Consumer Reactions to Online Behavioral Tracking and Targeting

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ABSTRACT

This study measures three aspects of consumer reactions to online behavioral tracking and targeting: (1) What consumers know or believe about online behavioral tracking and targeting and the practices associated with it, (2) the nature of their opinions or evaluations regarding these strategies, and (3) the consumers online shopping actions or behavior in view of what they believe and how they feel about online tracking and targeting. The findings indicate a higher level of awareness of tracking and targeting than existing literature suggests. Reactions to it are largely negative, though not strident. Dislike of tracking and targeting does not appear to have greatly inhibited online browsing or shopping activities.

INTRODUCTION

In the beginning, e-commerce promised the coming of the "perfect" market at last. With the introduction of product search and price comparison websites or so-called *shopping bots*, it appeared that technology was about to achieve what economists could only *assume* in the past: namely, near *perfect information*. [1, 2]

Behavioral tracking

Lately it would appear that what technology has provided it may now take away. By depositing "cookies" on individual shopper's computer and/or by recording a visiting shopper's computer IP address, online marketers obtained the ability to track the shopper's behavior, not only while at the site, but also coming and going. [3] Behavioral tracking provides the data for "tailoring" pages, offers, and prices to the behavioral characteristics of the individual shopper. [4]

The online shopper sits comfortably at the keyboard, comparing products and prices from one online seller's site to another, or perhaps with the help of a shopping bot, confident that the "best" deal has been identified. [5, 6] Meanwhile, several of the online marketers whose sites were visited may have deposited cookies on the shopper's computer and perhaps received data from previously deposited cookies. [4, 7] So, the "best" deal may be only the best available at this particular time for this particular visitor with this particular history and this particular avenue of arrival at the site. In other words, it may not be the best deal at all, in any global sense of the word.

Behavioral tracking and price targeting have grown rapidly in popularity among marketers and are very likely to continue to gain acceptance. [8] There are several benefits or reasons for online sellers of consumer goods to invest in the software and maintenance to track and target shoppers:

Boosting sales

There are potential increases in sales revenue and profits inherent in tailoring offers and prices to the buyer's behavior. At its core, market segmentation and target marketing are all about this kind of differential treatment of a broad market. [9] With conventional target marketing, the assumption is that it is more lucrative to gain deeper penetration in *specific* segments than to attain only shallow penetration among the entire market by trying to be "all things to all people." But in the case of online tracking and targeting, as with database marketing in general, the "segments" consist of *individual* consumers.

Experimentation

Experimenting with offers and prices is nothing new to direct marketers. For decades they have been using "split run" methods to test appeals, offers, prices and media, among other things. The technology to do behavioral tracking and targeting has only enhanced that ability to experiment, and in many cases, made it more economical to do so. For instance, an online marketer might offer a set of prices randomly to shoppers visiting the site to estimate the demand curve to the product. Alternatively, various appeals, page layouts, featured goods, "specials" and deals might be tested. In such cases, the objective is to determine what sells best, then establish that set of characteristics as the standard for that product in the coming time period.

Winning new customers

It is an axiom of direct marketing that *investment* in the first transaction, to obtain a new customer, typically has long-time benefits in terms of the *lifetime value* of the customer. [10] By identifying visitors to an online marketers site and distinguishing those who have purchased previously from those who are potential new customers, the newcomer can be wooed with special deals and incentives, including discounted prices, free shipping, and the like. Doing so is based on the premise that the customer is likely to return and purchase at prices more lucrative to the seller.

Building customer loyalty

This is, of course, the opposite side of the coin from the effort to win new customers. In this case, the strategy is to reward existing customers for coming back. [11-14] Again, the existing customers must be distinguished from newcomers, but with this policy, the existing customers get the special deals, prices, or incentives. The offers and prices may be conditioned on how frequently the customer purchases, the volume of purchases, the duration of patronage, even the period of time since the last purchase, in order to win back inactive former buyers. [15]

Meeting competitor prices

Tracking technology allows online merchants to identify visitors to the site who come directly from online product search and price comparison sites or shopping bots. [16] Some online marketers believe such customers are likely to be more price sensitive than those who come to the site directly or form other sites. Thus, they may offer such visitors, and especially the first-time visitors, price discounts, special deals or incentives.

Recover referral costs

Product search and price comparison sites often list links to online merchants above, below, or to the right of the actual search results. These "ads" are keyed to words or phrases in the search string, based on a contractual arrangement between the search site and the online merchant. Each time a shopper clicks on one of those links outside the regular search results, that merchant is charged a fee, whether or not the shopper makes a purchase. In fact, only a very small fraction of such visitors do buy. Some online merchants either charge a higher price to come to their site by this route or, more likely, do not offer special incentives that might be available to those who come to them via a different route.

Augment email promotions

Bombarded with ads and other messages, most consumers open only a small proportion of the email they receive. They respond to an even smaller fraction of offers. E-commerce merchants who track the behavior of visitors to their sites can and sometimes do use this data to target emailings. Recipients who are addressed by name or offered products or services related to previous purchases or to goods they have examined on the sender's website are more likely to respond than those who receive "blind" mailings. [17] [16]

Making a "Second Offer"

Merchants who track consumer behavior at their sites may record what items are left in abandon shopping carts. The assumption is that such shoppers were close to making a purchase, then changed their minds. Perhaps a discount or other incentive, such as free shipping would push them over the edge, resulting in successful conversion. If the merchant has or can obtain the shopper's email address, this kind of "second offer" can be provided, containing a link to the site and even the specific page listing the product of interest to the shopper. [15]

Marketers' Perspective

Online marketers using the new track and target technology typically see it as the ultimate micromarketing tool. [18] Implantation of cookies coupled with the establishment, maintenance and enhancement of a customer plus shopper database provide the potential for individualized targeting.

Online merchants are also quick to purport that tracking and targeting programs are in the best interest of the consumer, as well as the marketer. Shoppers are provided with offers for the goods and services in which they are most interested. They receive fewer messages and offers for merchandise for which they have no need or desire. Consumers gain information about goods they need and want; information they would not otherwise receive or would have to search out. Such claims are certainly true, to some degree. On the other hand, it is doubtful that consumers are quite so sanguine about tracking and targeting practices as are the online merchants.

Consumer Reactions

Both anecdotal reports from the popular press and empirical evidence reported in the academic literature indicate public reactions to online behavioral tracking and price and offer targeting range from shear disbelief to vehement outrage. [19] Many consumers are reported to believe price targeting is actually illegal. One study reported, "Sixty-four percent of American adults who have used the internet recently do not know it is legal for "*an online store to charge different people different prices at the same time of day*." The same study indicated, "Seventy-six percent agree that "*it would bother me to learn that other people pay less than I do for the same products.*" [20]

Quick to pick up on public fear, advocacy groups such as *The Center for Digital Democracy* and *U.S. Public Interest Research Group* filed a brief with the FTC asking for tighter restrictions on advertising online. While the main area of focus of most studies and reports is concern for information privacy, the issues of disclosure and fairness in pricing is also a major factor. A representative of the *U.S. Public Interest Research Group* proclaimed, "The emergence of this online tracking and profiling system has snuck up on both consumers and policymakers and is *much more than a privacy issue*" (emphasis added). [21]

Public concern and institutional response have not gone unnoticed by direct and interactive marketers. At an FTC public hearing in late 2006 Direct Marketing Association President John Greco stipulated, "We need to determine from what we want to protect (consumers) beyond the areas upon which everyone agrees." [22] His statement highlights the fact that public concerns regarding ecommerce constitute a *package* if beliefs, preferences and fears.

Research Questions

The questions addressed by this study are based on the traditional three-component attitudinal model. The study seeks to learn (1) what consumers *know* or *believe* about online behavioral tracking and targeting and the practices associated with it, (2) the nature of their *opinions* and *evaluations* regarding these strategies, and (3) the consumers online shopping *actions* or *behavior* in view of what they believe and how they feel about online merchandisers.

METHODOLOGY

A survey of 1,135 adult consumers residing in the Mid-Atlantic region of the U.S. was conducted in March, 2007. The questionnaires were delivered and retrieved by university student field workers who were assigned a quota, based on the age and sex of respondents. To qualify for participation, respondents were required to have access to a computer at home and connection to the internet. They must also have made at least two online purchases in the past year. Although no minimum value was specified in the quota, they were asked to report number and value of purchases in the questionnaire.

Survey Questionnaire

The self-administered survey questionnaire listed 16 statements concerning online merchants practices. A 5-point scale was depicted to the right of each statement with extremes labeled *Definitely True* and *Definitely False*. The midpoint was labeled *Not Sure*. Respondents were asked to circle a number beside each statement to indicate what they thought about it regarding *online marketers* who sell consumer goods on the Web.

On the following page of the questionnaire, respondents were asked to indicate their agreement or disagreement with a second set of 16 statements on a 5-point scale with extremes labeled *Strongly Agree* and *Strongly Disagree*. The midpoint on this scale was labeled *Don't Know*. The statements were composed of what online shoppers might or might not advocate or support and how they evaluated what they knew.

The third questionnaire page included a list of 16 online shopping actions to which respondents indicated how often they performed each using a 5-point verbal frequency scale. The scale points were labeled *Very Often, Often, Sometimes, Rarely*, and *Never*. The actions listed included such common online behavior as using search engines to find products, writing product review, or registering with an online merchant.

In addition to these behavioral measures, 10 popular *product search and price comparison* websites and 10 *coupon supplier* websites were each listed in alphabetical order. Respondents indicated how often, if at all, they had visited each site during the past year. They were also questioned about their mode of connection to the internet, frequency of computer use, internet and web activity, and online shopping and buying behavior.

Lastly, respondents reported their demographic status. They indicated their sex, age, marital status, education level, employment category, occupational category, home ownership and family income in the demographic section of the questionnaire. These data measured field worker adherence to quota specifications, as well as indicating the nature of the population represented.

RESULTS

Sample Characteristics

The demographic distributions of response for the responding sample are displayed in Table 1. About half of the sample are of each sex, reflecting the sample quota specifications. The responding sample tended to be more educated, affluent, and engaged in more up-scale occupations than the general population from which the convenience sample was obtained.

Internet Connection Methods

Survey respondents were asked to indicate their main internet connection at home. The results are shown in Table 2. More than 6 out of 10 had a digital cable connection, while only slightly more than 1 in 10 still used a telephone MODEM; a largely obsolete technology. Thus, the lack of a fast, dependable internet connection can not be regarded as a serious limitation on shopping online or on browsing among complex, content-laden online merchant sites.

Table 1
Demographic Distributions of the Sample

	Number	*Percent*
Sex		
Male	565	49.8
Female	570	50.2
Age		
Under 35	411	36.2
35 - 50	363	32.0
Over 50	361	31.8
Marital Status		
Married	613	54.0
Not Married	522	46.0
Education		
High School Only	266	23.4
Some College	316	27.8
College Graduate	378	33.3
Post-Graduate	175	15.4
Employment		
Company Employed	483	42.6
Education or Government	164	14.4
Self-Employed	106	9.3
Not Employed	382	33.7
Occupation		
Professional	168	14.8
Executive, Managerial	167	14.7
Technical, Administrative	155	13.7
Sales, Marketing	146	12.9
Skilled, Semi-skilled	117	10.3
Not Employed	382	33.7
Home Ownership		
Owner	768	67.7
Renter	367	32.3
Family Income		
Under $40,000	142	16.6
$40,000 to $59,000	117	14.5
$60,000 to $79,000	121	15.0
$80,000 to $99,000	160	19.8
$100,000 to $139,000	99	12.2
$140,000 & Over	170	21.0
Total	809	100.0

Total N = 1,135

Computer and Internet Use

Survey respondents registered the number of hours per week they spent using the computer at home and at work, time on the internet, and time actually shopping online. These results are contained in Table 3.

