EFFECTS OF NEW TECHNOLOGIES

- NRC committee requested by US Army Research Institute spent 2 years evaluating 11 "New Age" performance enhancers of Army interest.
- NRC found only 2 (mental practice and stress reduction) were effective.

DATA ARE BEST PROTECTION AGAINST EXTRAVAGANT CLAIMS

- Do not select new techniques based on personal experience, market popularity, or testimony.
- Select new techniques by comparing their effects with the methods you now use.

Articles in P&I Vol 28 1989

<table>
<thead>
<tr>
<th>Type of Article</th>
<th>No. of Articles</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Only</td>
<td>126 100%</td>
<td></td>
</tr>
<tr>
<td>Text Only</td>
<td>47 37%</td>
<td></td>
</tr>
<tr>
<td>with Diagrams</td>
<td>41 37%</td>
<td></td>
</tr>
<tr>
<td>with Matrices</td>
<td>35 28%</td>
<td></td>
</tr>
<tr>
<td>with Check Lists</td>
<td>17 13%</td>
<td></td>
</tr>
<tr>
<td>with Procedure Tables</td>
<td>14 11%</td>
<td></td>
</tr>
<tr>
<td>with Data</td>
<td>5 4%</td>
<td></td>
</tr>
</tbody>
</table>

Types of Data in P&I Vol 28 1989

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>No. of Articles</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>with Surveys</td>
<td>0 0%</td>
<td>0</td>
</tr>
<tr>
<td>&quot; Rating Scales</td>
<td>0 0%</td>
<td>0</td>
</tr>
<tr>
<td>&quot; Test Scores</td>
<td>0 0%</td>
<td>0</td>
</tr>
<tr>
<td>&quot; Count / time</td>
<td>4 3% *4/yr</td>
<td></td>
</tr>
<tr>
<td>&quot; Gain Factors</td>
<td>3 2% *4/yr</td>
<td></td>
</tr>
<tr>
<td>&quot; PIP's</td>
<td>1 1% *4</td>
<td></td>
</tr>
</tbody>
</table>

SUMMARY OF P&I JOURNAL ARTICLE COUNTS

- Few performance technology articles contain data (only 4%).
- But, those few articles with data publish gain factors with fairly large sized (*4/yr) effects.
- If effect measurement was made easier and standardized, more would publish data.

CONSTANT MULTIPLIER GROWTH

- Chemistry - Mass Law
- Biology - Organic Growth Ln
- Banking - Compound Int +12%
- Math - Exponential Growth Log
  - Geometric Series
  - Power Series
  - Harmonic Series
  - Fibonacci Series
- All are straight lines on SCC™
STANDARD CEBRATION™ CHARTS
- Frequencies up the left on 6 cycle X 10 scale.
- Calendar time across bottom synchronized on + scale.
- 8 x 5.25" grid fits screens.
- Corner to corner (34° angle) is doubling each Celeration Period™.

STRETCH TO FILL CHARTS
Unique chart for each case with:
- Frequencies up the left on + or X scale, truncated and laminated to fill screen.
- Sessions across bottom on + scale, truncated and laminated to fill screen.
- Start at case birth date, not calendar synched.

SCCTM PERFORMANCE MEASURES
Performance:
Frequency no/min a dot

Performance Trend:
Celeration™ no/min/wk a slope (Acceleration or Deceleration)

SCCTM PERFORMANCE EFFECTS
Performance Jump:
a factor (* or /) a vertical line

Performance Trend Turn:
a factor (* or /) change in slope

Both can be "* up" or "/ down" and are independent.

INTEGRATED SCCTM SET
Frequency charted: Celeration™ observed:
Daily Weekly
Weekly Monthly
Monthly 6 Month
Yearly 5 Year

SCCTM MONITORING ADVANTAGES
- Save time - 2 min / chart.
- See directly effect quantities.
- Project outcome date easily.
- Compare with other cases.
- Separate jumps from turns.
- Discover variables from:
  - celeration™ changes.
  - exceptional days.
- Combine cases in meta charts.

Presented at National Society for Performance & Instruction Conference,
on 30 March 1990 in Toronto, Canada. Handout Page 2 of 4
Standard Celeration Charts™, celeration™ and SCCTM are trademarks of Behavior Research Co.
**COMPARING PERFORMANCE TECHNOLOGY EFFECTS**

- Displaying and measuring effects on STF charts is contrasted with SCC charts.
- Examples are taken from:
  - Miller's *Behavior Management.*
  - *Performance & instruction.*

**LOCATING PERFORMANCE MATRIX CONFLICTS**

- Different celerations of units within an organization indicate matrix conflicts.
- Examples are:
  - the classic Parkinson's Law.
  - MR releases and readmissions.

**FINDING POTENTIAL FOR IMPROVING PERFORMANCE**

1. Chart performance for each worker on each task on SCC.
2. Mark middle performer on each task distribution.
3. Draw line from middle to top of each task distribution.
4. Longest line is the task with the biggest PIP.

**CONCLUSIONS**

- Standard Celeration Chart technology is now available.
- It should be used in monitoring performance and locating PIPs.
- It must be used in comparing effects of technologies.

*Presented at National Society for Performance & Instruction Conference, on 30 March 1990 in Toronto, Canada. Handout Page 3 of 4*
Committee on Techniques for the Enhancement of Human Performance formed by National Research Council at request of Army Research Institute to investigate “New Age” techniques. Committee met six times in two years, made ten site visits, invited twenty briefings, and commissioned ten background review papers. The committee met twice with an Army Resource Advisory Group.


The “New Age” performance enhancement techniques investigated by the committee and a brief statement of the committee’s findings were:

<table>
<thead>
<tr>
<th>“New Age” Technique</th>
<th>NRC Committee Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning During Sleep</td>
<td>If truly asleep, no evidence of recall. -</td>
</tr>
<tr>
<td>Accelerated Learning</td>
<td>Extravagant claims unjustified. -</td>
</tr>
<tr>
<td>Motor Skills: Mental Practice</td>
<td>Gain of 1/2 Standard Deviation. +</td>
</tr>
<tr>
<td>Motor Skills: Visual-Training</td>
<td>No research evidence. -</td>
</tr>
<tr>
<td>Motor Skills: Biofeedback</td>
<td>Too many loose ends in research. -</td>
</tr>
<tr>
<td>Mental States: Hemi-Sync</td>
<td>Do not appear to be effective -</td>
</tr>
<tr>
<td>Stress Management</td>
<td>Certainty decreases stress - can Army? +</td>
</tr>
<tr>
<td>Neurolinguistic Programming</td>
<td>No evidence that it is effective. -</td>
</tr>
<tr>
<td>Group, Cohesion (COHORT)</td>
<td>No current evidence of effectiveness -</td>
</tr>
<tr>
<td>Parapsychology: Psychokinesis</td>
<td>No scientific warrant for existence. -</td>
</tr>
<tr>
<td>Parapsych: Remote Viewing</td>
<td>No scientific warrant for existence. -</td>
</tr>
</tbody>
</table>

Army should not select new techniques based on:
- Personal experience
- Marketplace popularity
- Testimony

Army should conduct research to investigate further:
- Long-term retention of skills
- Optimizing performance in special emotional or physical states.
- Subliminal methods of enhancing emotional states.
- Preparation to perform under pressure.
- Models of expert performance.
- Enhancing group performance.
