



How Consumers' Attitudes Toward Direct-to-Consumer Advertising of Prescription Drugs Influence Ad Effectiveness, and Consumer and Physician Behavior

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Abstract

Data from 1081 adults surveyed by the FDA were analyzed to explore consumers' attitudes toward direct-to-consumer advertising (DTCA) of prescription drugs, and the relation between these attitudes and health related consumption behaviors. We report the favorableness of consumers' reactions to DTCA, and more importantly, demonstrate that consumers' attitudes toward DTCA are related to whether they search for more information about a drug that is advertised, and ask their physician about the drug. Finally, we document how consumers' attitudes towards DTCA relate to the prescription writing behavior of their physicians. Mediation analyses that more fully explicate these findings are discussed.

Keywords: direct-to-consumer advertising, consumer behavior

UK-based Boots Pharmaceuticals aired the first Direct-To-Consumer (DTC) television advertisement of a prescription drug in 1983. The Food and Drug Administration (FDA) subsequently ruled that the ad violated regulations that detailed information about side effects should appear in the ad in a readily understandable format, and consequently required Boots to supply information on contraindications and effectiveness, and to drop a misleading comparison. After ruling on Boots' ad, the FDA also requested a two-year moratorium on consumer drug advertising (PharmaVoice, June 2003). In 1997 the FDA reinterpreted its regulations such that major statements in advertisements could be much simpler than previously required. Furthermore, a concise summary of the risks associated with the drug and additional information about the drug did not have to be presented, but sources for more complete information should be given (e.g., toll free numbers, web sites). Since this time, television advertisements for prescription drugs have become common. According to the Competitive Media Reporting and Publishers Information Bureau, between 1996 and 2001 the FDA reviewed more than 34,000 DTC ads for television, magazines, and web sites.

DTC advertising expenditures are substantial, with \$2.33 billion spent in 2002 (NDC Health), but pharmaceutical companies appear to be reaping commensurate rewards. Holmer

(2001) reports that during 2000, more than 100 million consumers sought information about drugs they saw advertised, 53 million talked to their physicians about those drugs, and 12.1 million got the prescription they requested. Research has shown that DTC advertising affects brand share positively and increases category sales (Wosińska, 2002; Narayanan, et al., 2004), and that consumer awareness of advertisements for nationally advertised prescription drugs is high, and particularly high among users of prescription drugs and those with poor health conditions (Alperstein and Peyrot, 1993; Bell et al., 2000; Gönül et al., 2000). The National Institute for Health Care Management reports that prescription drugs advertised directly to consumers are the largest and fastest selling medicines.

Although it is clear that DTCA is often effective, very little is known about *when* DTCA will be effective, and *how* it affects behavior. These issues are of a great deal of importance given the high expenditures of pharmaceutical companies, which are keenly interested in maximizing DTCA effectiveness. In this article we explore consumers' attitudes toward the general concept of DTC advertising of prescription drugs (i.e., not toward a particular ad or brand) and investigate the effects of these attitudes on consumer and physician behavior. Generally, we show that DTCA is likely to be effective when consumers have positive overall attitudes towards DTCA, and we document correlates of DTCA attitudes to show how DTCA affects behavior.

Our work complements prior research that delineates the type of consumers who are most receptive to DTCA. Gönül et al. (2000), for example, report that consumers who have recently been ill, are older, and are highly educated are less likely to be influenced by DTC ads. Moreover, our work extends attitude and advertising research because we investigate the impact of attitudes toward the concept of DTCA on specific consumer and physician behaviors, rather than the impact of attitudes toward a specific ad (MacKenzie et al., 1986), or brand (Fazio, 1990), on behavior.

Using data obtained in a large-scale survey conducted by the FDA, we show that the favorableness of attitudes toward the concept of DTCA is predictive of both a range of consumptive behaviors, such as information search and prescription requests, and the actual prescription decisions physicians make in response. These results are of substantial relevance to the pharmaceutical industry because we demonstrate the utility of a new consumer-level variable that predicts the effectiveness of DTCA. Finding that general attitudes toward DTCA influence the above behaviors suggests that increasing consumers' favorableness toward DTCA may be beneficial to the pharmaceutical industry, and may also facilitate the effectiveness of ads for specific drugs. More specific marketing implications and recommendations are discussed later.

