

Self-Recording of Everyday Life Events: Origins, Types, and Uses

Ladd Wheeler and Harry T. Reis

University of Rochester

ABSTRACT In this article we review the history of the scientific use of self-recording and conclude that there are three basic methods: (a) interval-contingent, in which respondents report on their experiences at regular intervals, (b) signal-contingent, in which respondents report when signaled, and (c) event-contingent, in which respondents report whenever a defined event occurs. We then discuss the relative merits of these techniques for answering different questions. Finally, we note that self-recording of small events is a departure from the science of psychology as typically practiced, requiring an acceptance of reality as defined by respondents.

History is always informative, usually fascinating, and often useful. Accordingly, our first inclination when researching a topic is to look to the past. In this article, we are concerned with the history of the self-recording of everyday life events. Our use of the term "self-recording of everyday life events" refers to the ongoing recording of any kind of personal experience. One-time measures such as personality and attitude questionnaires and projective tests, meant to measure enduring characteristics, are not included. The use of these self-recording methods has increased significantly since the last half of the 1970s (Larsen, 1990). Although such methods have been largely ignored in the literature, new treatments of research methodology will have to be considered incom-

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plete if self-recording is not included. The research reported in this special issue testifies to the growth and potential of these methods, and we need to develop a historical perspective and a vocabulary for describing them.

The social sciences have a long and well-established tradition of studying major life events. Although there can be little doubt that such events are significant, it is equally true that the recurrent "little experiences" of everyday life fill most of our waking time and occupy the vast majority of our conscious attention. Moreover, these small events cannot be studied with ecological validity in the laboratory. As a result, researchers are increasingly developing and improving methods for self-recording of everyday events.

There is in fact a noble history of studying these events. The study of small events, considered broadly, began long ago in many countries as social surveys reporting on the living conditions of the working class. Although the first question was how people spent their money, it led to the question of how people spend their time (cf. Bevans, 1913). After World War II, the scope and number of time-budget studies grew tremendously as the use of leisure time became an important topic the world over. A peak of sorts was reached with the Multinational Comparative Time-Budget Research Project (Szalai, 1972), a 12-country study of what (and with what else simultaneously) people did during the day, reported for how long, how often, at what time, in what order, where, and with whom. In "fresh interviews," respondents were asked to reconstruct the previous day. In "diary-founded interviews," they reconstructed their activities with the aid of a diary. Unfortunately, psychological questions were not asked of the respondents or of the data.

In psychology itself, the rise of behaviorism created a moratorium on the study of inner experience for the approximate period 1920 to 1960, and it was not until 1967 that the theme of the American Psychological Association convention was "The Unfinished Business of William James." This is important to the history of self-recording because much of what we find theoretically interesting is not directly observable. Books by Tomkins (1962) and Singer (1966) were signs of renewed interest in inner experience. The Nowlis Mood Adjective Check List (MACL; Nowlis, 1965) appeared, and Thayer (1967) used a modification of the MACL to study activation at different times of the day. Nowlis and Cohen (1968) had students complete the MACL at least

once an hour, along with activities, on an exam day. Researchers saw that the decline of strict behaviorism allowed them to begin asking respondents how they felt in naturally occurring situations; it was no longer necessary to control the stimulus situation or to limit data to observable events.

Contributions from Behaviorism

At the same time, even behaviorists were breaking ranks. In an important article, Homme (1965) introduced the term "coverant," which is a covert operant. In the first issue of the *Journal of Applied Behavioral Analysis*, Lindsley (1968) described a reliable wrist counter for recording behavioral rates; it was a \$6.95 golf counter from Hoffritz, and one could remove the golf-related printing from the face with jeweler's polish in order to produce a more attractive piece of jewelry. Lindsley described the durability of three wrist counters he had been wearing for some time. This Skinnerian-based movement, which had many enthusiastic disciples, did not limit itself to observable acts and could include thoughts and impulses. The idea was that the mere act of recording the behavior changes its frequency in a desirable direction, increasing the frequency of positively valued behavior, such as smiling at others, and decreasing the frequency of negatively valued behavior, such as cigarette smoking. Self-monitoring (as this method was often called) was used primarily for behavioral modification rather than for data collection because of its reactivity. Duncan (1969) provided an informative discussion and demonstration of this technique.

