Direct-to-Consumer Advertising in Black and White: Racial Differences in Placement Patterns of Print Advertisements for Health Products and Messages

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If direct-to-consumer advertising (DTCA) increases consumer participation in healthcare, then it may provide a useful strategy for addressing health disparities, in part, where patient-level barriers have contributed to such disparities. However, this presumes equitable access to DTCA. Using mixed methods, we explored advertisement patterns in matched African American and general audience magazines across a range of genres and ad types. Results suggest no significant differences in ad frequencies by race. However other meaningful categorical and qualitative differences were found, suggesting that advertisers may fall short in maximizing DTCA as an adjunctive strategy for empowering populations at risk for health disparities.

KEYWORDS direct-to-consumer advertising (DTCA), health disparities, minority health, pharmaceutical advertising, social marketing

The pharmaceutical industry has shifted its focus onto the consumer market as evidenced by the increased spending on direct-to-consumer advertising (DTCA) in contrast to decreased spending on direct-to-physician advertising

(Woloshin, Schwartz, Tremmel, & Welch, 2001). Every dollar spent to advertise prescription drugs directly to consumers returns six times that amount from purchases of drugs that have appeared in print and broadcast media ads (Crosse, 2006). Thus, DTCA is recognized as having a tremendous impact on consumer demand for prescription medications (Pinto, Pinto, & Barber, 1998) and, according to U.S. Food and Drug Administration (FDA, 2005) reports, in its ability to prompt some patients to seek medical care for conditions that otherwise have been left untreated. Proponents of DTCA acknowledge this as a central benefit of the practice and publicize its ability to appeal and empower consumers to become proactive in their medical care (Lyles, 2002).

If DTCA can increase consumer participation in their healthcare, then it may provide a useful strategy for addressing health disparities at least, in part, where patient-level barriers to seeking medical care have contributed to such disparities. However, this presumes that all populations have equitable access to DTCA. Other investigators have reported differences in patterns of DTCA and reported two disturbing trends regarding differences in the frequency of DTCA and in types of products advertised between magazines that target racial or ethnic readers and those geared toward a general (nonethnic) readership. They reported fewer prescription drug or health promotion advertisements in those magazines targeting African American or Latino readers compared to those targeting a general audience (Duerksen et al., 2005; Omonuwa, 2001); and their findings showed a surprising lack of DTCA in African American or Latino magazines for products intended for treatment of serious health conditions for which there are documented disparities among the targeted ethnic populations (Duerksen et al., 2005; Mastin, Andsager, Choi, & Lee, 2007).

While these reported patterns suggest that current practices of DTCA placements may not leverage the potential of DTCA to increase racial or ethnic minority consumer empowerment in seeking medical advice, methodological challenges in DTCA measurement (Hansen & Droege, 2005) found in these studies warrant further consideration of these conclusions. We investigated patterns of direct-to-consumer (DTC) print advertisements that appeared in magazines matched by racial (African American) vs. nonracial (general audience) target readership across a range of genres, (including women's interests, entertainment and general interests, and finance and business periodicals) over a six-month period from September 2005 to February 2006. We hypothesized that if DTCA were to be an effective adjunct to efforts for increasing minority participation in healthcare, perhaps by providing inducements to seek medical advice or attention, then minimally there would be equitable (a) frequencies of ads in African American oriented magazines compared to that in general audience magazines; and (b) placement of specific health related product and message advertisements for conditions for which there have been reported health disparities. Thirdly, (c) we explored

if patterns of ad placement showed correspondence to the racial orientation of the magazines.

STUDY DATA AND METHODS

Sampling

Magazines were selected based on total paid circulation data reported by the Magazine Publishers of America (Magazine Publishers of America, 2004) and by subject category (genre) indicated in the Ulrich's Periodicals Directory (Ulrich's Periodicals Directory, 2007). Magazines with the largest circulations among African American periodicals were matched by genre to comparable magazines with large circulations among general (nonethnic specific) audiences.