1. Attitudes Toward DTCA: Central Tendencies and Influences on Behavior

There may be a number of differentially valenced influences on consumers' general attitudes toward DTCA. On one hand, there are a variety of suspicions about the social value of DTCA. First, it is questionable whether it is ethical to build primary demand for a product when consumers are ill equipped to understand its potential benefits and risks. In many

DTC ads important information, such as success rates and treatment duration, is omitted (Bell et al., 2000). When information is supplied, it is often presented in a vague manner without evidence supportive of ad claims (Woloshin et al., 2001). Collective discontent with this state of affairs is evidenced in the nearly 60 bills that have been introduced both in state legislatures and in Congress, essentially asking for more disclosure in DTC ads. A second concern with DTC ads is that they typically focus on benefits and less on risks and potential side effects. Although pharmaceutical companies typically claim their ads are informative, and hence are of social benefit, physicians often perceive that the DTC ads are neither intended to educate patients, nor to empower them to be more intelligently involved in their own care, but are simply aimed at increasing physician prescribing (Hoffman and Wilkes, 1999). In a recent survey of physicians conducted by the FDA (Aikin, 2003), 87% of the physicians recalled patients asking them about a specific prescription drug, and 60% said they were asked to prescribe a specific drug. A final concern is that advertising costs drive up the cost of medications, both with respect to increasing the costs of brand name drugs, and building unfounded consumer demand for a more expensive advertised brand name drug versus a less advertised brand or a generic (Lee, 2001).

In contrast to these considerations that may lead to negativity, there are potential benefits of DTCA that may lead to positive attitudes. DTC ads provide education on available treatments, and encourage consumers to take a more active role in their own health care. Thus consumers may be more likely to seek additional information about their symptoms and possible remedies, and as a result they may experience better health outcomes. There is evidence that encouraging patients to be active in decision making results in them becoming more alert, active, happy and healthy (Langer and Rodin, 1976). Langer et al. (1990) suggest that by virtue of mindful involvement in their health care, patients become less like a "projectile propelled along a predetermined trajectory" and more like a "free bird". Thus, if DTCA encourages consumers to become more involved in their health care, there may be physical and mental health benefits. In addition, the medical community's opposition to DTCA has moderated in the past years (Calfee, 2002). Aikin (2003) reports that roughly 40% of physicians believe that ads for prescription drugs can benefit their interaction with patients because of increased patient knowledge.

The preceding paragraphs document that there are numerous reasons why a consumer may be either favorable or unfavorable toward DTCA. Information integration theory (e.g., Sanbonmatsu et al., 2003) and multiattribute model research (Nelson, 1999) suggests that when both favorable and unfavorable evidence about an entity is present, the overall evaluation of the entity based on the aggregation of the information will be of moderate extremity. Thus, we expected that while consumers' may hold strong opinions about aspects of DTCA (both favorable and unfavorable), overall attitudes toward DTCA would be neither extremely positive nor extremely negative. We also suspected that there would be substantial variability in consumers' attitudes because some of the issues raised above will be more important to some consumers than to others. Thus:

H1: Consumers' overall attitudes toward DTC ads for prescription drugs will be of moderate extremity (i.e., neither extremely favorable nor unfavorable).

Our next consideration is the role of consumers' attitudes toward DTCA in their behaviors. There are a number of reasons why we expect that the favorableness of consumers' general attitudes toward DTCA would be related to their subsequent behavior in response to an ad for a specific brand. Generally, to the extent that a consumer has a positive attitude toward DTCA, his/her attitude is less ambivalent, more stable, and thus more likely to guide behavior. A more specific consequence of a consumer having a positive attitude toward an entity is that he or she is more likely to visually orient to it (Roskos-Ewoldsen and Fazio, 1992). Thus, consumers who possess a favorable attitude toward DTCA may be more likely to notice, attend to, and process a drug ad than consumers with less favorable attitudes. Attention and comprehension are necessary phenomena for an ad to have significant persuasive effect (Duncan, 2002).

