How to Numerically and Graphically Summarize Learning Across Classrooms, Schools and Published Precision Teaching Studies (Metacharting)

Ogden R. Lindsley, Abigail B. Calkin, Owen R. White

This workshop reviewed and practiced summarizing learning pictures across classrooms, schools, and published articles. Its objectives included: review and practice in distributing frequencies and collecting celerations; review and practice in calendar synchronizing and event synchronizing daily, weekly, monthly, and yearly Standard Celeration Chart collections; and introduction of Standard Celeration Metacharting of effects across published Precision Teaching and applied behavior analysis articles.

At an advanced workshop for experienced Precision Teachers and administrators, participants practiced the following:

1. Charting frequencies on daily, weekly, monthly and yearly Standard Celeration Charts.
2. Computing and charting record floors and ceilings.
3. Drawing and projecting accelerations and decelerations (gradual frequency growth and decline) using a celeration focuser.
4. Measuring the size of accelerations and decelerations (gradual frequency growth and decline) by eye and with a celeration finder.
5. Contrasting the abrupt jumps with the gradual turns in celerations.
6. Measuring the size of jumps and turns.
7. Making calendar synchronized and treatment event synchronized celeration collections.
8. Using a scale reader to read numbers from the published graphs.
9. Converting number, percent, duration and latency to standard frequencies.
10. Interpreting and describing metacharts of effects across published studies.

The workshop targeted school principals, curriculum and area coordinators, and district assistant superintendents who need an easy way to summarize the learning under their supervision. It also assisted university-based graduate students, instructors, and assistant professors, who desperately need quality research publications. Most do not yet have graduate students or grant funds. Using merely the methods introduced in this workshop, along with library journals and copy machines, they can make significant contributions to educational research. Since quantified summaries of Precision Teaching research literature have yet to be made,

university personnel were encouraged to use these approaches to construct and publish them.

A list of first publication of the different distributions and collections used in the workshop is provided. Sample celeration collection charts follow.

REFERENCES TO STANDARD CELERATION CHART COLLECTIONS, DISTRIBUTIONS, TALLIES AND TABLES

The following references were the sources of the exemplary Standard Celeration Chart summaries shared in the Pre-conference Workshop entitled, "How to numerically and graphically summarize learning across classrooms, schools and published Precision Teaching studies (Metacharting)." Ogden R. Lindsley, Abigail Calkin, and Owen White conducted the workshop on 24 March 1993 in Salt Lake City, Utah. In most cases the references were the first reported application of each particular summary method.

All, P. (1977). *From get truckin' to jaws, students improve their learning picture.* Unpublished Master's Thesis, University of Kansas, Lawrence.
(Learning Picture Tallies)

Edwards, J. S. (1969). *Precisely teaching children labeled learning disabled.* Unpublished doctoral dissertation, University of Kansas, Lawrence, KS. *Dissertation Abstracts International,* 1970, 34, 5162A. (University Microfilms No. 70-11. 017).
(Celeration Change Collections)

Calkin, A. B. (1979). *Measuring and comparing perceived facts, fun, and freedom.* Unpublished doctoral dissertation, University of Kansas, Lawrence. *Dissertation Abstracts International,* 1980, 41, 34A. (University Microfilms No. 80-14, 398).
(Frequency Dot Distributions)

Haughton, E. C. (1967). *A practical way of individually tailoring classroom consequences.* Unpublished doctoral dissertation, University of Kansas, Lawrence.
(Frequency Box Distributions)

Johnson, N. J. A. (1971). *Acceleration of inner-city elementary school pupils' reading performance.* Unpublished Doctoral Dissertation, University of Kansas, Lawrence, KS. *Dissertation Abstracts International,* 1971, 32, 6250A. (University Microfilms No. 71-27, 160).
(Offset Celeration Pair Collections)

Liao, C-J. (1984). *A quantitative review of published Standard Celeration Charts* (1970-1983). *Unpublished master's thesis.* University of Kansas, Lawrence, KS..
(Frequency, Celeration, Bounce, Up-

Bounce, Down-Bounce, Verge Distributions)

Lindsley, O. R., Koenig, C. H., Nichol, J. B., Kanter, D. B., & Young, N. A. (1971). *Handbook of precise behavior facts*. Kansas City, Kansas: Precision Media. 2 volumes. (Charted Best-Middle-Worst: Frequency, Celeration, Jump, Turn.)

