



December 1–3, 2008  
 Olympic Park, Sydney  
 New South Wales, Australia

**Australia and New Zealand Marketing Academy Conference 2008**  
 Marketing: Shifting the Focus from Mainstream to Offbeat



[Conference Handbook](#)

ISBN 186308 144 5

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## **Risks, Benefits and DTC – An Analysis of Information Formats**

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### **Abstract**

Critics of direct to consumer prescription medicine advertising (DTC) claim it is unbalanced because benefit information features more prominently than risk information, and that it thus fails to meet the high standards of social responsibility called for in regulatory codes. We used respondent conditioning theory to examine whether variations in risk information format could improve recall of benefits, side effects and contra-indications in print DTC advertisements. A best-worst study confirmed striking differences in preference for varied information formats, while a second study found that visual heuristics increased recall of both risk and benefit information. The findings question marketers' reluctance to provide easily accessible risk information and suggest prominent drug information panels may discharge manufacturers' social responsibilities while simultaneously improving the effectiveness of their promotions.

### **Introduction**

Proponents of prescription medicine advertising (DTC) claim it provides important benefits including more informed discussions with doctors, speedier diagnoses, better compliance with treatment regimes and improved reach to groups that may have difficulty accessing health information (Burak & Damico, 1999; Calfee, 2002; Kelly, 2004; Donohue, 2006; Bradford & Kleit, 2006; Lee *et al*, 2007). However, others have questioned whether awareness of a drug's indications implies potential users are knowledgeable about other attributes, such as its risks (Hoffman & Wilkes, 1999; Mintzes *et al*, 2002; Toop *et al*, 2003; Huh and Cude, 2004). Morris *et al* (1985) found consumers did not always understand risk details and were more likely to ascribe benefits than risks to promoted drugs (Basara, 1992; Davis, 2000; Kopp & Bang, 2000).

DTC promotions emphasise benefit information, which is expressed in simple language, has greater visual prominence, and thus may be more salient to consumers (Adams & Edworthy 1995). By contrast, risk information is often technical, shown in a small font, and confined to a small section of an advertisement. As Pitts noted: "*Risk information is hidden in plain view and benefits are communicated broadly*" (2004, p.260). A recent FDA survey reported that half the respondents found DTC hard to read, while 60% thought it did not contain enough risk information (Aitken *et al*, 2004). Researchers from New Zealand, the only other nation to allow DTC, have reported similar conclusions; for example, Hoek, Gendall and Calfee (2004) found that over 80% of consumers believe DTC is skewed in favour of benefit information.

These findings raise important questions about how risk information is communicated to potential users. Stewart and Martin (1994), among others, examined warning labels, which have many similarities to risk information panels, and concluded that consumers' responses to these depend on their demographic traits, knowledge and experience (see also Petty *et al*, 1983;

Friedmann, 1988; Kavadas *et al*, 2007; Lee *et al*, 2007). Argo & Main's (2004) meta-analysis of warning information found that mechanical features affect the cognitive demands placed on consumers. Advertising researchers have drawn on ergonomics research examining how different colours and font sizes minimise consumers' interpretive burden (Bettman *et al* 1987; Laughery *et al*, 1993; Braun and Silver, 1995; Wogalter & Shaver, 2001; Wogalter *et al*, 2002).

Although parallel studies have explored how consumers interpret warnings (Burton & Andrews, 1996; Andrews *et al*, 1991; 1998), these have focussed on warning content, not format, and inevitably conclude by calling for research into format variations. As DTC contains mandatory information that cannot be changed, research examining the formatting of visual stimuli is timely. Behaviour modification theory (BMT), particularly respondent conditioning, provides a framework for hypothesising how learned associations evoked by visual stimuli affect responses to risk information. BMT focuses on external stimuli, the conditioned responses these elicit, and the resulting reduction in cognitive processing required of consumers. Nord and Peter (1980) argued that the resulting associations may become so strongly paired they eventually function as heuristics, or discriminative stimuli, that simplify cognitive tasks by activating previously experienced contexts (Bettman *et al*, 1998).

Tests of heuristics' effects have examined several variables; of these, recall is the most relevant to DTC, since its primary purpose is to convey information that will activate the information processing pathway. As Roth (2003) stated: "... *generating advertising recall is the first critical marketing communication objective for a balanced DTC drug advertisement*" (p. 181). Recall is widely used as a measure of advertising effectiveness and estimates consumers' ability to retrieve information provided by a stimulus, such as a print advertisement (Zinkhan, 1982). Because DTC informs subsequent decisions, recall of relevant risk information promotes effective healthcare management; furthermore, higher risk recall is positively correlated with warning compliance (Hilton, 1993; Laughery *et al* 1993).

