Arthritis websites — Deconstructing the messages to identify strong versus weak performers

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Howard R. Moskowitz

is President and CEO of Moskowitz Jacobs Inc., a firm he founded in 1981. He is simultaneously a well-known experimental psychologist in the field of psychophysics and an inventor of world class market research technology. He has also developed and refined procedures which enable research to interrelate products, concepts, consumers, experts and physical test instruments, in order to accomplish product optimisation and reverse engineering. His research and technology developments have led to concept and package optimisation (IdeaMap®), integrated and accelerated development (DesignLab®), and the globalisation and democratisation of concept development for small and large companies alike, in an affordable, transaction-oriented approach (IdeaMap® Wizard).

Barbara Itty

joined Moskowitz Jacobs Inc. three years ago as an International Coordinator and soon after became a Brand Coordinator for i-novation Inc., the web-based sister company of MJI. Barbara has worked closely with Dr. Moskowitz on various areas of academic research as well as using MJI's conjoint concept development tools in identifying new opportunities in product development.

Risa Asami

graduated from Franklin and Marshall College in 1997, with a degree in experimental psychology. She joined Moskowitz Jacobs Inc. three years ago and has been involved with helping food, beverage, pharmaceutical and service provider companies gain answers to various concept and product development business issues.

Carly Fink

graduated with honours from Lafayette College in 2001, and was awarded the Frederick Knecht Detwiller prize for excellence in fine art and history. Currently, she is working towards her masters in advertising and applied research at Boston University College of Communications.

Laurent Flores

is President and CEO of CRM Metrix, a leading company in the field of customer experience management, which he founded in 2000. It is based in New York and Paris. Laurent is also a part-time Marketing Professor at Sup de Co Amiens in France, a regular speaker at conferences such as Esomar, ARF and Admap, and a widely-published author of international repute.

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Abstract The study shows how the medical marketer can understand the current market and jumpstart creativity through a deconstruction exercise. That is followed by conjoint measurement, which identifies strengths and weaknesses of the deconstructed elements. Text elements were created by deconstructing messages appearing in current websites, thus providing a competitive assessment. Visual elements were taken from appropriate stock photographs. Respondents evaluated short concepts created by systematically varying subsets of text and visual elements dealing with arthritis. On a total panel level, no elements performed very well or very poorly. Greater differentiation and patterns emerged from segmentation based upon the pattern of utility values. Four concept response segments emerged: Segment 1 (interested but not differentiating beyond basic interest), Segment 2 (seeking a healthy life), Segment 3 (seeking a social and support network), and Segment 4 (seeking to treat an actual condition). Segments 3 and 4 both showed strong responses to a variety of text and visual elements. Responses to visual elements were consistent with response patterns to text elements.

Howard R. Moskowitz
Moskowitz Jacobs Inc., White Plains, New York, USA.
Tel: 914-421-7400.
E-mail: Mjihrm@sprynet.com

INTRODUCTION — MEDICAL SITES AS THE MOST IMPORTANT

A growing body of data about Internet usage reveals that medical information is the most widely sought on the Internet, and consequently medical sites receive the greatest interest. Medical information can range from conventional information about health and wellness to more specific disease sites for specific conditions, and onwards to specific, professional-oriented sites. Currently, a Google® search of the sites suggests that there may be as many as 76,300,000 sites uncovered with the word HEALTH, and 32,000,000 sites uncovered with the word MEDICAL. This number changes daily, but the sheer number of sites shows the interest in medical information. Since health-related subjects are among the most widely used websites on the Internet, the sheer volume of sites suggests that consumers want more information and control over health decisions. The Internet has created a more consumer-driven health system, allowing people to become more involved in medical decisions, financial consequences and medical benefits. The growth of biotechnology and medical research permits consumers to eagerly shop for medical information on the Web.[1,2] Along with the growth of consumer involvement, connecting doctors and patients through the Internet improves healthcare and decreases medical costs. The ability to compare different attributes of wellness sites further drives the high usage of medical Internet sites.[3]

METRICS ON WHAT WORKS AND WHAT DOES NOT

With the great interest of consumers regarding medical and health/wellness on the Internet, a key issue is to identify what particular communications of an Internet site work, and what do not. There is information about the number of sites visited for different medical sites, but popularity may just mean that the site deals with a prevalent issue. The many people interested in the topic may log onto the site out of general curiosity rather than real need; or, they may have a real need, but the messages do not persuade. Thus, there is a need in the industry for diagnostics about the effectiveness of the different communications.

There is a growing body of information about Internet sites dealing with the experience that consumers have who visit the sites. For example, the most widely used metric on the Internet is the 30-day cumulative called 'total reach'. This method estimates the number of people who view at least one page of a site during the past month. Total reach, however, does not measure viewing behaviour of the website. Measuring the traffic level and the frequency with which a person logs onto a site is calculated through a method called 'gross page impression'. Often this metric is accompanied by some general questions about the individual's experience with the site. It must be reiterated, however, that there is no disciplined analysis of the specific information to create a metric about what works versus what does not.

Deconstructing current competitive websites as guides as to what works and what does not

One of the benefits of a free market and easily accessed communications is that the players in the competitive frame must inevitably put forward what they believe to be the most cogent messages. This means that at some level the competitors, who feature websites, have done some research and have identified winning communications. Therefore, one strategy in understanding what to put into the website is to look at what competitors do,

identify that which works and that which does not, and then attempt to identify potential underlying patterns.