Another method of self-monitoring, in addition to frequency counting, is the behavioral diary. Target behaviors or changes in feelings or thoughts are self-recorded. In addition, circumstances surrounding these events are also recorded. Behavioral diaries may be unstructured or structured, as in Knox's (1972) work on marital interactions: ". . . [T]he purpose of these diaries is to select target behaviors and to determine their controlling variables, thereby facilitating choice of treatment strategies. Once the target behaviors have been selected and a treatment strategy proposed, the target behaviors will continue to be monitored during baseline and intervention to evaluate the success or failure of the treatment program" (Nelson, 1977, p. 268).

A behavioral approach to depression led to research by Lewinsohn and Libet (1972) and Lewinsohn and Graf (1973), who correlated the

number of pleasant activities and mood on a daily basis, supporting the behavioral view that positive reinforcement (engaging in pleasant activities) reduces depression. Later, Lewinsohn and his associates began to include unpleasant as well as pleasant events in their research, using daily self-monitoring (Grosscup & Lewinsohn, 1980; Lewinsohn & Amenson, 1978; Lewinsohn & Talkington, 1979).

Contributions from Behavioral Medicine

When Holmes and Rahe (1967) published their social readjustment rating scale, they gave credit to Adolph Meyer (cf. Lief, 1948) for inventing the "life chart," a device for organizing medical data as a dynamic biography showing changes of habitat, births and deaths, graduations, changes, failures, various jobs, and so forth. Subsequent work with the life chart in Harold G. Wolff's laboratory at Cornell University Medical College provided convincing evidence that "stressful" life events played a causative role in the natural history of many diseases, leading Holmes and Rahe (1967) to develop the social readjustment rating scale. The Holmes and Rahe scale, and variations of it, dominated stress research for many years, despite evidence that people do not remember life changes very well over longer periods of time (Jenkins, Hurst, & Rose, 1979) and do not always agree with their spouses about the occurrence of life changes (Yager, Grant, Sweetwood, & Gerst, 1981), and despite very modest relationships between life events and illness.

In the late 1970s, Lazarus and his associates became convinced that to obtain markers of the stress process, researchers had to know (a) the content of daily stressful encounters as appraised by the individual, (b) the subjective intensity of each stressful reaction, and (c) the fluctuations in content and intensity of stress reactions over time. They developed the Hassles Scale and the Uplifts Scale and compared them to the Holmes and Rahe scale (Kanner, Coyne, Schaefer, & Lazarus, 1981), concluding that the Hassles Scale, given monthly for 9 months, was better at predicting psychological symptoms and somatic health status. A shorter, combined Hassles and Uplifts Scale was developed later and was administered daily (DeLongis, Folkman, & Lazarus, 1988). Related research on concurrent and subsequent effects of daily stressful events was reported by Caspi, Bolger, and Eckenrode (1987), Eckenrode (1984), Rehm (1978), and Stone and Neale (1984).

Contributions from Industrial/Organizational Psychology

In the 1950s and 1960s, industrial/organizational psychologists began using self-recording techniques. Activity sampling or work sampling by outside observers is an old tradition in the workplace, dating back to Frederick Taylor (1911) and his "efficiency experts." As an extension of traditional activity sampling, Burns (1954), who was concerned with the direction of communication in a departmental executive group, asked subjects to record all communications within the group whenever they occurred, indicating the initiator and the recipient of the communication. The recording forms were mailed to the researcher daily.

Hinrichs (1964) was the first to ask subjects to self-record at random times. A computer selected five random data points for each of 11 workdays. Respondents were given the daily schedule and a pocket alarm watch. When they completed a report about any communication activity they were engaged in, they set the watch for the next designated time. Hinrichs gave credit to the Case Institute of Technology, Operations Research Group (1958) for pioneering the method.

