users are asked to furnish such information. Given the significant relationship between the two variables (path coefficient = .30, $p < .001$) it is clear that the perceived misuse of personal information is a solid antecedent of WA-P. This finding suggests that WWW merchants need to be made aware that their

consumers count on a certain level of privacy while using the WWW and the profits gained from selling personal information may detract from a consumer's overall desire to use the WWW as a medium to conduct retail transactions and must be appropriately considered (Rust, et al., 2002). It seems important to more broadly examine this construct to better understand consumers' privacy needs (Swaminathan, et al., 1999).

Hypothesis 3 proposed that a perceived need for interpersonal communication while shopping would lead to greater WA-P. The data were not entirely consistent with this hypothesis. This could be explained by an argument put forward by Parks and Floyd (1996) that computer-mediated communication is not incapable of conveying personal and relational content, but that it just takes more time to be able to extract interpersonal content through computer-mediated communication. Likewise, this finding is also consistent with the arguments put forward by Walther (1996) who suggests that computer-mediated communication is not impersonal and offers users the opportunity to experience personal and relational content if desired. Consistent with Walther's view (1996), the consumers surveyed in this investigation might not believe that the WWW deprives them of interpersonal contact or they did not expect the WWW to offer a high level of interpersonal contact, leading to a weak association with WA-P. It seems reasonable to examine this relationship more closely in future investigations to determine to what extent specific needs for interpersonal contact influence online spending. While the perceived "media leanness" of the WWW might be a valid disincentive for some consumers to shop online, a portion of the negative impact of this perception might have been masked or influenced by other psychological responses that deal more with the preference for other available transactional media rather than apprehensiveness toward WWW use.

The tests of Hypothesis 4 and Hypothesis 5 revealed that WA and WA-P were both negatively and significantly related to the amount of time participants reported they spent online. In comparison,

however, WA had a stronger influence upon time spent online compared to WA-P (path coefficient = -.32, $p = .001$; and path coefficient = -.22, $p = .05$, respectively). Because WA also influenced WA-P in the model, it appeared that WA was the starting point of resistance for a potential WWW user, which then flowed down into perceptions toward more specific transactional activities and actual usage behaviors. At a practical level, this observation is particularly salient now because consumers have a number of communicative and commerce-related options from which to choose, including physical stores, catalog shopping, and TV shopping. If they experience discomfort or fear about engaging in online activities, they can choose not to use the WWW and spend money on an array of products and services available for sale off-line.

The test of Hypothesis 6 revealed that WA-P was negatively and significantly related to the amount of money participants reported they spent online. Participants who reported discomfort with online commerce-related activities, whether influenced by WA, a need for interpersonal contact while shopping, or perceptions that WWW merchants misuse their personal information, reportedly spent less money online. The inverse among these relationships was also true, indicating that those who were less WWW apprehensive purchased products and services online more frequently.

Lastly, the post-hoc analyses revealed two additional findings not initially anticipated in the model. First a statistically significant connection was uncovered between time spent online and dollars spent online. While it is possible for consumers to make a few very large purchases in a relatively short period of time spent online, the data suggest that those who spend more time online, spend more money online, and vice versa. The post-hoc analyses also revealed that a need for interpersonal interaction while shopping was notably related to WA, but not WA-P as anticipated. Because general WA can be influenced by the same elements that influence WA-P, it is likely that the perceived need for interpersonal contact while shopping also tapped into customers' propensity to favor more rich socially-

derived communication exchanges while using the WWW for general purposes, rather than for e-commerce specifically. This interpretation is consistent with the reported relationships between WA and WA-P and is particularly relevant because more than half of the respondents surveyed had yet to make an online purchase. This finding builds upon Kraut and Rice's (1998) assertions that individuals consider both the social and functional elements of a communication medium, and suggests that a combination of media richness and social information processing models should be applied to assess users' perceptions and use of communication media.

