AN EXPLORATORY CONTENT ANALYSIS OF PHARMACEUTICAL ADS IN JOURNALS TARGETED TO PEDIATRICIANS

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A content analysis of pharmaceutical product ads targeted toward pediatricians was conducted to determine the extent to which they were informative and the types of information presented. The results indicated that pharmaceutical product ads contain an abundance of information that may help in educating and informing the physician. The vast majority of ads illustrated product benefits (94 percent) and characteristics (98 percent). Some ads (71 percent) identified the disease or condition for which the product is used. However, ads tended to leverage emotion (52 percent) more so than scientific information (35 percent) in support of the product. New product ads were statistically more informative relative to maintenance products. Similarly, prescription drug ads were more likely to identify the disease but were concomitantly less likely to rely on product or patient visual cues. Most surprisingly, despite FDA "fair balance" guidelines, the majority of ads (53 percent) were perceived to present benefits in unequal proportion to risks. The implication of these findings is discussed in the context that this research provides a platform for the analysis of the changing paradigms in healthcare advertising practices. As such, this report provides important advertising guidance to those involved in the management of pharmaceutical product promotion to physicians.

INTRODUCTION

Physicians are exposed to pharmaceutical promotion in the form of Direct To Consumer (DTC) advertising, sales force detailing, continuing medical education and in the professional media (Kohlhepp 1999). Therefore, today's pharmaceutical product manager is challenged with effectively allocating funds across the entire gamut of promotional vehicles, while maintaining stringent budgetary goals. Whereas, investment in pharmaceutical promotion increased from $9.2 billion in 1996 to $15.7 billion in 2000, the bulk of this increased investment has occurred in DTC, and concurrently the investment in promotion to the physician has declined (Rosenthal 2002). In fact, spending by pharmaceutical companies on professional journal advertising declined by 13 percent in 2000 - 2001 (May 2001). Thus, the advent of DTC has profoundly impacted the modes used by pharmaceutical companies to advertise products to their customers.

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There is much debate over the motives behind pharmaceutical DTC advertising (Koerner 1999). Although proponents of DTC argue that such advertising programs involve patients directly in their own healthcare, the potential impact on the standard of healthcare that patients ultimately receive has yet to be fully determined. Indeed, it has been suggested that time pressured-physicians might be prompted to comply by prescribing what consumers demand rather than perform a comprehensive diagnosis (Koerner 1999; Zuger 1997). There is also the danger that in a blinkered quest for profits, pharmaceutical companies might even exclude the physician altogether in the communication process. For example, because initial promotional efforts in support of Pravachol, the anti-cholesterol drug, targeted only consumers, physicians preferentially prescribed the competing brand Lipitor (Ukens 1999). Thus, the prevailing message is one of a balanced promotional program that acknowledges the physician as the healthcare "gatekeeper" and incorporates physician-targeted communication as a vital partner to DTC.

Since the intensity of competition for time with the physician is increasing, sales representatives invariably

have only minimal time to communicate product attributes to the doctor (Gleason 2001). Thus, advertisements in the professional media may play an imperative role in the communication process between pharmaceutical company and physician. A 2001 independent study showed journal advertising to provide a greater return on investment compared to sales force detailing, DTC, or medical education (Neslin 2001). Moreover, journal ads may be a preferred source of information for physicians, presented in a user-friendly format and at times determined by the physician (Castagnoli 2002; Mohrman and Scott 1994). On the contrary, there is concern that if physicians receive all of their information about drugs from advertising, then health care may be compromised (Kohlhepp 1999). These apparently contrasting viewpoints highlight the need to better comprehend the informational content currently provided by pharmaceutical companies to physicians through the professional media. Consequently, this study seeks to fill the void in the literature regarding the content of pharmaceutical advertisements to physicians.

RESEARCH OBJECTIVES AND PROPOSITIONS

The objective of this study is to investigate the approaches used to advertise healthcare products to pediatricians as a paradigm for pharmaceutical promotional practices to physicians overall. While there is a paucity of published content analyses of pharmaceutical product advertisements targeted toward the medical professional, there is an abundance of research dedicated to consumer advertising using the printed media. Effective models have been developed that are based upon the analysis of 14 information cues contained within an ad that could facilitate intelligent choices from among product alternatives (Stern, Krugman and Resnik 1981). These models have been utilized, for example, to compare the information content between U.S. and Japanese or Indian magazine articles or to analyze ads for business and consumer services (Madden, Cabellero and Matsukubo 1986; Rajaratnam 1995; Turley and Kelley 1997). Analysis of pharmaceutical product ads directed toward consumers has investigated specific characteristics relating to both disease state and product including market size, drug usage, side effects and lifecycle stage (Sheffet and Kopp 1990).