Self-recording at random intervals entered academic psychology about 20 years later through the independent contributions of M. Csikszentmihalyi, Larson, and Prescott (1977), Hurlburt (1979), and Klinger (1978a, 1978b). Csikszentmihalyi had been studying flow¹ with a diary technique in which subjects reported at the end of the day on what they had been doing and feeling at randomly selected times during the day. This was an obvious burden on the subjects' memory, and when Csikszentmihalyi's research group was trying to find some way to tap into ongoing experience, Prescott suggested using the beepers that MDs carried. Csikszentmihalyi found the data on people's day-to-day activities so interesting that it took him 10 years to return to the study of flow (personal communication, September 1990).

Hurlburt had worked as an engineer prior to psychology graduate school and had read an article in *Fortune* magazine stating that the best way to understand management would be to have secretaries look in on their bosses at random intervals and note what was happening. Later

1. Flow is that state between boredom and anxiety when challenges and skills are in balance and at a relatively high level (see M. Csikszentmihalyi & I. Csikszentmihalyi, 1988).

influenced by Barker's writings (Barker, 1963; Barker & Wright, 1951), as part of his 1976 dissertation research at the University of North Dakota. Hurlburt asked subjects to carry an electronic random interval generator (designed and built by Hurlburt) connected to a hearing-aid earphone. Ten subjects self-recorded for 3 days the thought that was occurring when signaled, what they were doing, and the time. Because most of the subjects were surprised at the results, Hurlburt concluded that people are not good estimators of the relative frequency of their thought classes (one subject said that he thought about sex 40% of his waking life, but that the signal never caught him).

Klinger was using laboratory methods to sample thought content at the University of Minnesota. Morris, and immediately recognized the possibilities of signal-contingent self-reporting when he discovered dissertation research being done by Lorents (1971). Lorents, working in the industrial/organizational tradition, used a beeper to sample faculty activities at the University of Minnesota, Minneapolis. Klinger then used this same beeper method to access "respondent thought" (as opposed to operant thought)—fantasy, daydreaming, reverie, mind wandering, and so forth. Upon being beeped, respondents provided a narrative description of thought content, followed by ratings on a number of other variables concerning the thought.

Another approach to studying small events appeared at about the same time, although it was anticipated by Burns (1954). In this method, using the Rochester Interaction Record (RIR; Wheeler & Nezlak, 1977), subjects were instructed to record various pieces of information about events (social interactions) whenever they occurred.² The authors were aware of the earlier behavioral modification approach of counting events; they enlarged the approach by using fixed-format diaries rather than wrist counters.³ This method is used to measure experiences while they are still fresh in people's minds. The event measured does not have to concern social interactions, of course, and Wheeler and Miyake (1990), for example, have used event diaries to measure social com-

2. The stimulus for this work was the belief that retrospective accounts on global questionnaires were likely to possess significant distortions and that the field was ready for a more objective technique for data gathering.
3. Wheeler and Nezlak (1977) were *not* aware that the behavioral modifiers had also used fixed-format diaries. Had they been, they might have dismissed the idea as unmodeled.

parisons. The advantage of this method is that it measures experience as it occurs, thus providing a more immediate, and accurate, record of the experience. The Iowa Communication Record (ICR; Duck, in press; Duck, Rutt, Hurst, & Strejc, in press) is a similar instrument, which emphasizes the conversation content of the interaction, and provides subjective measures of its quality, purpose, and impact on the relationship. Although in the present collection of articles neither the RIR nor ICR recording method was used to measure specified events and is not mentioned in Stone, Kessler, and Haythornthwaite's (1991) discussion of methodological considerations, both methods are used widely and have distinct advantages and disadvantages.