As colour and increases in font size are associated with increased recall of risk information (Laughery *et al*, 1993; Adams & Edworthy, 1995; Wogalter *et al*, 2002), we posited that these variables would enhance the communication effectiveness of a DTC advertisement. Risk information in New Zealand DTC appears in a small paragraph, however, as Wogalter and Shaver (2001) found outline formats that grouped details improved recall, we tested whether use of an outline format enhanced the perceived communication effectiveness of the advertisement. The BMT suggests heuristics simplify the assimilation of detailed information and we also explored the effect a conditioned visual cue, namely a "traffic light" heuristic, had on perceived communication effectiveness and attribute recall. Since benefit information appears in advertising copy, headlines and visuals as well as the information panel, we surmised that symptom recall would be unaffected by the information panel format.

## **Methodology**

We developed a DTC advertisement for a fictitious allergy drug, Nasolin, which relieved symptoms of congestion, sneezing and itchy, runny nose. Results from formative evaluation using depth interviews informed refinement of the six information panels used in two subsequent studies. The first panel represented the status quo and thus functioned as a control; it used a

paragraph format with 10 point text while the second panel used a coloured background to increase its visual prominence. The third and fourth panels used 12 point (rather than 10 point) font. The final panels used 12 point font and presented the information in an outline format that grouped details into symptom (or benefit), side effect, and risk columns; one version was uncoloured while the other drew on a “traffic light” heuristic by using green, orange and red colours, in the benefit, side effect and risk panels, respectively.

A Best Worst Scaling (BWS) experiment was used to test the hypothesised pattern of information accessibility and preferences for the different formats. Developed by Finn and Louviere (1992) as an alternative to discrete choice experiments, BWS requires respondents to evaluate and compare the utilities of different attribute levels presented to them, then select both the best (highest utility) and the worst (lowest utility) option from the choices viewed. BWS assumes respondents select the pair of options that differ most on an underlying subjective dimension, such as “degree of preference” (Auger, Devinney and Louviere, 2004). BWS avoids problems associated with rating scales and ranking question, which often produce tied items, and enables ratio-scaled comparisons between the attributes estimated (Flynn *et al*, 2006).

A balanced incomplete block design (BIBD) using 10 showcards was developed and mall intercept interviews were conducted with a systematically selected sample of 170 respondents. Each respondent was asked to identify the format that was most effective (best) and least effective (worst) at communicating information about Nasolin; other questions explored whether respondents or their families suffered from allergies. The sample had a broad demographic profile; 71% were personally affected by an allergy or had a close family member who suffered from allergies. There were no differences in the proportion of respondents affected by allergies across any of the demographic variables.

The second study used three formats that varied widely in perceived communication effectiveness. Data were collected via 300 mall intercept interviews, using the same systematic selection procedures as the BWS experiment. Respondents had 30 seconds to peruse an advertisement featuring one of the three information panels before being tested on their (unaided) recall of the advertisement content. Pre-coded open-ended recall questions examined respondents’ knowledge of the brand name, symptoms, risks, side effects, contra-indications and usage instructions. The questionnaire included the same demographic and allergy questions used in the BWS survey. There were no significant differences in respondents’ gender, education or allergy profile (60% had a personal or family allergy) but the sub-samples were weighted by age.

## **Results**

We had hypothesised that introducing colour would improve perceptions of a format’s communication effectiveness and that a larger font size (from 10 point to 12 point) would further enhance these perceptions. Finally, we surmised that dividing the information into logical segments would improve a format’s perceived communication effectiveness, and that a colour heuristic (the traffic light shading) would be perceived as more effective again. Table 1 contains the results relating to these hypotheses.

**Table 1: BWS Estimates of Perceived Communication Effectiveness**

Information Panel Format	Best-Worst Scores <sup>1</sup>	Standardised Best-Worst Scores	Effect Size
Paragraph (control)	-624	-0.73	
Paragraph with colour	-483	-0.57	Colour = .13
Paragraph with larger font	-65	-0.08	
Paragraph with larger font and colour	14	0.02	Font size = .62
Outline format (larger font)	434	0.51	Outline format = .59
Outline format – traffic light (larger font)	720	0.85	Three colour = .34

1. The first column contains the sum of the best scores minus the worst scores, the second uses the best-worst score to calculate a standardised score where:

$$\text{Standard Score} = \frac{\text{Count best} - \text{Count worst}}{5n}$$

n is the number of questionnaires and 5 is the frequency with which each option appears in the experimental design (Goodwin *et al*, 2005). The standardised scores are conceptually equivalent to standardised regression coefficients with the signs taken into account and indicate the relative perceived effectiveness of the information formats tested.

