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Managing aggressive thoughts and feelings with daily counts of non-aggressive thoughts and feelings: A self-experiment☆

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Abstract

This article describes a self-experiment with a participant managing aggressive thoughts and feelings. The participant counted occurrences of aggressive thoughts and feelings per 24 h, and displayed these data on Standard Celeration Charts. Our experimental questions addressed the effects of daily 1-minute counts of non-aggressive thoughts and feelings, and daily distributed series of six 10-second counts of non-aggressive thoughts and feelings on the occurrences of aggressive thoughts and feelings. We used an A1-B1-C1-B2-C2-A2 experimental design to analyze data from the 1-minute counts and the six 10-second distributed counts as these conditions alternated around two baseline conditions. Compared to the baseline, less aggressive thoughts and feelings occurred during both independent variable conditions. The six 10-second distributed counts produced lower frequencies of aggressive thoughts and feelings than the 1-minute counts. At the end of the second six 10-second counting procedure and during the second baseline, the participant most frequently had 0 aggressive thoughts and feelings per day.

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1. Introduction

Most people experience some form of anger. Respondent and operant behaviors occurring during anger vary from person to person. The past interactions and current context with the environment will likely influence the relationship between the respondent and operant behaviors of anger. For example, anger may function as an establishing operation (Michael, 1993), or it may evoke behavioral outcomes that produce (a) health problems such as elevated blood pressure or increased heart rate (Sharkin, 1988), and (b) social concerns such as verbal outbursts, physical aggression, and destruction of property. Discovering measurably effective ways for counteracting anger with more productive behaviors, thoughts, and feelings has an appeal for treatment and applied research.

Precision teachers have an over 35-year history of experimental research and demonstrations that report measurably effective academic instruction (Binder, 1988; Binder & Watkins, 1989; Lindsley, 1971, 1990). Moreover, precision teachers also have a history of developing socially important non-academic behaviors, for example, applied strategies that encourage self-observation and recording of "inner behaviors".

Inner behaviors include the thoughts or feelings that an individual can observe. We name these inner operant behaviors, and respondent smooth muscle and gland responses, emotions (Skinner, 1953, 1957). This broad definition of inner behavior enables an individual to pinpoint thoughts or feelings and self-record their frequency of occurrence. Precision teachers display these counts of inner behavior on Standard Celeration Charts (Pennypacker, Koenig, & Lindsley, 1972).

Creating a visual record of inner behaviors from continuous self-observations and self-recordings permits an evaluation of the effectiveness of an intervention. A growing literature from precision teachers experimenting with inner behaviors may shed light, and contribute to the knowledge we have of "emotional harmony". For instance, Dean (1973) taught student nurses to count and chart positive and negative thoughts and feelings as they rotated hospital departments during their nursing practicum. The students then consulted their Standard Celeration Charts to determine the positive and negative thoughts and feelings associated with each hospital setting. These student nurses used their self-observations and self-recordings to facilitate the selection of a department for specialization.

Calkin (1981) performed an experiment on herself using daily counts of positive and negative inner behaviors. In her response class of negative inner behaviors, she included feelings that represented inadequacy, insecurity, and dependence. She counted thoughts that contained similar notions but without a physical feeling. Research has demonstrated that self-recording alone can reduce problem behaviors (Hughes & Boyle, 1991), but Calkin found that her negative inner behaviors were unaffected by self-initiated procedures. Reading lists of positive statements, not reviewing lists of negative statements, thought substitution, and even visits to a psychologist did not affect the negative inner behaviors (Calkin, 1981).

Calkin (1981) surmised that because daily, 1-minute timings have proven effective in accelerating academic behavior, counting positive thoughts for 1-minute a day might have similar beneficial effects. Her hunch proved correct and she decelerated her daily

negative thoughts and feelings while concomitantly increasing her daily positive thoughts and feelings. Calkin (1992) collected projects of 45 people who self-recorded inner behaviors, 35 of whom used the 1-minute counting procedure as Calkin did earlier (cf. Calkin, 1981). Calkin (1992) discovered that people can reliably count and chart inner behaviors, and affect a wide variety of thoughts and feelings including confidence, frustration, indecisiveness, and self-evaluations of work ethic, child rearing and interpersonal relationship abilities.