Different Self-Report Methods

Let us summarize this brief historical review by categorizing and describing the three methods that are in current use for collecting self-reports of small events. By naming them we can be more thorough in planning and more economical in our description of research. Outlining them should also help researchers choose the method that best fits the questions they seek to address. These methods fall into three general categories:

(1) *Interval-contingent recording.* This is the oldest method of daily event self-recording. Participants report on their experiences at some regular, predetermined interval. Typically, these intervals represent theoretically or logically meaningful units of time, e.g., at the end of each day or after every meal. These units are used because the reports usually refer to what has happened since the previous interval, although they may also refer to what one is feeling at the moment. Examples of this method from the present special issue are the articles by Larsen and Kasimatis (1991), Zautra, Finch, Reich, and Guarnaccia (1991), Bolger and Schilling (1991), Campbell, Chew, and Scratchley (1991), and Emmons (1991).

(2) *Signal-contingent recording.* In this paradigm, subjects are instructed to describe their experiences whenever signaled by the researcher. Signal intervals can be fixed, random, or a combination of both (in which signals are randomly generated within fixed blocks of time). An example of the latter in the present volume is the article by Wong and M. Csikszentmihalyi (1991). Note that phone interviews,

highly recommended by Stone, Kessler, and Haythornthwaite (1991), could be either interval-contingent or signal-contingent, depending upon the schedule of calls.

(3) *Event-contingent recording*. This method requires a report every time an event meeting a preestablished definition has occurred. Although none of the articles in this special issue use event-contingent recording, this method has been used widely for the study of social interaction (Duck et al., in press; Nezlek, Wheeler, & Reis, 1983; Reis & Wheeler, 1991). Of course, the events to be sampled might be anything: stressful events or hassles; strivings; use of drugs or alcohol; headaches; or instances of sexual or racial harassment. The key here is the unambiguous definition of events requiring a report, as well as the timeliness of reporting following the event itself.

We might briefly note that Klingner (1971, p. 52) anticipated these three classifications by noting three distinct methods of obtaining dream reports. The first method was to ask subjects in the morning what they had dreamed about (interval-contingent method). The second method, employed between approximately 1893 and 1930 (Berrien, 1930; Calkins, 1893), was to wake subjects at predetermined times during the night and question them about their dreams (signal-contingent method). The third method (event-contingent method), based on observations using the second method that dreaming was related to REM and EEGs, was to wake subjects when these indicators suggested that dreaming was occurring (Aserinsky & Kleitman, 1953).

Comparison of Methods

Interval-contingent methods are usually chosen when researchers want to study the prevalence of certain events in daily life (e.g., stressors), or when they wish to characterize everyday experience across some general time period (e.g., mean and range of mood states over 2 weeks). One major disadvantage of this method is that the recording tends to be removed in time from the event in question, adding the possibility of retrospection bias, a source of error that diary studies are expressly intended to minimize. The social cognition literature is replete with evidence that retrospective judgments may be influenced disproportionately by events that are accessible to memory, such as by their temporal recency or their emotional significance (Kahneman & Tversky, 1982; Schwarz, 1990). "What was your mood today?" may get a response that

completely ignores a morning funk. This point is demonstrated nicely in a study by Hedges, Jandorf, and Stone (1985). They had subjects report their momentary mood four times a day: 9 A.M., 1 P.M., 4 P.M., and 7 P.M. Then, at around 10 P.M., the same subjects were asked to report their overall mood for that day. Peak momentary mood reports resembled overall daily moods more than the daily average did, computed over the four momentary reports. This implies that, when trying to summarize their day, subjects were more swayed by their extreme momentary moods than by true averages of ongoing moods.

The extent to which this is a problem depends on the nature of the phenomenon being rated (i.e., whether it is easily remembered or susceptible to modification) and the length of the interval between the event and its description. Thus, the more often ratings are provided, the less substantial this problem may be. A major advantage of this method, on the other hand, is that it is straightforward and not too demanding. All the respondent has to do is to remember to complete the instrument at the appointed time. Also, if equal intervals of time are used, a time-series analysis can be performed, which is not possible with signal-contingent or event-contingent methods unless data are aggregated over equal intervals.