Table 2
Respondents' Internet Connection Methods

Method	**Number**	**Percent**
Digital Cable	718	63
Telephone DSL	233	21
Telephone MODEM	131	12
Satellite/Other	53	5
Total	1,135	100

The sample quota specifications required qualified respondents to have made at least two online purchases in the past year. Thus, it might be expected that they would be relatively frequent users of computers and the internet. About 40 percent used the computer at home more than 10 hours per week. Nearly 3 out of 10 spend over half their work week on the computer. Time on the

internet was also substantial, with more than 3 of 10 spending over 10 hours per week on the net.

Table 3
Hours Spent Using the Computer*

Activity	Number	Percent
Hour per Week Using Computer at Home		
Less than 5 Hours	377	33
6 to 10 Hours	308	27
11 to 20 Hours	291	26
More than 20 Hours	159	14
Hour per Week Using Computer at Work		
Less than 1 hour	383	34
1 to 10 hour	264	23
11 to 20 hour	161	14
More than 20 hour	327	29
Hour per Week on the Internet or Web		
Less than 5 Hours	337	30
6 to 10 Hours	311	27
11 to 20 Hours	301	27
More than 20 Hours	186	16
Hour per Week Shopping Online		
Less than 1 Hour	152	13
One Hour	484	43
Two Hours	199	18
3 or More Hours	300	26

*N = 1,135

Time spent *shopping* online was also substantial. Only 13 percent said they spend less than 1 hour a week shopping on the web, while over a fourth indicated they spend 3 or more hours a week so engaged. This group, then, might be regarded as very experienced computer users and online shoppers.

Table 4
Value of Online Purchases in the Past Year*

Type of Purchases	Number	Percent
Value of Most Expensive Purchase		
$75 or Less	241	21
$76 to $150	260	23
$151 to $250	183	16
$251 to $500	228	20
More than $500	223	20
Total Value of All Purchases		
$200 or Less	247	22
$201 to $400	209	18
$401 to $1,000	315	28
$1,001 to $2,000	142	13
More than $2,000	222	20

*N = 1,135

Online Purchase Values

Respondents recorded the value of their most expensive purchase in the past year as well as the approximate total value of all online buying for that period. These data, displayed in Table 4, also represent high levels of purchase behavior. Only slightly more than 1 in 5 indicated their most expensive purchase was $75 or less, with about the same proportion reporting total purchases for the year of $200 or less.

On the high side of the spectrum, a fifth of all respondents reported their most costly purchase at more than $500 and the same fraction said they had spent more than $2,000 in total during the previous year. Once again, these data encourage the conclusion that those responding to the survey were frequent and purposeful online buyers of consumer goods, rather than merely casual shoppers of web offerings.

Table 5
Percentage Visiting Sites in the Past Year*

Site	Never	1 - 10	>10
Price Comparison Sites			
Yahoo	36	34	29
BizRate	78	19	3
Froogle	81	15	4
PriceGrabber	90	9	2
NexTag	91	7	1
DealTime	94	5	1
PriceScan	94	5	0
PriceRunner	96	4	0
MetaPrice	97	2	0
PepperJam	98	1	0
Coupon Sites			
MyCoupons	85	13	2
CoolSavings	92	6	1
DealCatcher	92	6	2
Entertainment	92	7	1
CouponCraze	96	4	0
Eversave	96	3	1
Consumers Campus	97	2	0
CouponMountain	98	2	0
FlamingoWorld	98	2	0
Keycode	98	2	0

*N = 1,135

Price Comparison and Coupon Seeking

Ten of the most popular online price comparison websites were listed in alphabetical order and respondents were asked how many times in the past year they had visited each site. The results are contained in Table 5. *Yahoo! Shopping* proved to be the most popular product search and price comparison site listed, with the responding sample divided almost equally between those who *never* visited, those who visited *between 1 and 10 times*, and those who visited *more than 10 times*. Some 22 percent said they had visited *BizRate* at least once while 19 percent indicated so for the *Google Product Search* site. Less than 5 percent had visited either of these two sites more than 10 times. More than 9 out of 10 shoppers had never visited the remaining 8 product search and price comparison sites.

Visits to coupon supplier sites were even more rare. Over 95 percent of respondents indicated they had never visited the 6 least popular sites listed. More than 90 percent had never visited three others. The *MyCoupons* site was the most popular, but 85 percent had never visited it and only 2 percent had visited it more than 10 times. Clearly, these were not aggressive coupon seekers.

Reactions to "Track and Target"

The main thrust of this survey was to examine three aspects of consumer shoppers' reactions to online behavioral tracking and to targeting of offers and prices based on the tracking data: What online shoppers and buyers *know or believe* about these practices, how they *feel or evaluate* such online marketers' actions, and the manner in which they *respond or behave* when shopping online under these perceived conditions.

Table 6
Percentage Who Each Statement as True, False, or Were Unsure*

	Statement	True	Unsure	False
1	*Online marketers* often save information about the buyers who purchase from them online.	87.9	8.4	3.7
2	*Online marketers* may be able to tell who has prviously visited their site by leaving small programs or "cookies" on visitors' computers.	73.7	21.8	4.6
3	*Online marketers* can tell whether or not a visitor linked to their site from a search site such as Google.	70.9	22.3	6.8
4	*Online marketers* can keep track of what pages an online shopper visits on their site whether or not they buy anything.	67.5	22.8	9.8
5	*Online marketers* often sell or trade the information they obtain from people who visit their website.	67.4	18.4	14.2
6	*Online marketers* may be able to identify repeat visitors by recording the IP address or "ID number" of the shopper's computer	64.9	27.8	7.3
7	*Online marketers* can tell how long an shopper stays at their website on a given visit.	63.4	30.4	6.2
8	*Online marketers* sometimes give lower prices to shoppers who link to their site from "price-comparison" sites such as BizRate or Froogle.	44.1	42.7	13.2
9	*Online marketers* almost always charge the same price to every online shopper for the same goods at a given time.	37.3	25.9	36.8
10	*Online marketers* sometimes give better deals to "first-time" buyers than to those who have purchased from them before.	37.1	32.4	30.5
11	*Online marketers* can not tell anything about vistors to their sites unless the shopper rcords some information and submits it.	32.3	22.4	45.2
12	*Online marketers* sometimes offer lower prices to shoppers who previously visited their site once or more without buying.	30.0	42.4	27.6
13	*Online marketers* almost always charge less for goods advertised in email messages with links to their websites.	25.2	45.8	29.0
14	*Online marketers* can not tell how many times a shopper has visited their site if the visitor didn't buy anything before.	22.3	28.4	49.2
15	*Online marketers* are required by law to charge the same price to every online shopper for the same goods at a given time.	21.4	39.3	39.3
16	*Online marketers* can not tell what items visitors put in their "shopping carts" if the shopper leaves the site without buying.	18.0	28.8	53.2

*N = 1,135

Consumer Knowledge and Belief

Sixteen statements about what online marketers' practices and capabilities were listed in random order in the survey questionnaire. Respondents registered whether they regarded the statements as true, false, or were unsure. The results are shown in Table 6 with the items listed in the order from that most often to least often seen as true. Ten of the 16 items might be assumed to be actually true. Six items, numbers 9, 11, and 13 through 16 in Table 6 can be seen as false, in reality, depending on how one interprets such words as *often, sometimes,* or *may be.* These items are highlighted in Table 6 for easy identification.

Less than 1 out of 7 respondents incorrectly regarded the first 8 [true] items in Table 6 as false. Nearly 88 percent correctly indicated online merchants often save buyer information *[item 1]*, while nearly three quarters correctly recognized online marketers may be able to identify previous visitors through the deposit of cookies *[item 2]*. Over two thirds knew about merchants ability to identify the site from which visitors came to their site *[item 3]*, as well as their propensity to trade or sell information *[item 4]*. Uncertainty was most frequent regarding online marketers' giving lower prices to those coming from price comparison sites *[item 8]*; to previous visitors who were not buyers *[item 12]*; or to those linking to the site from an email ad message *[item 13]*.

Less than a third erroneously believed they could remain anonymous if they didn't register or record any information when visiting a seller's website *[item 11]*. Similarly, only slightly more than 1 in 5 respondents incorrectly indicated that online marketers were legally bound to charge the same price for the same goods at a given time *[item 15]*. Nearly 40 percent correctly recognized that was not a legal requirement.

Taken as a whole, these results do not support the view that consumers who are online buyers are a naïve lot. While they may be somewhat uncertain or incorrect regarding targeted pricing, the majority are well aware of the potential for collection and application of data obtained from their visits. Obviously this does not imply that they approve of online marketing measures associated with behavioral tracking and targeting, but it does indicate awareness of such measures.

Consumer Opinions and Evaluations

Respondents to the study expressed their opinions and evaluations by indicating their agreement or disagreement with 16 statements listed in random sequence. They are shown in Table 7 in order from that most often to least often obtaining agreement.

More than 8 out of 10 would advocate legal prohibition of online marketers' *selling* information without permission *[item 1]*, while nearly 7 in 10 agreed there should be a law against *collecting and saving* data from online shoppers *[item 3]*. Very nearly the same proportion agreed to a key item central to this

Table 7
Percentage Who Agreed and Disagreed with Each Statement*

	Statement	Agreed	Dis-agreed
1	Online marketers should be prohibited by law from trading or selling information about visitors or buyers without their permission.----------	80.8%	19.2%
2	I would be upset if I found out that other shoppers got better deals than I did from the same website during the same time period. ----------	78.9%	21.1%
3	There should be a law against online marketers collecting and saving information about visitors to their sites without the shopper's permission.--	68.5%	31.5%
4	Email ads with links to "special discounts" can be misleading because the prices are often no better than those routinely offered at the website.---	62.6%	37.4%
5	It's easier to find bargains and discounts on the web than it is in conventional retail stores. -------	62.4%	37.6%
6	Online shopping is generally much more risky than shopping at a conventional retail store.----------	59.7%	40.3%
7	If I learned that an online marketer charged different prices to similar shoppers during a given time I would avoid shopping at that website. ----	56.7%	43.3%
8	If I visited a website several times within a few hours and the prices fluctuated up and down substantially I would be very surprised! ----------	55.9%	44.1%
9	It should be illegal for online marketers to charge different prices to some shoppers than to others during the same time period. ----------	55.2%	44.8%
10	In all fairness, online marketers should offer their loyal customers better prices and bargains than first-time buyers. ----------	51.5%	48.5%
11	Online shoppers who take the time and trouble to use "price-comparison" sites such as PriceScan or Yahoo! deserve to receive lower prices. -------	49.6%	50.4%
12	Online marketers can learn too much about visitors to their sites, even when the shopper doesn't actually enter or submit any information.----------	49.0%	51.0%
13	Conventional retail stores are generally more fair and honest than online marketers who sell consumer goods and services. ----------	39.1%	60.9%
14	Websites that specialize in discounts and coupons, such as "Eversave" or "MyCoupons," allow online shoppers to obtain substantial savings. ------	37.2%	62.8%
15	Online shoppers can protect their privacy completely if they delete the "cookies," the small programs websites leave on visitors' computers.	26.3%	73.7%
16	It is against the law for online marketers to charge different prices to some shoppers than to others during the same time period. ----------	19.8%	80.2%

*N = 1,135

study: *"I would be upset if I found out that other shoppers got better deals than I did from the same website during the same time period." [item 2]*. Along those same lines, well over half agreed: *"If I learned that an online marketer charged different prices to similar shoppers during a given time I would avoid shopping at that website." [item 7],* and nearly as many agreed, *"It should be illegal for online marketers to charge different prices to some shoppers than to others during the same time period. [item 9]*. More than half also agreed that if prices fluctuated up and down substantially with subsequent visits within a few hours they would be very surprised *[item 8]*. Roughly 6 out of 10 respondents agreed: email ads promoting discounts can be misleading *[item 4]*, and it is easier to find bargains on the net than in stores *[item 5]*, but shopping online is more risky than offline *[item 6]*.