Limitations

As with most empirical studies, this research has a few limitations that should be noted. First, although our rural- and metropolitan-based respondents were drawn from a carefully selected probability sample, they were nonetheless drawn from two cities in the same northeastern state, making it is unreasonable at this time to assert broad generalizations about the US population at large from these findings; however, these findings were consistent with the results reported from additional samples collected in different geographic regions (cf. Susskind et al., 2003). Future research should continue to examine a broader base of consumers concurrently. Secondly, as briefly mentioned above, the response rates were generally low. This is due mainly to the negative impact that the growing telemarketing industry has had on residential dwellers, making it increasingly difficult to reach cooperative respondents via telephone. Third, when examining WWW usage, it would be ideal to solicit direct observations of online behavior to mitigate concerns over any possible self-report method bias. While our research design included the collection of both attitudinal and recalled behavioral data, it remains a challenge in this line of research to gather completely objective usage data. This is true largely because to gather such information the participants must offer the researchers direct access to their online

usage patterns. This exacerbates concerns about respondent anonymity and privacy, both of which are key issues related to WWW apprehensiveness. In research such as that reported here, the limitations of using self-report online spending data and general WWW usage data should be appropriately balanced with the respondents' burden to participate in the study and provide objective usage data (Howard, 1994; Spector, 1994). Finally, the data collected from our sample were cross-sectional in nature. As a result, it is not possible to make causal attributions among the variables from these data. As noted above with the collection of objective usage data, collecting longitudinal data is complicated by the removal of the promise of anonymity to the respondents.

Future Research

This investigation provided some insight into the relationship between WWW commerce and WWW apprehensiveness, as well as some factors contributing to the specific fear of using the WWW for retail transactions. In particular, this study showed that a WWW apprehensiveness framework is useful in providing a basic explanation for why some consumers remain reluctant to shop online. Future investigations should extend the WWW apprehensiveness framework, particularly by testing additional antecedent variables to WA and WA-P. For instance, it would be valuable to consider the influence of more user-based variables, such as personality traits and self-efficacy associated with WWW use. These factors may help to assemble a more complete picture of the elements that discourage consumers from using the WWW in general and more specifically for commerce. Additionally, user experience with the WWW beyond reported daily usage should be considered as a factor in determining how apprehensiveness toward the WWW in general and toward commercial transactions in particular changes over time. If feasible, having longitudinal and multiple sources of data for triangulation will add considerable value to continued research on this increasingly important and timely topic.

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Appendix

Appendices

Appendix A List of Survey Items

Interpersonal Contact

IPC1. It is important to me that a merchant I shop with on regular basis recognizes me.

IPC2. When I buy something, I generally need to be able to talk with a salesperson about the product.

IPC3. Face-to-face contact with a salesperson is important to me when I shop.

IPC4. I like receiving product recommendations from a salesperson who knows my preferences well.

IPC5. Shopping on the Web doesn't allow me to get to know the merchants. ^{a,b}

IPC6. Web merchants cannot easily get to know my tastes and preferences. ^{a,b}

IPC7. Shopping on the Web is too impersonal for me. ^{a,b}

Use of Personal Information

PI1. I am uncomfortable giving out my personal information on the Web. ^a

PI2. I believe that my information registered on the Web is sold to other marketers.

PI3. I wish I could know more about how my personal information is used.

PI4. I am uncomfortable with having no control over how my personal information is used.

PI5. Most Web sites do not tell me how my personal information will be used.

General WWW Apprehensiveness

WA1. I like to use the Web for a variety of reasons. ^b

WA2. Generally, I am not comfortable using the Web to gather any information.

WA3. Communicating with the Web usually makes me uncomfortable.

WWW Apprehensiveness Relative to Purchasing

WA-P1. Ordinarily I am very calm and relaxed when making online purchases. ^b

WA-P2. Sometimes I am apprehensive about making online purchases.