Positive attitudes towards DTCA are also likely to affect consumers' perceptions of the drug being advertised. When consumers have positive attitudes, they process incoming stimuli in accordance with the attitude (Fazio, 1990). Thus, positive general attitudes toward DTCA are likely to color consumers' perceptions of a specific drug being advertised, resulting in a more favorable evaluation of the drug. More favorable perceptions of the drug, in turn, may be likely to affect consumers' subsequent behaviors related to the advertised drug (e.g. seek more information about the drug, and/or try to obtain a prescription).

Attitude toward the ad (A_{ad}) is an affective construct representing consumers' feelings of favorability/unfavorability toward the ad, and has been shown to mediate the influence of an ad on brand attitude, search behavior, and purchase intentions (MacKenzie et al., 1986; see also Batra and Ray, 1987; Batra and Stayman, 1990). Although prior research on A_{ad} considers the relation between A_{ad} and a specific brand and behavior, in this article we will expand this relation and seek to demonstrate that consumers' general attitudes toward DTCA are related to their and their physicians' behavior.

The data set that we obtained will not allow us to tease apart the various mechanisms discussed above; however, taken together they suggest that DTCA attitudes will be predictive of consumers' behaviors regarding the advertised drug. These behaviors may take a variety of forms, including searching for information about the drug in books, magazines, online, by talking with friends or a pharmacist, or calling an 800 number. Moreover, consumers may also seek to learn more about the drug by asking their physician about it, an essential step in obtaining the drug.

H2a: The favorableness of consumers' attitudes toward DTCA will be related to their likelihood of searching for additional information about an advertised drug.

H2b: The favorableness of consumers' attitudes toward DTCA will be related to their likelihood of asking their physician about an advertised drug.

In addition to these basic relationships, we theorized that consumers' attitudes toward DTCA would affect the likelihood of consumers asking their physician about the drug because DTC attitudes predict the likelihood of subsequent information search, one example of which is asking one's physician about an advertised drug. Thus, the following mediation Hypothesis is suggested:

H3: Attitudes toward DTCA will affect the likelihood that consumers will ask their physician about an advertised drug because attitudes are related to the likelihood that the consumer will search for more information after seeing a DTC ad.

If the above hypotheses are correct, attitude favorability may also be related to whether consumers actually obtain a prescription for the drug from their physician. This may occur for two reasons. First, consumers who see a DTC ad may suspect that a given drug may solve a physical problem for which they have not yet sought treatment. If a drug is appropriate for a consumer's condition, the physician may prescribe it. Additionally, physicians may be likely to comply with patients' requests for a number of reasons, from the discomfort interjected into social discourse when one party declines a request, to concerns over losing patients in an increasingly competitive medical marketplace (Prosser et al., 2003).

We further hypothesized that the likelihood of the consumer seeking additional information about an advertised drug would also exert an independent influence on whether the consumer would obtain a prescription of the drug from the physician. Even if attitudes toward DTCA generally are negative, if an advertised drug appears to be of potential benefit, the consumer may be likely to seek to obtain a prescription. Physicians' behavior, though more complex given their knowledge of diseases and medicines, is likely also affected by patients' requests. Thus:

H4: The favorableness of consumers' attitudes toward DTCA will be related to physicians' likelihood of prescribing an advertised drug, such that greater favorableness will be associated with greater likelihood of the drug being prescribed.

H5: The likelihood that consumers will search for additional information about an advertised drug will be related to physicians' likelihood of prescribing the drug, such that greater search likelihood will be associated with greater likelihood of the drug being prescribed.

Finally, we hypothesized that consumers' DTCA attitudes and likelihood of searching for more information about an advertised drug would predict the likelihood that their physician would write a prescription for the drug because these variables are related to the likelihood that consumers would ask their physician about the drug—an obvious precondition to obtaining a prescription. Thus, the following Hypothesis regarding mediation is suggested:

H6: Attitudes toward DTCA and likelihood of searching for more information about an advertised drug predict the likelihood that the physician will prescribe the drug, as these variables are related to the likelihood that consumers will ask their physician about the drug.