Consistent with the legality issue measured in the previous section, the highest proportion of disagreement was with the statement claiming it is against the law to charge different prices to different buyers during the same time period *[item 16]*. Nor did the majority of respondents agree that conventional retails are mare fair than online sellers *[item 13]*, or that coupon supplier sites help consumer save *[item 14]*. Nearly three fourths disagreed that deleting cookies effectively protects privacy *[item 15]*.

Overall, the results portray a public more opposed than hospitable toward several merchant practices necessary to effective online behavioral tracking and offer or price targeting. That said, it should be noted that in many cases there are substantial minorities who are comfortable or at least tolerant of the practices. These results are contrary to the conventional wisdom fed by the popular press, that consumers are largely ignorant of the actions of online merchants, blatantly hostile and mistrusting of them, and openly fearful of being exploited. [20]

Online Shopping Behaviors

The 16 online shopping actions or practices presented in random order in the questionnaire are shown in Table 8, listed from that most often to least often reported. Respondents indicated how often they performed each using a verbal frequency scale ranging from 1, *Very Often,* to 5, *Never*. Both the median and modal values are shown.

Using a search site to locate products *[item 1]* was the single most frequent behavior online shoppers reported. Recording tracking numbers for delivery of purchases *[item 2]* was close behind. Respondents also reported they *often* check more than one site for comparisons *[item 3]*; bought mainly from favorite online sellers *[item 4]*; and read online reviews before buying *[item 5]*. Among the actions least often taken, respondents reported rarely if ever visited coupon sites *[item 16]*; "personalized" seller sites with their own preferences *[item 15]*; wrote online reviews or sent email of product descriptions from seller sites to others *[item 14]*; nor did they often forward email product descriptions to friends of family *[item 13]*. In the mid-range of frequency, the typical respondent *sometimes* added items to a shopping cart then left to return later *[item 7]* or to never again return *[item 8]*.

Key items for this study, in the order from most often to least often reported, were: *"Return to a site several times to see if better prices are offered.", "Allow the online merchant to send you email ads and sale bulletins.", "Link to a site from an email advertisement you received."*, and *"Register with the seller's site or "personalize" the seller's web page." [items 10, 11, 12 and 15, respectively]*. All 4 are directly related to tracking and targeting practices by online merchants. Returning to check for price changes received a median value of 3, indicating the most typical

respondent reported *sometimes* doing so; however, the modal value, the most common rating was 4, indicating *rarely* doing so. While the most typical respondent only *rarely* allowed online merchants to send them email or linked to a site from an email ad, the most common response to registering or personalizing a home page was *never*.

Table 8
Median and Modal Frequency Ratings of Online Shopping Actions*

	Statement	Median	Mode
1	Use a search engine or site to locate what you want.	1	1
2	Record a tracking number when available and track delivery.	2	1
3	Check more than one site to make comparisons.	2	2
4	Buy mainly from a "favorite" online seller.	2	2
5	Read online reviews of the goods before buying.	3	2
6	Go to one or more price comparison sites or sellers.	3	3
7	Add items to the "shopping cart," then leave the site and come back later.	3	3
8	Add items to the "shopping cart," then leave without ever returning.	3	3
9	Select a delivery method that's faster than the least costly one.	3	4
10	Return to a site several times to see if better prices are offered.	3	4
11	Allow the online merchant to send you email ads and sale bulletins.	4	4
12	Link to a site from an email advertisement you received.	4	4
13	Send email product descriptions from the site to family or friends.	4	5
14	Write reviews of previous purchases when the site allows it.	4	5
15	Register with the seller's site or "personalize" the seller's web page.	4	5
16	Visit an online coupon service site to find discount coupons or "codes."	4	5

*N = 1,135 - 5-Point Scale:
1=Very Often, 2=Often, 3=Sometimes, 4=Rarely, 5=Never

Taken together, the results regarding online shopping behavior by respondents indicates what might be viewed as fairly typical actions by experienced online buyers—using search engines, tracking deliveries, checking several sites and reading reviews and the like. Nor could sometimes temporarily or permanently abandoning a shopping cart be regarded as aberrant. By contrast, there appeared to be substantial reluctance by the responding sample to voluntarily and proactively provide information or encourage online merchants to contact them.

CONCLUSIONS

Consumer Awareness

This study was designed to reveal, in some detail, what consumers *know* or *believe* about the practices associated online merchants' use of online behavioral tracking and the targeting of offers and pricing based on such data. The popular press and some academic reports convey the impression that, unbeknownst to consumers, online marketers engage in nefarious activities behind the scenes, manipulating and exploiting them to the merchants' benefit and the consumers' detriment. [20, 23, 24] While such assumptions may provide fodder for a dramatic exposé, this study provided little or no evidence of such profound ignorance on the public's part. Instead, the survey revealed considerable awareness conditions attendant to behavioral tracking and price targeting; namely, data recording of online activity and application of that data to promotional programs.

Consumer Evaluations

While a substantial proportion of consumers appear to be aware of practices associated with online behavioral tracking and offer targeting or so-called "dynamic" pricing, *most do not like it!* Even though only a fifth thought it was currently against the law, over half thought it *should* be illegal. Compared to shopping at a conventional, "brick and mortar" retail store, respondents found online shopping easier but also more risky. The nature of their perceived risk seems to be in regard to *information privacy.*

Consumer Actions

The actions online shoppers in this study reported taking might be seen as reflecting their *concern*, but not outright fear. Although many decried selling or trading of data and dynamic pricing practices, it did not appear to inhibit them greatly while shopping online. While they did not proactively volunteer information about themselves when it was not required, they reported browsing and shopping the net without much regard for what tracking data might be acquired by the sites they visited. Although not completely dismissive of the risks and threats trumpeted by the popular press, it seems clear that "the rabble" have not been greatly aroused—at least not yet!

Restriction Too Much

It seems the nature of legislative bodies and government bureaus to do surgery with an ax. Industry inaction tends to result in government action, often to the detriment of everyone concerned, including both marketers and consumers. Restrictions on online behavioral tracking, offer targeting and dynamic pricing are likely to handcuff larger, high-profile online merchants while leaving more obscure and perhaps less conscientious online sites to operate "under the cover of darkness," so to speak. At the very least, legislative restrictions and bureaucratic regulations are certain to add costs that must and will be passed on to consumers.

Disclosure Not Enough

Online merchants' industry organizations and some consumer advocacy groups and government bureaus have called for greater disclosure of what data are being collected and compiled and to what use it is being put. Most online marketers do post their "privacy policy," even if obscure, verbose and in very small print. On the other hand, very few, if any online marketers are "up front" about the use of offer targeting or dynamic pricing. Even when the practice is discovered and reported publicly, some claim it was a mistake, the accusation are unfounded, or they were merely "testing" a new price.

There is little foundation for the assertion that if consumers know about it, then it is okay to do it. Indeed, knowing the nature and source of abuse, if it exists, makes it no less intolerable. This

is not to say that online marketers can safely ignore the call for greater disclosure. It would appear they can not! The cries will probably only become louder. Resistance only begs the question, "Why not?" The reasons for concealing what data are acquired and what is done with it are neither obvious nor compelling.

Beyond knowing what online merchants are learning about their shoppers and customers, the consumer must know why the data are being sought and recorded. While there are, in fact, several benefits and advantages to be gained by the consumers whose online behavior is being tracked, the focus in the media has been almost entirely on the benefits to the merchants. Often the situation is portrayed as something of a zero sum game: The more the online merchants gain, the more the consumers loose. It is the online marketers and their industry organizations responsibility to take the initiative in informing and persuading their publics about the benefits this kind of micro-targeting has for those being targeted.

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Consumer Privacy Rights and Online Behavioral Advertising

Tony Frost

As Federal Trade Commission Chairman William Kovacic

I. Executive Summary

Online behavioral marketing offers both great promise and considerable concern. The amount of data that is collected about consumers' internet browsing practices in order to specifically target advertisements towards them allows for much of the free content that consumers desire, but is also a source of concern because much of that information may be considered private by consumers.

The Federal Trade Commission is in an advantageous position to protect consumer privacy rights in the area of online behavioral advertising, notably because the location of its jurisdiction is so large. As such, the FTC is proposing three areas in which industry should move forward with the help of the FTC in order to help protect consumer privacy rights. (1) In accordance with the FTC proposed guidelines for self-regulation of online behavioral advertising, there are certain industry practices that need to be curbed and others that need to be clarified to the consumer public. (2) Industry participants must join with the FTC in educating the consumer public and businesses about the risks of gathering data on consumer behavior and as to the limits to which gathering consumer data is permissible. (3) The FTC must remain flexible in its approach to online behavioral advertising; specifically targeted regulations must not quickly become obsolete and the FTC must remain vigilant in assessing new risks to consumer privacy. This paper seeks to address these three major topics.

II. Introduction

The past decade and a half have witnessed explosive growth in consumers' ability to

easily access large amounts of information over the internet. The benefits provided to consumers are manifest. Consumers may search for, exchange, and create information faster and easier every day. This is a good thing. Inherent in this new medium, however, are risks to consumer privacy. This paper will explore both these issues and a path towards solutions for these risks.

The vehicle that allows consumers to freely surf the web and provides the infrastructure for the web's massive growth is online advertising. Much online advertising is similar to traditional advertising and is called contextual advertising.[1] Advertisements of this sort are the kinds we would find in newspapers or in magazines. These advertisements have been targeted towards end-users through the context of their surfing experience – what the users have typed into a search engine, or the content of specific web pages that they have visited. The content of a visited web-page or text of a search query suggests to advertisers that potential consumers may be interested in certain advertisement.

Behavioral advertising is a newer form of internet advertising that has proved better at targeting advertisements to consumers and thus more lucrative. Online behavioral advertising is the tracking of a consumer's activities online – including the searches the consumer has conducted, the web pages visited, and the content viewed – in order to deliver advertising targeted to the individual consumer's interests.[2] Particular practices in this area that are concerning to the consumer privacy advocate are the gathering of data without consent, the transparency of data gathering techniques, the use and security of data that is logged by advertisers, and the probability that changing business models will lead industry to use

1 PC MAGAZINE, *Contextual Marketing*, http://www.pcmag.com/encyclopedia_term/0,2542,t=contextual+marketing&i=56351,00.asp.

2 FTC, *Online Behavioral Advertising: Moving the Discussion Forward to Possible Self-Regulatory Principles*, *(2007)*, http://www.ftc.gov/os/2007/12/P859900stmt.pdf.

information in a different way than users had originally anticipated.[3] The FTC must further be aware that technological growth means that there will undoubtedly be newer and more invasive privacy concerns in the future.

There are two broad categories of approaches that can be used in response to the consumer privacy concerns swirling around the collection and use of data in the internet age. First, companies that deal with sensitive consumer data may be able to police themselves to a certain extent. This is called self-regulation and is conducted by coalitions of companies that are invested in online advertisement, such as the Network Advertising Initiative (NAI).[4] Second, specifically targeted regulations could be passed to ensure that certain minimum standards are being met and that advertisers are accountable for misusing or mistreating consumers' private data.[5]

The FTC, at this time, wishes to propose a three pronged approach for protecting consumer privacy rights in the area of online advertising. This approach seeks to retain the benefits of the technological improvements of the internet while properly safeguarding the privacies of consumers. (1) The FTC is currently concerned with several specific areas of behavioral advertising techniques, which are best exemplified by the FTC's proposed principles for self-regulation.(2) At the forefront of combating privacy risks that consumers face while using the internet is educating consumers as to the risks that they face while browsing. It is also important to educate the behavioral advertising industry as to what they are permitted to do within the scope of behavioral advertising. (3) The FTC must maintain flexibility in order to

3 *Id.*

4 NETWORK ADVERTISING INITIATIVE, *Written Comments for the FTC's Behavioral Advertising Town Hall Forum* (2008), www.ftc.gov/os/comments/behavioraladvertising/071019nai.pdf.

