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HyperScaling : The Reference manual

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HyperScaling: Reference Manual

1. Overview

HyperScaling is an interactive measurement tool good for research in psychology and related fields. Its basic design is independent of both machine and language, but requires a friendly multi-media environment which incorporates the object-oriented principles. The system is good for both research and personal use.

The system consists of uni- and bi-dimensional scaling. Basically, a subject (or an end-user) evaluates a stimuli or a series of stimuli, in either text or graphic, in terms of the task items, by sliding scale buttons along a scale bar (uni-dimensional) or in a two-dimensional space. Researchers can examine the effects of the response modes in the former method: Point, interval, point-interval and split-and-bind.

The present system (ver. 1.0) works under HyperCard 2.1. Although any Macintosh model is good for running it, Mac IIci, Centris 650, Quadra series or any future higher machine is recommended for smooth operations.

The system will soon be made available as anonymous ftp'able files at [ftp@u-tokyo.ac.jp](ftp://ftp@u-tokyo.ac.jp)

2. Files

Hyper-Scaling consists of four HyperCard stacks and a text file for recording responses. Graphic stimuli in either PICT or QuickTime format can be incorporated. All the files shown in Figure 1.1 should be placed in one folder. An extra file or a companion stack called "utilities" is needed to run the system. The stack contains, as the name suggests, useful scripts and button icons for the stacks of HyperScaling and others in general. Hence, it is suggested to keep it in the same folder with the HyperCard itself, perhaps along with the accompanying original Home stack.

2.1 Scaling stacks

The stack "Home for HyperScaling" serves as the stage for navigation (see Figure 1.2). Its stack script provides utilities shared by the scaling stacks

called "1-" and "2-Dimensional". The "Practice" stack offers a guide for a user into essential mouse operations with intriguing sound icons. It is recommended to start an experiment with this stack followed by either or both scaling stacks.

2.2 Response record file

Responses will be transferred at appropriate timing to the file "Response record" with time stamps and other relevant information including a task and a stimulus name. After each experiment, move the "Response record" to a safe place. A new one will be automatically created.

2.3 Graphic stimuli

For creating your own graphic stimuli, you are assumed to have access to an image scanner and graphic software like Adobe Photoshop. Movie Player or some other QuickTime related software is necessary for editing a QuickTime stimulus. Also, the QuickTime file must be in the extension folder on the Mac in use.

3. Arranging stacks for an experiment

Exercise caution when you attempt to make any modification, since the current version is still far from being fail-safe. Basic modifications, however, are relatively easy to make by changing scripts of the related background buttons and fields.

The most global variables of the two stacks "1-Dimensional" and "2-Dimensional" use the same names for the sake of consistency and saving memory. The control structures are similar for the same reasons. Hence, combining them in a single stack may cause undesirable effects.

The easiest way to create your own stack(s) is to modify the demo stacks. The background and the first card of them are protected to prevent a mishap. But they can still be modified. To create a new card, select "New card" from the "Edit menu". First specify the stimulus name, then choose the appropriate file type. To see the graphic stimulus just specified, click the bg fld "Stimulus name". If you see a text insertion icon instead of a hand icon, lock the field by pressing the option key while keeping the mouse over it.

If it is desirable, choose "Reset" from the "Misc" menu. Or you can add

```
doMenu "Reset"  
in some place in the stack script of "Home for HyperScaling". e.g.,  
on closeCard  
  ....  
  do menu "Reset"  
  ....  
end closeCard
```

3.1 To switch between the background and the card levels

Because specification buttons are hidden under the background field "Stimulus area cover", select "bg<->cd" from the "Misc" menu (Figure 2.1). The revealed background buttons (Figure 2.2) fall in two groups: Those pertaining to scale settings and those activated by the menu "Misc". The only exception is the "New card" button which responds to "New Card" from the "Edit" menu.

The location of a stimuli is determined by the coordinates of the background field "Stimulus area": Their center of a stimulus is set at that of the field.

2.1 The number of scales

Initially a card contains 5 scales in the stack "1-Dimensional". Change the script of the background button "Set scale bars" according to your needs. The scale bars are actually drawn over the indexed background fields "Scale 1", "Scale 2" and so forth. The locations and the sizes of the "Item" and the "Value" fields will be adjusted to the scale bars when the buttons are clicked. There are four scale buttons for each scale bar. For each new bar, they must be copied from the preceding ones manually. Scripting this operation will not be difficult. The button icons are in the companion stack "utilities".