While the criteria for these models were developed specifically for consumer advertising, the basic tenets of the models serve as the foundation for this analysis. Thus, the impact of influencing factors such as drug usage, side effects and product lifecycle will be analyzed in association with specific informational cues to discern patterns of content within and between ads. In addition, the presentation of the ad will be characterized from a rational and emotional standpoint to determine the mode of communication of the message to the audience. The influencing factors deemed most relevant to pharmaceutical product ads formed the basis for the hypothesis development used in this study. Consequently, these factors are discussed in more detail below.

Prescription Drugs

Pharmaceutical product advertisements in the professional media fall into two categories, those that are available only by prescription and those that are available over-the-counter (OTC). In prescription advertisements wherein claims are made regarding the product's use or effectiveness, the *Code of Federal Regulations* (2002) statutory requirements mandate the inclusion of a Brief Summary of Product Characteristics that provides detailed information about the drug, its dosage, administration and contraindications. This Brief Summary must also contain clinical data on the drug's efficacy and report any adverse reactions that may occur after administration. Typically, the Brief Summary is provided either adjacent to the actual ad or on the following page.

There is a substantial return required for an investment in advertising. Consequently, there is an expectation that the majority of product ads support prescription drugs that are typically patent protected and thus can command higher prices. In contrast, OTC products are speculated to be commodities and consequently less advertised. Because of these differences, potential exists for differential patterns of informational content between prescription and OTC products.

H_1: Ads to physicians are more likely to be prescription. (Rule for judgment: Reject H_1 if <50 percent of ads are prescription).

Benefits and Risks

For prescription drugs, there is an FDA requirement that the body of an advertisement contains a "Fair Balance" of a drug's benefits and risks. The requirements indicate that copy in favor of the product should be approximately balanced by appropriate information on the safety and risks associated with the product. The statutory requirement *21 CFR 202.1(e)(5)* states that both drug benefit and risk information be presented in comparable depth and detail (*Code of Federal Regulations* 2002). Thus, there is an expectation that prescription advertisements do contain such fair balance in accordance with CFR guidelines. This study will test whether ads are perceived to be fairly balanced by the reader, and as such will investigate the ethical obligations that pharmaceutical companies adhere to in communicating with physicians. A high level for the judgment was set because majority conformity is expected due to the FDA regulations.

H_2: Prescription ads contain fairly balanced statements of benefits and risk. (Rule for judgment: Reject H_2 if <80 percent of ads do not present a fair balance).

Stage of Product Lifecycle

One explanation for the recent decline in advertising expenditures in the medical media is the lack of new product introductions, and the corresponding decrease in advertising investment (May 2001). Also, it has been proposed that the advertising of maintenance products has declined due to the number of new introductions (Castagnoli 2002). Interestingly, new product launches may be advertised with discrete informational content that positions the product with unique competitive advantages in order to take market share from "lesser" drugs. It is recognized that such new products have larger expense budgets and therefore can be advertised more comprehensively. The advertisements for new products typically contain identifiers such as "introducing" or "new." This study will quantify the proportion of ads that present new products and in so doing correlate them with any distinct informational cues.

H_3: Many advertised products tend to be early in their life cycle. (Rule for judgment: Reject H_3 if <30 percent ads are early in lifecycle).

Informational Cues

The crux of the analysis is to understand whether targeted pharmaceutical ads are a viable source of information for pediatricians. The model was adapted from that employed by Stern, Krugman and Resnik (1981) to incorporate cues relating to product benefits and characteristics, scientific data, dosing, and treatment (Table 1). Selected information cues were not included in this analysis targeted toward physicians by reason that they would likely not provide relevant information (i.e., those focused on price, special offers and guarantees). In the Resnik and Stern model, ads were deemed to be informative if they contained just one of the selected information cues (Stern, Krugman and Resnik 1981; Resnik and Stern 1977). At such a low stringency, it's not surprising that some reports indicate that the proportion of informative consumer-targeted ads ranges between 75 percent and 85 percent (Madden, Cabellero and Matsukubo 1986). It is proposed that the nature of the pharmaceutical business obligates companies to provide a higher level of factual and beneficial information regarding their products than is expected in consumer ads. This proposal is based upon the important role that pharmaceutical companies play in health care delivery and because of the presence of federal regulatory guidelines. Therefore, this analysis proposes to classify an ad as informative only if it contains at least four of the selected information cues.

H_4: The majority of product advertisements can be deemed as informative. (Rule for judgment: Reject H_4 if <50 percent of ads contain ≥ four information cues).

