



- **Conjoint analysis-based message optimization**

Asking about few executions to determine the appeal of thousands of possible message configurations

Dr. Steven Struhl



Conjoint message optimization: How it works

- Conjoint remains an excellent method for determining the best way to configure a single item that can vary in many ways—whether a product, a message or a logo
- The power of experimental designs allows us to determine the appeal (or fit with message proposition, etc.) of an amazingly large number of possible combinations of message elements
 - For instance, on the next page—
 - One message element that could be varied in 5 ways (or with 5 levels)
 - Four message elements each with 4 levels
 - One with 3 levels
 - Or all possible combinations would be $5 \times 4 \times 4 \times 4 \times 4 \times 3$ or **3840** possible arrangements of message elements
 - This all fit into **24** experimentally designed combinations of message elements
 - Use of **HB analysis**¹ allowed us to show each person **8 of the 24** message profiles—and determine the best possible combinations
 - For messages, respondents evaluate several specific designed versions on a 0 to 100 scale (interest fit with message, or appeal, etc.)

¹This is Hierarchical Bayesian analysis, which dramatically expands the amount of information we can gather—and needs its own presentation

Conjoint message optimization: Six elements that varied

Letter

Divie Cleverelle
SavbizCor Ltd
28 Green St., Suite 14
Upstate, NY 10947

October 27, 2006

Ms. Margaret Edwards
Barnelli Ltd
48 Stanstead Road
London SE27 1HF

For the Attention of Financial Manager

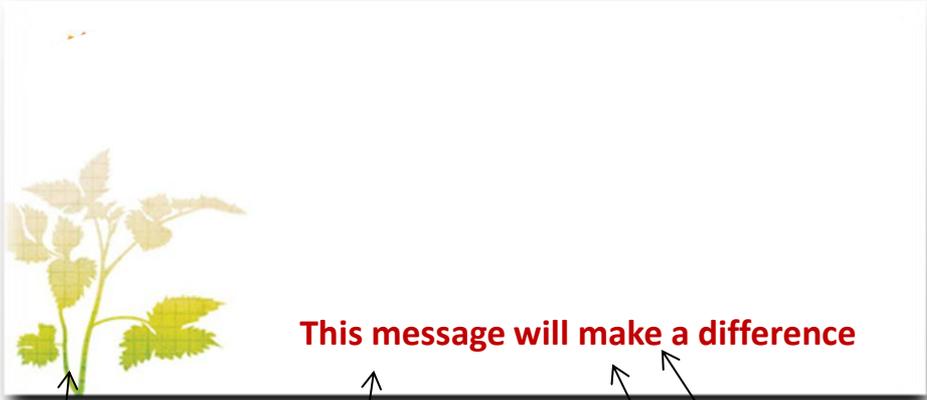
Dear Ms. Edwards:

Why planning for the future is important

[Blurred text]

Attribute 6:
4 levels—header 1, 2, 3, 4

Envelope



This message will make a difference

Attribute 1:
4 levels—message 1, 2, 3, or 4

Attribute 2:
4 levels—font 1, 2, 3, or 4

Attribute 3:
3 levels—color red, black or green

Attribute 4:
4 levels—graphic 1, 2, 3, no image

Attribute 5:
5 levels: Sequence of text blocks

Conjoint testing of eight elements varied in print

- Elements varied include photo, headline, headline font, tagline, end tag, logo and cautions

2 3 levels—font 1, 2 or 3

1 3 levels—headline 1, 2 or 3



1 **Wake up young and skinny**

2

3 **Effluuvium**

3 **It really does it all. Everything.**

4 This is the panacea you have been waiting for. Believe us. Because we say so. This is THE ONE. **Effluuvium**, taken once a day relieves all the symptoms associated with modern living for up to+ 24 hours. It has a refreshing cherry flavor and leaves your household's drains sparkling. You may begin to experience relief from the symptoms of living your life within 2 hours of taking your first bolus of **Effluuvium**.

5 You may experience side effects such as chills, sweats, constipation, diarrhea, early menstruation, menopause, defenestration, wibbly wobblies, and aversion to Elmer's glue. This is for adults only and should never been used or seen by children under 18. You are exhorted to report the negative effects of this medication or really anything else to the FDA. Visit www.fda.ove/medwatch or call 1-800-FDA-1088.