3.2 Task and stimulus names

The task name must be specified as the card name. The stimulus name should appear in the background field "Stimulus Name". It must correspond to the name of a graphic file to be presented. A stimulus need not be graphic. It can be a text written in a card or a background field. Whether a stimulus is a text, a PICT or QuickTime Movie file is to be recorded as a card property in the background field "Method." Pull down the menu "Misc" (see Figure 2.2) to specify this property. The specification will be asked at the time "New

Card" is selected from the "Edit" menu.

3.3 Value ranges

Some research, like probability estimation, requires an interval [0,1.0], while others, like the Semantic Differential, require a symmetric interval, e.g., [-7.0,+7.0]. Choose an appropriate setting for a scale origin in the handler

"on xOriginWidth" in the background script. Also, adjust the multiplication constant in the handle "on measureSB" to any integer suitable for a research purpose.

3.4 Method of scaling

The choice of a scaling method, Point/Interval/Both/Split-Bind, may be determined when a new card is created. To change the current one to another, choose "Scaling method" from the "Misc" menu.

3.5 Information field

The information field beneath the stimulus can be used for the explanation of the stimulus or instructions. The field is locked to prevent mishaps. To unlock the field, place the mouse over it and press down the option key. Other important fields behave in the same way except for background fields with "shared text".

3.6 Instruction field

This is for providing a brief instruction of scaling.

4. Move to the navigation Home

The "Go home" button is an emergency button primarily for a programmer to escape to the "Home for Hyper-Scaling" stack, but not the HyperCard's "Home". It should be hidden during an experiment, but not to be deleted because a click on the "Next card" button (on the last card) will send a message to it.

5. Interactive presentation of information

People will enjoy and behave differently when they find the system interacting with them. One way to do realize this is to utilize a message generated by a mouse action on a graphic window. The present system shows

two basic means: Try "mouse down" on 'audi.100a, b,..' examples; and, vocal introduction will be heard from 'QT Secretaries' by a mouse click on the second button from left with a triangle icon pointing right. Consult relevant literature for more technical information.

6. Copyright

Hyper-Scaling is a freeware, provided that a user observes the copyright. You can make any modification, but please do not distribute your version to others. Comments and suggestions to upgrade the software will be greatly appreciated.

Send your notes to the author at the address shown on the cover sheet.

5. Acknowledgment

Without continuous encouragement and intellectual curiosity of many of my colleagues and friends, it would have taken much longer time to develop the system. I am especially grateful to people at Washington State University where I started the HyperScaling project as a novice user of HyperCard. They include Drs. Mark G. Gillingham, Randall Kleinhesslink, Gene Rosa and Mr. Gayland Gump. I am also thankful to Mrs. SHINODA, Naoko for her assistance in debugging and testing.

6. Appendix

Examples of 1- and 2-dimensional scaling are shown in Figures A.1 and A.2.