This strategy of deconstruction is known by a variety of names. One of the most popular is called content analysis.[4] Content analysis looks at the types of messages in communications and attempts to identify trends. Content analysis often works at a gross, morphological level, looking at the frequencies of specific communications. Through an analysis of different media, one can identify the spread of information, the tonality of the way the topic is presented, and similar general descriptions. In one sense, the content analysis approach is akin to the sociologist looking at groups of individuals. Instead of getting into the mind of the individual and identifying like-minded clusters of people, the sociologist looks at the interaction of masses of individuals, to identify emergent trends of a social, inter-personal nature.[5]

The role of conjoint measurement as a technique to quantify the impact of messages

Traditional consumer research instructs the respondent to rate or to rank in order a set of stimuli according to a criterion, eg, acceptance or relevance. The explicit assumption is that the rank order reflects what is important to the respondent. If the stimulus elements are of the same type (eg, statements about health benefits or statements about price) then the conventional approach works quite well. Respondents can, in fact, rank in order these statements on some order of merit.[6] The psychophysics literature is replete with evidence of this scaling ability for physical stimuli (viz., methods of category and magnitude estimation scaling).[7] The psychological literature is also replete with such scaling efforts, and many scales are created by rational procedure.[8]

When the elements for the study are more complex, and the researcher wants to understand the comparative 'trade-off' values of the elements, then another appropriate technique is conjoint measurement. Conjoint measurement refers to a series of research procedures designed to identify the drivers of concept acceptance in a more complex combination.[9,10] In a conjoint task, the researcher systematically varies the elements according to a statistically created design,[11] ensuring that the different elements appear as free agents against various backgrounds. From the consumer response to these combinations, the researcher can infer the part-worth contribution of each element to the rating attribute. The approach can be used in different venues, such as paper and pencil, computer-interview and, more recently, Internet-based interviews.[12] Conjoint analysis is particularly useful in understanding consumer values and the trade-offs that consumers make when responding to compound stimuli, such as those found on a website.

A simple example illustrates the problem with conventional approaches. If faced with statements about lifestyle modifications, the respondent can rank these. If faced with statements about drug price, the respondent can rank these as well. If faced with alternating simple statements about price and life-styles, how can the respondent rank these to show the relative utilities? There is simply nothing to refer to with respect to price, because price is evaluated alone. Price should be evaluated within the context of a stimulus because, otherwise, price is meaningless.

Combining conjoint measurement and deconstruction is very powerful in terms of a strategy to understand a category. Deconstruction provides the guide to generating the information about the competitive frame. Conjoint analysis, in turn, provides the research and analytical engines to better understand the data.

Table 1 The deconstruction and reconstruction process

1	*Gather*	'in-market' ads as raw material
2	*Deconstruct*	ads to elements
3	*Mix/match and test*	combinations of elements
4	*Estimate*	part-worth element utilities, impacts
5	*Segment*	customers on basis of impact patterns
6	*Optimise*	new concepts, product, positioning

Deconstruction and conjoint measurement — strategies and methods

Deconstruction of existing messages follows a simple set of steps. Subsequent conjoint analysis identifies the contributions of the individual elements, and the algebra of trade-offs by which respondents integrate the different features and benefits of the product or situation to arrive at an overall judgment.[13] Table 1 summarises the deconstruction and reconstruction into concepts via conjoint measurement. The approach is similar to competitive intelligence in that it uses the materials from the competitive frame to identify trends (ie, content). The approach differs from competitive intelligence in that a subjective rating step is incorporated, based upon the response of consumers, rather than expert raters.

METHOD

Identifying sites and creating elements — rationale, strategy, results

A search through Google® revealed hundreds of sites and more than one million specific pages that mentioned arthritis, in one way or another. Many of these sites were technical in nature, oriented towards health professionals, and not particularly accessible to the conventional consumer. These sites were not deemed relevant because they were too technical. Other sites that appeared more consumer friendly were put into the consideration set. Finally, because of the limited number of concept elements that could be tested in this system (no more than 150), the information in the different front pages was further assessed to select a limited number of pages. Table 2 shows the final set of sites from which the elements were abstracted. It is important to keep in mind that the Internet is a dynamic, changing, evolving medium, so that sites appear, flourish, and then disappear. The sites in Table 2 were visited in November 2000, so that the information is current as of that time.

Visuals as concept elements

One goal of this study was to assess the impact of visuals as communication elements. An array of 22 stock visuals was created from a variety of sources to

Table 2 Sites from which the concept elements were abstracted

www.arthritis.about.com/health/arthritis/
www.arthritis.com/
www.arthritis.org
www.arthritiscentral.com/
www.mediconsult.com (www.cyberdiet.com/modules/ar/under/about/about.html)
www.merck.com/health/
www.mediconsult.com
www.merck.com
www.next50.com
www.webmed.com
www.drkoop.com

Table 3 Visuals tested in the study

Element	Description	Utility (Total)
VI9	Older couple walking a dog	2
VI13	Two doctors standing reviewing X-rays	1
VI12	Family of three hugging	1
VI17	Mature couple, wife looking at husband	1
VI10	Older group walking	1
VI14	Two doctors seated, reviewing X-rays	1
VI8	Three women speed walking	0
VI18	Four women exercising on mats	0
VI16	Pharmacist	0
VI1	Diagram of joints and what arthritis does	0
VI3	Young middle-age women holding bowl	0
VI5	Hands, some look arthritic and older	0
VI20	Collage of stethoscope, pills, etc. (Chagall)	0
VI2	Grandparents, with grandchild in middle	0
VI19	Women wrapped in towel, holding pills	–1
VI4	Pills coming out of bottle	–1
VI11	Younger group exercising on machines	–1
VI22	Back of women with spinal cord highlighted	–1
VI21	Two hands holding each other	–1
VI15	X-rays of hands, showing 'hot spots'	–1
VI6	Two couples on course, one older, one younger	–2
VI7	Older man showing younger teen how to play golf	–2

represent different aspects of health that could be relevant to one or another aspect of arthritis. Where possible, the visuals were selected to be relevant to consumers, and to represent a range of emotions and technical information. Table 3 presents the element, and a description. The right-hand side (total) shows the utility or impact value of the visual element, and will be discussed in the Results section.