Disease Identification

Identification of the disease to be targeted by a particular drug might be an important aspect of the informative

TABLE 1
Information Cues (adapted from Resnik and Stern 1977)

1. **Product Characteristics:** The inherent qualities of the product, its components, durability or engineering.
2. **Product Benefits:** Product performance, what it does and how well, especially with reference to any potential competitive advantages.
3. **Identify Disease:** The disease, syndrome or condition for which the product is intended.
4. **Taste:** Evidence presented of superior taste, flavors or texture that could discriminate from other products.
5. **Nutrition:** Evidence of the nutritional value of the product, or any reference to nutritional content.
6. **Packaging/Shape:** Reference to the package or shape of the product that possibly confers a competitive advantage.
7. **Safety:** The safety features associated with the product. Statements that the product is safe.
8. **Independent Research:** Presentation of data from an independent research organization. The ad contains identifiers referring to "independent."
9. **Company Research:** Presentation of the data from company-sponsored research efforts. The ad contains identifiers referring to the "company" when showing data.
10. **Efficacy/Effectiveness Data:** The product produces a desired effect as measured in controlled clinical trials. Efficacy and effectiveness data is typically associated with the words "efficacy" or "effectiveness."
11. **Scientific Data:** Under the widest definition of scientific data represents any product-relevant scientific data, e.g., graphs or percentages. May include efficacy/effectiveness data, independent and company research as well as any other data that is presented.
12. **New/Innovative:** The product's position in its lifecycle as described by words such as "new", "innovative" or "coming soon."
13. **Dosing Regimen:** The doses of product necessary for treatment. Quantities of doses or number of doses per day that could provide differentiation from competitors.
14. **Treatment Directives:** How the product is to be used, when it is to be used or who the product should be used with.

process. On the other hand, pharmaceutical drugs can be used "off-label" for the treatment of diseases other than those for which the drug is specifically indicated. Thus pharmaceutical ads may purposely not identify the particular disease for which the product is indicated thus facilitating "off-label use" and thereby resulting in a positive impact on corporate revenue.

H_5: Ads to pediatricians identify the disease to be treated. (Rule for judgment: Reject H_5 if <50 percent of ads identify the disease)

Treatment Directives

Important components of the information delivery process for a pharmaceutical ad might be to provide direction on the use of the drug, when to use the drug, or regarding the type of patient for whom the drug can and should be used. Even with the possibility that ads will not identify the disease to be treated, they nevertheless may provide directions on the use of the drug. Moreover, there is potential for an interesting dichotomy in that the disease may not be identified (i.e., rejection of H_5) but specific direction on the product's usage is provided (i.e., H_6 is not rejected). In this scenario, the data would be suggestive of ads being exquisitely designed to maximize profits even for disease states in which the drug has not been indicated or otherwise not proven effective.

H_6: Ads provide direction on the use of the product. (Rule for judgment: Reject H_6 if <50 percent of ads provide directives on use)

Scientific Data

The goal of the pharmaceutical product manager is to inform the physician about the qualities of a drug and the impact it might have on the patient. Thus, product ads targeted toward physicians might be expected to display

a variety of scientific data outlining the effectiveness of the drug in order that comparisons can be made to competitor treatments. Moreover this question contributes to the determination of whether physicians make decisions based upon rational scientific information or are motivated by emotion. The original Stern, Krugman and Resnik model (1981) focused on discerning company-sponsored data from independent research. While the potential for such discrimination was retained in the current model used in this study, information regarding product efficacy and scientific data was additionally collected as a mechanism to increase the comprehensiveness of the analysis of an ad's scientific content (Table 1).

H_7: Scientific data is an important tool used to validate product benefits. (Rule for judgment: Reject H_7 if <50 percent of ads contain scientific data).

Ad Presentation: The Role of Emotion

It is well recognized that ads need to be oriented to the specific customer group in order to be effective, and this basic marketing theory applies to healthcare professionals (Mohrman and Scott 1994). For example, information on symptom relief would be encouraged for physicians while managed care officials might prefer demonstrations of economic value. Various factors can influence ad performance and these can be measured using ad recall studies. The goal of the ad is twofold: 1) draw the attention of the physician and 2) motivate the physician to read and take action. However, market research indicates that very few ads are recalled unaided, and few physicians can accurately describe the ad or its content (Mohrman and Scott 1994; Mohrman and Scott 1988; Mohrman 1987). Thus, to be successful an ad needs to get noticed, be easily assimilated, validate claims and be remembered. Of central importance to these objectives is the initial impact of the headline that may influence the subsequent reading of the entire ad (Turley and Kelley 1997).

The theory to be investigated is that pharmaceutical companies appeal to pediatricians based upon a rational approach to advertising (e.g., using scientific data) rather than on emotional cues. This hypothesis is consistent with the viewpoint of Daniel Starch: "... the fact remains that superlative generalities are weak arguments and far less convincing than a statement of facts" (Starch 1923). Thus, in this study the questions were designed to investigate whether ads leverage product characteristics and benefits rather than emotion to appeal to pediatricians. Emotion was directly assessed using questions about the headline and body copy, and more indirectly by virtue of the creative artwork associated with the ad.

H_8: Emotion stimulating cues have only a limited role in informing physicians. (Rule for judgment: Reject H_8 if >20 percent of ads contain emotional cues)

RESEARCH METHODS

Content analysis was used to investigate the approaches used to advertise healthcare products to physicians in the professional print media. The basic methodology for content analysis includes objectivity, quantification and reliability as essential components (Kassarjian 1977). Moreover, content analysis has been described as a useful method to establish whether patterns support research propositions with regard to the print media (Kassarjian 1977; Kolbe and Burnett 1991). Content analysis models have typically been targeted toward evaluation of consumer advertising, thus mandating some reasonable adaptation prior to use as a tool to evaluate pharmaceutical advertising directed toward physicians.