Lindsley, O. R., & Rosales-Ruiz, J. (1984). *Standard celeration meta-charting of overcorrection literature*. Presented in the symposium, Exploring and assessing response deceleration procedures. 10th Annual Convention of the Association for Behavior Analysis, 30 May, Nashville, TN. (Connected Change Collections with separated change lines)

McGreevy, P. E. (1978). *District-wide learning screening compared with average learning and learning picture products of resource teachers*. Unpublished doctoral dissertation, University of Kansas, Lawrence, KS. *Dissertation Abstracts International*, 1979, 40, 4183A. (University Microfilms No. 79- 19, 282). (Frequency and Celeration Box Distributions; Learning Picture Tallies)

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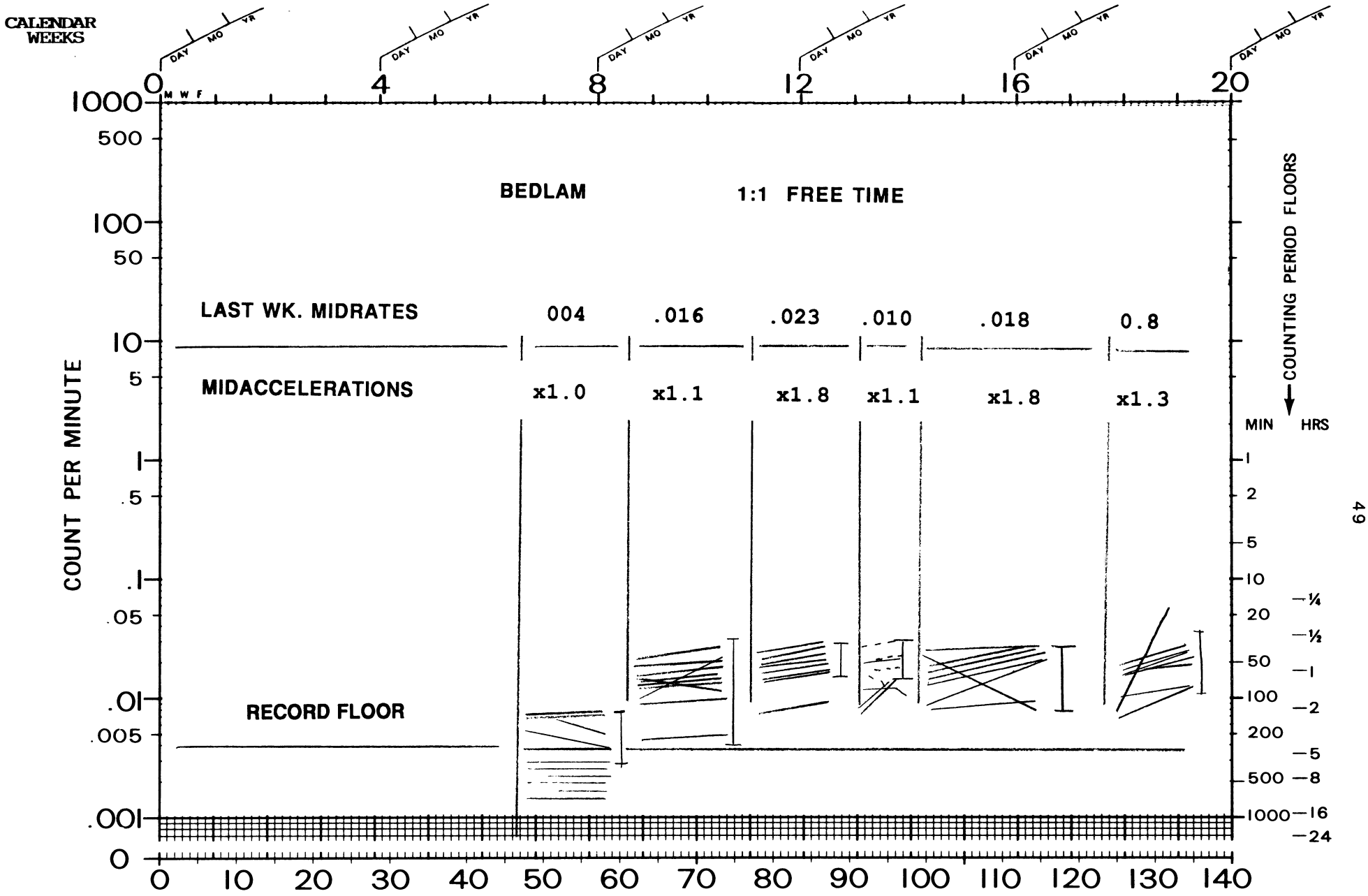
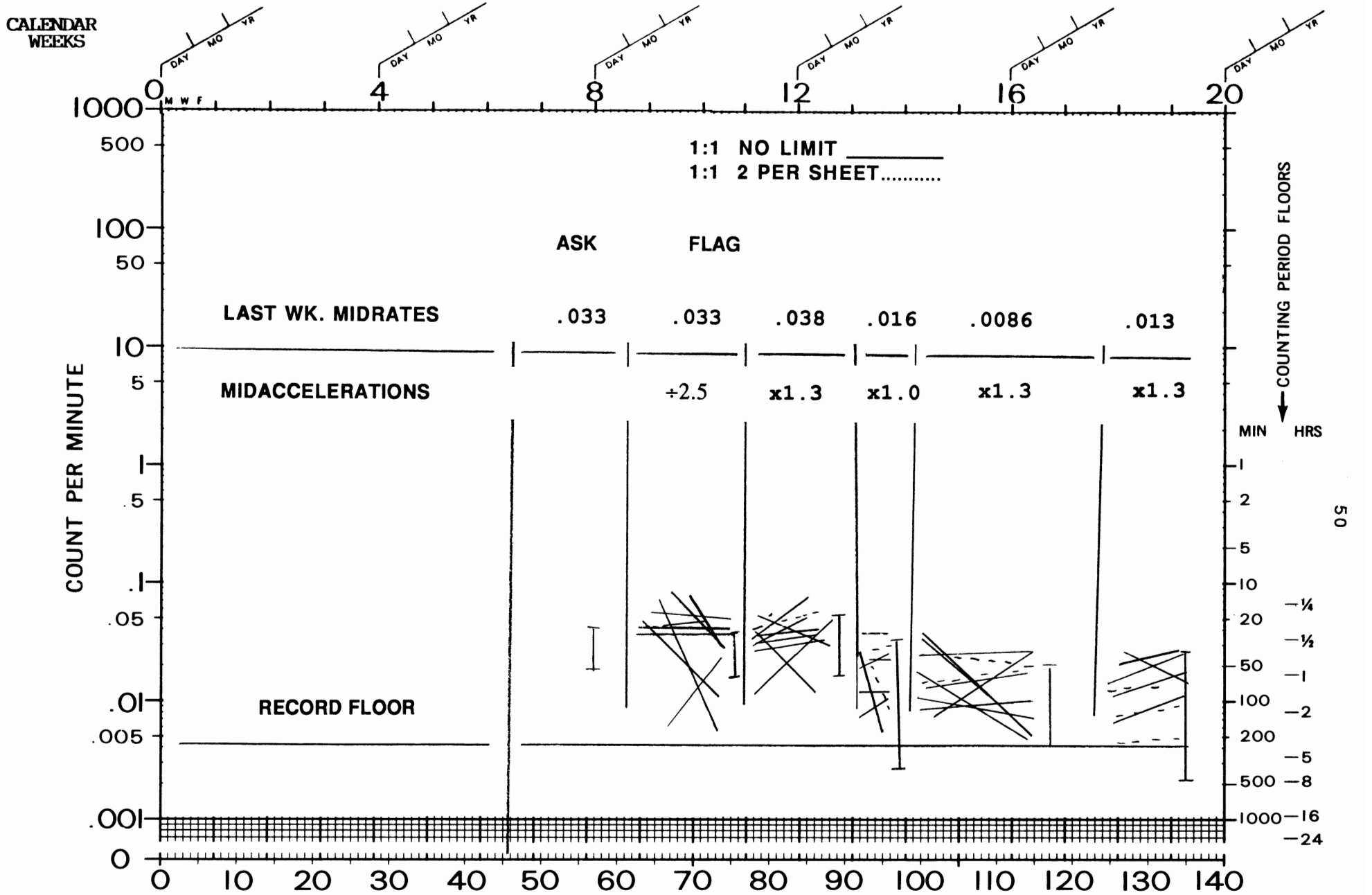
Dr. Abigail Calkin is Principal, Quinton Heights Elementary School, Topeka, KS. Dr. Owen R. White is the Director of the Experimental Education Unit and Professor of Special Education at the University of Washington, Seattle, WA.