5 Edward Markey, *Consumers Have Right to Know What Broadband Providers Know About Web Use* (2008), http://markey.house.gov/index.php?option=com_content&task=view&id=3411&Itemid=141.

react to the inevitable consumer privacy concerns that tomorrow's cyberspace will bring. Important in this area are the need to enact regulations that are specific while up-to-date, and the need to remain perceptive to new threats to consumer privacy.

III. Current Concerns and Planning for the Future of Consumer Privacy

A. The FTC is an Appropriate Enforcer of Consumer Privacy Rights

The Federal Trade Commission (FTC) is in a particularly advantageous position to guard against harms to consumer privacy on the internet. The internet is a problematic area for enforcement of rules regarding privacy (or anything else for that matter), at least in part, because it is not tied to any particular geographic area.[6] The victims and perpetrators of privacy harms are geographically scattered. Local enforcers do not wish to spend precious capital protecting consumers from other geographical areas. In the same way, local enforcers are hard pressed to enforce against perpetrators of harms from geographically distant areas. Furthermore, local enforcers simply do not have the resources to combat the privacy ills that plague their consumers' internet activity.[7]

The FTC is in a much better position than local enforcers to remedy privacy harms against consumers. The FTC is an agency with broad powers of enforcement, including the ability to cooperate effectively with foreign governmental agencies. Because of this it is well-equipped to safeguard consumer privacy in an area where bad-actors are difficult to hold accountable due to geographical proximity.[8]

The SAFE WEB act of 2006 is an example of the broadening of the FTC's powers to deal with geographically remote bad actors in the area of online crime.[9] SAFE WEB has given the

6 *See* Peter Swire, *No Cop on the Beat* 3, *accessible at* http://ssrn.com/abstract=1135704.
7 *Id.*
8 Peter Swire, *Letter to the FTC*, http://ftc.gov/os/comments/behavioraladprinciples/index.shtm.
9 SAFE WEB Act, Pub. L. No. 109-455, §§ 4, 6 2006.

FTC the ability to redress harm in both the United States for harm done by foreign actors and in foreign countries by wrongdoers located in the United States. In using tools like SAFE WEB the FTC can find consumer privacy breaches and enforce privacy rights against wrongdoers.

B. Specific, Targetable Harms and the FTC's Proposed Principles Regarding Self-Regulation

The United States can now boast that 75% of its adults and 90% of its teenagers are accessing the internet.[10] Because of this, it is time to take seriously the privacy concerns that accompany the many benefits of the internet.[11] However, proposing solutions to the problems that accompany internet consumption is difficult, in large part because of the difficulty in determining just what privacies consumers are concerned with. Different consumers hold different privacies dear. This implies an overarching consumer privacy protection theme: users must be equipped to make privacy choices for themselves when accessing the internet.

The internet has largely sprung to life in a legislative vacuum. The early years of the internet seemed more of a frontier world, where the web seemed a place of anonymity and enforcers were slow to realize its inherent privacy risks.[12] This assumption, however misguided, is one that is held by much of the consumer populace. The relatively recent introduction of more invasive advertising techniques such as behavioral advertising through the use of cookies, flash cookies, and deep packet inspection, for example, have become of greater concern to consumer privacy.

A primary concern is that, while online behavioral advertising is, at least in part, the vehicle through which consumers are able to travel the web for free, it is largely an invisible,

10 Susannah Fox , *Privacy Implications of Fast, Mobile Internet Access* (2008) www.pewinternet.org/pdfs/Privacy_Fast_Mobile_Access.pdf.

11 *Id.*

12 Glenn Fleishman, *On the internet no one knows you're a dog* , http://www.nytimes.com/2000/12/14/technology/14DOGG.html?.

unknown commodity.[13] Consumers often have a nominal understanding of web advertising (*i.e.* they understand that advertising, in some form powers their internet experience), but it is less clear that they have an understanding of the mechanics of that advertising.[14] This is true with regard to many forms of behavioral advertising (especially pronounced are the more invasive techniques such as deep packet inspection (DPI)). Candidly, regardless of which privacies consumers wish to be protected, they will be unable to take precautions to stop threats of which they are unaware.

Recently, industry participants have shown an interest in participating in the protection of consumer privacy rights discussion through self-regulatory practices. Organizations such as the Network Advertising Initiative (NAI) have been instrumental in grouping together behavioral advertisers and suggesting minimum standards with which all participants must comply.[15] Developing minimum standards of compliance to which industry participants can adhere in different areas is important for the protection of consumer privacy rights. It is currently unclear, however, whether the NAI or any self-regulatory body will be able to completely police the industry.

Legislation targeted towards these specific harms may, in fact, be necessary in order to ensure that consumer privacies are protected. This legislation would have to be as minimally obtrusive as possible in order to address specific privacy concerns that arise in the area of behavioral advertising. An example of a piece of legislation targeted toward specific privacy

13 FTC, *Online Behavioral Advertising: Moving the Discussion Forward to Possible Self-Regulatory Principles*, *(2007)*, http://www.ftc.gov/os/2007/12/P859900stmt.pdf.

14 TRUSTe, *Consumer Awareness and Attitudes about Behavioral Targeting*, http://www.truste.org/about/press_release/03_26_08.php (last visited Nov. 25, 2008).

15 NETWORK ADVERTISING INITIATIVE, *Written Comments for the FTC's Behavioral Advertising Town Hall Forum* (2008), www.ftc.gov/os/comments/behavioraladvertising/071019nai.pdf.

harms is the Children's Online Privacy Protection Act (COPPA).[16] This law, passed in 1998, concerns the collection of data from children under the age of 13. The FTC has the authority to enforce COPPA against online advertisers.

In an area where technology is evolving as rapidly as this, it is important for the FTC to work quickly with industry and the Congress to determine solutions to specific privacy risks and harms that consumers face. Because of this, the FTC would like to call attention to the more pressing of these specific areas, which are best illustrated by the FTC's proposed principles for self-regulation.

The FTC's proposed guidelines were intended to outline the scope of consumer privacy protection in the area of behavioral advertising.[17] While these principles articulate the broad scope of consumer privacy protection, they also help illustrate narrow instances of consumer privacy harm that must be dealt with. The proposed principles are: (1) Companies that gather data must be transparent regarding their data gathering practices and those practices must be within the consumers' control. (2) There must be reasonable security and limited data retention for all gathered consumer data. (3) Consumers must give affirmative express consent for material changes to existing privacy promises made by data gatherers.(4) Consumers must give affirmative consent for any sensitive data gathered.

i. Transparency and consumer control

Industry leaders must strive to be transparent to consumers with their data gathering practices. There is evidence to suggest that consumers simply do not know the extent to which their data is being gathered. The proposed principle reads:

16 Children's Online Privacy Protection Act, 15 U.S.C. § 6501–6506 (Pub.L. 105-277, 112 Stat. 2581-728, enacted October 21, 1998).
17 FTC, *supra*, note 13.

> Every website where data is collected for behavioral advertising should provide a clear, concise, consumer-friendly, and prominent statement that (1) data about consumers' activities online is being collected at the site for use in providing advertising about products and services tailored to individual consumers' interests, and (2) consumers can choose whether or not to have their information collected for such purpose. The website should also provide consumers with a clear, easy-to-use, and accessible method for exercising this option. [18]

Unfortunately, current data gathering practices do not uniformly adhere to this proposed guideline. Industry's data gathering behavior that have, at least in some cases, flouted this principle.

One area where industry is not being completely transparent and where consumers are not being given enough choice is in the practice of deep packet inspection (DPI). DPI is a surreptitious practice whereby a third party, in conjunction with a broad band internet service provider (ISP), scans "packets" of information as they are transferred from the ISP to the consumer.[19] This practice is currently often practiced without express consent of the consumer and, ostensibly, without the consumer being aware of the practice's existence. This type of invasive cataloging of individual consumers behaviors without their consent or knowledge is at odds with the spirit of the proposed principal.

Even with the use of more innocuous techniques such as flash cookies, or local shared objects, industry has not made it clear to consumers that their behavior is being tracked.[20] While these techniques are not *per se* bad, their use without transparent notice to consumers is concerning. This is an area where specific regulations may be necessary if self-regulation cannot determine an adequate path to enable industry to become transparent about its actions to.

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18 *Id.*

19 CDT, *Online Behavioral Advertising: Discussing the ISP-Ad Network Model* (2008), http://www.cdt.org/publications/policyposts/2008/15.

20 I'm a Super, *Flash Cookies: the Silent Privacy Killer*, http://www.imasuper.com/66/technology/flash-cookies-the-silent-privacy-killer/ (last visited Nov. 25, 2008).

consumers

ii. Data retention and security

An issue of exceeding importance that the behavioral advertising industry must deal with is that consumer data must be kept safely. The FTC's proposed principle regarding such matter is as follows:

> Any company that collects and/or stores consumer data for behavioral advertising should provide reasonable security for that data. Consistent with the data security laws and the FTC's data security enforcement actions, such protections should be based on the sensitivity of the data, the nature of a company's business operations, the types of risks a company faces, and the reasonable protections available to a company ... Companies should retain data only as long as is necessary to fulfill a legitimate business or law enforcement need.[21]

Most commonly, websites that wish to make use of behavioral data use devices called "cookies" to track the behavior of consumers on the internet.[22] Through the use of cookies, businesses may keep, among other things, information on sites a user has visited, time a consumer has spent on each site, and the IP address of your computer. It is not unforeseeable that information could be tailored together to match personal users with their browsing habits. The amount of information gathered is staggering and it must be kept secure, both physically and virtually.

There is also considerable concern as to how long it is necessary for companies to retain data that they have accrued on consumers' browsing history. There is currently much worldwide discussion about what length of retention is appropriate.[23]

the development of industry-wide standards may be advantageous in order to ensure that

21 FTC, *supra* note 13.
22 CDT, *Simple Behavioral Advertising*, http://www.cdt.org/privacy/targeting/simple.php (last visited Nov. 25, 2008).
23 Google reduces search data retention time to 9 months, but not enough, http://www.edri.org/edrigram/number6.18/google-search-retention (last visited Nov. 25, 2008).

privacy norms are properly developed and adhered to. A consistent manner of treatment of this data is an important goal so that consumers can be assured that their data is safe and so that industry participants can set appropriate expectations for their business models.

iii. Affirmative express consent for material changes to existing privacy promises

As companies seek to change their business models when developing behavioral advertising techniques, it is important for them to allow consumers to be aware of the changing practices that these companies are employing. The FTC proposed policy is:

> As the FTC has made clear in its enforcement and outreach efforts, a company must keep any promises that it makes with respect to how it will handle or protect consumer data, even if it decides to change its policies at a later date. Therefore, before a company can use data in a manner materially different from promises the company made when it collected the data, it should obtain affirmative express consent from affected consumers. [24]

The rationale for this proposal is simple: consumers have a right to determine in what way their private data is used. If consumers have signed up for a service with the knowledge that data about their online behavior is going to be used in a specific way, then those consumers have a right to ensure that data is used only in the manner to which they agreed.

iv. Affirmative express consent for the collection and use of sensitive data

There may be legitimate business reasons for companies to collect sensitive data about consumers. It is imperative, however, that companies receive express consent from individuals whom they collect this data from. As such, the FTC proposed principle is: "Companies should only collect sensitive data for behavioral advertising if they obtain affirmative express consent from the consumer to receive such advertising."[25]

The collection of sensitive data may be an area where a bright line rule could be

24 FTC, *supra* note 13.
25 *Id.*

developed, either by industry or in regulatory fashion, in order to establish minimum business practice standards. It would seem in the best interest of both consumers and of industry participants to have knowledge of what constitutes sensitive data. Some examples of sensitive data may include data on: sexual orientation, health records, social security numbers, or financial information.