2. Data and Measures

We tested our hypotheses using survey data gathered by the FDA as part of its efforts to monitor the effects of DTCA. In 1999, the FDA conducted a random national telephone survey of adults to ask their views on DTC promotion of prescription drugs and its effects

on visits to the physician. Participants were asked questions to measure the influence of DTCA on attitudes toward prescription drugs and on the physician-patient relationship. 1,081 adults at least 18 years of age participated in the survey. 960 of them had visited a physician in the three months prior to being surveyed.

Consumers' attitudes toward DTCA were measured with eleven statements, to which consumers were asked to state their level of agreement or disagreement (see Table 1). The response options were anchored by 1 = agree strongly and 5 = disagree strongly. Other questions were asked with respect to the respondents' last visit at the physician's office. Specifically, they were asked (1) if an advertisement for a prescription drug ever caused them to search for more information about the drug, (2) if they asked their physician about a drug for which they had seen an ad, and (3) whether their physician prescribed the drug they asked about. Each of these questions was answered either yes or no. Finally, several demographic variables were measured.

3. Results

3.1. Attitudes Toward DTCA

We employed factor analysis with standard varimax rotation to explore whether the attitude questions could be reduced into common factors. The factor analysis suggests that the attitude questions reflect three independent constructs (see Table 1). The first factor reflects consumers' general attitudes toward DTCA, and accounts for 48% of the total variance. The second factor describes perceptions of the extent to which DTC ads accurately and completely convey drug performance, and explains 29% of the total variance. The third factor, which explains 23% of the variance, reflects implications for physicians of DTCA.

Hypothesis 1 posited that general attitudes toward DTC advertising would be middling. Although this Hypothesis cannot be tested inferentially, inspection of the individual items comprising the general attitude factor (factor 1), as well as the aggregated mean ($M_{\text{Factor1}} = 2.611$), clearly convey moderate attitudes (see Table 1). While there is some variability in mean response across the general attitude questions (e.g., consumers generally are more confident that DTC ads contribute to awareness of new drugs, but are much less convinced that such ads improve their health decisions), overall, consistent with Hypothesis 1, consumers are neither extremely positive nor negative toward DTCA. Similar to the general attitude factor, items and aggregate central tendencies of factor 2 (performance information value, $M_{\text{Factor2}} = 2.629$) also show mixed evaluations of DTCA. Results suggest that while consumers do not exhibit extreme distrust of the performance information value of DTC ads, they nevertheless are unconvinced that drug performance is completely and accurately conveyed. These data are also consistent with Hypothesis 1.

The third factor (implications for patient-physician interaction) does not directly bear on Hypothesis 1. Central tendencies of this factor ($M_{\text{Factor3}} = 4.202$) suggest that consumers generally do not feel that DTC advertisements imply the irrelevance of physicians, and that they do not worry that talking with a physician about a prescription drug ad would imply distrust of one's physician.

Table 1. Results of Factor Analysis and Central Tendencies

	Factor 1: Attitudes toward DTC	Factor 2: Perceived information value	Factor 3: Physician implication	Means ^b	SD
Advertisements for prescription drugs help me have better discussions with my doctor about my health	0.779	0.070	0.029	2.438	1.240
I like seeing advertisements for prescription drugs	0.745	0.007	-0.157	2.693	1.344
Advertisements for prescription drugs help me make better decisions about my health	0.732	0.019	-0.038	2.929	1.402
Advertisements for prescription drugs help make me aware of new drugs	0.674	0.038	-0.101	1.812	1.064
Advertisements for prescription drugs give enough information for me to decide whether I should discuss the drug with the doctor	0.520	-0.438	0.228	2.374	1.290
Only the safest prescription drugs are allowed to be advertised to the public ^a	0.445	-0.052	0.447	3.416	1.458
Advertisements for prescription drugs do not give enough information about the possible risks and negative effects of using the drug	-0.050	0.807	0.039	2.492	1.364
Advertisements for prescription drugs do not give enough information about the possible benefits and positive effects of using the drug	0.243	0.640	0.059	2.869	1.390
Advertisements for prescription drugs make the drugs seem better than they really are	-0.060	0.510	0.389	2.463	1.242
I would not talk with my doctor about an advertisement for a prescription drug, because it would seem like I did not trust my doctor	-0.096	-0.008	0.728	4.510	0.982
Advertisements for prescription drugs make it seem like a doctor is not needed to decide whether a drug is right for me	-0.116	0.317	0.551	3.894	1.365

^aAlthough the score for this statement is almost the same for factor 1 and 3, we felt it fits factor 1 better.

