A SINGLE MOVEMENT FREQUENCY STRATEGY FOR PROGRAMS SERVING SEVERELY HANDICAPPED LEARNERS

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Although it is not a requirement of the Precision Teaching model, it seems clear that, in practice, the orientation of Precision Teachers is to measure movements at a molecular level. Our training orients us to count multiple, often narrowly defined behaviors within the ubiquitous context of the 1-minute probe(see, for example, suggestions offered by Eaton[1983] regarding classroom organization). Such practices have, and continue to, produce rapid and gratifying growth in essential skills for many pupils. To some of us who attempt to provide severely handicapped learners with functional, generalizable skills, however, it seems that there are times when a broader approach to movement definition may be desirable and appropriate. That approach, which is consistent with recent recommendations for total task instruction within naturally occurring sequences(Neel, Billingsley, & Lambert, 1983; Sailor & Guess, 1983), may be applicable in situations in which a pupil has component movements in his or her repertoire, but needs to combine them within a behavioral chain which achieves some critical function. For example, it may be functional for a pupil to walk directly from the classroom to the gym within five minutes, to clean the dining room table after lunch within 30 seconds, to vacuum the floor within seven minutes, to complete eating lunch with a fork during a 30-minute lunch period, or to put toys in a toy box within two minutes. Such skills seem particularly suitable for assessment as intact behavioral units.

Certainly, the components necessary to the achievement of each skill could be assessed in a relatively molecular fashion. In the case of walking to the gym, we could count and chart steps per minute, while in the case of vacuuming the floor, frequency of successful and unsuccessful "passes" with the vacuum nozzle could be documented, and so forth. However, such practices may be more difficult to implement than it first appears and may possess a number of disadvantages.

The number of steps per minute necessary to accomplish the objective of getting to the gym within the allotted time is likely to change as the child gets older(younger, smaller pupils must walk faster) and aims in terms of steps per minute may vary depending on the time available to reach different destinations. A steps-per-minute aim appropriate to the pupil at age six may not, therefore, be appropriate to the same pupil at age 10 because the six year old aim may exaggerate differences between the 10 year old handicapped pupil and non-handicapped peers in his or her environment. It is also conceivable that the specification of a steps-per-minute aim could mitigate against the skill generalization and adaptation necessary to regulate locomotion according to distance and time available. The measurement of vacuuming presents slightly different problems. The simple mechanics involved in counting(and defining) successful "passes" with a vacuum nozzle may be difficult to manage, since success would probably require a very rapid judgment by the manager(depending on pupil fluency) regarding response adequacy along at least two dimensions: the length of the pass and the cleanliness of the floor. In addition, a reasonable aim might be difficult to establish since different vacuuming styles(e.g. heavy or light pressure on the nozzle) can require a different number of passes to achieve the same degrees of cleanliness. That is, multiple behavior forms which achieve the same function may be acceptable even though those forms are performed at different frequencies.

Similar skill-specific problems could be outlined for each of the examples cited earlier. In the larger context, however, a common measurement problem exists across many such skills: molecular approaches to measurement almost invariably require close observation by a manager. As it is entirely possible that manager presence may act as a discriminative stimulus for responding by severely handicapped pupils(cf. Bellamy, Horner, & Inman, 1979), manager proximity should be faded to the greatest extent possible as training progresses. Molecular measurement may increase the difficulty of "fading the manager out" and, at least in some cases, act to reduce the probability of obtaining generalized skill performance in situations where manager presence is less obvious.

