

# QUALITATIVE AND QUANTITATIVE ANALYSES OF HISTORICAL DATA

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■ **Abstract** Although the typical study in psychology involves the quantitative analysis of contemporary research participants, occasionally psychologists will study historical persons or events. Moreover, these historical data may be analyzed using either qualitative or quantitative techniques. After giving examples from the subdisciplines of cognitive, developmental, differential, abnormal, and social psychology, the distinctive methodological features of this approach are outlined. These include both data collection (sampling, unit definition, etc.) and data analysis (both qualitative and quantitative). The discussion then turns to the advantages and disadvantages of this research method. The article closes by presenting the reasons why (a) psychologists will probably continue to use historical data and (b) quantitative analyses may eventually replace qualitative analyses in such applications.

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## INTRODUCTION

Imagine the typical empirical study published in a mainstream psychology journal. Or examine the sample investigations used to illustrate the official APA style in the *Publication Manual of the American Psychological Association* (2001). All of these studies tend to share certain features, two of which I wish to emphasize here.

1. The data collected are inherently quantitative in nature. This attribute holds for both laboratory experiments (e.g., reaction time, error counts, behavior frequencies, and similarity judgments) and correlational studies (e.g., Likert-type ratings on personality inventories or attitude questionnaires). Even when qualitative assessments are included, they are most often secondary to the quantitative assessments. An example is the use of protocol analysis in cognitive psychology (Ericsson & Simon 1984). Moreover, with recent advances in computerized administration of experiments and tests, the data can often be collected so that the participant's response is directly converted into quantitative scores in the investigator's database, all set for subsequent statistical analyses. In a sense, the investigator only knows his or her participants via the numbers they provide for those later statistics.
2. The data collected seldom if ever have any intrinsic importance. The data would not even exist if the researcher had not bothered to design the investigation in the first place. Although occasionally other investigators might ask for copies of the data, such requests are rare and usually reflect the desire to reanalyze the data using some other technique. The data have so little intrinsic value that researchers have to be specifically advised to retain them. "Authors of manuscripts accepted for publication in APA journals are required to have available their raw data throughout the editorial review process and for at least 5 years after the date of publication" (*Publication Manual of the American Psychological Association* 2001, p. 137). It is not surprising that APA authors have to be so admonished. After all, the participants were most likely anonymous animals, children, undergraduates, survey respondents, or other individuals in which the investigator takes no personal interest. Both the participants and the data they provide are merely the means to an end: the testing of nomothetic hypotheses about human thought, affect, or behavior.

In contrast, imagine a totally different type of psychological inquiry. To begin with, the researcher did not actually collect the data, but rather others already carried out the compilation. Even more oddly, these "others" were almost never scientists but rather historians, biographers, or archivists. As a consequence, the data collection was not designed to address some scientific question, but because the information was inherently interesting or valuable. In particular, the data represented what the collectors considered to be worthy of the "historical record." That is, the data concerned events or persons deemed sufficiently significant to deserve preservation in the various annals that define the "memory" of human civilization. Not only are the data to be preserved in perpetuity rather than just for 5 years,

but the data would still exist even if psychology had never emerged as a scientific discipline.

Just as critically, these historical data are almost entirely qualitative in nature. This emphasis is immediately apparent upon reading the history of any major event or the biography of any famous person. Except for a few dates and other numbers scattered here and there, the archival record tends to consist of words: descriptions, narratives, speculations, interpretations, and the like. To be sure, sometimes the historical record may include substantial quantitative information, as is evident in the many and varied compilations of sports statistics (e.g., *The Baseball Encyclopedia* 1996). Even so, historical data seldom come “ready-made” in quantitative form. Consequently, if psychologists want to use this information in a scientific inquiry, they usually have only two somewhat contrasting options: (a) The recorded information can be retained in its original form and then subjected to a qualitative interpretation or (b) the information can be quantified by some objective coding scheme and then subjected to a statistical analysis like the typical data set in psychology.

My goal here is to discuss the qualitative and quantitative analysis of historical data in psychological science. In particular, I (a) give some representative examples of the ways that psychologists have adopted this research strategy, (b) describe the methods unique to these applications, (c) outline the advantages and disadvantages of the general methodology, and (d) speculate on the future utility of the approach in the discipline.