^bThe scale for these questions ranged between 1 = agree strongly to 5 = disagree strongly.

3.2. *The Relation Between Attitudes Toward DTCA and Consumers' and Physicians' Behavior*

To test the relation between consumers' attitudes toward DTC ads and their behavior, we conducted a series of binary logit analyses (see Table 2). Consistent with Hypothesis 2a, consumers with more favorable attitudes toward DTCA are more likely to search for information about an advertised drug following receipt of an ad (see model #1). Moreover, consistent with Hypothesis 2b, consumers with more favorable attitudes toward DTCA are also more likely to ask their physician about the drug (see model #2).

We hypothesized that the likelihood that the consumer will search for more information after seeing a DTCA would mediate the relation between attitudes and the likelihood that consumers would ask their physician about the drug. Model 3 is supportive of this hypothesis. When both DTC attitudes and likelihood of subsequent information search are entered into a regression predicting whether consumers would ask their physician about an advertised drug, the coefficient of attitudes becomes non-significant while the effect of information search remains significant. Thus, following Baron and Kenny's (1986) test for mediation, Hypothesis 3 is supported.

Next we explored our hypotheses regarding physicians' behavior (see model #4). Consistent with Hypothesis 4, consumers' DTCA attitudes predicted physicians' likelihood of prescribing the advertised drug, such that patients with more favorable attitudes towards DTCA were more likely to receive prescriptions for it. Consistent with H5 there was an independent effect of the likelihood that consumers will search for additional information about an advertised drug on physicians' behavior, such that consumers who were more likely to search for information about an advertised drug were more likely to receive a prescription for it from their physician.

Finally, we tested H6 that the effect of DTC ad attitudes and likelihood of information search about an advertised drug would predict the likelihood that the physician will write a prescription for the drug because these variables are related to the likelihood that the consumer will ask his or her physician about the drug. As expected, when these three variables were used to predict whether the physician prescribed the advertised drug, the coefficients for DTC attitudes and information search dropped and became non-significant, while the coefficient for likelihood of asking the physician was significant (see model #5). Thus, the likelihood of asking one's physician about an advertised drug mediated the relationship between DTCA attitudes and likelihood of information search on whether the physician wrote the prescription.

Although our hypotheses relate only to general attitudes towards DTCA, we also conducted analyses to explore potential effects among the other factors. Neither factor 2 nor factor 3 was related to any subsequent behavior of consumers or physicians.

3.3. *Individual Differences and Demographic Effects*

Although we did not offer hypotheses regarding the demographic variables measured in the survey because they were not germane to our purposes, we nevertheless explored the data

Table 2. Effects of Attitudes toward DTCA on Consumer and Physician Behavior

Independent	Dependent				
	Model #1 Information search	Model #2 Ask doctor	Model #3 Ask doctor	Model #4 Get prescription	Model #5 Get prescription
DTC attitudes (<i>t</i> -stat)	0.718** (7.597)	0.365* (2.29)	0.221 (1.322)	0.352* (2.471)	0.191 (0.925)
Info search (<i>t</i> -stat)			0.78** (2.633)	0.441* (1.814)	0.257 (0.725)
Ask doctor (<i>t</i> -stat)					2.562** (7.562)

*Implies significance at <0.05 level.

**Implies significance at <0.01 level.

for trends reported by others. Previous research (Gönül et al., 2000; Alperstien and Peyrot, 1993; Bell et al., 1999) has found that consumers who use drugs for chronic conditions have more favorable attitudes toward DTCA and are more likely to participate in their health decisions. Consistent with prior research, we found that those who were currently taking a prescription drug were more inclined to ask their physicians about a specific brand of drug ($\beta = 0.888$, $p = 0.002$) and to obtain the prescription ($\beta = 1.3034$, $p < 0.0001$).

Moorman and Matulich (1993) found that consumers' health ability is a critical predictor of health information acquisition. Their definition of health ability includes several consumer characteristics, among them are education, age and income. We found that income was the only significant predictor of information search. Specifically, those with higher incomes were more likely to search for information about an advertised drug ($\beta = 0.1196$, $p = 0.02$).