In this study, advertisements targeted toward pediatricians, a discrete subgroup of physicians, were specifically selected by utilizing six widely read pediatric journals. The aim was to analyze all product advertisements in these journals from January to June 2002. This technique was implemented in order to remove the bias associated with sample selection. The journals selected were: *Pediatrics, Pediatric News, Infectious Diseases of Children, Pediatric Research, The Pediatric Infectious Disease Journal,* and *Archives of Pediatrics and Adolescent Medicine*. These represent a cross section of journals that range from peer-reviewed journals to periodical magazines such as *Pediatric News* and *Infectious Diseases of Children* that

provide brief news and commentary on clinical developments. While this study is not designed to determine where physicians get their information, it does provide information on the content of ads across the breadth of journal types selected. As dictated by the models of content analysis on which these studies were based (Kassarjian 1977; Kolbe and Burnett 1991), three specific criteria were employed to ensure objectivity and reliability: 1) establish clear rules and definitions, 2) provide judge training, and 3) ensure judge independence and reliability.

Rules and Definitions

The analysis was performed using a one page questionnaire that contained various categories or information, the majority of responses to which were "yes or no." Judges were informed of the objectives of the study, and were asked to complete a questionnaire on a sample pharmaceutical ad by way of discussing each of the categories.

Judge Training

Judge training is important for both intra- and inter-judge reliability. Judges were exposed to the operational definitions used in the questionnaire by way of an approximate hour-long presentation. The use of a sample ad facilitated discussion of concepts, definitions and potential conflicts. Particular attention was focused on evaluation of the "fair balance" statements within the ad as well as enabling direction on some of the more subjective categories, e.g., emotion.

Judge Independence and Reliability

Three independent judges were used for evaluating the content of 67 distinct advertisements that appeared one or more times in the six journals over the six-month time frame. The judges possessed considerable experience across the medical profession and pharmaceutical industry, and included a director of pharmaceutical marketing, a family practice physician and a rehabilitation counselor. Thus, they were eminently capable of comprehending the language associated with pharmaceutical product advertisements.

To ensure the accuracy of conclusions resulting from the data analysis, it is imperative that judges be able to make autonomous assessments of the content. Judges were selected to be completely independent and were under no time constraint. In order to interpret results with a high degree of accuracy, statistical measurements of the coefficient of agreement were calculated prior to reconciliation (Perreault and Leigh 1989). Reliability coefficients were calculated for each coding category as well as for each product advertisement. Overall, the inter-judge reliability coefficient (Ir) was 0.88, a value that exceeds the Ir of 0.70 suggested as an accuracy guideline (Perreault and Leigh 1989). By advertisement, Ir ranged from 0.81 to 1.00 (note: three ads were deleted from the analysis because of irreconcilable disagreements between judges). By coding category, Ir ranged from 0.70 to 1.00 (Tables 2 and 3). Where necessary, discrepancies between judges were resolved by discussion and with this author's input.

RESULTS AND IMPLICATIONS

The results represent patterns in the advertising of pharmaceutical products to pediatricians for selected journals within the six months encompassing January to June of 2002. The focus on printed ads in the professional media recognizes the essential role of journal advertising in the communication process between pharmaceutical company and physician. In the six journals selected there were a total of 411 product ads, of which, *67* were in support of different products from 31 companies. Each of these 67 ads was analyzed for informational content using the questionnaire. The frequency of ads varied significantly across the journals (Table 4). The non peer-reviewed journals (*Infectious Diseases of Children* and *Pediatric News*) included 78 percent of the total ads analyzed suggesting that advertisers think these journals display a higher recall rating for the target audience versus the peer-reviewed journals. There was no evidence from this study that pharmaceutical companies prefer to advertise in the more prestigious peer-reviewed journals in the hopes of enhancing brand value and creating additional demand for their products. However, previous studies have documented that ads can be engineered to target specific customer segments based upon the type of content (Weeks, Wallace and Surrott 2001). In this study, due

to the disproportionate distribution of ads across journal type, no statistically significant patterns in information content of the ads relative to particular customer groups were observed. A more comprehensive analysis over a longer time period might define such trends that relate informational content with journal type or target audience.

The data collected from the study are presented in Figure 1 and Tables 2 and 3, which show a summary of the proportion of answers for each question in addition to the coefficient of agreement for that category. The majority of ads were full page (78 percent) versus multi page (17 percent) or half page (5 percent) (Fig. 1). Of the multi page ads, 55 percent advertised products that were also described as new compared to an overall study average of 29 percent (Table 2). This significant increase is consistent with the large expense budgets that often accompany the introduction of new products. Notable observations regarding the content of the ads are described in detail below.