## EXAMPLES

Psychologists have often included informal references to historical events and personalities to illustrate a principle or make an argument (e.g., James 1880). Even so, the first genuine qualitative analyses that were governed by a specified set of methodological rules did not appear until the advent of psychobiography and psychohistory—a development strongly associated with the psychoanalytic movement. In fact, the landmark work of this type was Freud’s (1910/1964) psychoanalytic interpretation of the life and work of Leonardo da Vinci (Elms 1988). Surprisingly, the first quantitative analyses of historical data appeared long before this classic effort. Indeed, such quantitative analyses likely predate any other quantitative methodology in the behavioral sciences. The Belgian mathematician Adolphe Quételet—best known for his introduction of the normal curve and for coining the word “statistics”—published the first bona fide scientific application in 1835. In particular, Quételet took data on the dramas written by eminent French and English playwrights to conduct a quantitative analysis of the relation between age and achievement. Another pioneering inquiry was Francis Galton’s (1869) *Hereditary Genius*, which used biographical data to assess the heritability of intellectual ability via the family pedigree method. To put these dates in perspective, Quételet’s (1968) work appeared a quarter century before Fechner’s classic experimental studies in psychophysics, and Galton’s (1869) book was

published almost a decade before Wilhelm Wundt founded the first laboratory for conducting original research in experimental psychology. Galton's *Hereditary Genius* also appeared five years before he himself introduced questionnaire methods (Galton 1874). Moreover, by the early twentieth century quantitative analyses of historical data had already acquired a special name, historiometry (Woods 1909, 1911; see also Cox 1926; Simonton 1990b).

Since the time of Quételet, Galton, and Freud, psychological analyses of historical data, whether qualitative or quantitative, have attracted psychologists from many subdisciplines. The result is a significant contribution to psychology's store of cumulative knowledge. Below I highlight some of the representative findings in five subdisciplines: cognitive, developmental, differential, abnormal, and social (see also Simonton 1998c, 1999).

## Cognitive Psychology

It is sometimes claimed that cognitive psychologists tend to concentrate on the generic human mind completely divorced from its biographical and historical context (Gardner 1987). Yet that focus has not prevented them from exploiting historical data in their research. For instance, Neisser (1981) directly compared conversations recorded on the White House "Watergate" tapes with John Dean's Senate testimony regarding those conversations in order to learn how memory functions in a naturalistic setting (see also Hirst & Gluck 1999). Another example comes from the extensive literature on problem solving, especially that devoted to the process of scientific discovery. Sometimes the results of laboratory experiments and computer simulations are directly applied to the interpretation of the laboratory notebooks of famous scientists (e.g., Kulkarni & Simon 1988, Tweney 1989). Other times notable scientific discoveries will be replicated in experimental or computer simulations using the same data that inspired the original finding (Bradshaw et al. 1983, Langley et al. 1987).

Finally, I must mention the vast literature on conceptual (or integrative) complexity. Measures used in more conventional investigations (Schroder et al. 1967) were first converted into content-analytical coding schemes that could be applied to almost any historical document (Suedfeld et al. 1992). This enabled researchers to determine how the performance and decision making of historic leaders was determined by their information-processing complexity. The leaders studied have included US presidents (Tetlock 1981b), Canadian prime ministers (Ballard 1983), US senators (Tetlock 1981a, 1983; Tetlock et al. 1984), British parliamentarians (Tetlock 1984), Soviet politicians (Tetlock & Boettger 1989), US Supreme Court Justices (Tetlock et al. 1985), the leaders of various revolutions (Suedfeld & Rank 1976), and even presidents of the American Psychological Association (e.g., Suedfeld 1985).

## Developmental Psychology

As already pointed out, the first historiometric analysis concerned the relation between age and achievement (Quételet 1968). Since then a great many other

investigators have pursued the same research topic (Raskin 1936, Lehman 1953, Dennis 1966, Schulz & Curnow 1988, Ohlsson 1992). As a result, there has now accumulated an imposing corpus of empirical findings (Simonton 1988a) and theoretical models (Simonton 1997a). Moreover, this research tradition has expanded to cover the entire human life span, from birth to death. Thus, at one end of the spectrum, many psychologists have used historical data to study the impact of genetic endowment (Bramwell 1948, Galton 1869, Simonton 1983) as well as the repercussions of specific types of childhood and adolescent experiences, such as birth order (Bliss 1970, Zweigenhaft 1975, Stewart 1991), parental loss (Eisenstadt 1978), role models and mentors (Boring & Boring 1948; Simonton 1977a, 1988b), and education and expertise acquisition (Hayes 1989; Simonton 1991b, 2000a). At the other end are studies that examine the psychological changes that occur in the final years of life (e.g., Suedfeld & Piedrahita 1984, Simonton 1989b, Lindauer 1993). Some even look at the factors that might influence a person's life span (Davis 1986, Coren & Halpern 1991, Kaun 1991, Cassandro 1998, McCann 2001, Schulz & Bazerman 1980). These studies highlight one of the distinct assets of this data source: the ability to examine the human being over the entire life span, from the moment of conception to death.