Other studies support the findings by Calkin (1981, 1992) that people can count, chart and affect inner behaviors through the use of the 1-minute counting procedure. These studies span age level, socioeconomic class, gender, and selected inner behaviors. Cooper (1991) used the 1-minute timing to effect destructive and loving thoughts and feelings. Kubina, Haertel, and Cooper (1994) demonstrated the effectiveness of senior citizens using 1-minute counts to effect depression, loneliness and other negative inner behaviors. Judy, Malanga, Seevers, and Cooper (1997) extended the use of the 1-minute counting procedure to using encouraging self-statements on the daily frequency of forgetfulness. Fletcher, Kubina, and Cooper (1998) found that 1-minute counts effect "can't do", "can do", and self-worth feelings and thoughts.

In the light of the many positive and beneficial effects of the 1-minute counting procedure, the first author determined that he would intervene on his experience of anger. This gave an opportunity to test and systematically extend the 1-minute counting procedure. Since anger has multiple meanings for people, we pinpointed one aspect of anger: aggressive thoughts and feelings. The following study evaluates the effects of 1-minute and six 10-second distributed daily counts of non-aggressive thoughts and feelings self-reported by the experimenter. The aim was to reduce self-reported aggressive thoughts and feelings.

2. Method

2.1. Participant

Douglas Kostewicz, the first author, served as the participant in this self-experiment. We wrote the method section in first person to emphasize that the intervention effects and procedures occurred exclusively with the first author. The second and third authors served as mentors to review data and give procedural suggestions to the first author.

At the beginning of the self-experiment, I described myself as a 23-year-old graduate student with a history of anger, accompanied by aggressive thoughts and feelings. I experienced high levels of stress both at and away from home as a graduate student enrolled for many credit hours each quarter, held a 20 h per week graduate research position, and had a thesis to write. The stress in my life sometimes turned into anger and impatience with other people and myself. I do not have a problem controlling aggression toward others. I do, however, have an extensive history of rampant aggressive thoughts and feelings. I have trouble relaxing when I experience many aggressive thoughts and feelings. These thoughts and feelings presented a continuing

problem for me. My inability to control these events made me a suitable, if not a prime, candidate for this self-experiment.

2.2. Setting

I counted my aggressive thoughts and feelings in all settings and situations when they occurred, for example, at home, work, school, recreation, and in the car.

2.3. Defining and counting aggressive thoughts and feelings (*dependent variables*)

I maintained a count of the number of aggressive thoughts and feelings per 24-h. An aggressive thought consisted of a statement I directed at others, but made covertly. These thoughts included statements such as: "I hate you; I want to hurt you; I want to make you feel pain". I defined aggressive feelings as any urge or physical sensation to cause pain in others, inanimate objects, or to myself.

I used a small wrist counter, similar to a golf score counter, to record my daily 24-h counts of aggressive thoughts and feelings. Lindsley (1968) found this type of wrist counter reliable and durable. For each occurrence of an aggressive thought or feeling, I pushed a button on the side of the wrist counter to increase by one the number on the wrist counter. My wrist counter accommodated a total of 99 counts. I operated the knobs on the front of the wrist counter at the end of each 24-h counting time to reset the count to zero.

2.4. Defining and counting non-aggressive thoughts (*independent variable*)

The independent variables consisted of two separate counting times for thinking non-aggressive thoughts. Non-aggressive thoughts occurred when I thought statements such as: "I will help people; Hurting others is wrong; Breaking things is not good". I also counted imagery such as imagining myself walking away from problems, not fighting back, helping others, avoiding conflicts, and other positive thoughts.

In two separate conditions of the experiment, I counted and recorded as many non-aggressive thoughts as I could make during daily 1-minute counting times, or during six daily 10-second distributed counting times. I used a pen and paper to mark tallies of non-aggressive thoughts as they occurred during the 1-minute counting times, and during the 10-second distributed counting times. I used an electronic countdown timer to signal the 1-minute and the 10-second counting times.

