Computer Programs for Cognitive Rehabilitation

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An 8 by 8 array of homogeneous shapes ("Martians") is searched for one
different shape (a "sleeping" Martian). Search times are recorded from
when the display appears to when the ultimately successful response was
initiated.

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                              Purpose
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This program is designed to detect differences in attention and
responsiveness on the two sides of the visual field. It is particularly
designed to identify those persons who have a spatial hemi-imperception
which affects their ability to scan both sides of a display efficiently
and, used in conjunction with SEARCH, it differentiates this skill from
shape examination and matching.

The display contains an intermediate level of information compared to
REACT (one stimulus in an otherwise empty display) and SEARCH (an 8 x 8
array of heterogeneous shapes). This variation in information density
enables one to differentiate hemi-inattention and hemi-imperception.

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                             Materials
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No special materials are needed. Each stimulus face is identical.

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                             Procedure
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The patient searches an array of identical patterns (which can be
interpreted as the heads of little space people) for the "odd" one (the
one which appears to have closed its eyes). Using this analogy and the
instruction "Find the one that fell asleep", SOSH becomes simple to
understand. From trial to trial, the display stays the same; only the
location of the target shape changes. Locations throughout the array are
sampled and search times are reported and recorded for each. Median
search times are computed for left side and right side targets,
respectively.

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                             Settings
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   1...Accept, Change, Reset   Default value: none

     A = Accept settings as listed. These settings are based on the
     settings when this program was last used. C = Change one or more of
     the listed settings; R= Re-set to standard default values.

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   2...Feedback   Default value: YES

     Feedback tends to be motivating, but unobtrusive. Change to no

feedback only if you wish to minimize cues that would trigger
compensation - usually to demonstrate to patients who think they are
compensating well.

   3...Response Device   Default value: Keyboard

   If the layout of the arrow keys is logical, and the keys are easily
   reached, they are usually the most convenient and reliable mode of
   responding. If the mouse is selected, but does not work, check to see
   that a DOS mouse 'driver' has been loaded.

   4...Time Limit   Default value: 30 (secs.)

   For patients who are likely to need extra time, we re-set this to a
   multiple of 30. How long do you want patients to search before giving
   them help? If the time limit is too short, it can be discouraging.

   5...Response Registration Time   Default value: 15 (1.5 s)

   Pause threshold for registering a response. During initial evaluation
   the examiner should enter the response moves. Dwell time should be
   increased if the patient is making the responses, e.g., to 20 or 25,
   and keyboarding is inefficient.

   6...Goal Time   Default value: 5 secs.

   If feedback has been requested, an auditory beep confirms response
   registration. A double beep is offered for responses which are
   initiated within this goal time. For therapy one might increase this
   to 10 sec, or, possibly, 20 sec.

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                                Results
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 NOTE: If printed output was selected when you first started the COGREHAB
 programs, then
 (1) the printout will contain whatever is displayed on the screen.)
 (2) you may pause the display by pressing the <SPACE> bar. Freezing the
 display is useful for discussing the results with the patient

 The initial display shows the reaction times in seconds to locate the
 target in the different screen locations. These times are for correct
 trials only, since, if an error is made, the same location is retested.

 The next display shows mean and median response times for the left and

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 right sides of the display, as well as the entire display. We use the
 median search times on the left and right sides to summarize the results
 for SOSH.

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                            Clinical Findings
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Median response times which differ by more than two sec on the left and
right sides, are clinically significant, particularly if responses are
consistantly quick on one side.

Overall long response times may reflect difficulty with oculomotor
function, including scanning and search. The emphasis is not on
recognition and inspection of shapes, but rather on the scanning of visual
arrays of information.

Inconsistent response times without any pattern suggests visual
inattention.

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                          Normative Findings
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Formal norms are pending; however, the following guideline is offered:
Median response times should be about 2.0 sec with all times below 5 sec.

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                    Measure                   Mean   StDev  Cutoff
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  SOSH   :    Left average                    1.52    0.61    2.74
N = 20: 27.4 yrs                         Source: C. Hall

  SOSH   :    Left average                    3.04    1.58    6.19
N = 20: 75 yrs                           Source: C. Hall

  SOSH   :    Right average                   1.70    0.59    2.88
N = 20: 27.4 yrs                         Source: C. Hall

  SOSH   :    Right average                   3.65    1.33    6.31
N = 20: 75 yrs                           Source: C. Hall

  SOSH   :    Absolute difference             0.29    0.25    0.79
N = 20: 27.4 yrs                         Source: C. Hall

  SOSH   :    Absolute difference             1.22    0.86    2.93
N = 20: 75 yrs                           Source: C. Hall

  SOSH   :    Combined                        1.61    0.57    2.76
N = 20: 27.4 yrs                         Source: C. Hall

  SOSH   :    Combined                        3.34    1.29    5.92
N = 20: 75 yrs                           Source: C. Hall
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  SOSH   :    Standard deviation              0.67    0.44    1.55
N = 20: 27.4 yrs                         Source: C. Hall

  SOSH   :    Standard deviation              2.02    1.36    4.74
N = 20: 75 yrs                           Source: C. Hall
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                            Miscelleneous
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If the person does well with normal contrast, explore low contrast. This
may be accomplished informally by lowering the contrast on the display
monitor. Mor e formally, use lenses which filter all but 1% of the light.

These may be obtained in wrap-around glasses which fit over ordinary
spectacles. In persons who have a lateralized relative loss of visual
responsivity, you will find that response times are differentially lowered
on one side of the display; while on the other side, times are relatively
unaffected.

This program does not run under Windows. You must exit Windows
completely, or, in Windows 95, set the properties of the shortcut to force
the program to run in DOS mode with a maximized window.

The reason for this requirement is that this program involves precision
timing which WINDOWS (an inherently timesharing/multitasking program
environment) does not do well. We have opted to maintain the program's
timing over the convenience of running in Windows. However, we regret
this inconvenience and continue to seek a better solution.


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                             References
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  occupational therapist. In M. Scheiman (ed.) Understanding and
  managing vision deficits. Thorofare, NJ: Slack Inc.

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  Visual field deficits after brain injury: Computerized screening.
  Journal of Behavioral Optometry,2(6),143-150.

Gianutsos,R (1997a)
  Vision rehabilitation following acquired brain injury. In M. Gentile,
  Functional Visual Behavior: A Therapist's Guide to Evaluation and
  Treatment Options. Bethesda,MD: American Occupational Therapy Assn.
  (301 652-2682)

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                   Variables Saved in *.CUM Disk File
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Note: The information below is for use in reading the saved data into a
      spreadsheet, such as Quattro Pro. With this information one can
      identify what each measure represents. These procedures are some-
      what technical, but useful for comparing performance across sessions.

Seq	Variable	Description	I/D	Chrs		Example
====	======	====================	===	===	===	====================
1	TASK	PROCEDURE NAME	I	8	D	SOSH
2	NAME	LAST NAME	I	10	D	DOE
3	1ST	FIRST INITIAL	I	1	D	J
4	WHEN	DATE/RUN NO.	I	8	C	05079501
5	THGP	THERAPIST/GROUP	I	8	D	RG\TBI