This problem is compounded, and express consent of the individuals is extremely important, when companies who collect this data also collect what could be personally identifiable information (PII). In this case consumers may well be concerned that PII is being married to sensitive information. Express consent of the consumers must be required in order for this to happen.

The NAI, among other self-regulatory bodies, has commendably agreed not to use PII in conjunction with sensitive data.[26] However, it is unclear that what constitutes PII to the NAI or other self-regulatory bodies is a sufficiently strict standard such that data is actually not personally identifiable.

C. The need for comprehensive education of the consumer population and of business participants

Education, of both consumers and of businesses is an extremely important tool in allowing the FTC to stay ahead of the curve with regard to privacy rights of consumers in the context of behavioral advertising.[27] If the FTC and industry participants can better educate consumers as to the risks to their privacy that online behavioral advertising can pose (including protection mechanisms such as opt-out consent) then they will be more able to guard against the

26 NETWORK ADVERTISING INITIATIVE, *Written Comments for the FTC's Behavioral Advertising Town Hall Forum* (2008), www.ftc.gov/os/comments/behavioraladvertising/071019nai.pdf.

27 C-SPAN, *William Kovacic, Federal Trade Commission, Chairman*, http://www.c-span.org/Watch/watch.aspx?MediaId=HP-A-10562 (last viewed, Nov. 25, 2008).

invasions of their privacy that are most concerning to them. Similarly, if the FTC can educate businesses as to exactly what they are permitted to do within the world of online behavioral advertising, then it is more likely that industry participants will be able to develop the best practices that they can while respecting consumers' basic privacy rights.

In order to properly educate consumers as to the data gather techniques that go along with behavioral advertising, it is important for the FTC to join with industry participants involved in the gathering of data for behavioral advertising. The best interest of the public and, ultimately, of businesses seeking to profit from online advertising is better served by a well-educated consumer base.

An illustrative poll recently taken by TRUSTe, a nonprofit organization designed to self-regulate privacy concerns on the internet, suggested that 71 percent of online consumers are aware that their browsing information may be collected by a third party for advertising purposes, but only 40 percent are familiar with the term "behavioral targeting."[28] To the contrary however, it seems that consumers do, as a whole, wish for advertisements more specifically targeted towards their tastes.[29] This apparent contradiction implies the need for better education of the practices of data gathering and transparency with regard to how specifically targeted advertisements are created (through the use of behavioral data gathering techniques).

D. The need for the FTC to remain flexible when approaching the issue of behavioral advertising and consumer privacy

The nature of advertising on the internet and the relative immaturity of this type of advertising as a business practice suggest that there will be continued development and

28 TRUSTe, *Consumer Awareness and Attitudes about Behavioral Targeting*, http://www.truste.org/about/press_release/03_26_08.php (last visited Nov. 25, 2008).
29 *Id.*

refinement of it in the years to come. Circumstances surrounding how data is captured and to what end it is used are likely to change. Because of this, the FTC must remain particularly flexible with regard to behavioral advertising. This is particularly true in two ways: (1) The FTC must develop methods of regulating, or allowing for the self-regulation, of specific harms while making sure that the manner of regulation or self-regulation does not quickly become obsolete. (2) The FTC must remain open and flexible to possible legislation or cooperation with industry participants in order to remedy the consumer privacy risks of the future.

Statutes or promises made to consumers through self-regulatory bodies could be made broadly enough such that they cover all future privacy invasions due to behavioral advertising. This approach, however, is the proverbial sledge hammer when a scalpel is needed. What regulators sacrifice in terms of breadth of statutes or promises to consumers, they gain in more specifically tailored regulatory or self-regulatory solutions to problems. This dichotomy is at the heart of the balance between allowing for robust growth of the internet and protecting consumer privacies. Because of this it will be better for regulations or self-regulatory promises to be directed precisely at specific harms, but to be vigilant that these regulations or promises can become obsolete quickly and may therefore need to be amended.

IV. Conclusion

In conclusion, the FTC would like to stress three points with regard to behavioral advertisements and consumer privacy rights. (1) There are currently practices that concern privacy rights of consumers that are untenable and must be remedied. (2) The FTC must continue to educate the behavioral advertising industry participants and work with those participants in order to educate consumers at large in order to help minimize the privacy risks to consumers. (3)

Finally, in order to adequately approach the problem of consumer privacy rights in the ever evolving world of behavioral advertisements on the internet, the FTC must retain flexibility in both passing regulations and in being vigilant for new abuses of consumer privacy. The FTC looks forward to working with consumers and industry participants in the ongoing challenge of assuring consumer privacy rights and in fostering an environment that produces the broadest benefits possible to consumers.

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A proposed model of online consumer behavior: Assessing the role of gender

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ABSTRACT

This research examined the influence of Internet experience and web atmospherics on consumer online behavior. It developed a model of web navigation behavior where these antecedent variables drove website exploratory behavior and website involvement, which in turn, drove site attitudes and pre-purchase evaluations. These relationships were tested and confirmed in the context of a pharmaceutical website. Further, men and women differed in web navigation behavior, with men engaging in less exploratory behavior and developing less website involvement than women. However, across the two sexes, entertainment, challenge, and effectiveness of information content were the key drivers of website attitudes. The findings provide several guidelines for online communication strategy.

1. Introduction

The Internet is becoming an important facet of communication strategy due to its ability to deliver information, entertainment, and e-shopping. Internet access and usage have been steadily increasing in the United States with a corresponding increase in online information gathering and shopping. While men were considered early adopters of Internet shopping (Asch, 2001), recent data suggested that both men and women equally embraced this medium — 82% of men and 75% of women undertook online search for goods/services in 2005 (Pew Internet and American Life Project Survey, 2005).

Despite the growing importance of the Internet and its adoption by both sexes, research examining the factors that influence online browsing and consumer response toward online information is sparse. Also, little research investigated gender differences in online browsing. Specifically, although extant research studied gender differences in web advertising perceptions (Schlosser et al., 1999), use patterns (Weiser, 2000), and online privacy concerns (Sheehan, 1999), it did not directly examine how Internet experience and web atmospherics influenced the web navigation behavior of men and women. Hence, this research investigated the impact of Internet experience and web atmospherics on online browsing and if the influence of these factors varied by gender.

2. Conceptual background

The Internet is emerging as the main source of information for many products due to its ease of use, wide access, and wealth of information. The literature suggests that external information search could be goal-directed pre-purchase search and interest-driven search (Bloch et al., 1986). While research focused on pre-purchase search aimed at reducing uncertainty and risk, some researchers investigated ongoing search based on hedonic recreation (Holbrook and Hirschman, 1982) and enduring involvement with a good or service (Bloch et al., 1986). Within the Internet medium, external information search was broken down into web navigating behaviors: searching, browsing, finding, selecting, comparing and evaluating information as well as interacting and transacting with the website. To account for these, the proposed model of web navigation behavior included four major variables (Internet experience, web atmospherics, online behavior, and outcomes) and their interrelationships: Internet experience is conceptualized as the consumer's skills and challenge in using the Internet. Web atmospherics are related to the functional and hedonic characteristics of a website (i.e., structure, effectiveness, informativeness, and entertainment). Online behavior encompasses exploratory behavior and website involvement. Outcomes include site attitudes and pre-purchase evaluations. The conceptual model is depicted in Fig. 1 and explained below.

2.1. Internet experience

Flow theory (Csikszentmihalyi, 1990) provided insights for the online information search experience (Internet experience). Flow is

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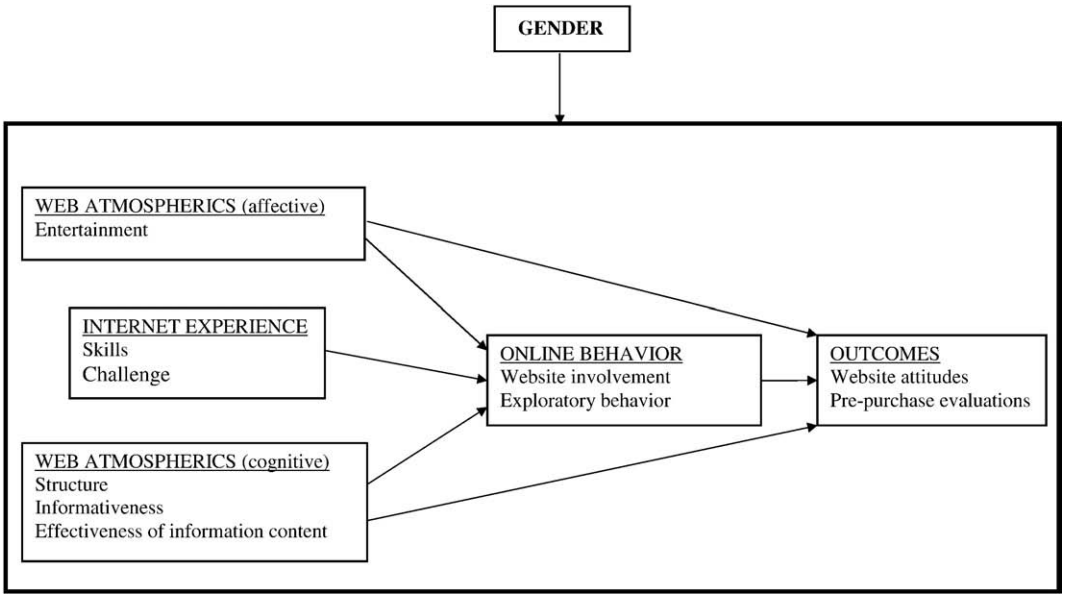

Fig. 1. Conceptual model of online consumer behavior.

an intrinsically motivated optimal state which occurs when challenge and skills are in balance and elevated beyond the critical threshold. When challenge encountered during task performance was matched to consumers' ability, they felt more active, alert, satisfied, pleased, and creative, whereas when such an optimal combination was absent the experience deteriorated (Csikszentmihalyi and LeFevre, 1989). In the online context, researchers reported findings consistent with this view. For example, researchers found that both challenge and skills were essential for creating positive online search experience (Mathwick and Rigdon, 2004; Novak et al., 2000). Ghani and Deshpande (1994) reported that the level of perceived skills and challenge in human–computer interactions was associated with achieving the flow state, which in turn predicted behavior. Luna et al. (2002) found that a website that offered optimal challenge (relative to skills) resulted in a more positive attitude toward the website. Also, skills and confidence in navigating websites were found to be antecedents of positive attitudes toward internet shopping (Childers et al., 2001). Thus, people skilled at using the web and finding it challenging experienced flow, searched for information online and responded favorably to such information. Thus:

H1. There is a positive relationship between (a) skills and exploratory behavior; (b) challenge and exploratory behavior; (c) challenge and attitude toward the website; (d) challenge and pre-purchase evaluations.

2.2. Web atmospherics

Web atmospherics relate to the conscious development of website environment to induce a positive response. These are critical to the effectiveness of a site since they determine online browsing and purchase behavior. The literature identified four variables as web atmospherics: structure, effectiveness of its content, informativeness, and entertainment (Bell and Tang, 1998; Chen and Wells, 1999; Richard, 2005).

2.2.1. Structure

Store layouts and signage which improve consumer's *wayfinding* are important to the success of brick-and-mortar retailers. This is even more relevant within the Internet medium where it is easy and relatively costless to leave a site and move to a competitive site. In online contexts, layout corresponds to website structure. Huizingh (2000) listed four navigational structures: a tree, a tree with a return-to-home page button, a tree with horizontal links, and an extensive network. Most websites (over 60%) had a simple structure of either a tree or a tree with a back to home page button, which allowed consumers to surf and access information easily (Poruban, 2002). Easy access to information can facilitate consumer goal achievement. The easier it was to learn and use navigational cues, the more cognitive capacity was available to process information in websites, resulting in better memory and superior attitudes. Consistent with this view, efficient websites induced positive attitudes toward websites (Elliott and Speck, 2005; Griffith, 2005). Thus:

H2. Effective website structure leads to positive website attitudes.