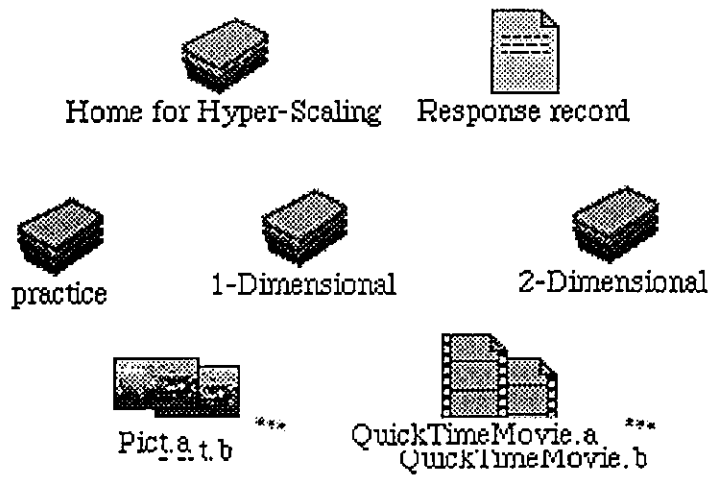


Figure 1.1 Key files: Stacks, graphic stimulus and response record

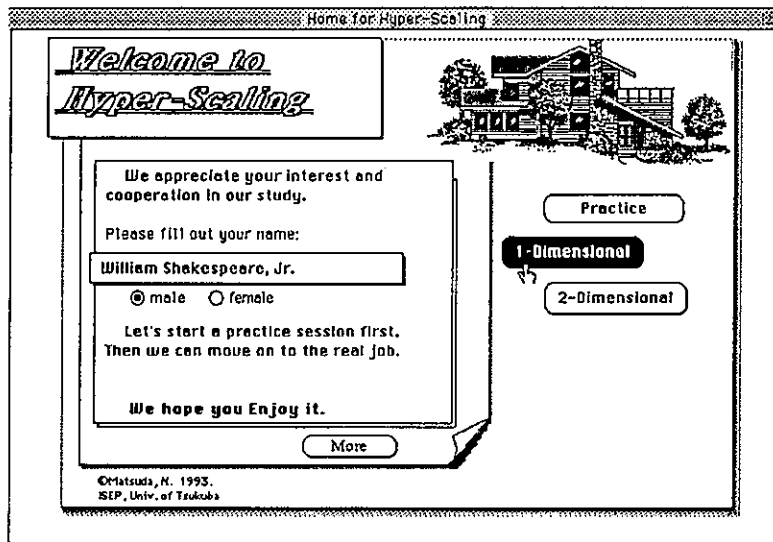


Figure 1.2 Navigation stack "Home for Hyper-Scaling"

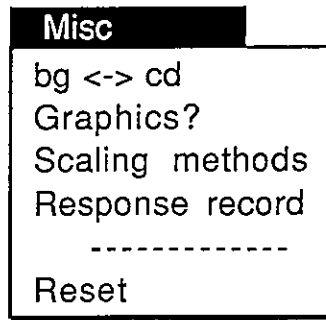


Figure 2.1 Menu "Misc"