6 See the reverse for important information about **Effluuvium**.

7 Ask your doctor if **Effluuvium** is right for you.

5 3 levels—warning 1, 2 or 3

6 2 levels—font 1 or 2

7 3 levels—end tag 1, 2 or 3

4 3 levels—photo 1, 2 or 3

8 3 levels—logo 1, 2 or 3

3 4 levels—tagline 1, 2, 3 or 4

What the respondent would see: One screen

Now, assuming this was the only message about this product, how likely would you be to prescribe the product to a typical patient with atypical depression? Please think of *just this message* and use the 0 to 100 scale where 0 means “absolutely unlikely” and 100 means “absolutely likely.” You can use any number from 0 to 100, but try not to rate any two messages the same as they are all different.

Please note: The actual screen would be larger as the formatting here uses screen real estate



Wake up young and skinny

Effluuvium
It really does it all.

This is the panacea you have been waiting for. Believe us. Because we say so. This is THE ONE.

Effluuvium, taken once a day relieves all the symptoms associated with modern living for up to+ 24 hours. It has a refreshing cherry flavor and leaves your household's drains sparkling.

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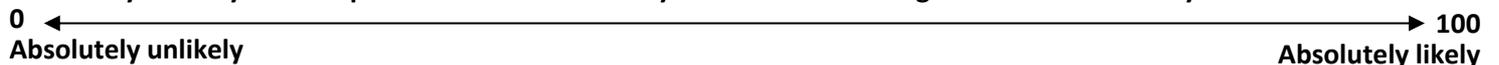
See the reverse for important information about **Effluuvium**.

Ask your doctor if **Effluuvium** is right for you.

APEX
Pharmaceuticals
800-555-5555

*This advertisement is entirely fictional—no connection between "Effluuvium" and any real company or product is intended, expressed, or implied.

How likely would you be to prescribe based on what you see in this message? Please write in any number from 0 to 100.



What the respondent would see: Another screen

Assuming this was the only message about this product, how likely would you be to prescribe the product to a typical patient with atypical depression? Please think of *just this message* and use the 0 to 100 scale where 0 means “absolutely unlikely” and 100 means “absolutely likely.” You can use any number from 0 to 100, but try not to rate any two messages the same as they are all different.



The cure for the common life

Effluvium

Beat back all the blahs. Really.

You have to trust us this time. We admit to having told you just a few, tiny whoppers and don't even think about all that press for the last two or three lawsuits. These are trifles compared to the relief you will feel. All at once.

Effluvium, taken once a day relieves all the symptoms associated with modern living for up to+ 24 hours. It has a refreshing cherry flavor and leaves your household's drains sparkling.

You may begin to experience relief from the symptoms of living your life within 2 hours of taking your first bolus of **Effluvium**.

You may experience all sorts of terrible side effects but we are putting those on the other side in even smaller type. You won't be able to read it.

This is for adults only and should never been used or seen by children under 18.

You are exhorted to report the negative effects of this medication or really anything else that could cause trouble to the FDA. Visit www.fda.ove/medwatch.

*See the reverse for important information about **Effluvium**.*

Tell your doctor that you **need** some **Effluvium**.

*This advertisement is entirely fictional--no connection between "Effluvium" and any real company or product is intended, expressed, or implied.

Synthandroid, a division of
APEX drug
Pharmaceuticals
800-555-5555

How likely would you be to prescribe based on what you see in this message? Please write in any number from 0 to 100.

0 ← Absolutely unlikely → 100 Absolutely likely

What the respondent would see: Another screen

Assuming this was the only message about this product, how likely would you be to prescribe the product to a typical patient with atypical depression? Please think of *just this message* and use the 0 to 100 scale where 0 means “absolutely unlikely” and 100 means “absolutely likely.” You can use any number from 0 to 100, but try not to rate any two messages the same as they are all different.



One tab and you are too cool

Effluvium

Make yourself the one. The only.

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*See the reverse for important information about **Effluvium**.*

Tell your doctor that you **need** some **Effluvium**.

By Synthandroid Pharmaceuticals

800-555-5555

*This advertisement is entirely fictional—no connection between “to submit recommendations” and any real company or product is intended, expressed, or implied.

How likely would you be to prescribe based on what you see in this message? Please write in any number from 0 to 100.