I transcribed all daily counts of aggressive thoughts and feelings and non-aggressive thoughts to a data sheet. In addition, I displayed these counts on a Standard Celeration Chart (Pennypacker et al., 1972).

2.5. Experimental design

I used a single-subject reversal design (A, B, C, B, C, A) to analyze the effects of daily counting times for non-aggressive thoughts, on the daily frequency of aggressive thoughts and feelings. This design used a baseline condition, i.e., A, conditions that

reversed the 1-minute counting time, i.e., B, with the six distributed 10-second counting times, i.e., C, and a return to the baseline condition. A dynamic experimental design guided my experimental decision making, grounding the decision making on the data as the project continued. Adding the use of the six distributed 10-second counting times as a third condition, i.e., the C condition, of the study illustrates this dynamic decision making.

2.6. Procedure

2.6.1. Baseline

For six weeks of baseline, I recorded all occurrences of aggressive thoughts and feelings from 12 a.m. one day to 12 a.m. the next day on the wrist counter. Usually, I transcribed the total daily count to a data sheet when the counting ended at 12 a.m. Then, I displayed that datum on a Standard Celeration Chart. The Baseline continued for six weeks.

2.6.2. Daily 1-minute counting times

I continued with the baseline procedures during this condition except that I added a daily 1-minute counting time to tally non-aggressive thoughts. This phase also continued for six weeks. During these 1-minute counting times, I thought and tallied as many non-aggressive thoughts as I could. Duplicate non-aggressive thoughts received only one count per counting time. I did, however, count the occurrence of that duplicate non-aggressive thought during another counting time. This counting procedure makes an important distinction, because I did not just repeat the same non-aggressive thought over and over to produce a high frequency of non-aggressive thoughts.

2.6.3. Six distributed daily 10-second counting times

The distributed condition used identical procedures as the daily 1-minute counting times, except that instead of using a continuous 1-minute counting time, I arranged to use six 10-second counting times distributed throughout the day. The approximate times of 10:30 a.m., 12:30 p.m., 2:30 p.m., 5:30 p.m., 7:30 p.m., and 10:30 p.m. provided the opportunity for each of the 10-second counting times.

3. Results

We used graphic presentations associated with precision teaching to present our results (Lindsley, 1972, 1990, 1992; Binder, 1996). All data appear on Standard Celeration Charts (Pennypacker et al., 1972), providing a standard display of frequency as count per minute. In this study, the standard celeration chart displayed the number of non-aggressive thoughts per 1-minute or 10-second counting time on the upper half of the chart. In both conditions the "dots" graphically display the non-aggressive thoughts and feelings. In the 10-second counting time conditions vertically "stacked" data appear in columns of 3, 4, 5, and 6. The occurrence of unequal stacked

columns happened because although Doug always did six distributed counts, some of those counts were the same and the computer placed one dot in front of another (e.g., 2, 3, 3, 4, 5, 6 produces a stacked column of 5 vertical dots). The numbers of aggressive thoughts and feelings per 24-h counting time appear on the bottom half of the chart represented by "X's".

The dashed horizontal line on line 1 of the chart indicates the counting times for the daily 1-minute timings (i.e., the counting period floors). The dashed horizontal lines across the frequency line 6 on the chart show the 10-second counting times (i.e., one 10 second occurs 6 times per minute). Placing a data point below the counting period floor shows the convention for displaying counts of zero. The only counts of zero occurred with the aggressive thoughts and feelings in the 24-h counting time. Figs. 1 and 2 present the data described below.

Doug, the first author, recorded a total of 356 aggressive thoughts and feelings during the initial baseline condition, Before (A1). This data set produced a median score of 6 aggressive thoughts and feelings per 24 h, (i.e., daily) with a frequency spread from 2 to 34 occurrences per 24 h.