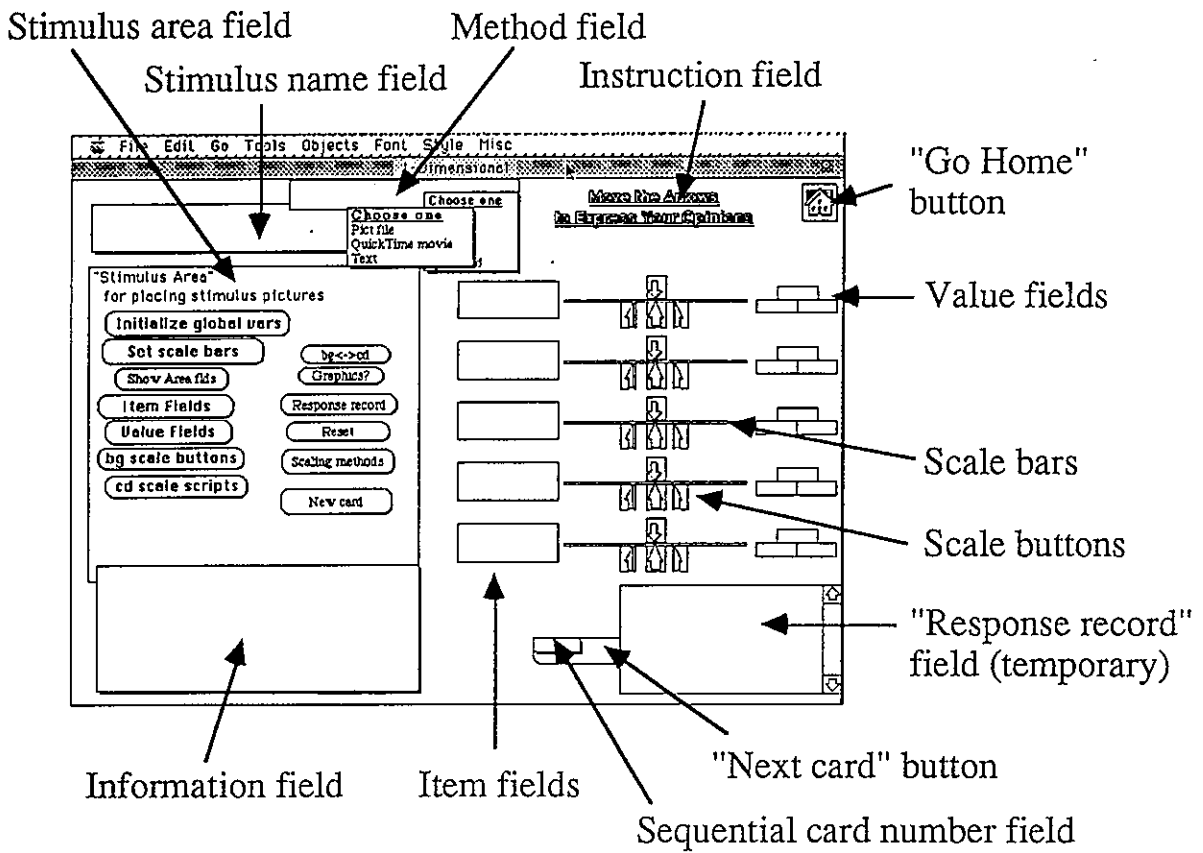
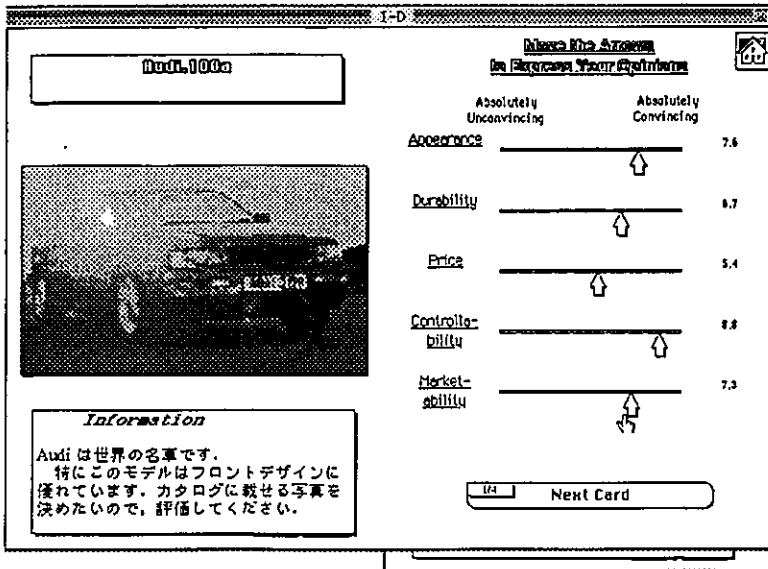
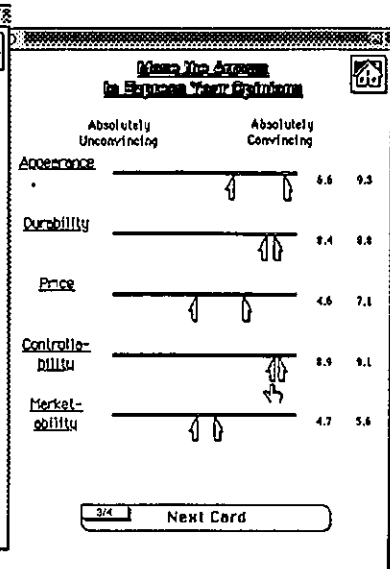