Extension to choice modeling for competing campaigns

- If several campaigns are competing, they could be put into a choice modeling framework
- Respondents would see the campaigns side by side and allocate points, e.g., 100 points to them
 - e.g., respondents would be asked to give out points for something like how well each execution does in interesting you in buying the product
 - Elements in each campaign would vary as respondents see somewhere around 8 to 18 sets
 - This might even include “none of these” as a choice---with careful instructions that respondents are to think of themselves as really wanting to use/buy/try the product in question
- Complexity of this exercise suggests that 3 or perhaps 4 campaigns with varying elements could be tested in this side-by-side format

Setup of one choice set varying elements

- Each campaign would appear with specific elements varied from one choice set to the next. Respondents would give out point, in this case, 100.

Imagine these were the only messages you saw about Effluuvium. Please consider just these and not any other messages you may have seen or heard. Please give out 100 points to these messages, based on how well you think they do compared with each other in interesting you in recommending Effluuvium to your typical patients with atypical depression.



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Synthandroid, a division of APEX drug
Pharmaceuticals
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By Synthandroid
Pharmaceuticals
800-555-5555

35

Points

25

Points

40

Points

100

= Points

Output from message optimizing conjoint

- Disguised from another study—a simulator screen testing inclusion/exclusion of 20 possible statements—or some 1,048,576 possible combinations
- Respondents evaluated 11 experimentally designed sets to get us to the answers

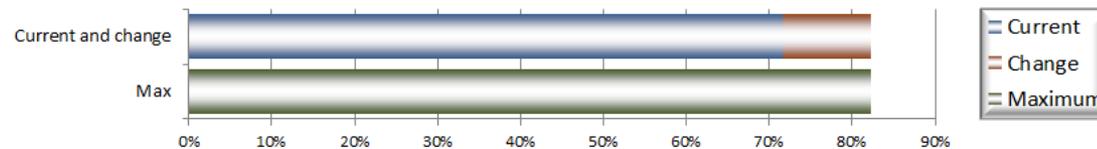
Click to include or exclude a statement in analysis. Results show how convincing that set of statements would be if considered together.

Pro Statements

- Testing everyone means I dont have to worry about offending anyone
- Testing everyone means I know I am not missing anything
- Early HIV detection makes me feel like I am changing the course of my patient's disease
- Early HIV detection means better patient outcomes
- Regularly testing patients for HIV makes me feel I am providing the best care
- Talking with my patient about HIV testing breaks down communication barriers
- Offering an HIV test provides a teachable moment for safe sex education
- Because patients are not always forthcoming, it is important to test everyone for HIV
- Testing lets me put my patient's mind at ease
- Knowing my patients' HIV status means my staff and I can take necessary precautions

Con Statements

- Discussing HIV testing with patients is time consuming and can put me behind schedule
- I lack the resources for when patients test positive for HIV
- Offering HIV testing to a patient can make them feel I am judging their lifestyle
- Bringing up HIV can make patients anxious and concerned
- There are many other issues to discuss with patients during an appointment so it is difficult to fit
- I would prefer to only test for HIV when the patient requests it
- Most of my patients are not at high risk for HIV
- Financially, it just does not make sense for me to test everyone for HIV
- I dont know enough about HIV to have an informed conversation with my patients
- HIV testing requires a consent process



Results

		Stated Likelihood to Increase Testing			
Total		71.6%	Gender	Male	69.3%
				Female	74.1%
Specialty	Nurse/PA	71.8%	Age	< 40	73.3%
	PCP	70.3%		40-49	73.3%
	OB/GYN	72.8%		50-59	70.0%
Tenure	Under 10	71.5%		60+	69.6%
	10 to 19	73.2%	Location	Urban	74.8%
	20+	69.8%		Rural	70.1%
				Suburban	68.4%

Change from reference value (all statements selected)

Total		12.7%	Gender	Male	13.1%
				Female	12.2%
Specialty	Nurse/PA	11.8%	Age	< 40	10.0%
	PCP	12.8%		40-49	12.3%
	OB/GYN	13.5%		50-59	14.2%
Tenure	Under 10	10.4%		60+	13.1%
	10 to 19	13.3%	Location	Urban	13.4%
	20+	13.2%		Rural	12.2%
				Suburban	12.0%