Prescription Drugs

A major focus of this study was to identify patterns in informational content between ads for prescription and non-prescription products. H_1 was developed based primarily upon the assumption that prescription drugs command a higher price in the marketplace relative to OTC drugs. Indeed, the data show that 65 percent of the product ads in the sample were in support of prescription products thus H_1 is not rejected (Fig. 1).

Benefits and Risks

For prescription drug ads, there is an expectation that ads conform to the CFR regulations regarding "fair balance." However, the data show, despite these federal regulations, 53 percent of prescription ads were perceived by the judges not to be fairly balanced in benefits and risks (Fig. 1). Thus, H_2 is rejected since > 20 percent of prescription ads were found not to contain a "fair balance" of information. The coefficient of agreement (Ir) for this particular category was 0.94, and was therefore indicative of nearly complete agreement on the assessment of the ads by each of the judges. Specifically, these ads were biased in favor of presenting benefits over risks, and not one single ad was judged to have presented risks in favor of benefits. This is an interesting finding that warrants closer analysis of ads especially with reference to objective FDA definitions and subjective reader perceptions. Similar results have been documented for prescription DTC ads (which must be approved by the FDA prior to publication) since 35 percent of DTC ads were perceived by the reader to be unbalanced in benefit and risk information (Roth 1996).

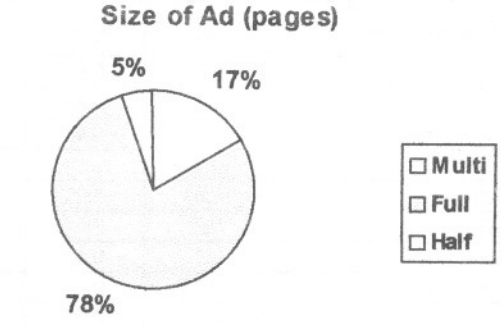
Stage of Product Lifecycle

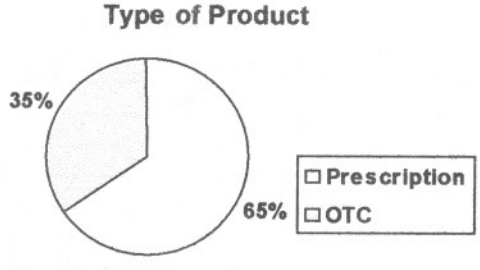
The rate of approval of new products has been declining since 2001, resulting in a lower number of new product launches and a corresponding decrease in advertising expenditures (Castagnoli 2002). As products proceed through their lifecycle, the available expenditures decrease as growth is maximized and sustained until finally the product becomes an off-patent commodity. Thus, lifecycle stage is an important factor in how a product is promoted. A significant proportion of ads were proposed to be in support of newly launched products such that for H_3, a rule for judgment of 30 percent was implemented. In reality, the data showed that 29 percent of the ads contained specific identifiers categorizing the ad as new or recently introduced (Table 2). In view of the fact that < 30 percent of ads were in support of products described as "new", H_3 is rejected. Nevertheless, since a significant proportion of pharmaceutical ads (29 percent) are in support of new products, a more in depth analysis was performed on this category with a view to identifying specific patterns of content relative to maintenance products ads.

Informational Cues

A priori, it is difficult to ascribe relevant criteria that meaningfully define an ad as being informative. Resnik and Stern (1977) focused on the inclusion of only one informational cue to conclude that the ad was informative but their studies were performed originally on television (TV) ads to consumers. In their analysis, only 49 percent of TV ads were deemed to be informative based upon a single information cue. However, 16 percent of the ads contained two or more information cues and less than one percent of ads had three informational cues (Resnik and Stern 1977).

FIGURE 1
Ad Size, Type and Fair Balance





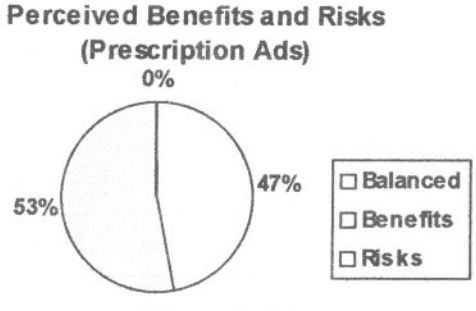


TABLE 2
Information Cues

	YES	NO	Inconclusive	Ir*
Product Characteristics (%)	0.98	0.02		0.92
Product Benefits (%)	0.94	0.06		0.98
Identify Disease (%)	0.71	0.29		0.89
Taste (%)	0.13	0.87		0.98
Nutrition (%)	0.11	0.89		0.95
Packaging/Shape (%)	0.52	0.48		0.78
Safety (%)	0.40	0.60		0.70
Independent Research (%)	0.03	0.05	0.92	0.99
Company Research (%)	0.05	0.04	0.91	0.94
Any Scientific data (%)	0.35	0.65		0.92
Efficacy/effectiveness data (%)	0.25	0.75		079
New/innovative (%)	0.29	0.71		0.92
Dosing regimen (%)	0.32	0.68		0.75
Treatment directives (%)	0.13	0.87		0.73