The signal-contingent and event-contingent methods require recording that is very close in time to the event, reducing the subjects' likelihood of forgetting or reappraisal, which, in our opinion, is a major advantage over the interval-contingent method. Furthermore, if time intervals in the signal-contingent method are selected randomly, the possibility that systematic bias is introduced by assessing behavior or feelings at fixed points in time is eliminated. (For example, people may always feel lethargic after dinner or before going to bed.) However, these methods have other problems of their own. For one, both can be intrusive. Having to complete a questionnaire, however brief, at a party is disruptive. Furthermore, the rarer the event in question, the less useful the signal-contingent method—there isn't much chance that the signal and the event will coincide. Stone et al. (1991) note that even with such a common event as students studying, Wong and M. Csikszentmihalyi (1991) had only three or four study episodes per student. Estimates of concentration while studying, for example, may be unreliable or nonrepresentative when based on so few data points.

Even more important, signal-contingent recording renders infeasible the study of variation within a class of relatively rare events. If one

wanted to compare interactions with best friends and romantic partners, it is unlikely that more than a few episodes would be obtained from random signals. Or, alternatively, data would have to be collected for a prohibitively long time before an acceptable data base was achieved. If one wanted to study even rarer events—for example, sexual fantasies—it seems unlikely that signal-contingent sampling would produce a sufficient number of episodes to permit reasonable generalizability. Focusing on the events directly interesting to researchers, by using event-contingent rather than signal-contingent self-recording, is in this instance more efficient. Also, by establishing a data base that includes all relevant events, there is little chance that significant episodes will be omitted because of signaling happenstance.

Event-contingent recording is not as intrusive as signal-contingent recording because subjects are typically instructed to complete the questionnaire as soon as possible after an event occurs, and no one has to know about this but themselves. Signals, even if they are vibratory rather than auditory, are bound to disrupt the ongoing activity somewhat and change the behavior of the recipient (who is likely to note the time and turn off the signal) in a noticeable way.

Event-contingent recording has been criticized on the grounds that it "permits subjects to anticipate many of the behaviors that will be measured, giving rise to a greater possible problem with behavioral reactivity" (Hornuth, 1986, p. 263). This criticism is not limited to this method, however; it applies equally to all self-recording methods that require repeated responding on the same dimensions or scales, since repetition itself, and not the timing of that repetition, is what allows subjects to anticipate the behaviors to be measured. Although participants in a signal-contingent study may not be able to predict the exact moment at which they will be notified, the relative frequency of signals per day, as well as their dispersion, facilitates awareness of the assessment process and anticipation of the behaviors to be described.

Event-contingent sampling is not appropriate for all research problems, however. If one wanted to compare the relative prevalence or characteristics of many different sorts of events—such as studying, partying, playing sports, talking, engaging in sex, or shopping—signal-contingent sampling would be more practical. To use event-contingent sampling with this example, subjects would have to complete a record whenever they did any of these things, an onerous task. In general, event-contingent sampling is preferable when researchers are interested

only in one or a very limited number of human activities; when these events can be defined clearly for subjects; and when it is important to obtain a large number of events, so that variation within the category may be studied. On the other hand, signal-contingent sampling is likely to be preferable when researchers are interested in the relative distribution of human activity across different domains; and when comparison of different domains is of prime interest.

Two final disadvantages common to all three procedures bear mention. The first is that they are time-consuming and cumbersome for both subjects and researchers. Why not simply ask people to summarize their relevant experiences during a specified time interval on a single questionnaire? The answer, as the articles in this special issue illustrate, concerns the quality of the data and the amount of information a single questionnaire provides. Global reports over extended time periods are subject to substantial distortion and therefore do not provide as good an indicator of daily life events as do contemporaneous accounts. Moreover, self-recording is rich in detail, permitting sophisticated analyses of variations across time and type of activity.