2.2.2. Effectiveness of information content

It refers to currency of the information content of a website, and is akin to executional cognitive elements in MacKenzie and Lutz's (1989) framework. For Johnson and Misic (1999), both currency and presentation were critical, and consumers evaluated websites on both dimensions. Currency is critical in online contexts since the Internet is more interactive and the preferred source of information for consumers. Hence, consumers likely have higher levels of exploratory behavior and site involvement if the website has current information related to the topic. Thus:

H3. There is a positive relationship between effectiveness of information content and (a) exploratory behavior; (b) website involvement.

2.2.3. Informativeness

It reflects the amount and richness of the information contained in the website, includes information about firms, products, non-commercial information, and transaction details such as payment options and shipping. With advances in technology, better search engines browsers, and faster downloading, websites are becoming more advanced, and have the capacity to encompass a lot of information along these dimensions (Huizingh, 2000). As informativeness increased, we assumed that consumers needed to engage in

less exploratory behavior to obtain the same amount of information. Thus:

H4. There is a negative relationship between informativeness and exploratory behavior.

2.2.4. Entertainment

The literature provided evidence that consumers obtained enjoyment from the shopping process itself. Holbrook and Hirschman (1982) identified a segment who found shopping to be hedonic, fun, and enjoyable. Babin et al. (1994) described this behavior as fun, fantasy, arousal, sensory stimulation, and enjoyment seeking. They suggested that these consumers appreciated the shopping experience for its own sake and valued entertainment during the process. In the online context, scholars noted that both 'informativeness' and 'entertainment' were important for evaluating a website (Ducoffe, 1996; Richard, 2005). Such entertainment was in the form of sensory and hedonic elements such as color, music, action, pictures, graphs, videos, and interactivity. McMillan et al. (2003) found that consumers with the greater perceptions of the site's entertainment value had more positive attitudes toward websites. Others reported that consumers surfed online for both information and pure enjoyment (Katerattanakul, 2002). Thus:

H5. Entertainment positively relates to (a) exploratory behavior; (b) website involvement; (c) site attitudes.

2.3. Online behavior

It included exploratory behavior and website involvement. In turn, these drove variables such as website attitudes and pre-purchase evaluations. Pharmaceutical websites (the focus of this study) only provided information and were not allowed to sell to consumers. With this information, consumers chose to buy the product at their preferred pharmacy. Hence, pre-purchase evaluations and website attitudes were appropriate outcome measures.

2.3.1. Exploratory behavior

Characterized by information search or exploration through browsing, exploratory behavior positively influenced website attitudes. The Elaboration Likelihood Model (ELM) posited that attitudes formed via a thorough consideration of available information were stronger and more enduring (Petty et al., 1983; MacKenzie and Lutz, 1989). Hence, consumers who spent more time at a site, gathered and processed more information through exploratory behavior likely had more positive website attitudes. Thus:

H6. There is a positive relationship between exploratory behavior and websites attitudes.

2.3.2. Website involvement

ELM suggests that high involvement subjects follow the central route to persuasion, forming attitudes on argument strength; whereas low involvement ones follow the peripheral route, forming attitudes on executional elements (Petty et al., 1983). In online contexts, limited available evidence was consistent with ELM predictions. For example, high involvement increased attention to relevant websites, information processing, and thought generation (Hoffman and Novak, 1996). For Balabanis and Reynolds (2001) positive attitudes developed when information and arguments on a site were relevant and strong. Thus:

H7. There is a positive relationship between website involvement and (a) website attitudes; (b) pre-purchase evaluations.

2.4. Gender

Gender moderates many effects predicted in the preceding sections as men and women respond differently to stimuli including marketing communications (Meyers-Levy, 1989; Putrevu, 2001, 2004). These differences were attributed to biology, socialization, and information processing style. Biology suggested the human brain is divided into two hemispheres. Lateralization refers to the specialized functioning of each hemisphere. The left hemisphere specializes in verbal abilities and the right hemisphere in spatial perception (Hansen, 1981). At some point in development, lateralization begins, and one hemisphere becomes dominant in its control of behavior. The timing and extent of lateralization affects cognitive processing. Recent clinical and experimental research indicated that the two hemispheres were more integrated in females and more specialized in males (Everhart et al., 2001; Gorman et al., 1992; Saucier and Elias, 2001). More functionally lateralized male brains process information on a piecemeal basis, whereas more integrated female brains process information holistically. Hence, men likely value highly focused information along few key attributes while women likely value information-rich sources.

The selectivity hypothesis suggested that gender differences emerged because men look for overall message themes or schemas, whereas women engage in detailed elaboration of message content (Meyers-Levy, 1989; Meyers-Levy and Maheswaran, 1991; Meyers-Levy and Sternthal, 1991). Men were selective processors relying on heuristics in place of detailed message elaboration. These heuristics involved one or a subset of cues that were highly available and salient, and implied a particular inference. In contrast, women were comprehensive processors who assimilated all available information. Unless restricted by memory constraints, females attempted effortful elaboration of all available information and gave equal weight to self-generated and other-generated information. In sum, the selectivity interpretation suggested that gender differences were due to differences in depth of processing.

An alternative viewpoint relates to differences in processing style. One type of elaboration is item-specific processing, which stresses attributes unique or distinctive to a message. This occurred spontaneously when people receive multiple message cues that are unrelated to each other. The second type is relational processing which emphasizes similarities or shared themes among disparate pieces of information. This occurred spontaneously when people receive many similar message cues (Einstein and Hunt, 1980; Hunt and Einstein, 1981). The sexes are socialized differently with men taught to value agentic sentiments and women communal sentiments (Eagly, 1987). Men, who were primarily concerned with self-focused agentic goals, more likely focused on message claims that affected them directly. Women, driven by relationship-oriented communal goals, more likely considered all message claims since they were interested in the message's overall impact. Hence, men undertook item-specific processing and women engaged in relational processing (Putrevu, 2001, 2004).

These gender differences could influence how men and women obtain and process online information and, hence, moderate the effects predicted in the hypotheses. For example, the influences of skills and challenge on exploratory behavior are likely stronger for women than men due to the female tendency to actively seek information. The male tendency to focus on piecemeal information suggests that the website structure would have a stronger influence on male attitudes compared to their female counterparts. Researchers reported that in traditional markets women spent more time shopping than men, seemed to enjoy it more, were more likely to make comparison shopping and bargain hunt (Wood, 1998). Since women were more likely to use websites for enjoyment and information gathering, they likely valued the effectiveness of such information. Hence, the relationship between effectiveness of information content and both website involvement and exploratory behavior should be stronger for females than for their male counterparts. Compared to women, men likely limit their information gathering to cues that are immediately relevant to the current context

and, hence, men are more likely to stop their exploratory behavior as soon as they find it. Women might continue to explore the site for other related information. Therefore, the negative relationship between informativeness and exploratory behavior should be stronger for men than women. Since women enjoy the shopping process more and spend more time shopping and searching for information, they more likely appreciate the website entertainment value and engage in more exploratory behavior on such websites. As suggested by the ELM, attitudes formed on the basis of high elaboration are likely stronger than those where elaboration is low. Since women elaborate more on the information, the relationship between exploratory behavior and website attitudes is likely stronger for women than men. The effects of involvement on attitudes and pre-purchase evaluations likely transcend gender, i.e., higher involvement in the website likely engender positive attitudes and evaluations among both sexes.

The model was tested first, followed by a test of gender effects. The next sections describe the method, results, and major implications.

3. Method

Internet is a valuable communication tool in the health sector. Recent studies reported that 74% of women and 58% of men look for health and medical information online (Pew Internet and American Life Project Survey, 2005). Also, the objectives of pharmaceutical companies were geared towards influencing consumer attitudes rather than online sales. Hence, pharmaceutical websites provided an appropriate context for testing the hypotheses. An OTC drug website was selected as OTC drugs are generally considered to be search products with functional attributes.

3.1. Website and methodology

The data were collected from the homepage of an OTC drug from one of the largest companies in North America. Ipsos PharmTrends (2002) reported that it was ranked #2 with a 23% share of the US market, compared to the leader's 32% share. The structure of the site was a tree with a return-to-home button. Respondents received clear written instructions on how to access and surf the website, and answer the questionnaire. Respondents visited the site without artificial restrictions and completed the online questionnaire immediately thereafter. To obtain a larger sample, a snowball technique was used whereby willing participants passed on the written instructions to their friends or family and asked them to participate online. No reward was offered. In this method, the content was viewed in its actual form and in a realistic setting.

3.2. Questionnaire

A structured, non-disguised instrument was used to collect responses. It included items to measure the characteristics and effectiveness of the pharmaceutical website; gathered information on respondents' skills, challenge, exploratory behavior, site involvement, site attitudes, and pre-purchase evaluations. All variables were measured using five-point Likert scales, except for involvement which used five-point semantic differential scales (Table 1). Finally, demographics such as age, gender, and education were collected. All measures were drawn from previous research and adapted for the online context.

4. Analyses and results

4.1. Sample characteristics

The sample size was 261 (145 females and 116 males). All age and education groups were represented but the sample was somewhat skewed toward younger and more educated consumers. There were no gender differences across age ($p=.383$) or education ($p=.115$) groups.

Table 1
Exploratory factor analysis.

Constructs	Items	Factor loadings	Cronbach alpha
Skills (SKIL)	• I am very skilled at using the Web.	0.945	0.91
	• I am considering myself very knowledgeable about good search techniques on the Web.	0.886	
Challenge (CHAL)	• Using the Web is a great challenge for me.	0.739	0.80
	• Using the Web provides an excellent test of my skills.	0.765	
	• I find that using the Web stretches my capabilities to the limits.	0.750	
Exploratory behavior (EXPB)	• When I hear about a new Web site, I'm always eager to check it out.	0.656	0.70
	• I like to browse the Web and find out about the latest sites.	0.811	
Entertainment (ENT)	• Exciting site.	0.807	0.84
	• Imaginative site.	0.797	
	• Entertaining site.	0.803	
Informativeness (INF)	• Informative site.	0.816	0.88
	• Useful site.	0.921	
	• Resourceful site.	0.796	
Effectiveness of information content (EFIC)	• Information is accurate.	0.795	0.79
	• Information is up-to-date.	0.718	
	• Product information is complete.	0.690	
Site structure (STR)	• The structure is well-organized.	0.877	0.84
	• It allows a great overview of its structure.	0.840	
	• The structure is straightforward.	0.698	
Site involvement (INV)	• Important to me…Unimportant to me.	0.818	0.87
	• Worth remembering…Not worth remembering.	0.790	
	• Relevant to my needs…Irrelevant to my needs.	0.777	
	• Worth paying attention to…Not worth paying attention to.	0.805	
Website attitudes (ATTI)	• This Web site makes it very easy for me to build a relationship with the company.	0.675	0.85
	• Surfing the Web is an excellent way for me to spend my time.	0.779	
	• I was smiling while I was exploring this Web site.	0.795	
	• I was part of a like-minded group of people while using this Web site.	0.664	
	• This Web site was a playful experience.	0.762	
Pre-purchase evaluation (PPEV)	• It takes a very long time to decide before buying drugs.	0.514	0.71
	• I get as much information as possible before purchasing a drug.	0.689	
	• I always compare product characteristics among brands of a specific drug.	0.682	
	• Before looking at this site, I was interested in reading about the needed drug.	0.584	

4.2. Exploratory factor analyses

With exploratory factor analysis, we identified and removed items with poor psychometric proprieties (i.e., loadings $<.50$, cross-loadings $>.30$). We conducted a second EFA on remaining items using principal axis factoring with varimax rotation. We obtained 10 factors with eigenvalues >1, accounting for 71% of total variance (Table 1). All extracted factors had acceptable reliabilities, with Cronbach's alphas at/above the .70 threshold.