*Ir = Coefficient of Agreement

TABLE 3
Analysis of Images and Copy

Images

	Yes	No	Ir
Photographic (%)	0.70	0.30	0.92
Drawing/Cartoon (%)	0.33	0.67	0.87
Graph/Chart (%)	0.17	0.83	0.98
Product Shown in Package/vial (%)	0.54	0.46	1.00
Object (%)	0.22	0.78	0.83
Animal (%)	0.11	0.89	0.98
Baby/Infant (< 2 yrs) (%)	0.30	0.70	0.95
Toddler (2 – 4 yrs) (%)	0.14	0.86	0.89
Child (> 4 yrs – 18 yrs) (%)	0.27	0.73	0.90
Parent/Adult (> 18 yrs old) (%)	0.14	0.86	1.00
Happy (%)	0.49	0.51	0.94
Suffering (%)	0.11	0.89	0.97
Neutral (%)	0.17	0.83	0.92

Copy

Product Benefits in Title (%)	0.81	0.19	0.81
Product Features in Title (%)	0.51	0.49	0.81
Emotional Cues in Title (%)	0.40	0.60	0.72
Product Benefits in Text (%)	0.89	0.11	0.89
Product Features in Text (%)	0.94	0.06	0.87
Emotional Cues in Text (%)	0.32	0.68	0.70

*Ir = Coefficient of Agreement

TABLE 4
Temporal frequency of ads across journals

Journal	Jan	Feb	Mar	Apr	May	June	Total (%)
Archives of Pediatrics and Adolescent Medicine	5	5	5	5	3	3	**26 (6)**
Infectious Diseases of Children	24	32	36	40	36	27	**195 (47)**
Pediatrics	7	6	9	6	6	5	**39 (10)**
Pediatric News	19	23	21	25	24	17	**129 (31)**
Pediatric Research	1	1	1	2	1	1	**7 (2)**
Pediatric Infectious Disease Journal	3	3	3	3	1	2	**15 (4)**
Total (%)	**59 (15)**	**70 (17)**	**75 (18)**	**81 (20)**	**71 (17)**	**55 (13)**	**411 (100)**

In applying these criteria to professional journal ads of pharmaceutical products, a series of assumptions were made with regard to the quantity of information that might be included in any ad. First, journals and magazines tend to be more informative than TV ads (Stern, Krugman and Resnik 1981). Second, it is intuitive that the goal of the pharmaceutical company is to inform the physician about the products benefits. Third, FDA regulations dictate the inclusion of certain types and amounts of information. Thus, a higher stringency level was set to determine whether pharmaceutical products ads were informative.

The results of the study showed that 86 percent of the ads were found to contain at least four of the information cues. Moreover, 60 percent of ads contained at least five, and 43 percent of ads contained at least six of the information cues. Thus, H_4 is not rejected since > 50 percent of the ads contain at least four information cues. These numbers are particularly striking in the face of the previously published literature that described patterns of consumer advertising in which ads were largely non-informative (Madden, Cabellero and Matsukubo 1986; Rajaratnam 1995; Stern, Krugman and Resnik 1981; Resnik and Stern 1977). It is acknowledged that the results derived from the content analysis model presented herein cannot be directly compared to the previously published models on consumer ads due to the adaptations that were made. Nevertheless, the implication is that pharmaceutical product ads do in fact cater to the customer by providing information that fulfills specific needs.

Prescription and OTC ads were directly compared for information content. Both types of ad did not differ statistically with regard to the number of information cues displayed (Table 5). Moreover, when compared to the overall study average of 5.1 information cues per ad, prescription ads had 5.1 cues and OTC ads had 5.2 cues. However, in comparing those ads supporting new products versus maintenance products, statistical differences were observed with regard to the average number of informational cues (Table 6). Ads described as "new" contained an average of 6.1 information cues whereas maintenance products had only 4.7 cues per ad ($p = 0.0049$). The explanation for such a difference might be based in the greater need for a comprehensive informational program for new and unknown products relative to their well-known and widely accepted maintenance counterparts.

Based upon the criteria used to determine whether an ad is informative, distinct patterns of informational content were identified. As expected, the majority of ads provided information on product characteristics and benefits (98 and 94 percent, respectively) but other information cues were not as consistently presented (Table 2). It was also apparent from the data that OTC products leveraged product familiarity by way of presenting the packaging of the brand within the ad. Compared to prescription drugs, OTC products either highlighted the packaging or displayed a picture of the product to a statistically higher degree than did prescription drugs (Table 5). This strategy might be focused on enhancing the apparent safety of the product in the mind of the physician by reinforcing the message

TABLE 5
A Comparison of Prescription versus OTC Products

	Prescription	OTC
Information Cues (avg # per ad)	5.1 (p = 0.10)	5.2
Disease (%)	0.85 (p = 0.0006)	0.45
Packaging (%)	0.34	0.86 (p = 0.00003)
Scientific Data (%)	0.37 (p > 0.05)	0.32
Vial Shown (%)	0.34	0.90 (p = 0.000004)
Baby Picture (%)	0.20	0.50 (p = 0.01)
Emotion (%)	0.24	0.45 (p = 0.09)
Scientific Data + Emotion (%)	0.17 (p > 0.05)	0.14

*Statistical analyses were performed by one-way analysis of variance (ANOVA) wherein significance was established using a p value = 0.05.