WA-P3. I have no fear of making online purchases. ^b

WA-P4. I feel perfectly comfortable using the Web to make online purchases under 1000 dollars. ^b

WA-P5. I feel perfectly comfortable using the Web to make online purchases under 1000 dollars. ^b

WA-P6. I would use the Web to purchase airline tickets, book hotel rooms, or other travel related services. ^b

WA-P7. I don't trust the security of the web to use my credit card for online purchases. ^a

^aan item excluded from the final factor solution;

^ban item asked in reverse form, such that a low response to the item (i.e., 1) is intended to represent a high score on the variable of interest.

Appendix B Test of the Model with Computer Users Only

To assess the model using only the participants who reported computer use, the following post-hoc analyses were conducted. The participants in the user sub-sample were 57 percent male ($n = .51$) and 43 percent female ($n = .38$). In terms of education, three percent reported less than a high school education ($n = .3$), 23 percent reported a high school diploma ($n = .20$), 38 percent reported a bachelor's level college education ($n = .34$), and 36 percent reported a graduate level degree ($n = .32$). Respondent age was collapsed into three categories: forty percent reported their age to be between 18 and 30 ($n = .36$), 42 percent reported their age to be between 31 and 45 ($n = .37$), and 18 percent reported their age as greater than 46 ($n = .16$). As with the full sample, respondents' income was also collapsed into three categories: seventeen percent reported an income under 30,000 dollars ($n = .15$), 25 percent reported an income between 30,001 and 60,000 dollars ($n = .22$), and 39 percent reported an income greater than 60,000 dollars ($n = .35$). Twenty percent of the respondents ($n = .17$) did not provide answers to this question.

Total online spending for the user subgroup was $M = \$2028.22$, $SD = \$2954.42$, ranging from zero to \$13,000. Likewise, 9 percent of the respondents reported they used the WWW for 30 minutes or less per day and 40 percent reported that they used the WWW for more than 2 hours per day; the remaining 51 percent of the users fell in-between the two anchor categories. Of the valid numbers dialed, 46 percent of the respondents were secured from the rural city, and 54 percent of the respondents came from the metropolitan sub-sample.

The model presented as Figure B1 fit the data quite well ($\chi^2 [29] = 15.07$, $p = .98$, $n = 89$), with only a few links varying notably in strength and significance from Figure 2 presented above. Two main differences were discovered in the tests of the user subgroup reported in Figure B1 when compared to the complete sample reported in Figure 2. First, the path between IPC and WA-P was no longer statistically significant in the model. While in Figure 2 this relationship was shown to be marginally significant (at the $p < .10$ level), the reported difference in Figure B1 among the user subgroup suggests that these respondents do not make a connection between a need for more rich interaction while shopping and apprehensiveness about making online purchases. The relationship between IPC and WA, however, remained significant in the model. In Figure B1 a moderate level of IPC ($M = .2.72$, $SD = .80$) was connected to a low level of WA ($M = .1.61$, $SD = .72$) indicating that Web users do not readily associate interpersonal interaction with general WWW applications. The second notable difference in the test of Figure B1 among the user subgroup was the connection between time spent online and dollars spent online. In Figure 2 the relationship was highly significant (path coefficient = $.52$, $p < .001$) yet in Figure B1 the relationship was not significant (path coefficient = $.07$, $p < .001$). This is most likely due to the nonusers who would be characterized by zero hours of time spent online and little if any dollars spent online. Overall the model presented as Figure B1 is a sound representation of the data and is consistent with the findings reported in Figure 2 based on the complete sample of users and non-users.