All advertisements appearing in these magazines over six consecutive months (September 2005–February 2006) that conveyed appeals regarding health issues were selected. These included ads for over-the-counter (OTC) and prescription drugs or for health messages, defined as specific health advice or information. We excluded advertisements that were for beauty products without health claims, insurance, drug payment programs (unless this was part of the advertisement of a specific drug), and public relations ads promoting a health company targeted for investors. Uncertainty regarding inclusion/exclusion was resolved by consensus of both senior investigators.

Coding

Two independent coders each coded all the ads in the data set by study variables described below. Results were compared and all resulting coding disagreements were arbitrated by consensus with senior investigators such that the final sample represented 100% agreement.

Descriptive and Qualitative Content Analyses

To compare frequencies of advertisements between African American and general audience magazines, we analyzed differences in the volume of ads by genre (women's interests, general interests, or finance and business) across matched African American vs. general audience magazines (Fisher's exact chi-square analysis). Due to differences in matched magazine sizes (number of pages per issue) and periodicity we created standardized densities for each magazine by calculating the proportion of advertisements (total number of ads per total number of pages in the six-month period) and multiplying by 1000. Thus, the ad density reflects the number of ads in a magazine per 1,000 pages. Stata v10 was used to compute statistics.

To qualitatively assess placement of ads between the two groups of magazines, we also performed a content analysis noting similarities and differences in types of products (OTC and prescription drugs) and health messages per categories of health conditions. All product and message advertisements were categorized by health conditions and by whether they were placed in an African American vs. general audience magazine or in both.

Multivariate Analysis

Lastly, to explore correspondences of ad characteristics in relation to the racial orientation of magazines, we used a multiple correspondence analysis method, described below. Each observation (advertisement) can be categorized by several multidimensional variables. Among our interests these include: its placement in an African American vs. general audience magazine; its appearance in a women's interest, entertainment, or business magazine; its promotion of an over-the-counter product, a prescription drug, or its conveyance of a health message; its ad type according to FDA regulatory designations; its costliness (as suggested by ad size); and its targeting of a specific health condition. We did not speculate regarding predictor-response relationships among these variables—that is, we presumed that each had no particular role as either dependent outcome or independent explanatory variables. A more likely relationship among the variables is one of correspondence.

MCA provides a noninferential procedure for identifying and visually mapping patterns of phenomenon for which there are multiple categorical dimensions that describe that phenomenon simultaneously, such as seen in our ad data. MCA computes chi-squared distances of row and column data from a multidimensional contingency table and converts the information into a graphical display allowing visualization of correspondences or relationships among the many variables. Computation methods for MCA are described elsewhere (Greenacre, 1984, 1992; Greenacre & Blasius, 2006). We performed MCA calculations using XLSTAT Version 2008.1.01 software (XLSTAT, 2008).

Study Variables

For bi- and multivariate analyses, variables under consideration were as follows:

- Magazine genre (categorical): Ulrich subject category of the magazine
    ENT (entertainment and general interests);
    WOM (women's interests); or
    FIN (finance and business)

- Magazine racial/Ethnic orientation (dichotomous)
  African American
  General audience
- Medical condition (categorical): Ads were coded according grouped health conditions using categories identified by Pinto (Pinto, 2000). These included products or messages that addressed:
  Serious, life-threatening conditions: illnesses representing serious, potentially life-threatening conditions such as diabetes, hypertension, heart diseases, lipid disorders, cerebrovascular disease, chronic hepatitis, AIDS, etc.;
  Chronic, nonlife-threatening conditions: nonserious health problems or illnesses such as allergies or dermatologic conditions;
  Mental health: conditions such as depression, anxiety, bi-polar disease, attention deficit disorders, etc.;
  Infectious diseases: nonlife threatening acute conditions diseases such as colds or ear infections, or symptoms associated with such conditions;
  Lifestyle activities: lifestyle conditions such as birth control, erectile dysfunction, smoking cessation; weight loss, nonmental health related sleep disorders, etc.
- Advertisement type (categorical)
  Over-the-counter product;
  Prescription product; or
  Message (specific health advice or information)
- FDA regulatory designation (Rados, 2004) (categorical)
  REM: Reminder, (unregulated ads containing product name but not its intended use);
  PROD: Product-claim (regulated ads that must include a "brief summary" detailing both risks and benefits of a prescription medication); and
  HS: Help-seeking ads (unregulated ads providing information about a medical condition but do not name any specific product)
- Ad size (categorical): A proxy for costliness;
  Less (ad was less than 1 page in size)
  More (ad was larger than 1 full page in size)
  Full (ad was 1 full page in size)