"Chart From The Start"



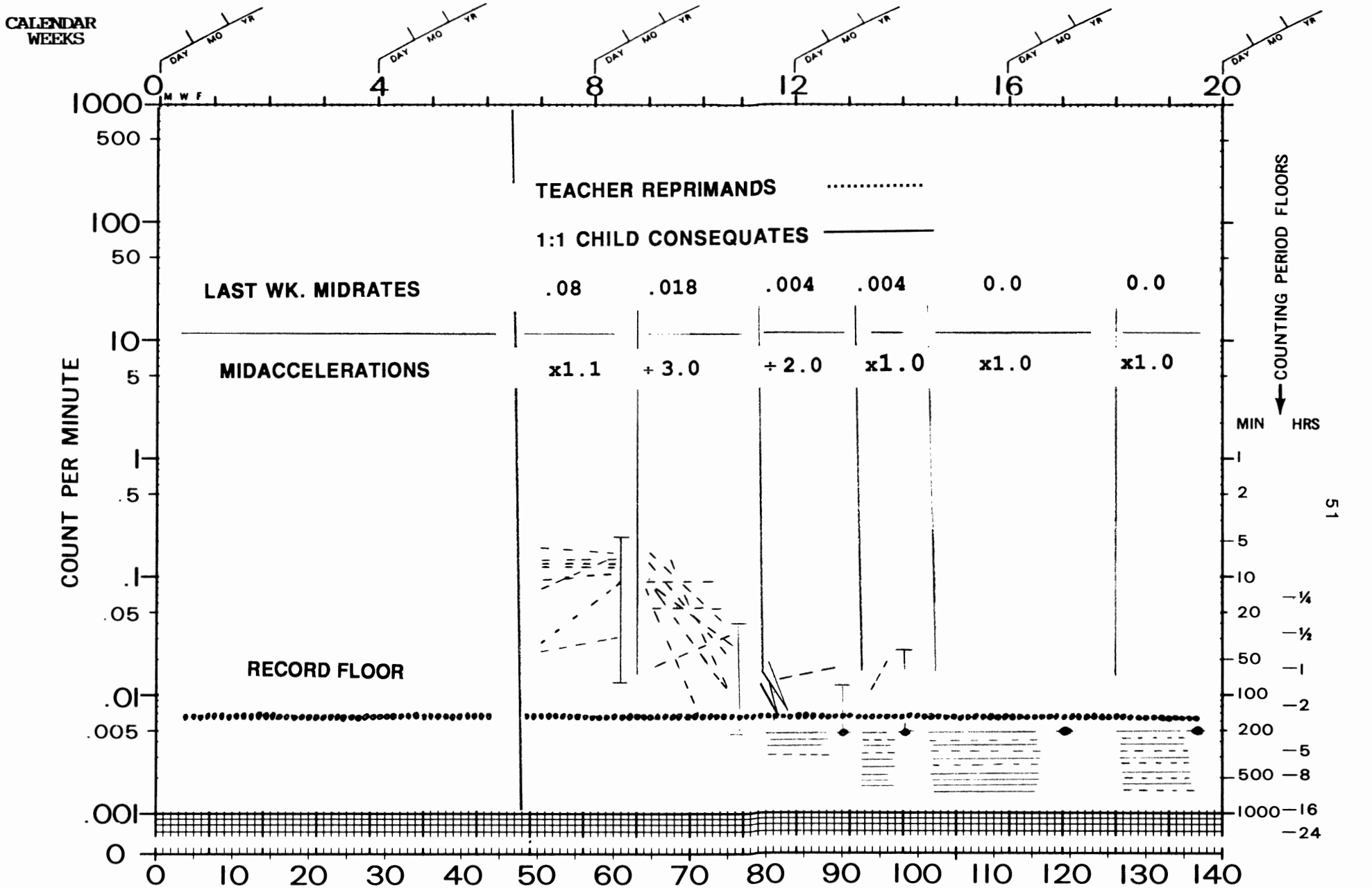
OGDEN LINDSLEY — SUPERVISOR
J. S. EDWARDS — ADVISER
J. S. EDWARDS — MANAGER
10 LEARNING DISABLED STUDENTS — BEHAVER
AGE
LABEL
PERFECT PAPERS PER MINUTE — COUNTED