4.3. Confirmatory factor analyses

The full latent model (Fig. 2) was specified using results from the EFAs and tested using EQS (Bentler, 1992) to simultaneously estimate its measurement and relational properties. Acceptable model fits are indicated by relative (standardized $\chi 2$ [$\chi 2/df$] and comparative fit index [CFI]) and absolute (root mean-square error of approximation [RMSEA]) indices. The cutoff values for acceptable fit are CFI > .90 (Bentler, 1992), $\chi^2/df < 5$, and RMSEA < .05 (Taylor and Todd, 1995).

The ten-factor structure was confirmed with a first-order CFA. Findings demonstrated good fit of the measurement model to the data according to relative ($\chi^2/df = 1.37$ and CFI = .98) and absolute (RMSEA = .038) fit indices. Convergent validity was established if the average variance extracted (AVE) for each factor accounted for ≥50% total variance (Fornell and Larcker, 1981). The AVE varies from 0.39 to 0.84, with only pre-purchase evaluations explaining <50%. A further test of convergent validity was the existence of statistically significant path coefficients (Anderson and Gerbing, 1988): all are significant. Discriminant validity is established if AVE is larger than the squared correlation coefficients between factors (Fornell and Larcker, 1981): this criterion was met across all pairs of factors. A more stringent test of discriminant validity was also conducted, consisting of chi-square tests between two models: one in which the correlation between two constructs is freely estimated, and the other where the correlation is fixed at 1.0. Results from LaGrange Multiplier (LM) tests indicated no significant cross-loadings for measurement items with non-hypothesized constructs, supporting discriminant validity. The 10 factors were distinct and valid instruments.

4.4. Structural model testing

A joint model for the causal relationships among all variables (Fig. 2) was tested with all observations ($N = 261$) using EQS. This model fitted the data very well, with $\chi^2/df = 1.4$; CFI = .98; RMSEA = .037. Such high values (CFI > .95) are indicative of an excellent fit (Hu and Bentler, 1999).

The results provided strong support for the conceptual model depicted in Fig. 1. In particular, most aspects of H1, H3, H4, H5, H6, and H7 were supported. Only H2 was not supported. First, exploratory behavior (EXPB) was positively influenced by entertainment (ENT) (.256, $p < .01$), challenge (CHAL) (.305, $p < .01$), skills (SKIL) (.343, $p < .001$), and effectiveness of information content (EFIC) (.313, $p < .01$), and negatively related to informativeness (INF) (−.183, $p < .05$). Second, site involvement (INV) was positively related to entertainment (.312, $p < .001$) and effectiveness (.260, $p < .01$). Third, most effects of website characteristics on website attitudes (ATTI) were partially or fully mediated by involvement and exploratory behavior. Specifically, entertainment impacted attitude both directly (ENT → ATTI: .369, $p < .001$) and indirectly via site involvement (ENT → INV: .312, $p < .001$; INV → ATTI: .242, $p < .001$) and exploratory behavior (ENT → EXPB: .256, $p < .01$; EXPB → ATTI .217, $p < .01$). Similarly, challenge had both direct (CHAL → ATTI: .226, $p < .01$) and indirect influences on attitude through exploratory behavior (CHAL → EXPB: .305, $p < .01$; EXPB → ATTI: .207, $p < .01$). However, the relationship between skills, informativeness, and effectiveness with attitudes were fully mediated by exploratory behavior and/or site involvement (SKIL → EXPB: .343, $p < .001$; INF → EXPB: −.183, $p < .10$; EFIC → EXPB: .313, $p < .01$; EXPB → ATTI: .217, $p < .01$; and EFIC → INV: .260, $p < .01$; INV → ATTI: .242, $p < .001$). Finally, pre-purchase evaluation (PPEV) was significantly influenced by site involvement (.420, $p < .001$) and challenge (.278, $p < .01$).

Analyses using EQS were performed to test model invariance between males and females. Prior to conducting these tests, it is customary to establish separate baseline models for each group. Two additional levels of constraints (i.e., measurement and structural) were introduced to test their equality simultaneously (Byrne, 1994). Two structural models were tested, one for males ($N = 116$), another for females ($N = 145$). These models, with corresponding fit indices and standardized parameter estimates, are depicted in Figs. 3. The overall goodness-of-fit was excellent for both male ($\chi^2/df = 1.3$, CFI = .97) and female models ($\chi^2/df = 1.2$, CFI = .97). For both, all measurement paths were significant and 11/14 causal paths were significant and in the hypothesized directions.

4.4.1. Invariance tests

The model proposed that the nature and strength of the relationships among the variables differed across male and female groups. As

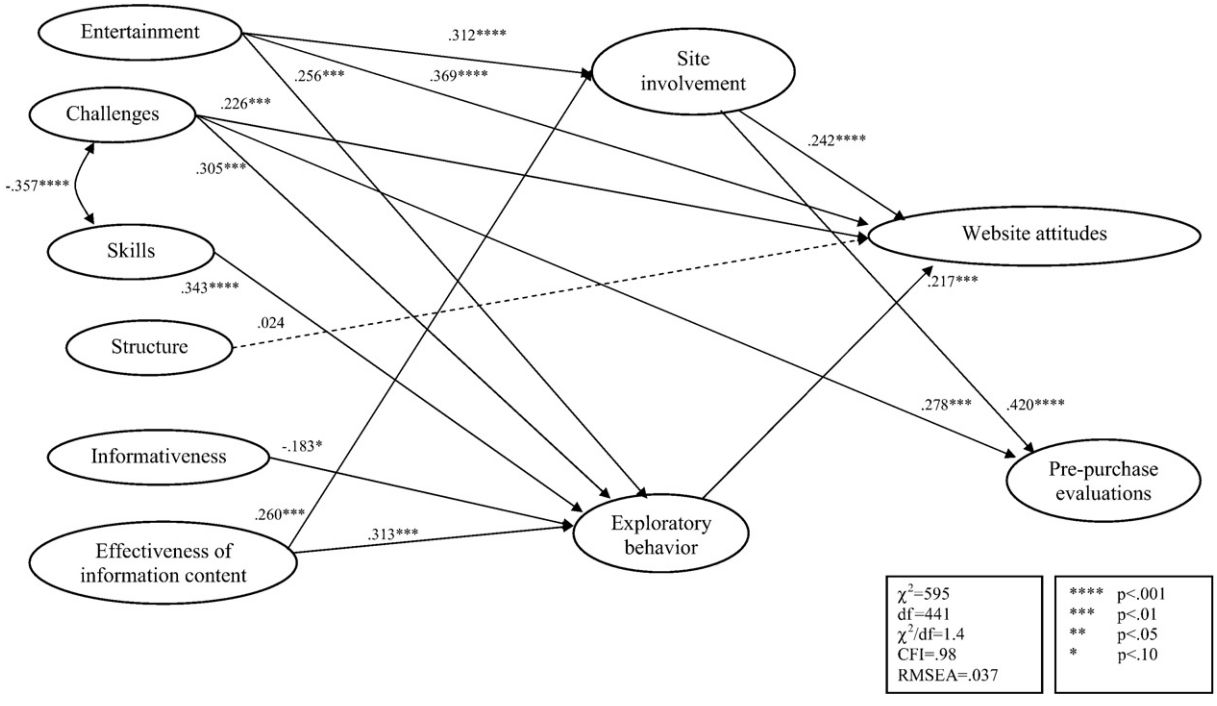

Fig. 2. Overall model of online consumer behavior.

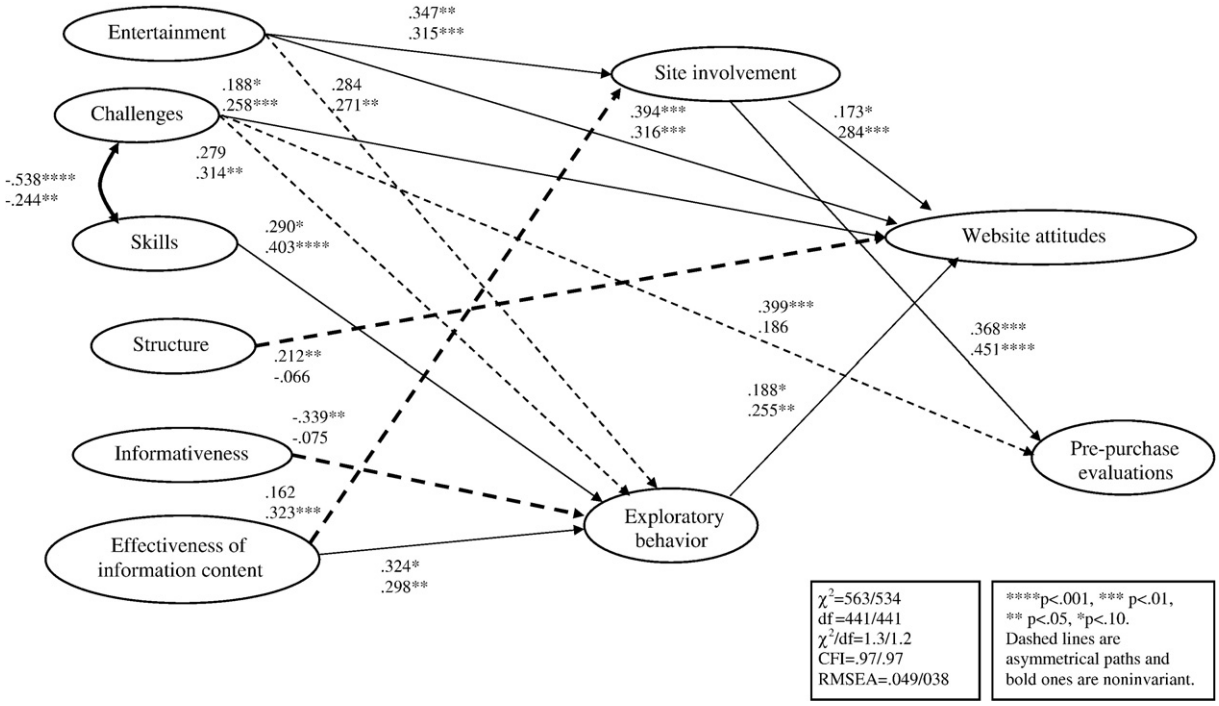

Fig. 3. Male and female models of online consumer behavior.

expected, six asymmetric paths (i.e., causal paths that were significant for males but not for females, and vice versa) were found across the baseline models. Specifically, CHAL → PPEV, STR → ATTI, and INF → EXPB were significant only for males but not for females, whereas ENT → EXPB, CHAL → EXPB, and EFIC → INV were significant only for females but not for males. These findings were consistent with our gender-based predictions.

However, this conclusion might be misleading if males and females did not perceive the indicators the same way. If measure invariance was not established, conclusions drawn from these scales are "at best ambiguous and at worst erroneous" (Steenkamp and Baumgartner, 1998). Hence, before further testing causal path invariance, measurement-level constraints (i.e., configural, metric, factor covariance, and error variance invariances) were introduced to test the equality across males and females simultaneously by multisample CFAs using covariance matrices test (Byrne, 1994).

Model M1: *Configural invariance*. The factor loadings matrix ($\mathbf{\Lambda}$), the factor covariance matrix (Φ), and the error variance matrix ($\mathbf{\Theta}$) are all of the same order, but freely estimated without restriction in each group.

M2: *Metric invariance*. $\mathbf{\Lambda}$(males) = $\mathbf{\Lambda}$(females), but Φ and $\mathbf{\Theta}$ are freely estimated without restriction in each group.

M3: *Factor covariance invariance*. Φ(males) = Φ(females), but $\mathbf{\Lambda}$ and Θ are freely estimated without restriction in each group.

M4: *Error variance invariance*. $\mathbf{\Theta}$(males) = $\mathbf{\Theta}$(females), but $\mathbf{\Lambda}$ and Φ are freely estimated without restriction in each group.

M5: *M2 and M3*. $\mathbf{\Lambda}$(males) = $\mathbf{\Lambda}$(females), and Φ(males) = Φ(females), but $\mathbf{\Theta}$ is freely estimated without restriction in each group.