TABLE 6
A comparison of New versus Maintenance products

	New	Maintenance
Information Cues (avg # per ad)	6.1 (p = 0.0049)	4.7
Safety (%)	0.50 (p > 0.05)	0.36
Scientific Data (%)	0.33	0.36 (p > 0.05)
Baby Picture (%)	0.11	0.38 (p = 0.037)
Suffering (%)	0	0.16 (p = 0.078)
Emotion (%)	0.29	0.43 (p > 0.05)

*Statistical analyses were performed by one-way analysis of variance (ANOVA) wherein significance was established using a p value = 0.05.

that the OTC product is a well-recognized brand that has been widely accepted in the marketplace over time.

Disease Identification

A large proportion of ads (71 percent) identified the disease to be treated and thus, H_5 is not rejected (Table 2). However, 29 percent of product ads did not contain identifiers on what disease or condition the product can be used for. Therefore, this data might belie assumptions made on the part of pharmaceutical companies with regard to the knowledge base of physicians. Alternatively, the data may signify a deliberate attempt by the ad to promote "off-label" use of prescription drugs for conditions other than those approved by the FDA. To investigate these hypotheses, prescription drug ads were compared to their OTC counterparts with regard to disease identification. Prescription drug ads identified the disease in a statistically superior quantity of the ads (85 percent, p = 0.0006) versus only 45 percent for OTC products (Table 5). Thus, it is apparent that any assumption made by the pharmaceutical companies about the physician's capacity to innately associate a product with a disease is restricted to the more widely implemented, and presumably safer, OTC products. Moreover, the data indicate a relative commitment on the part of the pharmaceutical companies to specifically identify the uses of prescription products, thus diminishing the potential for "off-label" promotion to increase revenues. No differences were seen in the identification of disease between new and maintenance products.

Treatment Directives

Related to the hypothesis on disease identification (H_5) is whether or not the ad provides any additional direction on using the drug in terms of doses, timing, contra-indications or any other treatment directives. Only 20 percent of the ads described treatment directives or dosing of the product, thus H_6 is rejected since less than 50 percent of the ads contained directives on drug usage. Specifically, 32 percent of the ads presented dosing information while only 13 percent of ads contained other treatment considerations (Table 2). Based upon these data, the intent of the pharmaceutical product ad seems

clear; to sell the product on benefits and characteristics first and subsequently follow up with information on treatment using other forms of the promotional mix. Thus the incorporation of treatment directives in a product ad may be superfluous with no ultimate impact on the communication to the targeted physician. Moreover, the results presented in this study are in agreement with an earlier study on DTC prescription ads in which only minimal information was provided directing the use of the product (Roth 1996).

Scientific Data

Consistent with providing relevant information to pediatricians is the need to provide rational evidence in support of a product's effectiveness in the form of scientific data. Resnik and Stern distinguished between independent and company-sponsored research as sources of such scientific information (Stern, Krugman and Resnik 1981). The current study was unable to specify the nature of the scientific information presented since key identifiers of the data source were largely not presented in the ads (Table 2). However, only 35 percent of the ads featured any scientific data whatsoever, and there were no significant differences between prescription and OTC (Table 5) or new versus maintenance products (Table 6). Additionally, only 17 percent of ads displayed either a chart or graph containing scientific data in support of the product (Table 3). Collectively, these data suggest that scientific data may not be as important a tool to validate product benefits as was assumed, thus H_7 is rejected. Scientific data might be thought of as too complex for inclusion into the majority of product ads whose primary goal is to generate maximal impact in a limited time frame.

Ad Presentation: The Role of Emotion

The visual and copy aspects of the ads were investigated in order to illustrate any patterns in the presentation of the ad, especially with regard to its capacity to induce emotion in the reader. It is possible that if pediatricians are exposed to more emotion rather than rational scientific information, there might be a resultant negative impact on the delivery of healthcare. Thus, one goal of this study was to determine whether products ads in the professional print media were predominantly educational or emotional. The inclusion of emotional informational cues has the capacity to mislead the prescribing physician on the qualities of a particular drug by appealing to "gut instinct" rather than logic (Wolfe 1996). Indeed this may be the *raison d'etre* of product advertisements designed by ever more creative advertising agencies. Interestingly, deficiencies in the educational value have been previously documented for DTC prescription ads (Wolfe 2002).