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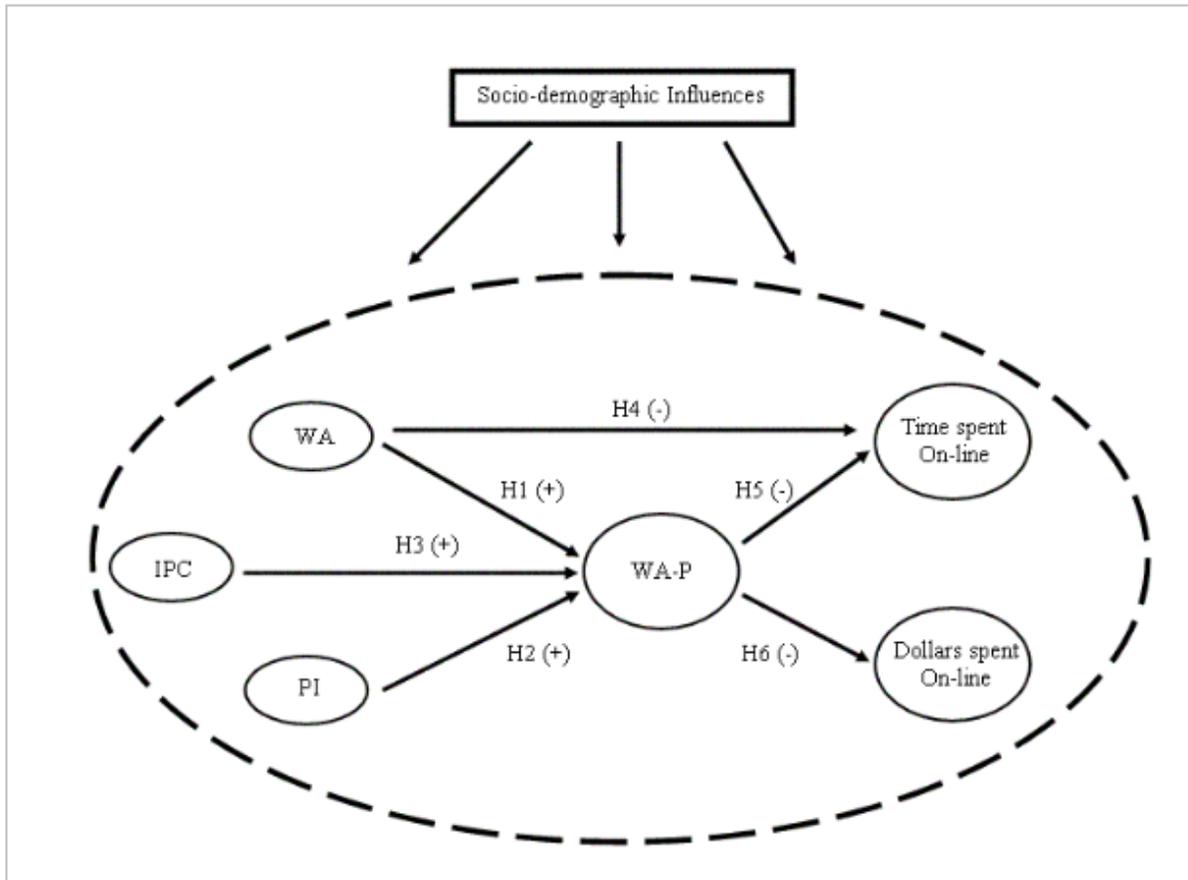


Figure 1

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Hypothesized model of the antecedents and consequents of World Wide Web apprehensiveness.

Table 1. Factor loadings from the factor analysis of the final retained items.

| Items | 1 | 2 | 3 | 4 |
|----------------------|----------|----------|----------|----------|
| IPC1 | -.02 | .50 | .22 | .15 |
| IPC2 | .28 | .77 | .05 | -.02 |
| IPC3 | .15 | .83 | .09 | .08 |
| IPC4 | .01 | .70 | .01 | .13 |
| PI2 | .11 | .07 | .54 | .17 |
| PI3 | .06 | .04 | .64 | .02 |
| PI4 | .23 | .23 | .74 | -.04 |
| PI5 | .08 | -.01 | .68 | -.06 |
| WA1 | .15 | -.04 | -.12 | .78 |
| WA2 | -.01 | .23 | .17 | .77 |
| WA3 | .19 | .20 | .11 | .79 |
| WA-P1 | .53 | .23 | -.09 | -.11 |
| WA-P2 | .50 | .06 | .29 | .03 |
| WA-P3 | .67 | .10 | .20 | .22 |
| WA-P4 | .76 | .09 | .04 | .16 |
| WA-P5 | .76 | -.11 | .19 | -.08 |
| WA-P6 | .56 | -.02 | -.13 | .26 |
| Eigenvalue | 5.05 | 1.97 | 1.81 | 1.42 |
| % Variance Explained | 26.6 | 10.40 | 9.60 | 7.50 |