Figure 2.2 Background design of the "1-Dimensional" Stack

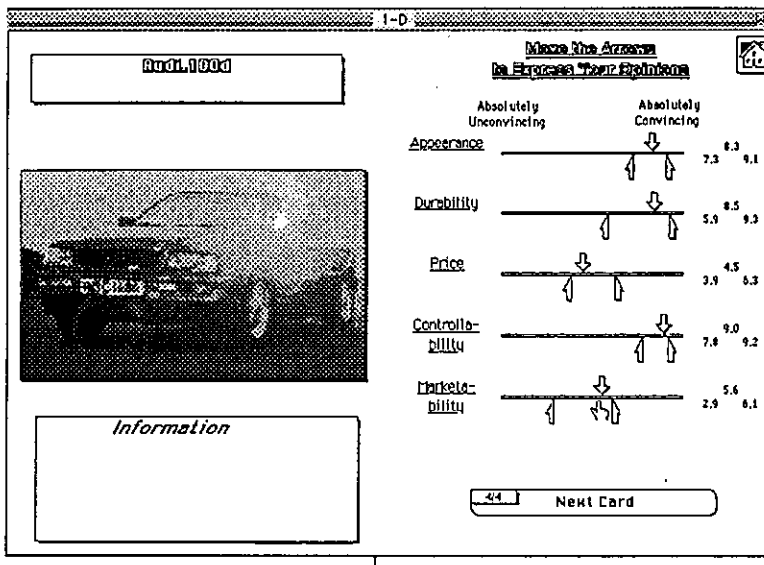
Point



Interval



Both



Split-Bind

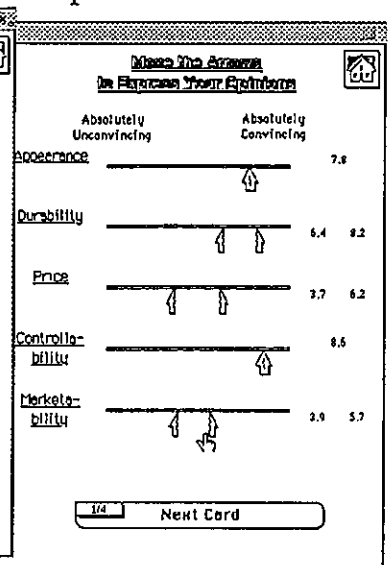
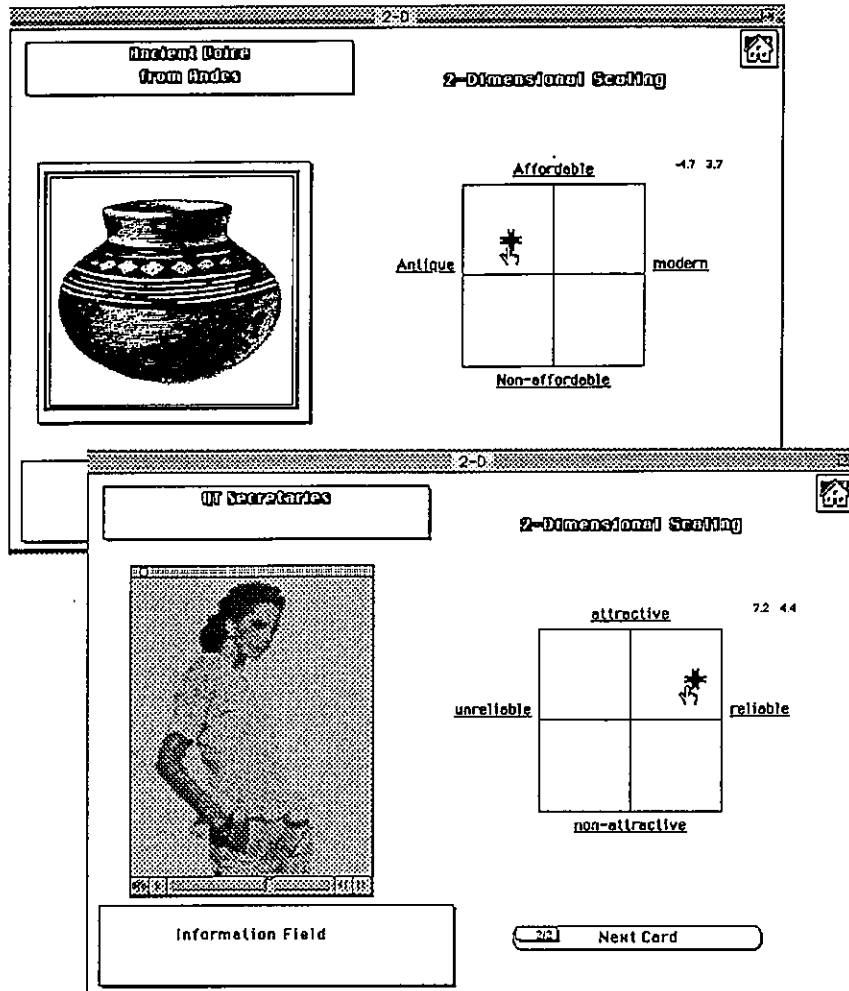


Figure A.1 Examples of 1-Dimensional Scaling

Stimulus: PICT file



Stimulus: QickTime movie file

Figure A.2 Examples of 2-Dimensional Scaling