In this study, the emotion contained within the ad was addressed by analysis of both images and text. One of the limitations of this study is that questions regarding emotion are subject to the interpretation of the reader. Consequently there was a lower level of agreement (Ir = 0.70) between judges within this category. Nevertheless, the results were informative since 52 percent of ads were judged to contain written emotional cues in either the title or body copy of the ad. Thus, H_8 is rejected since emotion does not play a limited role in the communication process between pharmaceutical company and pediatrician. No correlation, either positive or negative, was seen between the emotional and scientific aspects of ads, thus there is no evidence that particular ads are biased toward either rational or emotional presentations. Indeed, some ads (17 and 14 percent for prescription and OTC, respectively) contained both scientific and emotional information (Table 5). No statistically significant differences were seen in the emotional content between new and maintenance products (Table 6). Ads that depicted a human being tended to display happy images (49 percent) versus neutral (17 percent) or suffering facial expressions (11 percent) possibly indicative of physician preferences (Table 3).

It was of interest to note that the increased level of emotion in OTC product ads approached significance ($p = 0.09$) relative to prescription drugs (Table 5). Taken together with the result that these ads also preferentially incorporated pictures of babies (50 percent vs 20 percent for prescription ads, $p = 0.01$), the data imply that OTC products preferentially utilize emotional information cues to stimulate sales rather than the rational cues favored by prescription drugs (Table 5). Similarly, baby photographs were represented in 38 percent of ads for maintenance products compared to only 11 percent ($p =$

0.037) of new product ads (Table 6). Collectively, these data suggest that those products that have been in the marketplace for longer periods of time (i.e., are not new and have lost patent protection) might be forced into the utilization of emotional messages as a mechanism to enhance the impact of the ad.

DISCUSSION AND LIMITATIONS

The content analysis presented herein attempts to fill the gap in the knowledge of advertising practices to physicians using the professional print media. The study was intentionally focused toward the professional printed media for a variety of reasons:

1. Professional print media occupies a critical position in the communication process between pharmaceutical company and physician.
2. There has been a recent decline specifically in professional media expenditures that is inexplicable based upon the documented return on investment of the printed ad (Neslin 2001).
3. There is a need to balance the literature relative to the abundant information on direct to consumer prescription advertising.
4. To provide a platform for the continuing study of pharmaceutical product advertisements.

The mandate of any product manager is to increase the sales of the product, but with pharmaceuticals there is also an ethical obligation not to do this at all costs (Pizor 1998). The pharmaceutical industry is compelled to accurately educate, rather than promote to, prescribing physicians. In turn, this results in enhanced decision-making by the physician and consequently effective healthcare solutions for the patient. Therefore, this study recognizes professional print advertising as an important component of the marketing plan and provides directives on the content of professional ads. In so doing, the study ratifies the value of the Resnik and Stern (1977) model of content analysis that quantifies informational cues.

The data highlight several patterns of information content that pharmaceutical product ads include depending upon their particular classification. Thus, the results provide information and guidance to product managers with regard to leveraging the professional media in order to create and sustain a competitive advantage for a particular product. However, it is also recognized that professional print advertising represents only one component of the entire promotional mix and any decisions should be made in the context of the other promotional variables of DTC, medical education and sales force detailing.

The current study targeted ads directed toward pediatricians with a view to representing product advertising to physicians overall. This assumption was made in order to perform a manageable study; therefore any resultant conclusion must be placed in the context of the target audience. Pediatricians are continuously exposed to the heartache of a sick infant and thus may be more susceptible to emotional cues versus, say, a cardiovascular surgeon who might be more concerned with product efficacy. Similar studies on specific medical disciplines are warranted to investigate if the conclusions from this study are pervasive.

This study utilized three judges with different levels and types of experience relating to the medical profession and pharmaceutical industry. While this approach was beneficial for the efficient assessment of content information, it may not represent the perspective of pediatricians, the intended target of the ads. However, their individual experience within the healthcare field combined with the comprehensive training provided to each judge made them eminently qualified to make informed decisions regarding the informational content within the ad. Moreover, the extent of agreement between the judges seems to affirm any conclusions that were formulated in the pattern of pharmaceutical advertising to pediatricians presented herein. The use of judges that were peripheral to the pediatrician field may also have circumvented any bias or desensitization resulting from continuous exposure to such targeted ads.

SUMMARY

This study has surfaced some profound conclusions relating to the informational content of pharmaceutical product ads targeted toward pediatricians:

1. Pharmaceutical product ads are highly informative relative to consumer ads, and 98 percent contain details on product characteristics and benefits.
2. For prescription ads, 53 percent were perceived to favor benefits over risks, rather than balance such information in accordance with FDA regulations.
3. Only 71 percent of ads identified the disease or condition for which the product is used. Moreover, ads did not typically present treatment or dosing information.
4. Pharmaceutical product ads are biased toward emotional rather than rational information cues since only 35 percent of ads contained scientific data whereas 52 percent made reference to emotion.

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