STUDY RESULTS

A total of 262 advertisements for health products or messages that appeared in six magazines were collected and analyzed. Among these ads, there were 70 distinct products and 30 distinct messages. A summary of all magazines included in our sample by genre (Ulrich category), African American vs. general audience orientation, total paid circulation, and standardized ad densities by ad type is described in Table 1. Although not shown in the table,

TABLE 1 Average Total Paid Circulation* (2004) and Comparisons of Standardized Health Product and Message Advertisement Densities[†] of African-American vs. General Audience Magazines by Genre (Ulrich Category) and Ad Type

| Magazine genre | African American target magazines | | | General audience magazines | | | p value[‡] |
| | Magazine name (avg. total paid circulation) | Ad densities[†] | | Magazine name (avg. total paid circulation) | Ad densities[†] | | |
		Ad type	Ad density		Ad type	Ad density	
Women's interests	Essence (1,060,500)	(TOTAL)	(22)	Cosmopolitan (1,373,028)	(TOTAL)	(18)	(>.7)
		PRESCR	11		PRESCR	7	
		OTC	7		OTC	7	
		MESSAGE	4		MESSAGE	4	
Entertainment and general interests	Jet (927,402)	(TOTAL)	(17)	People (3,690,387)	(TOTAL)	(36)	(0.001)
		PRESCR	3		PRESCR	23	
		OTC	6		OTC	10	
		MESSAGE	8		MESSAGE	3	
Finance and business	Black Enterprise (508,552)	(TOTAL)	(10)	Forbes (924,908)	(TOTAL)	(9)	(>.2)
		PRESCR	2		PRESCR	5	
		OTC	1		OTC	1	
		MESSAGE	7		MESSAGE	3	

*Average Total Paid Circulation calculated by the Magazine Publishers of America from Audit Bureau of Circulations statements for the first and second six months of each year. Figures shown for 2004 represent complete data available at the time of sample selection.

[†]Calculations for standardized advertisement density based on proportion of ads for each magazine over entire study period per 1000 pages. Ad densities reported by: TOTAL = total ad counts; PRESCR = prescription drug ad counts; OTC = over-the-counter ad counts; and MESSAGE = message ad counts.

[‡]Chi square p-values based on comparisons of standardized ad densities for all ad types for each genre.

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the chi-square analysis comparing ad densities across all combined genres and ad types (all African American vs. all general audience ads) was nonstatistically significant (chi square $= 5.6015$, $p > 0.06$). Differences in ad densities by total ad types displayed in Table 1 showed statistical significance only in the entertainment and general interest magazine comparisons (*Jet* vs. *People*). There were no significant differences when comparing ad densities in women's interests (*Cosmopolitan* vs. *Essence*) or finance and business magazines (*Forbes* vs. *Black Enterprise*).

Qualitative differences in ads placements between African American and general audience magazines were assessed by noting which products and messages appeared in only the African American magazines, in only the general audience magazines, or in both. Some pattern differences can be noted. For example, Table 2 shows that for ads representing serious conditions, general audience readers were exposed to a greater range of cardiovascular products, including more variety of statins (Crestor, Vytorin, and Lipitor) compared to readers of African American magazines. Among health messages, readers of only African American magazines would have been uniquely exposed to advertisements for blood donation and education and prevention of stroke and kidney disease; readers of both African American and general audience magazines would have been exposed to messages regarding HIV testing, breast cancer, and education and prevention for chronic Hepatitis C and diabetes; and readers of only general audience magazines would have been uniquely exposed to education for ovarian cancer, primary immunodeficiency disease, and neuropathies. Similarly, fewer ads for products for the treatment of depression and other mental health conditions were seen in African American magazines (Table 2).