Pre-work — dimensionalisation

A single respondent in a conjoint measurement study can evaluate only a limited number of concept elements embedded in a larger number of concepts. Since analysis of conjoint data is done by regression, there are statistical limitations. If there are 150 elements, as there are in this study, then there must be far more combinations in order to ensure sufficient degrees of freedom in the regression equation. No respondent can be expected to evaluate that many combinations on the Internet. According to MacElroy,[14] the dropout rate for Internet research increases as the number of concepts, eg, survey length, increases. After about 12–15 minutes, the dropout rate increases quite dramatically.

The problem of working with a large number of elements and the need to limit the respondent's efforts in order to maintain cooperation was recognised previously.[15] The strategy was to create a system whereby each respondent needed only to evaluate a limited set of concept elements, embedded in a specific experimental design. That strategy led to the creation of a 'full' model for the respondent, including actual utility values from tested elements, and estimated utility values for untested elements. The missing element utilities were estimated by an algorithm that used the locations of elements in a semantic space. Each concept element was profiled on the semantic scales by a small group of respondents prior to the study. These respondents were similar to the respondents who would participate later. The algorithm estimated the utility of each untested element for each respondent from the utilities of the neighbouring elements in the semantic space.

To accomplish this objective the concept

Table 4 Example of elements located on the extremes of two semantic differential scales

Bottom of semantic scale Top of semantic scale	Beginner Experienced	Less active More active
Beginner vs experienced		
Your personalised programme can help you learn how to make informed decisions about your treatment options	3.8	6.5
We recommend that before you start any exercise programme, it is important that your physician examines you to see which types of exercise would be best for you	6.8	5.7
Less vs more active		
Find information on your daily calcium need to keep your bones healthy	5.8	3.7
Read our questions and answers about arthritis pain	5.7	7.8

elements for arthritis were profiled on four semantic scales (prevent vs treat; experienced users vs beginner users; more active vs less active life-styles; for occasional conditions vs for chronic conditions). Table 4 shows an example of the outcome of this exercise for four elements, profiled on two of the four semantic scales. The exercise, called 'dimensionalisation', locates each element on the semantic scale. Dimensionalisation has three uses for the conjoint measurement task:

1 *Imputation*: Estimate utilities of missing elements.[16]
2 *Segmentation*: Cluster respondents on the basis of the pattern relating to the utility values and the semantic scales, on a person by person basis.[17] This is called latent segmentation, and is one of the segmentation approaches.[18]
3 *Concept development*: Optimise concepts to have a specific tonality.[19,20] Since the semantic scales show the tonality of the elements, one can generate new concepts that have high utility values, as well as the appropriate locations on the semantic profile. Utility values deal with acceptance whereas locations on the semantic scale deal with tonality.

'Dimensionalising' teaches a great deal about the arthritis category, because it provides a 'signature' of the different elements and in turn of the different websites. Figure 1 shows the distribution of semantic values for the elements on 'prevent vs treat'. Each diamond in Figure 1 corresponds to an element. The website is on the ordinate, the semantic value is on the abscissa. It is clear that 'Arthritis Central' and 'About Arthritis' are judged by the semantic profilers to be presenting information about treatment. In contrast, 'arthritis.org', 'Arthritis.com' and 'drkoop.com' provide information deemed to be both about treatment and about prevention.

Concept creation by experimental design

Combinations are created by a main effects experimental design, comprising 60 concepts and 36 elements per respondent. The concepts are created in such a way that each concept comprises two–four elements. The elements were placed into categories comprising like-minded elements. No concept contained two elements from the same category, ensuring that the concepts could not present mutually contradictory ideas of the same type. Additional information is provided in other publications.[21–23]

Internet interview

The interview was conducted on the Internet, with respondents supplied by a strategic partner, Open Venue Ltd. The partner mailed out 2,000 e-mail

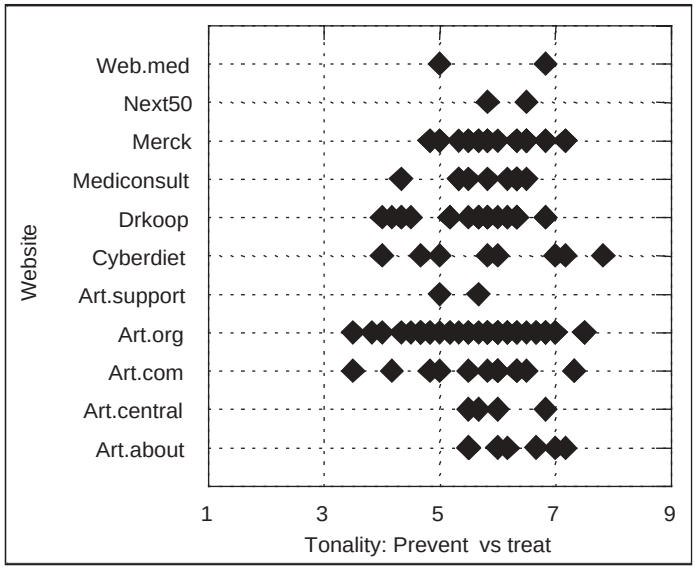

Figure 1 Plot of different sites on the semantic profile of 'prevent vs treat'

invitations, inviting respondents who were interested in arthritis to log into a webpage, and participate in a study, with a chance to win in a sweepstake. Respondents previously had opted in to participate in market research studies, and were self-selecting in terms of participating in the study. The study was run during January 2001. Figure 2 shows the orientation page for the study.