Due to the difficulties occasionally encountered in the measurement of narrowly defined, multiple movements in instructional programs for severely handicapped pupils, we have been experimenting with the use of a "single-movement frequency strategy" in some programs for pupils within the severely/ multiply handicapped classroom at the University of Washington Experimental Education Unit. The procedure retains the concept of frequency calculated on a per-minute basis, but applies it to the accomplishment of a single movement where the movement is defined in terms of the completion of a relatively broad behavioral sequence (e.g. walking to the gym, vacuuming the floor, eating lunch with a fork, etc.). Completion of the behavioral sequence is, therefore, counted as a correct movement. Timing is begun when the cue which should act to initiate the sequence is delivered(e.g. a teacher direction such as, "Tina, it's time to go to the gym") and is stopped when the sequence is completed(e.g., arrival at the gym). Frequency is then calculated by dividing 1(the number of movements) by the total time required to begin and perform the movement. This results in what Owen White (personal communication, December 14, 1983) calls "frequency to start and do." It should be noted that the frequency is a single movement frequency with a value which will always be equivalent to the counting period, and which is, therefore, plotted as a dot on top of the counting period floor. Presuming that the objective is to systematically reduce the start and do time, the correct frequency and the counting period floor will march up the Chart toward the aim if the program is successful. The aim, of course, is computed as 1/desired start and do time.

Because the time base for the calculation of frequency is variable by design in the proposed system, it has been our practice to chart errors(e.g., turning down the wrong hallway on the way to gym, leaving three "globs" of food on the dining room table which was supposed to be cleaned) as "counts", rather than frequencies, plotted from the 1-line on the Chart. This practice seems to reduce the confusion which may accompany the visual display of an increasing error frequency on a chart where the time to perform a skill is decreasing, but where the actual number of errors remains the same or decreases.

Chart 1 provides an example of data collected and charted according to the method we have described. The chart depicts the progress of Martha, a 13 year old, severely retarded pupil. The program was designed to teach Martha to walk independently from the classroom to the school bus within six minutes. It was also desired that she complete the trip without dropping her lunchbox(the deceleration target). It may be observed that Martha made steady progress toward her aims for both acceleration and deceleration targets and achieved those aims by the end of the fourth week of instruction.

We are not suggesting that the proposed counting and charting method will be applicable to all programs designed for severely handicapped pupils. It is likely that it will be most useful in programs (1) where successful completion of a behavioral sequence requires the repetition of a single movement or very few different movements, (2) where the several different movements required within a behavior sequence are performed with a relatively high degree of accuracy, and (3) where errors are observable from "afar" or produce a product for counting following the completion of the behavioral sequence. Its use is not intended to imply that teachers should ignore the component movements which lead to the achievement of critical functions or that it is inappropriate to employ interventions designed to affect those movements. We would enjoy hearing from other Precision Teachers about the utility of this method for assessing the