| | | M | Sd | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|----|----------------------|------|------|--------|-------|-------|--------|--------|--------|------|-------|-------|------|----|
| 1 | WA | | .96 | [.75] | | | | | | | | | | |
| 2 | PI | 2.97 | .91 | .12 | [.68] | | | | | | | | | |
| 3 | IPC | 4.03 | .78 | .27** | .25** | [.71] | | | | | | | | |
| 4 | WA-P | 3.11 | .82 | .35** | .38** | .32** | [.81] | | | | | | | |
| 5 | Dollars spent online | 972 | 2260 | -.22** | -.19* | -.19* | -.45** | — | | | | | | |
| 6 | Time spent online | — | — | -.44** | -.07 | -.07 | -.35** | .29** | — | | | | | |
| 7 | Sex | — | — | .16* | .02 | .06 | .08 | -.21** | -.06 | — | | | | |
| 8 | Income | — | — | -.07 | -.04 | -.10 | -.26** | .21** | .05 | -.12 | — | | | |
| 9 | Age | — | — | .38** | .19** | .08 | .14 | .10 | -.27** | .09 | .21** | — | | |
| 10 | Education | — | — | -.02 | .03 | -.20* | -.09 | .09 | .01 | .07 | .31** | .35** | — | |
| 11 | City Location | — | — | .19** | -.12 | .04 | -.09 | .02 | -.13 | -.08 | .11 | .00 | -.11 | — |

Figure 2

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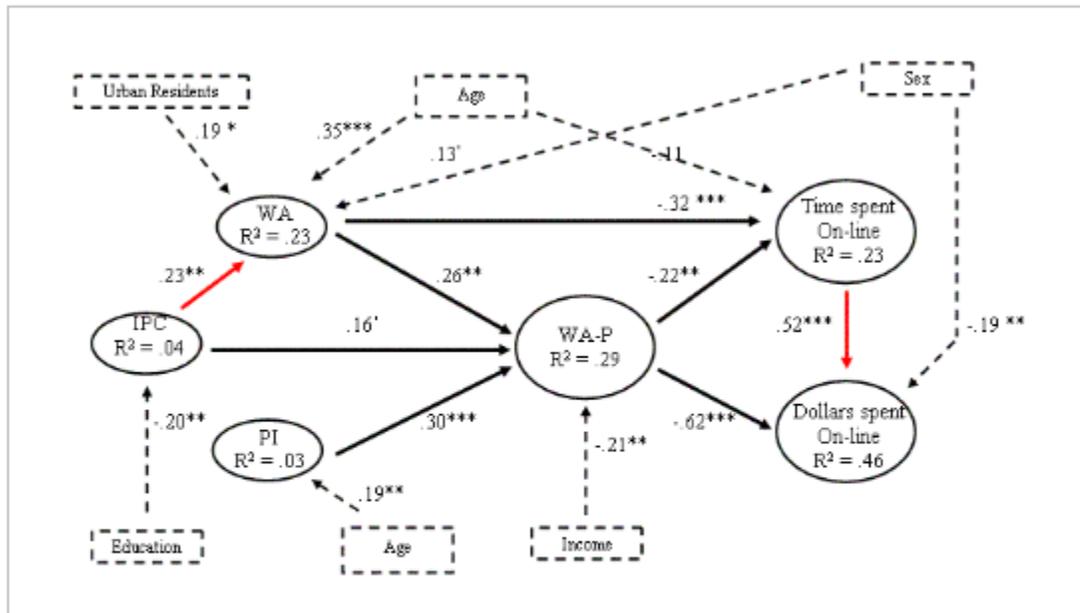


Figure 2

[Open in figure viewer](#) | [PowerPoint](#)

Final model of the antecedents and consequents of World Wide Web apprehensiveness.