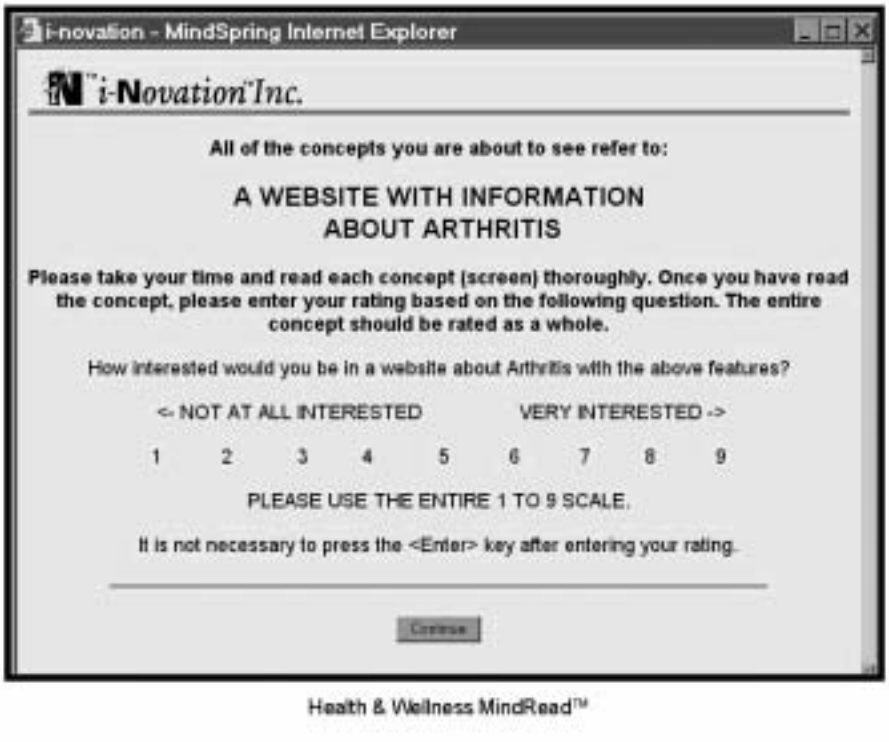

Figure 2 Orientation page for the arthritis study

Table 5 Distribution of respondents and additive constant in key subgroups, based upon the classification questionnaire, and on the concept-response segmentation, respectively

Group	Base	Constant
Total sample	144	48
Gender		
Males	112	51
Females	32	36
Age		
Under 35–54	75	53
55 and older	69	42
Medication used		
Other pain reliever users	83	47
Tylenol users	63	49
Arthritis medication users	26	50
Source of information		
Doctor	128	49
Media	87	46
Drugstore/pharmacy	80	52
Print	80	50
Web	74	53
Social network	64	48
Condition		
Has arthritis	115	54
Concept-response segment		
Segment 1	41	69
Segment 2	32	53
Segment 3	25	39
Segment 4	46	30

Sample composition

Out of 2,000 invitations, a total of 144 (7.2 per cent) of the respondents participated. This response rate parallels similar Internet-based studies run by the senior author. Table 5 shows the base size of respondents. In many studies, there is a preponderance of females.[24] These data show that almost 75 per cent of the respondents were male.

Creating the concept model for an individual

The basic data from the conjoint measurement is a simple additive model of the form:

$$\text{Rating} = k_0 + k_1(\text{Element \#1}) = k_2(\text{Element \#2}) \ldots k_{36}(\text{Element \#36}).$$

Step 1: Convert each individual's ratings on the nine-point scale to a binary scale. Ratings of 1–6 are converted to 0. Ratings of 7–9 are converted to 100. This binary conversion has the property of changing the rating of amount of interest to membership in one of two classes — rejector (rating of '0') or acceptor (rating of '100').

Step 2: Array the data from each respondent in a format for regression. Each respondent evaluated 60 concepts, comprising 36 elements, chosen from the full set. The data matrix comprises 60 rows, one row per concept, and 36 columns (one column for each of the 36 elements). The rating matrix of 0s and 100s is adjoined as the 37th column.

Step 3: Use ordinary least squares to estimate the coefficients, $k_1 k_{36}$, and the additive constant, k_0. Ordinary least squares is straightforward, computationally easy, and shows the marginal or part-worth utility value of the element.

Step 4: Estimate the utility value of untested elements by the data imputation method described above (section on dimensionalisation).

The additive constant — a measure of basic interest

The constant, a computed parameter, shows the conditional probability of an individual being interested in the arthritis concept on the website if the elements are not present. Clearly no concepts were tested without elements, and thus the additive constant is an estimated baseline value to which the utilities of the elements are added.

Table 5 shows a relatively strong level of interest among the respondents (additive constant = 48, meaning that without elements, 48 per cent of the respondents would be basically interested in the concept about arthritis). Men are far more interested than are women (51 vs 36). Younger respondents are more interested than are older respondents (53 vs 42), but this paradoxical result will be countered by the fact that many of the elements are far more interesting to older respondents than they are to younger respondents. Thus, for younger respondents it is a basic interest in arthritis that does most of the work in driving acceptance. For older respondents, it is the element itself that does the work in convincing them.

Performance of the elements — total panel

The key aspect of the study is the performance of the elements. Norms from many studies suggest that it takes a utility value of +10 or higher to begin to impact behaviour:

- >15 exceptionally strong element
- 10–14 very strong element
- 5–9 good element to have in concept
- 0–4 space filler – does not add much
- <0 eliminate the element, because it damages the concept by reducing interest.