Although not shown, patterns for advertisements of other nonserious conditions were also noted. African American specific magazines lacked advertisements for products related to obesity control or smoking cessation—lifestyle behaviors that increase risks for serious health conditions—while products for these conditions appeared in general audience magazines. Also absent were important government-sponsored messages regarding drug safety and how to improve the quality of doctor's visits that appeared only in general audience and not in the African American magazines.

To explore these patterns further we performed the MCA computation for all six study variables in the analysis. Table 3 shows the eigenvalues and % adjusted cumulative inertia (Greenacre, 1993) for the two extracted factors, F1 and F2 that explain nearly 78% of the phenomenon under investigation (relationships among all the study variables), leaving at least 22% of the data variation or error unaccounted for. Additional factors, e.g., F3, F4, or higher added little additional inertia in the model such that little can be said of the patterns they produced and thus results are not shown.

TABLE 2 Summary of Advertisements (Products and Messages) by Serious Life Threatening and Mental Health Conditions and Magazine Racial Orientation (African American vs. General Audience)

African American only	Both	General audience only
Cardiovascular disease products		
Bayer Low Dose (aspirin)*	St. Joseph's (aspirin)*	
	Toprol-XL (metoprolol)	Coreg (carvedilol)
	Crestor (rosuvastatin)	Plavix (clopidogrel)
		Vytorin (ezetimibe/ simvastatin)
		Lipitor (atorvastatin)
Diabetes products		
Actos (pioglitazone)		Avandia (rosiglitazone)
Ascensia (glucose testing)*		
Nature Made (diabetes health pack)*		
Breast cancer products		
Arimidex (anastrazole)		Femara (letrozole)
Serious life threatening disease awareness/Prevention messages		
Blood bank shortage	HIV testing	Primary immunodeficiency awareness
Stroke education and prevention	Breast cancer awareness and prevention	Ovarian cancer awareness
Kidney disease education and prevention	Hepatitis C awareness and testing	Neuropathy awareness
	Diabetes awareness and prevention	
Mental health products		
	Abilify (aripiprazole)	Adderall (amphetamine mixed salts)
		Effexor X (venlafaxine)
		Wellbutrin (bupropion)
		Zoloft (sertraline)
Mental health awareness/Prevention messages		
	Depression hurts (Lilly)	Eating disorders

Figure 1 is the representational map of the variables in relation to the first two axes, F1 and F2. Interpretation of MCA graphs is a stepwise process, enhanced and validated by referring back to the principal coordinates (scores) data (Table 3). The key is to compare distances from the origin along the two axes. Plots that are furthest from the origin represent variables driving that particular factorial axis—an observation reinforced by principal component scores greater than +0.85 or less than −0.85 listed in Table 3.

For our study question, it is notable that for the first axis (F1, from left to right), the magazine racial orientation categories each appear on opposite

TABLE 3 Eigenvalues, Cumulative Adjusted Inertia (%), and Principal coordinates (scores) across variable categories for First and Second Factorial Axes (F1 and F2)

	F1	F2
Eigenvalues	0.45	0.42
Cumulative adjusted inertia (%)	43.43	77.74
Variable categories		
Race-0	−0.160	−0.287
Race-1	0.438	0.787
Ad type-0	1.456	1.023
Ad type-1	−1.213	0.854
Ad type-2	0.123	−0.855
Genre-ENT	−0.225	−0.267
Genre-FIN	1.168	0.499
Genre-WOM	0.000	0.444
Condition-1	−0.294	−0.732
Condition-2	0.880	0.430
Condition-3	0.536	−0.961
Condition-4	−1.240	0.855
Condition-5	0.252	0.044
FDA-HS	1.302	0.916
FDA-PROD	0.135	−0.941
FDA-REM	−1.184	0.794
Size-LESS	1.669	1.676
Size-MORE	0.842	−0.648
Size-ONE	−0.203	0.021