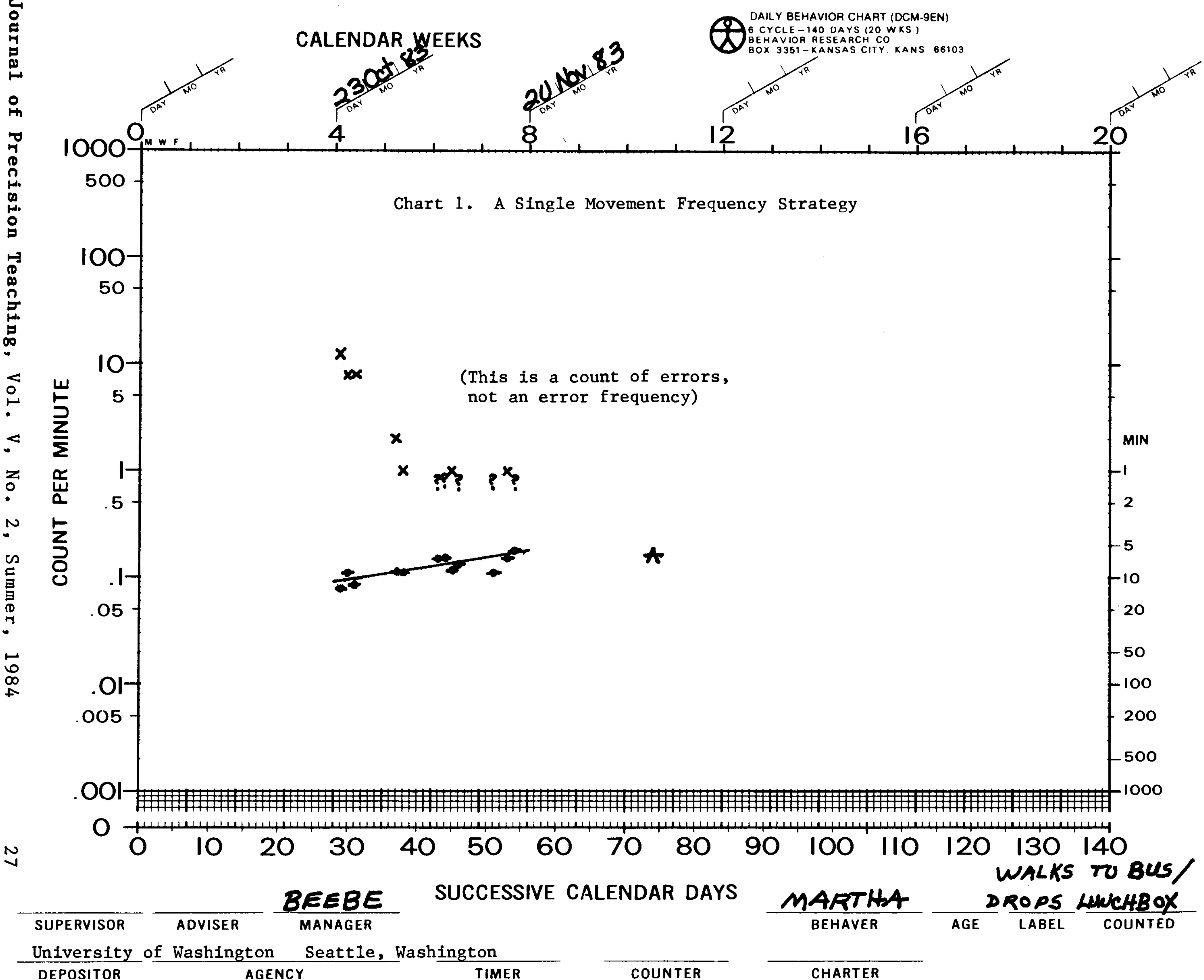

Chart 1. A Single Movement Frequency Strategy

performance of severely handicapped pupils.

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FREQUENCY AND THE STANDARD CELERATION CHART: NECESSARY COMPONENTS OF PRECISION TEACHING

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Abstract

Precision Teaching was founded by Ogden Lindsley and his students in 1965, and is essentially a movement advocating a science of human behavior and a practice of behavior change that includes the frequent observation and recording of behavior using a standard measurement unit, frequency, and a standard measurement scale, the Standard Celeration Chart. Lindsley adopted frequency, the standard unit of measurement used by Skinner(1938), and developed the Standard Celeration Chart. The Chart enabled Lindsley to determine the magnitude of human behavior frequencies, the change between two frequencies(frequency multiplier) and the change over seven or more frequencies(celeration). Some teachers and teacher trainers in the field of Precision Teaching are currently using non-standard measurement units like percent correct and count per opportunity rather than frequency. Since frequency is a standard unit of measurement, it cannot be changed without significantly affecting our understanding of human performance. In addition, some teacher trainers have truncated, that is, cut the Standard Celeration Chart and enlarged the remaining section, making it a non-standard, equal-ratio measurement scale. Since the Chart is a standard measurement scale like a meter stick, it cannot be enlarged(or, for that matter, reduced) without losing the absolute value and hence the understanding and interpretation of frequency, the frequency multiplier and celeration. The need to retain frequency and the Standard Celeration Chart(in its original size) as necessary components of Precision Teaching is demonstrated and discussed.

Many teachers, like the author himself, learned to collect children's frequencies and chart them on the