DEPOSITOR
AGENCY
J. S. EDWARDS — TIMER
COUNTER
CHARTER

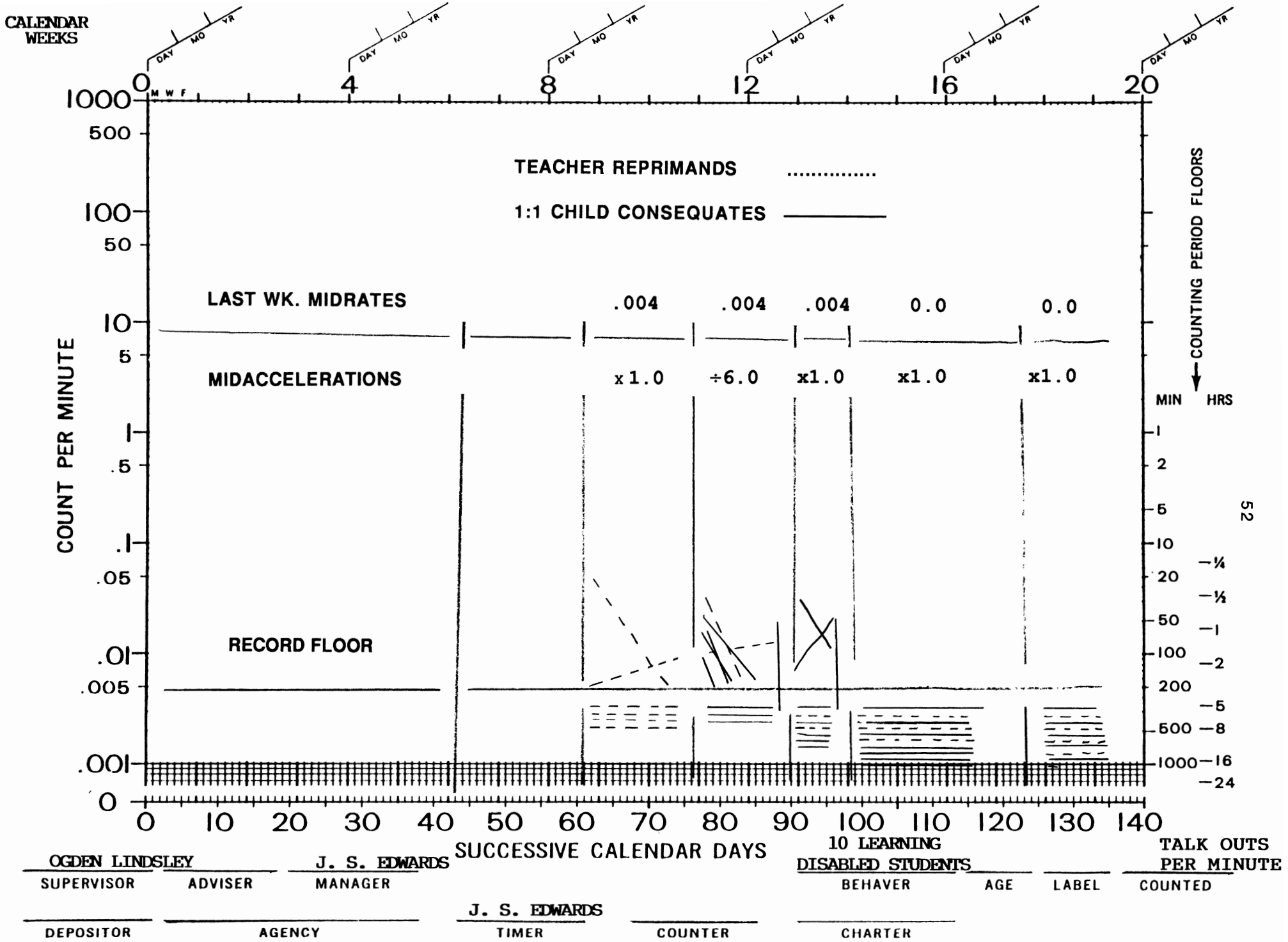


OGDEN LINDSLEY	J. S. EDWARDS		10 LEARNING DISABLED STUDENTS			TUTOR REQUESTS PER MINUTE
SUPERVISOR	ADVISER	MANAGER	BEHAVER	AGE	LABEL	COUNTED

	J. S. EDWARDS			
DEPOSITOR	AGENCY	TIMER	COUNTER	CHARTER



OGDEN LINDSLEY		J. S. EDWARDS		10 LEARNING DISABLED STUDENTS			OUT OF SEATS PER MINUTE
SUPERVISOR	ADVISER	MANAGER		BEHAVER	AGE	LABEL	COUNTED
		J. S. EDWARDS					
DEPOSITOR	AGENCY	TIMER	COUNTER	CHARTER			