Note. Variable categories: Race: 0 = General audience; 1 = African American audience. Ad type: 0 = Message; 1 = OTC product; 2 = Prescription drug. Magazine genres: ENT = entertainment and general interest; WOM = women's interest; FIN = business and finance. Medical conditions: 1 = serious, life-threatening; 2 = chronic, nonlife-threatening; 3 = mental health; 4 = infectious disease; 5 = lifestyle FDA designations: HS = help seeking ad; PROD = product requiring full disclosure; REM = reminder ad, not requiring full disclosure. Size of ad: Less = less than full page; More = more than full page; One = full page.

sides of the origin; however each distance from the origin is small and the overall distances between them are not great. For the second axis (F2, from top to bottom), the racial orientation categories continue to map as opposites; however each distance from the origin and the distances between the two are greater than seen in F1. This suggests that there is greater racial difference being accounted for in F2 than seen in F1. We then look at correspondences of other variables with the plots for each racial orientation category and note that: (a) African American magazines mapped closest to ads for OTC products, those designated by the FDA as reminder ads, and ads for infectious diseases; and (b) ads for serious life-threatening conditions and for mental health mapped closer to general audience magazines than to those oriented toward African Americans.
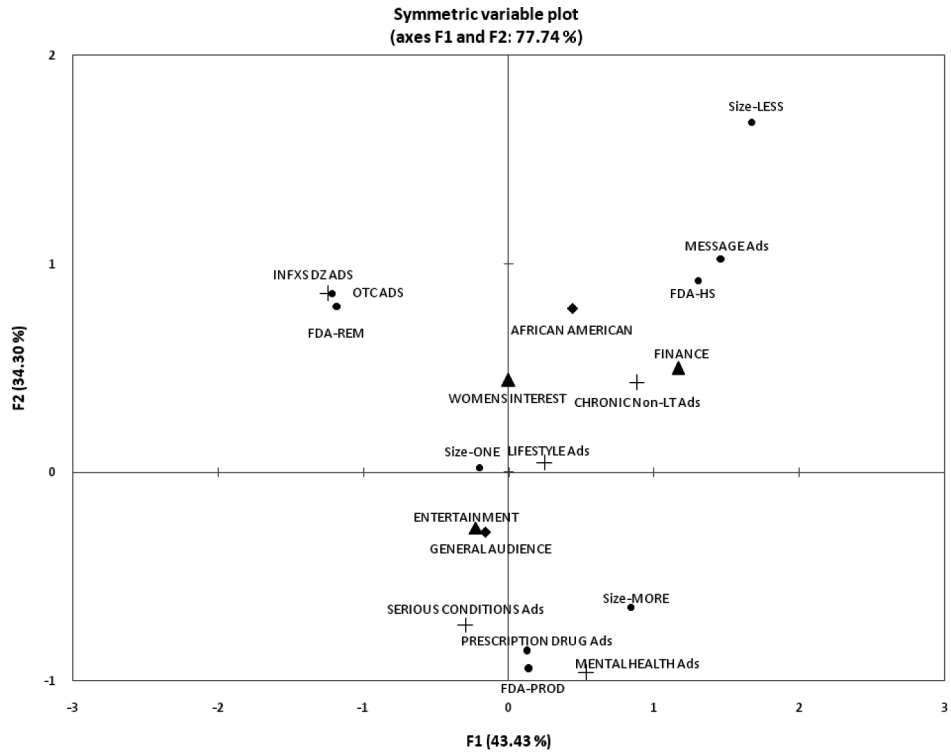
FIGURE 1 Correspondence map (Symmetric Variable Plot) of DTCA categories: Factorial axes and adjusted inertia (Percentages).