Table 6 Performance of elements by total panel

	Source	Utility
Winning elements		
We recommend that before you start any exercise programme, it is important that your physician examines you to see which types of exercise would be best for you	Merck	5
We have great, healthy recipes, as well as information about vitamins, diet and medical conditions	Arthritis.org	4
Explore types of arthritis and treatments in the 'Arthritis answers'	Arthritis.central	4
Read about the types of arthritis and treatments in the 'Arthritis answers'	Web.med	3
Find out what makes a healthy diet	Merck	3
Eating a healthy, balanced diet is important for everyone, but particularly for people with arthritis	Merck	3
Contains information about diagnosis and treatments	Arthritis.support	3
Find useful information targeted to your age group, such as nutrition, fitness, support groups, conditions, diseases and more	Arthritis.org	3
Order free brochures or buy an exercise tape in the 'Arthritis Store'	Mediconsult.com	3
Arthritis advocacy priorities — Read about the issues	Drkoop.com	3
The discussion group message board is moderated daily by a professional	Arthritis.org	3
Learn ways to prevent injury-related arthritis ... prompt treatment can avert serious damage	Arthritis.org	3
Learn more about the new 'Speaking of Pain' programme, and find out how you can request a free brochure	Arthritis.org	3
The 'Manual of Medical Information' transforms the language of the professionals' version into commonly used English	Merck	3
Losing elements		
Our list of recommended doctors covers all regions of all 50 states	Drkoop.com	–3
Contains a section on diagnosis, symptoms and risk factors ... learn about warning signs, who is at risk, and more	Arthritis.org	–3
Calculate your way to better health with our online health calculators	Mediconsult.com	–3
'Become an advocate — Join the Arthritis Foundation Advocacy Network'	Arthritis.com	–5

Table 6 shows the results for the total panel, revealing a very narrow range of utility values (high of +5 to a low of –3). At a superficial level one would conclude that virtually none of the messages used in the websites either compels or repels the average respondent.

Performance by age — strong differences in winning elements

In studies with foods dividing the population by age does not make a difference.[25] There are differences, however, in the prevalence of arthritis by age. The additive constant showed younger respondents to have higher additive constants than did older respondents (see Table 5). Far more insight into age-related effects appears when the winning elements from the younger and older respondent groups are listed (Table 7). The younger group does not respond strongly to the elements. There are a few elements that are disliked. These elements deal mainly with information acquisition for current conditions, and the opportunity to relate to others. The older respondents react to different elements. They like authority and sources of information. It is not necessarily the information itself, but rather the comfort that there *exists* a 'knowledgeable source' or 'authority', which is key.

Concept response segmentation

The foregoing analyses suggest that even when the respondents are divided by such key aspects of age, a correlate of arthritis, group-to-group differences are not dramatic, and strong patterns do not emerge. A potentially more productive analysis comes from dividing the respondents by the pattern of their responses.[26] This approach, segmentation by response patterns to concept elements,

Table 7 Winning versus losing concept elements and source for the younger and older respondents

	Source	Total	Young	Old
Winners — Younger Group				
We have great, healthy recipes, as well as information about vitamins, diet and medical conditions	Arthritis.org	4	5	3
Find out what makes a healthy diet	Merck	3	5	2
Losers — Younger Group				
Calculate your way to better health with our online health calculators	Mediconsult	–3	–5	0
'Become an advocate — Join the Arthritis Foundation Advocacy Network'	Art.com	–5	–5	–5
View our online checklist on how to monitor medication use for seniors	Drkoop.com	–2	–5	2
Get weekly information about arthritis medications	Merck	–1	–6	4
The message board is a great way for you to exchange ideas, thoughts, and express yourself	Arthritis.org	–2	–6	2
Winners — Older Group				
We recommend that before you start any exercise programme, it is important that your physician examines you to see which types of exercise would be best for you	Merck	5	1	9
Explore types of arthritis and treatments in the 'Arthritis Answers'	Arthritis.central	4	–1	9
Ask our experts any question at the oldest and largest free 'QandA' service on the Internet	Arthritis.central	2	–1	5
Read about the types of arthritis and treatments in the 'Arthritis Answers'	Web.med	3	2	5
Print out your meal plan and follow it to a new you ... recipes and a shopping list are included	Merck	1	–2	5
Manage your arthritis and improve your life	Arthritis.org	1	–2	5
Losers — Older Group				
'Become an advocate — Join the Arthritis Foundation Advocacy Network'	Art.com	–5	–5	–5

does not assume that the conventional ways of diving respondents (eg, self-reported disease state; geo-demographics) are necessarily the relevant ways. Nor does the approach work on more macro-patterns which yield a segmentation that often cannot be easily acted upon.[27] Rather, the segmentation approach identifies individuals who behave similarly. The approach, discussed above in the section on dimensionalisation, is explicated more fully in other articles.[28,29] Basically, the segmentation looks for patterns relating the utility value for each individual (across all elements) to the semantic differential scale. Each individual's utilities are regressed against each semantic scale, to generate a quadratic function. The quadratic function, in turn, is used to identify an individual optimal semantic value for each scale. The final step clusters individuals with similar profiles of semantic values corresponding to optimal utility values.

The results of this segmentation are instructive. They show that segments indeed do exist, and that these segments can be interpreted. The segmentation procedure itself is simply a statistical process, with interpretation left to the researcher after the fact. The segments, however, appear to be quite easy to interpret, based upon the elements that do best in each segment.

Here are some findings and trends that emerge from the analysis. Table 8 shows the winning elements, Table 9 shows the composition of these segments.

1 *At least four segments may exist*. The actual number of segments can vary because the segmentation exercise is a statistical one, and the researcher can pull out as many different groups as desired. It is important, however, to be able to interpret the segments. Based upon the nature of the elements that performed best in each segment in this study, the four-segment solution was the easiest to interpret.
2 *The size of the segments in the total population is only an estimate because the entire study comprised 144 respondents*. That is, the segmentation is suggestive, rather than conclusive. Even so, the nature of the segments will be reasonably easy to discern.
3 *Segment 1 (S1) respondents are basically interested, but that is all*. The first segment (S1) comprises individuals who are basically interested in the communications (constant = 69), but who are unresponsive to most of the communication. The highest scoring element scores +2. There is no pattern to the responses of this segment. This type of 'indifferent' segment has been found in many other studies by the senior author for a variety of commercial projects.
4 *Segment 2 (S2) respondents are interested in good living*. They have a lower constant (53), meaning strong interest, but less in-going interest in the concepts as compared to Segment 1. These individuals show relatively low incidence of arthritis. Furthermore, like Segment S1, this segment shows few high-scoring elements.
5 *Segment 3 (S3) respondents seek a social and support network*. They show a low constant (39), but find many of the elements highly interesting, however, with utility values above 10. They react quite strongly to messages that make them feel part of a community. They want to know about arthritis, but not necessarily how to treat an arthritic condition. They are predominately males.
6 *Segment 4 (S4) respondents want to know how to manage and treat their condition*. The fourth segment (S4) shows the lowest constant (30). In contrast to Segment S3, this fourth segment is heavily involved in the actual