The second disadvantage of the three methods we have discussed is that self-reporting of daily life events may subtly alter subjects' impressions of those events. Self-recording of the sort described in this special issue requires introspection and monitoring of daily life at a level to which many subjects may be unaccustomed. Over a number of days of study participation, respondents probably begin to observe their own behavior in new ways. Paying closer attention to previously subliminal events may yield different perspectives on the same behaviors, and in some cases may even facilitate behavioral change. For example, a person who becomes aware of how few and unsatisfying the interactions are with his or her spouse might try to improve the relationship. We are aware of no studies on this point, but it clearly warrants attention not only for methodological reasons, but as an interesting phenomenon in its own right.

CONCLUSION

Our hope in delineating these methods is that researchers will recognize the pluses and minuses of the three basic methods of self-recording and thereby choose the best method for the research questions they face. Researchers might even try to phrase their research questions in alter-

nate ways so that any of the methods could be used. A better-informed choice of methods might then be made or, if resources permit, more than one method could be used.

We think that self-recording of small events is a drastic departure from the science of psychology as it has been practiced. We agree with Duck (1991, p. 150) that there are some "radical assumptions that have not yet been fully discussed and understood in the wider scholarly community." There are questions of reliability, validity, and, probably, the nature of reality as we are willing to deal with it. A central part of any discussion of systematic observation methods has always been observer reliability, but how are we to obtain the interjudge reliability of the occurrence of an inner event? Test-retest reliability is problematical because stability or consistency would not be expected of many of the events of interest. The same is true of validity. We go along trusting what subjects say knowing full well that in a laboratory experiment these same subjects will deny having been influenced by an experimental manipulation that has produced a significant *p* value. There are differences between the two situations, to be sure, but these differences haven't been sorted out. We are proceeding primarily on the faith, based upon establishing a relationship conducive to honesty, that our co-investigators or collaborators know their reality at least as well as we do and are willing to disclose it.

Weick (1985), although devoting little space to self-recording in discussing observational techniques, was exquisitely aware of this issue. In his conclusion, he wrote:

The current reexamination of psychological inquiry shows an occasional, if ambivalent, tilt in the direction of naturalistic observation. . . . If social psychologists move toward naturalistic observation, they will have to be careful lest they commit again the same arrogant act they committed in the laboratory when they presumed to know what their subjects were thinking. The arrogance occurs in three steps. (1) The observer treats the observer's version of a participant's life *as* that person's real life. (2) The participant's version of that same life is treated as the subjective view of what "actually" happened. (3) The observer accommodates these two versions by explaining the processes that caused the participant to experience the life (version 2) other than the way it *actually* happened (version 1). Perpetuation of these distortions will get us no closer to accounts that matter and say something. (pp. 624-625)

Whether or not one agrees with these sentiments about arrogance, self-recording as an approach to studying people's lives is, by nature, humble. For "us" to deny "their" reality would be to deny the methodology of self-recording, effectively blinding us to most of those fascinating little events of everyday life.

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Personality and the Problems of Everyday Life: The Role of Neuroticism in Exposure and Reactivity to Daily Stressors

Niall Bolger Elizabeth A. Schilling

University of Denver University of Michigan

ABSTRACT This article investigates mechanisms through which neuroticism leads to distress in daily life. Neuroticism may lead to distress through exposing people to a greater number of stressful events, through increasing their reactivity to those events, or through a mechanism unrelated to environmental events. This article evaluates the relative importance of these three explanations. Subjects were 339 persons who provided daily reports of minor stressful events and mood for 6 weeks. Exposure and reactivity to these minor stressors explained over 40% of the distress difference between high- and low-neuroticism subjects. Reactivity to stressors accounted for twice as much of the distress difference as exposure to stressors. These results suggest that reactions within stressful situations are more important than situation selection in explaining how neuroticism leads to distress in daily life.

Everyone has a unique quota of distress and ill-health. Some people are habitually anxious or sad, whereas others are calm and happy. Some people suffer many physical ailments, whereas others are rarely ill. It is

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