The frequency of aggressive thoughts and feelings during the condition using a daily 1-minute count of non-aggressive thoughts and feelings remained essentially the same as the counts reported for the initial baseline. While doing the daily 1-minute counts of non-aggressive thoughts and feelings, a total of 391 recorded aggressive thoughts

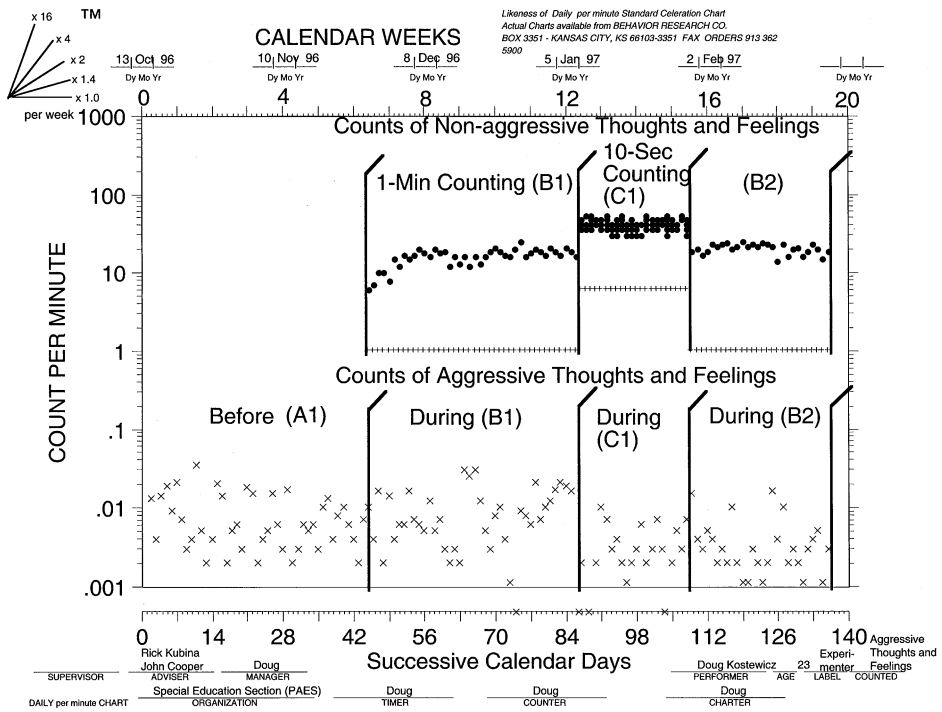

Fig. 1. Standard Celeration Charts displaying the daily counts of non-aggressive thoughts and feelings.

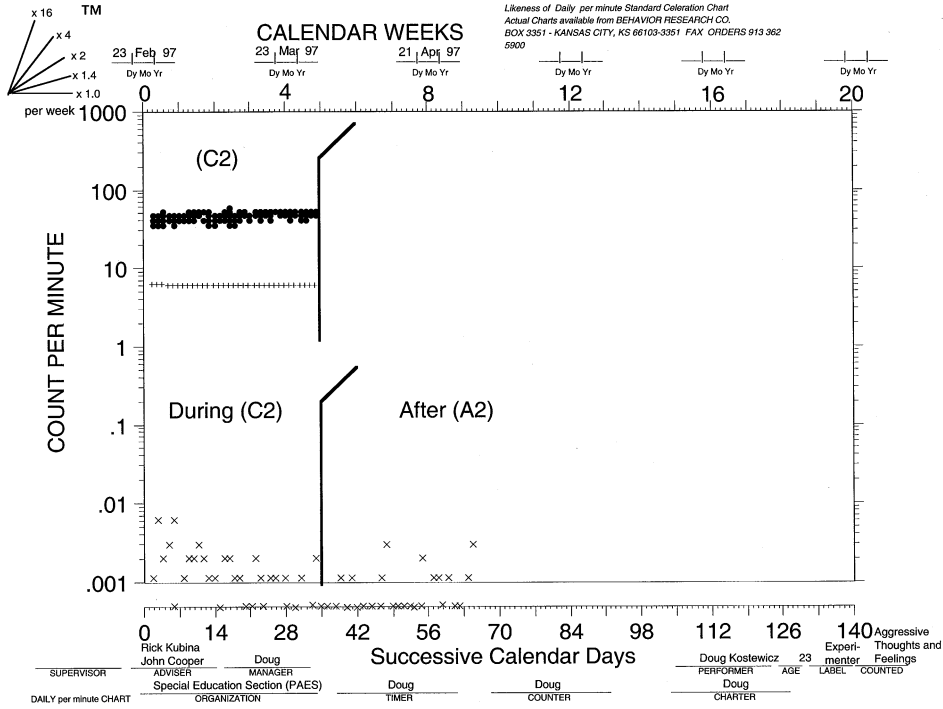

Fig. 2. Standard Celeration Charts displaying the daily counts of aggressive thoughts and feelings.

and feelings produced a median of 7 occurrences per 24 h, with a frequency spread from 0 to 33 aggressive occurrences per 24 h.