Table 8 Winning concept elements for each segment

	Source	Total	S1	S2	S3	S4
Base size		144	41	32	25	46
Additive constant		48	69	53	39	30
Segment 1 — Interested but unresponsive to communications						
Learn more about the new 'Speaking of Pain' programme and find out how you can request a free brochure	Arthritis.org	3	2	–3	7	5
Every week we send free bulletins to our valued subscribers regarding the latest research, treatments and product specials	Drkoop.com	–1	1	–9	3	2
Get the facts from expert doctors and dispel health myths	Arthritis.org	0	1	–5	7	1
Segment 2 — Seeking a healthy life						
Disease Center — Check here when you have questions about a medical condition	Arthritis.org	1	–6	6	3	4
Visit Living Well, a place to discover how to eat right and exercise properly	Mediconsult	1	–6	6	9	1
Find out what makes a healthy diet	Merck	3	–3	5	13	2
Segment 3 — Seeking a social and support network						
Find useful information targeted to your age group, such as nutrition, fitness, support groups, conditions, diseases and more	Arthritis.org	3	–4	–2	15	5
Receive a twice-weekly free newsletter complete with expert advice on exercise, nutrition and more	Drkoop.com	1	–1	–1	14	–1
Search the Internet and our database for healthcare websites, hospitals and support	Cyberdiet	1	–7	–2	14	3
Our site follows the On-line Privacy Guidelines and the Guidelines on 'Ethical Business Practice'	Arthritis.org	0	–2	–6	13	–1
Our disease topics have expanded information about living with diseases, finding support, the latest news and more	Arthritis.central	0	–3	–2	13	–3
Read medical minutes and ask questions about your health	Mediconsult	2	–2	–2	13	2
Read about the types of arthritis and treatments in the 'Arthritis Answers'	Web.med	3	–6	–3	13	11
Find out what makes a healthy diet	Merck	3	–3	5	13	2
We have very strict policies and procedures designed to protect the privacy of our visitors	Mediconsult	0	–7	0	13	–1
Read about different types of arthritis and treatments	Arthritis.org	2	–4	0	12	4
Visit 'Living Well' ... a place to discover how to strengthen your emotional health while living with a chronic condition	Arthritis.org	2	–2	–1	12	2
Tips for managing arthritis ... bite-sized chunks of information with links to longer articles	Arthritis.org	2	–4	–4	11	8
We have great, healthy recipes, as well as information about vitamins, diet and medical conditions	Arthritis.org	4	–3	–1	11	10
Our new Caregiver Center can help with information and support for both givers and receivers of care	Drkoop.com	1	–1	1	11	–4
We have established practices and procedures to ensure that our privacy policies are effectively implemented	Art.com	–1	–6	–4	11	–1
We have engaged outside independent audits of our policies and practices	Art.com	1	–2	4	11	–4
Click here for comprehensive information about your health	Merck	1	–3	–1	11	–1
Find out how to protect yourself from bone loss	Merck	1	–6	–2	11	5
An archive of feature articles about all aspects of arthritis	Art.support	0	–5	–8	11	5
Fight for more research funding, insurance coverage for medications and the rights of people with arthritis	Drkoop.com	2	–1	–6	11	5
Staying active is important for people with arthritis	Merck	0	–2	–7	11	1
We do not sell any personal information about our visitors, including e-mail addresses	Arthritis.org	0	–6	–4	11	2
Segment 4 — Seeking to treat an actual condition						
Shop for arthritis-friendly products	Arthritis.org	1	–7	–12	2	16
Explore types of arthritis and treatments in the 'Arthritis Answers'	Arthritis.central	4	–8	1	5	16
We recommend that before you start any exercise programme, it is important that your physician examines you to see which types of exercise would be best for you	Merck	5	–4	–4	10	16
The message board is a great way for you to exchange ideas, thoughts and express yourself	Arthritis.org	–2	–9	–18	–2	15
View our online checklist on how to monitor medication use for seniors	Drkoop.com	–2	–11	–12	–2	15
These guides will help you find information fast	Mediconsult	1	–6	–10	5	15
The Manual of Medical Information transforms the language of the professionals' version into commonly used English	Merck	3	–5	–6	6	14
Welcome to the message boards — a place for you to connect with others, where new relationships and ideas can be formed and shared	Arthritis.central	0	–8	–10	1	14