DISCUSSION

Drug advertising practices are presumed to be driven by commercial market forces and not predicated on social marketing or public health motives (such as health disparities reduction) (Grier & Bryant, 2005). Nonetheless, we provide three approaches for comparing patterns of DTCA ads in African American and nonethnic target magazines useful for determining the potential contribution of this practice in addressing health disparities. The first approach compared volume of ads between African American and general audience magazines. Unlike previous researchers, we found that

the total volume of ads, as measured by ad densities, did not vary significantly as a function of the target audience (African American vs. general). The only significant finding was within the entertainment magazines, *Jet* and *People*. However, it may be partially explained by other volume measures not captured by ad densities: for example as Table 1 shows, the circulation rates, and thus the potential market, differed dramatically between these two magazines. In addition, *People* magazine uses a full page size format (10.5 in. × 8 in.). By contrast, *Jet* uses a digest size format (5.5 in. × 8.25 in. page size); thus reducing the available ad space compared to *People*.

Volume data related to frequencies do not necessarily reflect what readers see or pay attention to when viewing magazines; thus our second approach allowed us to consider potential exposure to ads in relation to different health conditions. We found qualitative differences in ad placements that may be meaningful for health disparities. For example, ads for certain conditions (statins for hypercholesterolemia; antidepressants and other mental health drugs and messages; or products and messages related to obesity) were underrepresented or altogether absent in the African American magazines we studied.

Looking at ad placement patterns by target readership alone limits the conclusions that can be drawn from our qualitative analysis in that it may presume some degree of segregation among readers. Our study design made no assumption that any individual reads only one kind of magazine with regards to its racial or ethnic specificity. Instead our design focused only on ad placement requiring additional methods for insight into placement patterns. Our third analytic approach, multiple correspondence analysis, allowed us to visualize such patterns with results suggesting that the racial orientation of a magazine may partially explain the results seen in our sample. Racial differences were reflected most in the second dimension (F2), with prescription drugs for both serious life-threatening (e.g., cardiovascular drugs shown in Table 2) and mental health conditions (e.g., antidepressants) corresponding with general audience magazines. By contrast product ads for infectious disease (primarily OTC cold and allergy medications) and, to a lesser extent, chronic nonlife threatening conditions (primarily OTC pain meds) corresponded with African American magazines.

When concerned about the potential impact of DTCA on health behaviors (particularly on its potential to empower consumers to become more knowledgeable and proactive regarding their health needs), the full exposure to both products and messages should be considered. We took into consideration that readers of magazines were not only exposed to advertisements of pharmaceutical products, but also to nonproduct oriented health messages that provided specific health information or advice. We found that important health messages regarding obesity control, generic drug safety, misuse of OTC medications, and how to improve the quality of doctor's visits were altogether absent in African American magazines. This patterns further

supports that even the nonpharmaceutical based organizations that promote health awareness and disease prevention may be missing social marketing opportunities to address key patient behaviors that may contribute to health disparities through DTCA.

The implications of these findings reach beyond DTCA practices in the U.S. New Zealand is the only other industrialized country that currently allows DTCA of prescription drugs (Ministry of Health, 2006). While Canada has banned product-claim ads, Canadians continue to be exposed to them through U.S.-based publications and American television channels, and reminder and help-seeking ads are still permissible (Hebert, 2008). Thus our findings may have relevance to New Zealand, Canada, and other countries with concerns regarding racially and ethnically based health disparities in their countries as they consider future policies regarding DTCA.

Limitations

Our study limitations include the fact that we have no data about the population that viewed the advertisements that appeared in the six magazines during our study period. While inferences regarding numbers of potential readers can be gleaned from average paid circulation rates for these magazines, this does not account for nonpaid circulation rates. We also limited our study to only six magazines over a limited timeframe, thus not capturing the full range of DTCA exposure from other magazines or from other media (i.e., newspapers, radio, television, and internet). Lastly, our MCA suggests that an additional 22% of variation in our data may be accounted for by yet other variables. We recommend additional investigations that include a larger range of periodicals including other magazines with large ethnic readership to confirm our exploratory findings and to identify additional variables to consider.

Despite the limits discussed above, our triangulated results suggest that while there are likely no differences in the overall frequency or volume of DTCA between African American and general audience magazines, qualitative (categorical) differences do exist in ad placement suggesting that advertisers and purveyors of health products and messages may fall short in maximizing DTCA as an adjunctive strategy for empowering populations at risk for health disparities.

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