We observed an immediate jump down in frequency of aggressive thoughts and feelings with the introduction of a distributed series of daily six 10-second counts of non-aggressive thoughts and feelings. Doug recorded a total of 118 aggressive thoughts and feelings during this condition. This condition produced a median score of 3 occurrences per 24 h and a frequency spread of 0 to 10 aggressive occurrences per 24 h.

The occurrences of aggressive thoughts and feelings produced two separate data trends when we reintroduced the daily 1-minute count of non-aggressive thoughts and feelings. The first datum point in this condition started at approximately the same frequency as occurred at the end of the preceding distributed counting procedure. The first 16 data points after the reintroduction of the daily 1-minute count produced a gradual deceleration of the frequency of aggressive thoughts and feelings. The second trend started with a large jump up in frequency at the 18th data point, then continued with another gradual deceleration of the frequency of aggressive thoughts and feelings.

Aggressive thoughts and feelings typically did not occur by the end of the second distributed 10-second counting procedure, and during the final baseline condition. Doug reported a total of 54 aggressive thoughts and feelings during the distributed

counting procedure with a median score of 1 per 24 h and a frequency spread of 0 to 6 occurrences of aggressive thoughts and feelings per day. During the final return to baseline condition, Doug had 16 days of no occurrences of aggressive thoughts and feelings, 7 days with only 1 occurrence, and 3 days of frequency jump ups (e.g., spikes on the chart).

4. Discussion

This self-experiment showed: (a) a lower frequency of aggressive thoughts and feelings during the daily distributed counts of non-aggressive thoughts and feelings than in the absence of this condition, (b) a maintenance of improved inner behaviors, and (c) a replication of response patterns as reported by other experimenters (Calkin, 1981, 1992; Cooper, 1991; Conser, 1981; Duncan, 1971; Judy et al., 1997; Kubina et al., 1994; McCrudden, 1989). In addition, this self-experiment emphasized the importance of an apparently effective treatment method and a demonstration of improving troublesome inner behavior. Our results suggest a possible functional relationship between the daily distributed six 10-second counts of non-aggressive thoughts and feelings and the occurrences of aggressive thoughts and feelings.

With self-recording, Doug, the participant, noticed the environmental events that commonly evoked these troublesome behaviors (e.g., football games, sickness, personal problems). Doug reported that he found it difficult before self-recording to identify these environmental triggers for aggressive inner behaviors. Doug's awareness of such environmental triggers did not reduce the occurrences of his aggressive thoughts and feelings. He noticed the problem more vividly. Other researchers (Calkin, 1981, 1992; Cooper, 1991; Judy et al., 1997) who investigated inner behaviors have reported similar outcomes (i.e., self-recording alone did not improve inner behaviors).

The daily distributed six 10-second counts of non-aggressive thoughts and feelings correlated with pronounced reduction of aggressive thoughts and feelings. Doug believed that these distributed counting times helped him to relax often, and to think non-aggressive thoughts. Instead of counting non-aggressive thoughts and feelings only during a 1-minute counting time once a day, the distributed counting times gave Doug quick updates on non-aggressive thoughts six times, spread evenly throughout the day. Doug believed that the frequent updates on non-aggressive thoughts accounted for its effectiveness.

Research on inner behaviors has inherent limitations even with results that systematically replicate other research. As with any self-management procedure, the participant must learn the process for monitoring, giving consequences, and other aspects of managing problem behaviors. Doug found the self-recording procedures, and also the 1-minute and 10-second counting procedures, easy to learn. Some individuals will likely find self-recording difficult to maintain when used with long duration counting times (e.g., for hours) or for many sessions. Most individuals doing self-recording will need support from others, or use, as Doug did, already known self-management techniques to maintain counting. Further, Doug often put the wrist counter and

count-down timer near his wallet and keys, and wrote notes on his "to-do" list as a daily response prompt to count. Doug also recommended using a wristwatch with a countdown timer for timing the 10-second counting periods. The wristwatch provides a portable, non-obtrusive count-down timer.