A typical D-optimal experimental design for conjoint or choice

- D-optimal designs seek high **efficiency**
 - Defined as very good balance in the number of times each level of each attribute appears, and near zero correlations
- Each level of each attribute must also be paired with each level of each other attribute at least once
 - These do not try for all three-way, four-way, etc. combinations
- **This is a 24 card (or display) design**, showing the attribute levels that appear in each card
 - So the first one, for instance, has the 3rd level of A, the 1st level of B, the 2nd level of C, and the 1st levels of D and E
- The first 8 cards are version 1, cards 9 to 16 version 2, cards 17 to 24 version 3
 - Each respondent sees the cards in one version

Attributes across the top

Card	A	B	C	D	E	Version
1	3	1	2	1	1	1
2	1	2	4	2	1	1
3	1	2	1	3	1	1
4	2	3	3	3	1	1
5	3	3	1	1	2	1
6	2	4	4	1	2	1
7	3	4	3	2	2	1
8	2	1	2	3	2	1
9	1	4	2	1	1	2
10	3	2	3	1	1	2
11	2	4	1	2	1	2
12	3	3	4	3	1	2
13	2	3	1	1	2	2
14	1	1	4	2	2	2
15	3	2	2	3	2	2
16	2	1	3	3	2	2
17	1	1	3	1	1	3
18	3	1	1	2	1	3
19	2	2	2	2	1	3
20	3	4	4	3	1	3
21	2	2	4	1	2	3
22	1	3	2	2	2	3
23	3	3	3	2	2	3
24	1	4	1	3	2	3

Cards down the side

Diagnostics show a strong design—we can proceed

A

	Frequency	Percent
Level 1	7	29.2
2	8	33.3
3	9	37.5
Total	24	100.0

B

	Frequency	Percent
Level 1	6	25.0
2	6	25.0
3	6	25.0
4	6	25.0
Total	24	100.0

C

	Frequency	Percent
Valid 1	6	25.0
2	6	25.0
3	6	25.0
4	6	25.0
Total	24	100.0

D

	Frequency	Percent
Level 1	8	33.3
2	8	33.3
3	8	33.3
Total	24	100.0

E

	Frequency	Percent
Level 1	12	50.0
2	12	50.0
Total	24	100.0

Version

	Frequency	Percent
Valid 1	8	33.3
2	8	33.3
3	8	33.3
Total	24	100.0

- The levels appear with an excellent overall balance—only one attribute is one level off from perfect balance
- Correlations are zero or non-zero for all variables including the version
- Efficiency is very high compared to the theoretical maximum once all design needs are met by an iterative process—the design is ready to use

Correlations

		A	B	C	D	E	Version
A	Corr.	1	.046	.046	.000	.000	-.063
	Sig.		.831	.831	1.000	1.000	.771
B	Corr.	.046	1	-.033	.000	.075	.000
	Sig.	.831		.877	1.000	.729	1.000
C	Corr.	.046	-.033	1	.000	.000	.000
	Sig.	.831	.877		1.000	1.000	1.000
D	Corr.	.000	.000	.000	1	.000	.000
	Sig.	1.000	1.000	1.000		1.000	1.000
E	Corr.	.000	.075	.000	.000	1	.000
	Sig.	1.000	.729	1.000	1.000		1.000
Version	Corr.	-.063	.000	.000	.000	.000	1
	Sig.	.771	1.000	1.000	1.000	1.000	
	N	24	24	24	24	24	24

Determinant Analysis

Rank	Determinant of X'X	D-Efficiency	Percent of Maximum
1	2.01E+15	51.62	100.00
2	1.97E+15	51.56	98.27
3	1.95E+15	51.51	97.16
4	1.90E+15	51.43	94.83
5	1.89E+15	51.41	94.37
6	1.89E+15	51.40	94.25
7	1.89E+15	51.39	93.99
8	1.84E+15	51.30	91.74
9	1.84E+15	51.30	91.61
10	1.83E+15	51.29	91.44
11	1.81E+15	51.23	90.01
12	1.78E+15	51.17	88.47
13	1.75E+15	51.11	87.12
14	1.72E+15	51.06	85.80
15	1.72E+15	51.06	85.80
16	1.72E+15	51.05	85.59
17	1.72E+15	51.04	85.47
18	1.70E+15	51.02	84.79
19	1.69E+15	50.99	84.30
20	1.69E+15	50.98	84.07

Need more details? Questions?



Dr. Steven Struhl

smstruhl@convergeanalytic.com

smstruhl@gmail.com

 847-624-2268