The paragraph option was the least effective format, and a background colour only slightly increased its perceived effectiveness. However, increased font size, an outline format, and “traffic light” colour coding, all produced higher preference scores. The BWS results showed an additive effect across the formatting devices, supported our hypotheses, and functioned as a manipulation check that confirmed respondents saw the formats tested as very different.

The second study used the control, outline and traffic light formats and examined whether consumers’ ability to recall information varied according to the format they saw. MANOVA was used to test differences in respondents’ recall of benefits and risks; Table 2 contains these results.

**Table 2: Recall of Advertisement Elements**

	Control %	Outline %	Outline with Traffic Light %	Sig.
<b>Symptoms Treated (Benefits)</b>				
Sneezing	60	55	65	ns
Runny itchy nose	46	53	67 <sup>1</sup>	.00
Congestion	26	20	26	ns
None recalled	6	7	3	ns
Mean recall	1.3	1.3	1.6 <sup>1</sup>	.01
<b>Side Effects (Mild Risks)</b>				
Headache	21	26	32	ns
Nosebleed	18	19	18	ns
Sore throat	7	10	8	ns
Nose infection	4	10	22 <sup>1</sup>	.00

None recalled	66	57	55	ns
Mean risk recall	.5 <sup>3</sup>	.6	.8 <sup>2</sup>	.04
<b>Contra-indications (Serious Risks)</b>				
MAO inhibitors	20	42 <sup>1</sup>	37 <sup>1</sup>	.00
Age < 4	18	31 <sup>1</sup>	35 <sup>1</sup>	.03
High blood pressure	12	16	43 <sup>1</sup>	.00
Urine retention	6	22 <sup>1</sup>	34 <sup>1</sup>	.00
None recalled	51 <sup>1</sup>	17	17	.00
Mean recall	.7	1.4 <sup>1</sup>	1.7 <sup>1</sup>	.00

1. Estimate significantly higher than unmarked estimates ( $p < .05$ ).

2. Estimate significantly higher than estimate marked 3 ( $p < .05$ ).

We hypothesised that respondents' recall of the product benefits would not vary; for two of the three symptoms, no differences were detected. However, respondents who saw the "traffic light" stimulus were more likely to mention runny nose symptoms and recalled a significantly higher mean number of product indications than respondents exposed to the other versions. People who saw the control recalled fewer side effects than those who saw an outline format, and a higher proportion of the former recalled no side effects. Mean side effect recall following exposure to the "traffic light" format was significantly higher than the control. Respondents who saw an outline format recalled significantly more contra-indications; half those exposed to the control recalled no contra-indications. Table 2 suggests increased font size combined with an outline format improved recall of both mild and serious side effects, as did the "traffic light" heuristic. The final hypothesis, that benefit recall would not differ, was only weakly supported; this implies that presenting risk information in a more visually salient format does not detract from benefits.

## Discussion and Conclusions

Research that examines whether risk information could go beyond merely satisfying regulatory requirements has important health implications. The new formats tested rated more highly on perceived effectiveness and significantly increased recall of serious risk details and, to a lesser extent, recall of symptom (benefit) and side effect information. Although we hypothesised that recall of symptom details would not vary across the formats, since it is not confined to the information panel, symptom recall increased in response to larger font size, an outline format and a colour heuristic. This implies that advertisers should not resist calls to increase the space allocated to information panels, since larger and more accessible panels appear to increase recall of product indications, and may promote related behaviours, such as further information search.

Replications and extensions are required to test other formatting variations, repeated exposure measures, and whether our findings are generalisable to other drug categories, particularly those with different risk and user profiles. However, if risk information in DTC is to be functionally as well as physically present, our findings suggest changes to its presentation are essential. By integrating findings from warning label research with respondent conditioning theory, we have identified formats that significantly increased recall of serious risk information. Adoption of the formats found to be effective would improve consumers' ability to access information, assist their decision to seek further advice, and may even help them avoid serious health complications.

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