M6: *M2 and M4*. $\mathbf{\Lambda}$(males) = $\mathbf{\Lambda}$(females), and $\mathbf{\Theta}$(males) = $\mathbf{\Theta}$(females), but Φ is freely estimated without restriction in each group.

M7: *M2, M3 and M4*. $\mathbf{\Lambda}$(males) = $\mathbf{\Lambda}$(females), Φ(males) = Φ(females), and Θ(males) = Θ(females).

The results are summarized in Table 2. Since M1 is the least restrictive, M2–M7 which contained different sets of constraints were nested in M1. Chi-square difference tests identified the best model to represent common measurement properties. M2, M3, and M5 were not different from baseline: $\chi^2_d(22) = 29.62$, $p = .13$; $\chi^2_d(10) = 11.76$, $p = .30$; $\chi^2_d(32) = 35.15$, $p = .32$. Among these, M5 was nested in M2 and M3. Additional model comparisons presented no significant chi-square differences between M2 and M3 [$\chi^2_d(12) = 17.86$, $p = .12$], M2 and M5 [$\chi^2_d(10) = 5.53$, $p = .85$], or M3 and M5 [$\chi^2_d(22) = 23.44$, $p = .38$]. M5 (both metric and factor covariance invariances) best represented the common measurement properties for males and females, suggesting that these factors had at least the same factor patterns, structure, and covariances across the two samples. The measurement invariance model fitted the data very well, with $\chi^2/df = 1.2$, CFI = .97.

To add a more stringent test of the hypotheses, multiple-group analysis was conducted to test the equality of measurement and structural paths by imposing equality constraints on parameters of the two models (Byrne, 1994). As shown in Table 3, these models were different in the STR → ATTI path, i.e., structure had a significant impact on attitudes (.212, $p < .05$) for males, but not for females (−.066, $p > .15$). Using one-tailed *t*-tests, two other asymmetric paths were also significantly different between males and females: one between informativeness and exploratory behavior, with a negative relationship for males but not for females (−.339 vs. −.075, $p < .10$) and the other between effectiveness of information content and site involvement, where it is significant for females but not for males (.323 vs. .162, $p < .10$). Hence, men and women perceive the indicators similarly but respond to them differently.

5. Discussion

Most hypotheses related to the impact of Internet experience and web atmospherics on online behavior and outcome variables were supported by the data. As expected, antecedent variables (Internet experience and web atmospherics) drove online behavior (website involvement and exploratory behavior) which drove outcomes (website attitudes and pre-purchase evaluations). As hypothesized,

Table 2
Tests of measurement invariance between males and females (Multisample CFAs).

Models	Goodness-of-fit indices			
	χ^2	*df*	*p*-value	CFI
M1: configural invariance	1103	882	.000	.97
M2: **Λ**(males) = **Λ**(females)	1133	904	.000	.97
M3: **Φ**(males) = **Φ**(females)	1115	892	.000	.97
M4: **Θ**(males) = **Θ**(females)	1163	917	.000	.97
M5: **Λ**(males) = **Λ**(females) **Φ**(males) = **Φ**(females)	1138	914	.000	.97
M6: **Λ**(males) = **Λ**(females) **Θ**(males) = **Θ**(females)	1194	939	.000	.97
M7: **Λ**(males) = **Λ**(females) **Φ**(males) = **Φ**(females) **Θ**(males) = **Θ**(females)	1210	954	.000	.96
Model comparisons	**Difference**			
	χ^2	*df*	*p*-value	
M2 vs. M1	29.62	22	.13	
M3 vs. M1	11.76	10	.30	
M4 vs. M1	60.08	35	.01	
M5 vs. M1	35.15	32	.32	
M6 vs. M1	91.11	57	.00	
M7 vs. M1	106.6	72	.01	
M2 vs. M3	17.86	12	.12	
M2 vs. M5	5.53	10	.85	
M3 vs. M5	23.44	22	.38	

gender was found to act as a moderator of six of the major paths, all related to antecedent variables. There were no gender differences among the online behavioral variables.

For the overall model, skills and challenge had a positive influence on exploratory behavior as predicted by H1. Structure did not have an impact on website attitudes, rejecting H2. As expected in H3, effectiveness of information content had a positive influence on exploratory behavior and website involvement. In line with H4, higher levels of informativeness led to lower levels of exploratory behavior. As predicted by H5, the hedonic or entertainment aspects of the website had positive influences on exploratory behavior, website involvement, and website attitudes. Consumers who indulged in higher levels of exploratory behavior had more positive website attitudes, supporting H6. Consistent with H7, website involvement was a key determinant of attitudes and pre-purchase evaluations.

Novak et al. (2000) reported that skills and challenge influenced online search and purchase behavior. However, this research suggested that these variables had a significant impact on female exploratory behavior, but only skills seemed to influence male exploratory behavior. These findings are consistent with gender differences proposed by Putrevu (2001, 2004): males relied on their skills to navigate websites quickly and efficiently to obtain select pieces of information, whereas females enjoyed facing the various challenges as they conduct thorough search to gather all relevant information before making a decision.

As expected, higher levels of challenge led to a better evaluation of the websites for both sexes. In addition, males' challenge influenced site attitudes and pre-purchase evaluations, while females' challenge influenced only website attitudes. The direct impact of challenge on pre-purchase evaluations for males indicated that once men found

Table 3
Invariance tests across gender.

Hypothesized causal paths	Standardized β values[a]		Path differences: Chi-square (*p*-value)
	Males	Females	
H1a: Skills ⟶ Exploratory behavior	.290*	.403****	.001(.48)
H1b: Challenge ⟶ Exploratory behavior	.279 (*t* = 1.23)	.314**	.288(.25)
H1c: Challenge ⟶ Website attitudes	.188*	.258***	.894(.34)
H1d: Challenge ⟶ Pre-purchase evaluations	.399***	.186 (*t* = 1.62)	.214(.32)
H2: Structure ⟶ Website attitudes	.212**	-.066 (*t* = -.81)	4.388[b](.02)
H3a: Effectiveness of information content ⟶ Exploratory behavior	.324*	.298**	.580(.23)
H3b: Effectiveness of information content ⟶ Site involvement	.162 (*t* = 1.20)	.323***	2.167[b](.07)
H4: Informativeness ⟶ Exploratory behavior	-.339**	-.075 (*t* = -.59)	1.877[b](.08)
H5a: Entertainment ⟶ Exploratory behavior	.284 (*t* = 1.52)	.271**	.039(.42)
H5b: Entertainment ⟶ Site involvement	.347**	.315***	.102(.75)
H5c: Entertainment ⟶ Website attitudes	.394***	.316***	.697(.40)
H6: Exploratory behavior ⟶ Website attitudes	.188*	.255**	.151(.35)
H7a: Site involvement ⟶ Website attitudes	.173*	.284***	.068(.79)
H7b: Site involvement ⟶ Pre-purchase evaluations	.368***	.451****	.570(.45)
Fit indices	$\chi^2(441) = 563$, $p < .001$; $\chi^2/df = 1.3$; CFI = .97	$\chi^2(441) = 534$, $p < .001$; $\chi^2/df = 1.2$; CFI = .97	$\chi^2(919) = 1143$, $p < .001$; $\chi^2/df = 1.2$; CFI = .97

**** $p < .001$.
*** $p < .01$.
** $p < .05$.
* $p < .10$.
[a] Asymmetric paths (i.e., significant in one category but not in the other) are shaded.
[b] *p*-values (one-tail tests) indicate significant difference between pairs of causal paths.

the site challenging, along with relevant information, they found the product attractive and reported higher pre-purchase evaluations. The lack of such direct relationship for females was consistent with the finding that males were more prone to quick online decisions, while females used the Internet to gather information and later decided whether to buy in a brick-and-mortar store or elsewhere (Wolin and Korgaonkar, 2003). We found a *negative* covariance between skills and challenge, i.e., skills increased more rapidly than challenge. This was more significant for men, as the covariance between skills and challenge is more negative that for females (i.e., the difference was *significant* at $p < .01$), indicating that for the same level of skills, females feel more challenged than males.

As predicted, website attitudes were impacted by website structure for men but not women. The easier a website was to use, the more cognitive capacity was available to process information (Griffith, 2005). This was consistent with research that suggested that men preferred simple, straightforward information whereas women were more receptive to complex information (Meyers-Levy and Maheswaran, 1991; Putrevu, 2001, 2004). Contrary to expectations, effectiveness of information content influenced exploratory behavior of both sexes equally but, as expected, it influenced website involvement of women and not men. Thus, effectiveness of information content had a stronger overall effect for women due to its impact on both exploratory behavior and website involvement. Further, the positive path between structure and website attitudes and negative path between informativeness and exploratory behavior among male respondents suggested that male attitudes were driven by website structure and that men limited their information gathering. These results were consistent with previous research suggesting that men processed information in a heuristic and/or piecemeal manner, whereas women undertook more detailed elaboration of message arguments (Meyers-Levy and Maheswaran, 1991; Putrevu, 2001, 2004). Thus, for female audiences it is important to create websites with a lot of information presented in varied formats, with many links to related topics. For male audiences, it might be prudent to keep it simple, limit the information to key issues, provide an overall summary and visual reinforcement of verbal information.

As predicted, entertainment of a website influenced exploratory behavior of females but not males. This was consistent with the reasoning that highly entertaining websites make for more pleasurable visits especially for women who spend time and efforts to gather information online. However, this hedonic characteristic did not translate into higher website involvement or attitudes for either sex. Interestingly, no gender differences were observed between exploratory behavior and website attitudes. Contrary to expectations, despite indulging in more exploratory behavior women did not form stronger website attitudes. As predicted by ELM, website involvement had a positive influence on attitudes and pre-purchase evaluations for both sexes.

6. Conclusions and implications

The three key variables that drove website attitudes were website involvement, entertainment, and challenge. Further, pre-purchase evaluations were driven by website involvement and challenge. Website involvement, in turn, was driven by effectiveness of information content and entertainment. While exploratory behavior was influenced by antecedent variables, its effect on attitudes was less pronounced. Hence, the most effective websites were those that are entertaining, moderately challenging, and current. In addition, men and women differed in their web navigation behavior. Males, as heuristic or item-specific processors, preferred straightforward information presented through a website that is well-structured and easy to access and process. The primary drivers for males were good entertainment, challenge, and structure. The combined impact of skills, informativeness, and effectiveness of information content on exploratory behavior was weaker and secondary. If the main audience is male, the website should be efficiently designed to develop positive site involvement and attitudes, and generate positive pre-purchase evaluations. Women, as comprehensive or relational processors, engaged in more exploratory behavior and became more involved with the website content. If the main audience is female, the website should be designed to encourage and support exploratory behavior through provision of detailed information, entertainment, and attributes that stimulate both the skills and challenge of females. For example, the use of multiple links to related content could be useful when targeting women. When the audience is composed of both sexes, the key is to engender website involvement as this drives attitudes and pre-purchase evaluations of both men and women.

The study had limitations. The sample was a snowball sample which limited generalizability and external validity. Further, as with other Internet-based studies, it was skewed toward younger, more educated demographics. However, such consumers are the main audience for online marketers. The sample size was modest, especially when the analysis was restricted to one gender. While the results were consistent with the hypotheses, a larger sample size might have resulted in stronger results. Finally, a single product exemplar was used.

A starting point for future research is to use more representative samples and additional product/brand exemplars. It would be useful to explore whether variables such as need for cognition, mood, and culture influence web navigation behavior. While pharmaceutical companies are not allowed to sell directly to consumers, such restrictions are not placed on products from other industries. Based on product contexts, one could examine whether superior attitudes and pre-purchase evaluations lead to higher sales (online and offline). Given the increasing importance of the Internet for both information and sales, advertisers would benefit from understanding how consumers respond to information presented in this growing medium.

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