

# Visible Vibrations (originally Chladni Patterns) - Adding Memory Buttons

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THIS IS NOT A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
  - small sample sizes
  - expedited analyses
  - brief reports
  
- **look at an earlier version** of the exhibit/program, which may mean
  - a focus on problems and solutions, rather than successes
  - a change in form or title of the final exhibit/program

# Visible Vibrations (originally Chladni Patterns) Adding Memory Buttons Formative Evaluation Report 8/6/02

## Goals

To determine how the addition of memory buttons to the exhibit affected:

- visitor holding time
- the number of visitors who successfully made a pattern
- the number of patterns visitors made
- the number of visitors who used the memory buttons

## Methods

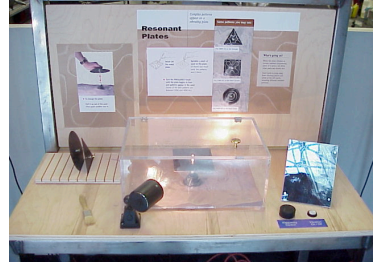

We compared two versions of the exhibit:

- (1) “Resonant Patterns” label — no Memory buttons
  - N = 24 visitor groups in 4 hours of tape (half hour per tape), recorded on 6/29/02
- (2) “Visible Vibrations” label — with Memory buttons
  - N = 63 visitor groups in 4 hours of tape, recorded on 7/27/02

## Summary

- The memory buttons were correctly used by very few visitor groups.
- The memory buttons seemed to slightly decrease interaction at the exhibit.

**Table 1.** Two versions of exhibit tested in this study

Resonant Patterns No memory buttons	Visible Vibrations Working memory buttons
	

Analysis consists of coding 8 one-hour videotapes recorded on 6/29/02 (4 tapes) and 7/27/02 (4 tapes).

## Results

### Visitor holding time

#### ANOVA Table for Log(Time)

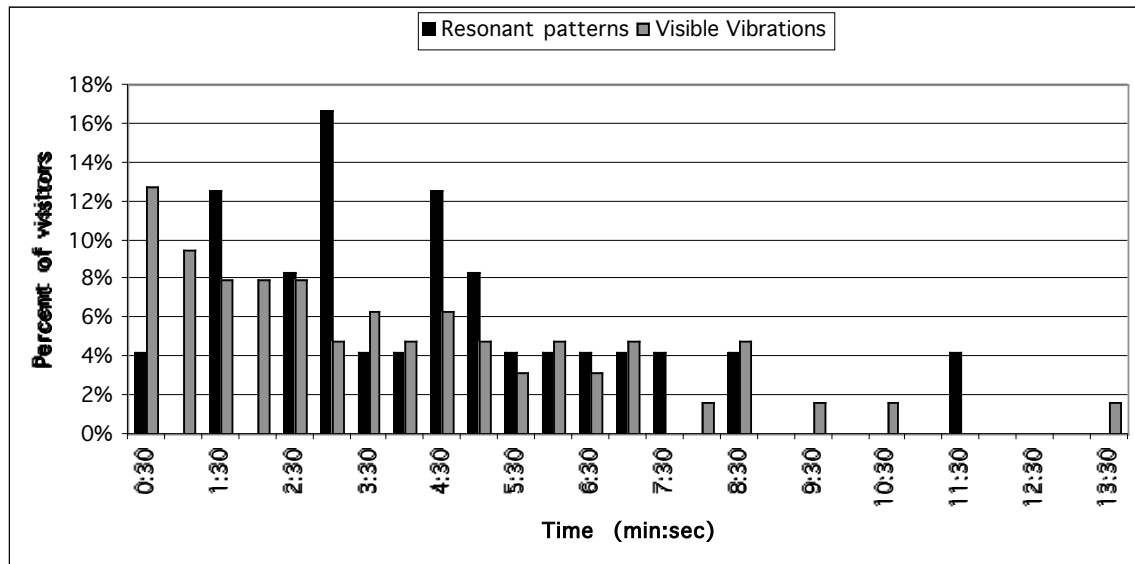
Inclusion criteria: 3 plates only from Chladni\_8/6/02\_Statvw\_01

	DF	Sum of Squares	Mean Square	F-Value	P-Value	Lambda	Power
Label	1	.471	.471	2.528	.1155	2.528	.332
Residual	85	15.830	.186				

There was a marginally significant difference in mean holding time between the two versions ( $F_{85} = 2.5$ ,  $p = .12$ ). The median holding times were:

- (1) Resonant Patterns Version = 4 minutes, 0 seconds
- (2) Visible Vibrations Version = 2 minutes, 59 seconds

See Figure 1 for holding time distributions. Note that in Version (1), the distribution is slightly right-skewed, while in Version (2), it is highly right skewed, almost flat.



**Figure 1.** Holding times for different visitor groups in Versions (1) and (2). The differences in holding times are marginally significant.

### Success in making a pattern

There were no significant group differences in the number of visitor groups who were able to make a pattern ( $\chi^2 = 1.6$ ,  $p = .21$ ). The percentage of visitors in each group who successfully made a pattern was:

- (1) Resonant Patterns Version = 76%
- (2) Visible Vibrations Version = 59%

### Making multiple patterns

There were no significant differences across version in the number of patterns made by each visitor group ( $F_{83} = .22$ ,  $p = .15$ ). On average, each visitor group made between 1 and 2 patterns, regardless of exhibit version. The percentage of visitor groups making more than one pattern was marginally different across versions ( $\chi^2 = 2.5$ ,  $p = .11$ ):

- (1) Resonant Patterns Version = 58% made more than one pattern
- (2) Visible Vibrations Version = 38% made more than one pattern

Table 2 shows the number of visitors making patterns in each treatment group.

**Table 2.** Patterns made by visitor groups in different versions.

Patterns made	Version	
	Resonant Patterns N = 24	Visible Vibrations N = 63
0	25%	41%
1	17%	21%
2	25%	16%
3	17%	10%
4	4%	8%
5	8%	3%
6	4%	2%
15	0%	0%

### Using the memory buttons

- Only 33% of the visitors in the Visible Vibrations version pressed the memory buttons at all.
- Even fewer (3%) correctly used the buttons to save a particular pattern.

## Conclusion

The memory buttons do not seem to be used by many visitors. Moreover, it seems that the holding time and number of patterns made was marginally lower with the buttons than without them. Perhaps either more attention should be made of the buttons in the label or they should be removed.

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