Measuring Inner and Outer Behavioral Effects of Hemi-Sync®

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One primary goal of The Monroe Institute since its inception has been stated succinctly: To provide "something of value." Defining that something can be an elusive process. Even when agreement exists that something of value has been provided, the quantitative aspects of that value often seem difficult or impossible to measure. I'd like to share some insights gleaned from working in the field of behavior measurement, where some of these measurement difficulties have been solved using Standard Celeration Charting. Unfortunately, resistance to new technology seems to be the general rather than the special case, regardless of the particular topic area. Much of what follows has yet to be incorporated in the very specialty that spawned it. For that reason the "Tomorrow Is Now" theme chosen for the 1992 Professional Seminar seems particularly appropriate. By gathering and sharing information from the cutting edges of various technologies, those of us using Hemi-Sync® in research and practice can indeed make tomorrow today.

Something of Value

When something of value has been provided, behavior that wasn't occurring before, or wasn't occurring often or fluently enough becomes possible. In other words, behavior changes provide the substantiation of value. In the parlance of science, a specific

condition is varied (added or subtracted) while all other conditions are controlled as the effect is measured. Hemi-Sync serves as an added condition and the user's behavior serves as the effect to be measured. How can one determine the significance of behavior change? Traditionally, in the behavioral sciences, the approach has been to use inferential statistics. After making the assumption that no differences occurred between two or more conditions, results can be quantified to show how likely it is that differences would occur in the event that chance, alone, were operating. A multitude of statistical tests, each with its own requirements and special considerations, often produces a nightmarish quagmire into which many of us fear to venture. The good news? With appropriate measurement and appropriate charts, determining the significance of behavior change can be done using one's own eyes rather than someone else's statistical tables. This sophisticated visual statistical technology, ideal for determining significance of behavior changes, can be used by anyone with some rudimentary training. Known as Standard Celeration Charting, it contrasts with typical social science and industry applications, where Analysis of Variance (ANOVA) and Statistical Process Control (SPC) have been promoted as the processes necessary to answer questions about behavior change.

What Is Behavior?

Behavior can be classified using several tools, one of which looks at outer and inner behavior. Outer behavior is everything we do that an ordinary observer could perceive, be it scratching one's head, typing on a keyboard, running across a field, or talking to a friend. Inner behavior involves the domain of activity within us that an ordinary observer cannot perceive. Access to inner behavior seems

to be limited to the behavior and includes the person's thoughts, urges, and inner feelings. Any behavior, inner or outer, has a beginning and an ending. This key feature of behavior has been called a behavior cycle. To define a behavior, one needs to consider what constitutes the beginning and the end of that behavior.

Another useful tool is the "Dead Body Test" for determining whether or not one has appropriately defined a behavior. Since the physical body of a dead person cannot "behave," one can apply this test to any "behavior," asking, "Could a dead body do this?" If the answer is "yes," then one must redefine the behavior appropriately. For example, consider "lying on a bed" as a possible behavior. Could a dead body do it? Yes, so this phrase would be classified as non-behavior. This non-behavior can be changed to a behavior by clarifying the cycle the beginning and ending. The result, including the initial action of lying down, then lying on the bed, then getting up-now constitutes a cycle and a behavior. A dead body could not perform the entire cycle.

What Does One Measure Behavior?

We have found in Standard Celeration Charting that attempts to measure behavior need to be sensitive to several characteristics of measurement. Measures should preferably be universal, standard, direct, counted, and visual. Following are brief descriptions of these terms:

* Universal. A measure that exists in any behavior can be considered universal and can be used as a compare-all within and across behaviors. * Standard. A tool that incorporates a set of

standard features for measurement within and across behaviors. This tool avoids developing a different measure for every behavior under investigation, or which produces problems in comparison and interpretation. * Direct. A direct measure represents original data. It can replace the use of a derived measure, such as an average or percentage, which requires creating something different and usually doesn't allow reconstruction of the original information. * Counted. If a behavior can be counted it can be represented by that count. This method contrasts with an inferred measure, such as a rating-scale response, in which an arbitrary value is assigned to a behavior. * Visual. In Standard Celeration Charting, a measure which can be visually represented is needed. Through visual pattern recognition one can see a behavior's current position and whether it increases or decreases, or improves or worsens. Such a visual representation, if chosen carefully, reflects changes in the behavior measure that correspond to changes in the behavior itself.

Frequency, Celeration, and Bounce as Behavior Measures

The three behavior measures of frequency, celeration, and bounce meet the above characteristics of measurement criteria. Frequency is the number of times a behavior occurred divided by the amount of time within which the behaviors occurred. Frequency equals count over time. Examples are: count per second, count per minute, count per day, count per week, count per month, count per year, etc.

Celeration represents the trend in frequencies of behavior across time and appears as a straight, sloped line through the frequencies.

Bounce represents the variability in behavior. With no bounce, all the frequencies would fall on the celeration line. With bounce, the celeration line has frequencies that fall above it, on it, and below it. The vertical distance from the celeration line to a parallel line running through the frequency farthest above the celeration line represents the up-bounce. The vertical distance from the celeration line to a parallel line running through the frequency farthest below the celeration line represents the down-bounce. The total bounce consists of the vertical distance from the up-bounce to the down-bounce line.

The Standard Celeration Chart

A tool incorporating all the behavior measures described above, the Standard Celeration Chart (SCC), was developed by Ogden Lindsley at the University of Kansas around 1965. Lindsley (1992) used a slope of thirty-four degrees to represent a doubling every celeration period on all SCCS. This standard slope parallels a line from the lower left- to the upper right-hand corner of each chart. Frequencies are dots on the chart, from 1 at the bottom to 1,000,000 at the top of a multiply scale up the left. Time goes across the bottom on an add scale as seconds, minutes, days, weeks, months, or years. This produces a standard graphical system on a multiply scale.

Behavior frequencies accelerate and decelerate by straight lines on the SCC. This allows one to project the course of a behavior visually with accuracy. Also, the up bounce tends to equal the down-bounce and the total bounce remains the same as the frequency changes. This allows one to see the difference between abrupt frequency changes and gradual celeration changes. Thus one can

visually discriminate the occurrence of abrupt Jump-ups, No-jumps, and Jump-downs, and gradual Turn-ups, No-turns, and Turn-downs. Such jumps and turns have been found to be independent and therefore occur in any combination.

Applications to Hemi-Sync® Research

A brief review of past reports from the Hemi-Sync Journal illustrates the potential utility of application of a standard measurement system incorporating the above features. The power of reporting effects of Hemi-Sync through SCC is that it can quantify the "something of value" which takes place across so many different behaviors and behaviors. From reduced fears of cancer patients (inner), decreased drug use in cocaine-addicted individuals (outer), positive thinking in individuals recovering from surgery (inner), and T-cell production in AIDS patients (outer), to learning new material in military training programs (outer) with less perceived stress (inner), and improving golf scores (outer) with increased feelings of confidence (inner) and fewer fear emotions (inner)-all these behaviors involve counts over time that can be charted for feedback and substantiation of behavior change (Schachter, 1992; Maliszewski, 1991; Cord, 1992; Greene, 1991; Waldkoetter, 1991; Batchelor, 1991).