CALENDAR WEEKS
DAY MO YR
0 4 8 12 16 20
M W F
1000
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50
10
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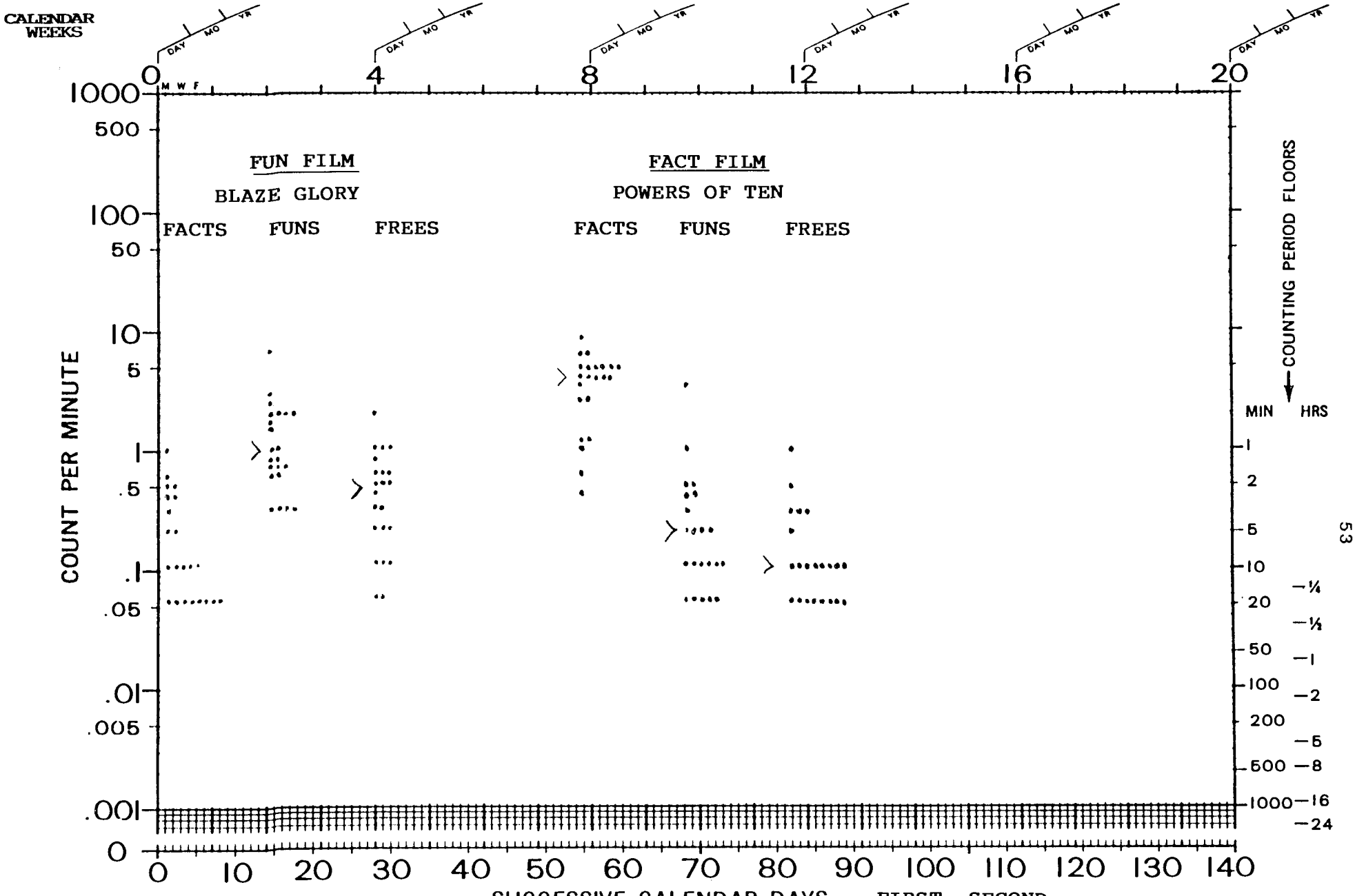
TEACHER REPRIMANDS .....
1:1 CHILD CONSEQUATES ——————
LAST WK. MIDRATES .004 .004 .004 0.0 0.0
MIDACCELERATIONS x1.0 ÷6.0 x1.0 x1.0 x1.0
RECORD FLOOR
COUNT PER MINUTE
COUNTING PERIOD FLOORS
MIN HRS
1 2 5 10 20 50 100 200 500 1000
¼ ½ 1 2 5 8 16 24
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
SUCCESSIVE CALENDAR DAYS
OGDEN LINDSLEY
SUPERVISOR
ADVISER
J. S. EDWARDS
MANAGER
10 LEARNING DISABLED STUDENTS
BEHAVER
AGE
LABEL
TALK OUTS PER MINUTE
COUNTED
DEPOSITOR
AGENCY
J. S. EDWARDS
TIMER
COUNTER
CHARTER



A. B. CALKIN				FIRST - SECOND GRADERS			
SUPERVISOR	ADVISER	MANAGER		BEHAVER	AGE	LABEL	COUNTED
				A. B. CALKIN			
DEPOSITOR	AGENCY	TIMER	COUNTER	CHARTER			