Table 8 Continued

	Source	Total	S1	S2	S3	S4
Buy all your arthritis-care products here in the online store. Just click on a product link to browse hundreds of items	Cyberdiet	1	–8	–7	5	14
Give us your feedback about our site	Merck	2	–8	–5	6	14
The discussion group message board is moderated daily by a professional	Arthritis.org	3	–5	–6	8	13
Your personalised programme can help you learn how to start and maintain a fitness programme	Drkoop.com	1	–8	–6	2	13
Your personalised programme can help you learn how to eat healthier foods	Cyberdiet	1	–4	–7	–1	12
Read about arthritis lifestyle information — aquatics programmes, exercise programmes and other movement ideas	Arthritis.org	–1	–8	–12	0	12
Manage your arthritis and improve your life	Arthritis.org	1	–3	–5	–3	12
Refill your prescriptions, find drug information and check drug interactions at the online pharmacy	Drkoop.com	0	–9	–6	1	12
A nationwide network of more than 2,000 diagnostic, surgical and rehabilitation centers for the most up-to-date arthritis treatments	Mediconsult	0	–7	–9	2	12
You can fill prescriptions online	Mediconsult	0	–5	–11	2	12
The path to a healthy lifestyle	Art.com	1	–4	–5	1	12
Print out your meal plan and follow it to a new you ... recipes and a shopping list are included	Merck	1	–7	–6	4	12
Services for you ... helpful tools and contact information	Merck	–1	–9	–12	5	12
Stop by the message boards and find others who share your interests and concerns	Arthritis.org	1	–9	–8	8	11
Enter a race or walk to raise funds needed for programmes and research	Drkoop.com	0	–5	–4	–4	11
Ask our fitness and nutrition expert any questions you may have	Arthritis.org	0	–8	–6	1	11
Order free brochures or buy an exercise tape in the Arthritis Store	Mediconsult	3	–6	1	5	11
Take three or more health quizzes and enter to win a free tee-shirt	Merck	2	–6	–5	5	11
Sort through our Health Library Index — see a complete list of all arthritis articles	Arthritis.org	0	–11	–10	8	11
Be a smart reader! Anyone can visit and post messages on our boards	Drkoop.com	1	–4	–8	5	11
Minor Medical Directory — click here for information about everyday health concerns	Art.com	1	–8	–3	4	11
Your personalised programme can help you learn how to make informed decisions about your treatment options	Cyberdiet	2	–8	0	4	11
Read about the types of arthritis and treatments in the 'Arthritis Answers'	Web.med	3	–6	–3	13	11
Looking for something specific or just want to browse? See the list of all articles in the Health Library	Arthritis.org	2	–6	–4	8	11
Taking Safety Measures ... if you are at risk of osteoporosis, learn how to prevent falls and back injury	Merck	1	–5	–9	7	11

mechanics of working with medicines, with treatments, and with the arthritic condition, or at least respond as if they are.

Visuals make a difference for segments, but not for the total panel

Although 22 visuals were tested as independent elements in the concepts, none of them performed particularly well or poorly. The compressed range of utility values for visuals (from +2 to –2; see Table 3, right-hand columns) suggests that visuals may not be the strong performers that marketing and advertising professionals have claimed. Despite the often held, but unsubstantiated, view that visuals convey information and feelings which text cannot, neither these results nor previous results substantiate this position for the total panel. That is, when pitted against the performance of text elements, visuals do no better nor no worse than one might observe from text elements.

The mediocre performance of visuals holds for the total panel, but not for the segments. Table 10 shows that Segment 1 (unresponsive, non-differentiating) is indifferent to visuals just as it is indifferent to text elements. Segment 2 (seeking a healthy life) responds to non-medical visuals (older couple walking a dog), which is consistent with their response

Table 9 Composition of concept response segments. All numbers in the body of the table except base size are per cent values

	Total	S1	S2	S3	S4
Base size	144	41	32	25	46
Gender					
Males	78	76	75	96	72
Females	22	24	25	4	28
Age					
54 and under (essentially 35–54)	52	56	56	60	41
55 and older	48	44	44	40	59
Pain reliever used					
Other pain reliever users	58	59	47	64	61
Tylenol users	44	37	66	36	39
Arthritis medication users	18	5	13	40	22
Information about arthritis from					
Doctor	89	85	81	88	98
Media	60	71	53	60	57
Print	56	56	50	68	52
Drugstore/pharmacy	56	46	69	56	54
Web	51	66	47	44	46
Social network	44	46	41	48	43
Disease situation					
Has arthritis	80	85	69	80	83

pattern to text elements. Similarly, Segments 3 (seeking a social support network) and 4 (seeking to treat an actual condition) show responses to visuals consistent with their response patterns to texts. For example, Segment 4 (seeking to treat an actual condition) shows a very strong reaction to a clearly medical visual X-rays of hands, showing hot spots. The other segments do not respond to that visual, nor should they on the basis of their response to text elements. One can conclude, therefore, that visuals play a relevant role, but not any more relevant than text. The often-stated truism that visuals communicate what words cannot, does not appear to be true here. Rather, visuals communicate about as strongly as text elements, if the visual comprises the appropriate content.

Table 10 Performance of visual elements in the conjoint model. Numbers in the body of the table are utility values

	Total	S1	S2	S3	S4
Segment 1 —— Interested but unresponsive to communications					
Diagram of joints and what arthritis does	0	0	0	0	0
Segment 2 – Seeking a healthy life					
Older couple walking a dog	2	–3	7	4	1
Family of three hugging	1	–8	6	7	3
Segment 3 — Seeking a social and support network					
Women wrapped in towel, holding pills	–1	–7	1	11	–2
Four women exercising on mats	0	–6	–6	11	4
Grandparents, with grandchild in middle	0	–6	–8	10	5
Two doctors standing reviewing X-rays	1	–8	4	10	4
Segment 4 — Seeking to treat an actual condition					
X-rays of hands, showing 'hot spots'	–1	–12	–14	2	15
Two hands holding each other	–1	–7	–15	0	13
Two doctors seated, reviewing X-rays	1	–6	–9	2	12
Back of women with spinal cord highlighted	–1	–7	–12	0	11
Mature couple, wife looking at husband	1	–8	–8	8	10

DISCUSSION

The issue of generality in self-selecting Internet interviews

The data in this study come from 144 respondents who self-selected to participate. These respondents participated based on an e-mail invitation. The cautious marketer or market researcher always should inquire about the generality of results from such a modest base size. Previous studies by the senior author suggest that results with as few as 50 respondents can predict results with much larger base sizes.[30] The fact that such comparability from small to large base sizes has been found, does not mean that this study is definitive, but rather that the results or at least the general patterns from this study would probably re-appear in larger scale studies.