4. Discussion and Implications

Our analyses provide insight into an increasingly important marketplace phenomenon—consumers' reactions to DTCA of prescription drugs. While there are clear potential benefits of DTCA for the consumer, there are also clear profit motives for the pharmaceutical industry. Consistent with our expectations, overall DTCA attitude results were of moderate extremity. Due to limitations in the data set we cannot delineate reasons underlying this finding, however moderate attitudes typically result when knowledge about an object is low (Sanbonmatsu et al., 1991), as may be the case with prescription drugs.

While delineating consumers' general evaluations of DTCA is important, perhaps more important are our findings about the downstream consequences of these evaluations for consumer and physician behavior. To the extent that a consumer was favorable toward DTC advertisements generally, the consumer was more likely to search for more information about a drug that was advertised, and to ask his or her physician about the drug.

Our most compelling finding is that when a physician's patient is favorable to DTCA and is likely to search for more information about an advertised drug, the physician is more

likely to prescribe this drug. This is surprising because physicians' behavior does not result from a patient's favorable attitudes toward a *specific* ad, but instead, results from categorical DTCA attitudes. Mediation analyses showed that DTCA attitudes and consumers' likelihood of information search affect physicians' likelihood of prescribing the advertised drug by affecting the likelihood of consumers asking their physician about the drug.

5. Managerial Implications and Recommendations

The contribution we make in this paper is delineating how consumers' attitudes toward DTC advertisements considered generally are related to their behavior, as well as that of their physicians. Although we did not have data about consumers' reactions to specific DTC ads, it is a near certainty that ad specific attitudes will also be related to subsequent consumption behavior. Thus, while pharmaceutical companies and their advertising agencies clearly should endeavor to create maximally compelling marketing for specific brands, marketing DTC drug ads generally may also procure marketplace rewards. While there are numerous potential social upsides of DTCA, there are also a variety of serious concomitant concerns. The pharmaceutical industry may find it profitable to create marketing communications aimed at increasing the positivity of consumers' perceptions of DTCA by delineating social benefits while addressing consumers' concerns. Indeed, our data show that to the extent that consumers are generally favorable to the category of DTCA, their behavior interacts with that of their physicians to increase the likelihood that an advertised drug will be prescribed.

The American Association of Advertising Agencies pursued a similar categorical strategy in which it essentially advertised advertising (e.g., suggesting that ads facilitate consumer-product matches, while discounting ads as "mind-control"). Consistent with our motivation for H1, we suggest that consumer suspicion of DTCA may be even more prevalent than concerns about advertising for more traditional consumer products. Thus, the potential behavioral response to communications targeted to make perceptions of DTCA more favorable categorically may be even greater for prescription drugs than package goods.

While we do not have data that evaluate particular approaches to instill more favorable attitudes toward DTCA, our understanding of the reasons consumers may evaluate DTCA negatively facilitates speculations on potentially impactful communication themes. Specifically, we suggest that advertisements focusing on how DTCA facilitates patient empowerment and increased decision making ability because of their information value may be effective. Moreover, DTCA could be presented as a tool whereby patients may become more active participants in their health care, and along with their physicians, better able to make appropriate personalized decisions. One particularly effective ad format may be testimonials of real patients who sought help and had positive outcomes as a result of seeing a DTC advertisement. Along the same lines, testimonials of physicians amenable to DTCA may be powerful in consumers' minds.

The two aims of our research were to highlight a previously undocumented predictor of the effectiveness of DTCA, and to offer suggestions for how the pharmaceutical industry could leverage this finding in future communications. We do not take a stand on whether this would be good for society. Indeed, Antonuccio et al. (2003) raise serious questions about

the social utility of DTCA. For example, they note that DTC ads often understate the risks of advertised drugs while overstating drug effectiveness, and that DTC ads sometimes contain misleading comparisons. Antonuccio et al. also question whether drug company funded research trials can be objective, and suggest a "firewall" between marketing and science because of potential conflicts of interest that arise when marketing objectives (increase sales and profits) are crossed with scientific aims (the production of objective data).

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