The absence of assessments to determine the validity (i.e., accuracy) and/or believability (i.e., interobserver agreement) of the data transduced (Johnston & Pennypacker, 1993) is another major limitation of using inner behavior as a dependent variable. Currently, science has not developed assessment techniques for determining the accuracy of self-recorded occurrences of inner behavior such as thoughts and feelings. Scientists will always find the assessment of believability unlikely. Most scientists who use "truth by agreement" for believability — as the major consideration in evaluating the "goodness" of the data will not find creditability with our self-experiment. The self-recorded events reported in this experiment will likely have less creditability than if we used an indirect measurement of accompanying public aggression (e.g., vocal statements, fighting) so we could have interobserver agreement measures to enhance believability. Doug did not have a problem with overt aggression, however, he had a problem with thoughts and feelings.

Even though we could not assess the accuracy or believability of Doug's self-recording, we did systematically replicate procedures used by other experimenters, and produced similar outcomes (Calkin, 1981, 1992; Cooper, 1991; Kubina et al., 1994; Judy et al., 1997). We believe that the limitations of assessments for accuracy and believability should not be viewed as a major reason for not experimenting with inner behaviors. Most physical sciences do not use "truth by agreement" to assess the goodness of their data, and they may often assume the accuracy of measurement. These scientists, instead, use direct and systematic replications of the same study by different experimenters, in different laboratories, to confirm the outcomes. The researchers and therapists who directly study inner behaviors can apply experimental replication logic to evaluate the "goodness" of data. Hundreds of cases build this inductively based science.

In addition to the inherent limitations associated with research on inner behaviors, this study has other procedural limitations. We did not complete extended maintenance assessments because of the low frequency of aggressive thoughts and feelings during the second baseline phase. Extended probes for maintenance of the low frequencies of aggressive thoughts and feelings would have assisted in checking for further maintenance.

Defining and counting thoughts and feelings as a single response class identifies another procedural limitation. At a surface level of understanding, both thoughts and feelings appear to belong to the same response class. Both occur at the private level. Both relate to a private stimulus, or a response whether aggressive, non-aggressive, happy, or sad. We defined these thoughts and feelings, however, as different response classes. We defined thoughts as self-statements and feelings as an overall sense or imagery of a personal representation of that feeling. We could have counted thoughts and feelings as separate units of analysis, as separate dependent and independent variables. Our treatment package confounded the data because we treated thoughts and feelings as a single response class.

We believe also that counting all day non-aggressive inner behaviors in addition to counting all day aggressive inner thoughts and feelings would have contributed greatly to our data display.

An apparent artificial ceiling on the occurrences of non-aggressive thoughts and feelings during the 1-minute counting procedure indicates another possible procedural limitation. The use of a response-prompt card containing non-aggressive statements may have increased the frequency of non-aggressive thoughts and feelings, and allowed Doug to use the statements that seem most helpful to him.

Few researchers or therapists have applied the combinations of self-recording inner behavior, self-charting those data on the Standard Celeration Chart, and the daily 1-minute or distributed counting procedures. These treatment packages appear to have potential for increased application with public or private problem behaviors. The counting and charting procedure conforms easily to any behavior. Certainly, therapists or researchers could consider replicating this study with younger persons, such as elementary or high school students, who experience feelings of inferiority, depression, or aggression.

We give one final and significant aspect of this experiment in Doug's own words. "The distributed counting procedure was the most helpful aspect of my self-experiment. During these phases, unlike the 1-minute counting phases, the many small counts 'reminded' me more often to relax and think non-aggressive thoughts. Instead of only reminding me once a day, these counts gave me quick updates six times, spread evenly throughout the day. The frequent 'reminders' that occurred with the distributed counts are what I perceive as the major reason for the effectiveness of the distributed 10-second counting procedure".

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