The problem with visuals

To better understand the effect of visuals in advertising, many studies have been conducted using content analysis. These studies showed that there was a significant increase of the respondents' interest level when visuals were shown in the advertisements. Some studies, however, did not find a significant relation between respondent interest level and the specific information portrayed in the visuals.[31] The data from this study suggest quite clearly that visuals generally played a modest role in the respondents' acceptance or interest in the concepts. Visuals may play a role in actual advertising, but it is hard to see from these data how visuals have any more effect than text elements. The range of utility values for visuals is approximately the same as the range of utility values for the text elements. The specific visuals that perform well among the segments can be predicted quite easily once the nature of the segments is known. Furthermore, even among the segments, the visuals do not perform any better than the text elements.

Creating stronger communications and better information in the websites

Concept research in the applied sphere should lead both to knowledge and to action. Action for this type of research consists of creating better stimuli, and in particular better website information. The results do not address the issue of the nature of the website itself, how information is communicated, nor how the Internet user navigates. The results do address the content of the website.

It is clear from these results that the website that attempts to be all things to the arthritis sufferer will not necessarily do well. There are different constituencies among the arthritis-concerned. To the degree that the website can segment itself and provide clear navigation to the different segments, it can push the different segments to the appropriate pages. At the page the website can then present the most powerful information. The utility values of segments for text and pictures suggest that the tonality of the different pages will be quite dissimilar. One page might deal with those wanting to join a community, such as Segment 3. This group might respond most strongly to appeals to the community, with the appropriate visuals to accompany that communication. The other page might be the more clinical, more health-oriented page. This page again would be engineered to communicate information to respondents such as those in Segment 4. Such inter-individual variations in receptivity to information and communication styles and content is not new, and has been a mainstay of research in advertising.[32,33]

The key task for the web designer is to create a navigation system by which a respondent can determine to which segment they belong. The website might

do this intrusively by asking them a few questions, and then rewarding them with the proper navigation, as well as providing them with information about the segment to which they belong. The website might do this unobtrusively, by identifying the types of information selected by the respondent, passing that through a detection and classification routine and then automatically suggesting the next location on the website. These procedures are now possible.[34]

Evolving communications over time to catch both momentary opportunities and trends

The medical world and the consumer world do not stand still. Ever-present competition and new discoveries join to create a flux into which the marketer must venture time after time, in order to create products and services that the consumer will accept. The traditional research approaches are often presented as 'systems' with an implicit static nature to them. There are presumed 'correct' procedures, such as stage-gates.[35] These approaches are comforting, because they provide a structure in which to operate. They are discomforting because they operate slowly in a world that appears to move ever more quickly.[36]

Although the conventional processes do comfort, they may not be able to provide ongoing advantages for communications. That is, these conventional processes might work quite well when the downstream risk is high. Their very deliberateness and slowness may be counterproductive for communication, where the message can change almost overnight and where it is necessary to take advantage rapidly of newly emerging opportunities.

How can the owner of a website be *au courant* in the face of such dauntingly rapid changes in scientific information on the one hand, and relentless competition on the other? One method is to create a self-authoring conjoint system, so that the researcher can use the power of deconstruction to identify 'hot buttons' and segments, and the power of segmentation to identify newly emerging groups of individuals. The approach developed here took several weeks to implement, and required significant up-front preparation.

An accelerated approach might well dispense with the different preparatory steps, in favour of smaller, more focused studies that cost far less to implement. Recently, the senior author and colleagues created a web-based system for conjoint measurement under the control of the user.[37] The key feature of the approach is that it deals with 36 elements (including visuals), rather than 150, but requires no up-front preparatory work (eg, dimensionalisation). Furthermore, the approach allows the researcher to input the elements on the Web, and launch the study immediately. With e-mail invitations, it becomes possible to complete the study in one or two days. Finally, the segmentation works using a variation of k-means clustering, based upon patterns of utilities.[38] Such segmentation can be easily automated to occur at the time of data processing. The speed of the self-authoring conjoint system allows the website manager to identify the strength of different messages. Since the self-authoring system is designed to be rapid and inexpensive, one can do studies almost on a daily basis. Rather than finding trends over time with large-scale studies, the website manager identifies local and immediate opportunities (messages that work), and identifies ongoing trends through repeated studies executed rapidly and over a period of time. The usefulness of approach remains to be tested, but appears to be promising based upon initial work in electronics with Hewlett Packard.[39,40]

The process might work as follows:

1 Deconstruct the competitive framework on a regular basis.
2 Identify sets of messages (eg, 125 or so text elements) and a complementary set of visuals (eg, 25).
3 Do the conjoint measurement on the Web to identify current messages and segments. This is a fairly rapid process, taking a few days at most.
4 Identify hot buttons and segments.
5 Explode the winning ideas into new elements.
6 Use smaller scale, self-authoring conjoint analysis, on the Internet, to identify winning executions of these themes, and move forward with new website material.
7 Repeat steps 3–6 on a bi-weekly basis in order to continue to refresh the wellspring of ideas and executions, as well as to identify emerging trends and opportunities.

The results here are only part of the picture

This paper deals with the momentary response to concept elements, selected from websites, and embodied in test concepts, and not to full websites. Thus, the data deal with only part of the picture, and call for future analysis to build on the results reported here.

1 The results deconstruct the website, so there is a lot of learning about the elements of the website in terms of what works and what does not, but not a lot of learning about the website as an organising set of messages. The logical next step is to create some type of index of the website, based upon the performance of the elements.
2 The data deal with immediate responses. They do not deal with the amount of retained information, and the comprehensibility and long-term persuasiveness of that information. The issue of long-term effects of elements cannot be easily dealt with in this type of design, but might represent a logical next step. The research method, however, would not necessarily entail conjoint analysis, but could use the conjoint-derived utilities to select high versus low scoring elements for subsequent research.

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