As the foregoing examples suggest, developmental psychologists have favored quantitative rather than qualitative analyses. Even so, noteworthy exceptions do occur from time to time. For instance, some psychologists have used such methods to study the creative careers of single individuals (Gruber 1974, Wallace & Gruber 1989) or to conduct comparative studies of several creative lives (Gardner 1993).

## Differential Psychology

Ever since Galton's (1869) classic study, quantitative psychologists have often analyzed historical data to examine individual differences in intellectual ability (Woods 1906, Thorndike 1936). Among the most innovative of these inquiries was Terman's (1917) estimation of an IQ score for Francis Galton himself, a calculation that was based on Galton's early childhood achievements. This method was then extended and elaborated by Cox (1926) to produce IQ estimates for 301 geniuses, these scores then being correlated with the achieved eminence that the individuals attained (cf. Simonton 1976a, Walberg et al. 1978). Cox's ambitious investigation was also notable for introducing techniques for assessing the personality traits of historical figures. She was then able to determine the personality profiles that influenced both achievement and career choice. Since then many other psychologists have attempted to gauge the personality characteristics of eminent creators, leaders, and other celebrities (Thorndike 1950, Cattell 1963, Simonton 1986b, McCrae 1987). Although these measurements were all based on biographical data, other psychologists have pursued a different approach, applying content analytical methods to historical documents or products (Smith 1992). Especially provocative are the many investigations that have assessed political leaders, such as US presidents, on such motives as

power, achievement, and affiliation (e.g., Winter 1987b, Spangler & House 1991).

Psychologists with a more qualitative orientation have tended to approach historical data very differently. In line with traditional psychobiography, the goal is often to explain the idiosyncratic behaviors or beliefs of eminent individuals, such as Adolf Hitler, Richard Nixon, King George III, Vincent Van Gogh, and Leonardo da Vinci (Runyan 1988b, Elms 1994). For instance, a large number of psychobiographers have attempted to decipher why Van Gogh cut off his ear (Runyan 1981). Nevertheless, sometimes qualitative analyses will be applied to multiple cases with the aim of teasing out nomothetic conclusions. A well-known example is Abraham Maslow's (1970) attempt to determine the characteristics of the self-actualizing personality through the analysis of exemplars such as Abraham Lincoln, Eleanor Roosevelt, Harriet Tubman, Albert Einstein, Martin Buber, Walt Whitman, Pierre Renoir, and Pablo Casals.

## Abnormal Psychology

One of the oldest debates in psychology is the relation between exceptional achievement and psychopathology—the “mad-genius” controversy. Qualitative analyses tend to address this issue by conducting single-case studies based on the biographies of creators or leaders with obvious disorders (e.g., Hershman & Lieb 1998). Historiometric analyses, in contrast, have approached this question in three different ways. The first approach is to assess the types and levels of psychopathology displayed by historical personalities in various domains of achievements (Juda 1949; Ludwig 1992, 1995; Post 1994, 1996; Kaufman 2001). The second is to investigate the genetics of psychopathology and achievement, especially using the family pedigree method (Myerson & Boyle 1941, Juda 1949, Karlson 1970, Jamison 1993). The third and last line of attack is to identify the environmental factors that underlie the occurrence of various psychopathological disorders (Masserman 1983, Pennebaker 1990, Simonton 1998d).

Most often these quantitative analyses use large samples, but single-case studies do appear from time to time. Examples include studies of the relation between manic-depression and creativity in Robert Schumann (Weisberg 1994), the relation between stressful events and mental breakdowns in King George III (Simonton 1998d), and the relations among fame, self-consciousness, and substance abuse in Kurt Cobain, Cole Porter, and John Cheever (Schaller 1997). These single-case studies, in combination with the multiple-case investigations, have notably advanced our appreciation for the causal intricacies connecting psychopathology and creative achievement.

## Social Psychology

Social psychologists have been using historical data for a very long time (Simonton 1998c). In fact, what is often credited as the first laboratory experiment in the field can also be considered the first quantitative analysis of historical data (e.g., Triplett

1898). Not only is the usage very old, but very extensive besides. A large number of central substantive issues have been investigated using this methodological approach. Indeed, because historical data inherently embed individual behavior in a social context, applications of this approach may be more useful in social psychology than in another subdiscipline within psychological science. In any case, the following four sets of applications can be considered representative:

1. Research on attitudes and attitude change has always had a prominent place in social psychology. Hence, it is fitting that social psychologists have sometimes used historical data to gauge the real-world relevance of experimental results regarding attitudes and attitude change. For instance, political elections, such as US presidential primaries, have been used to test repeated-exposure effects (Grush et al. 1978, Grush 1980). A different kind of example comes from the literature on the authoritarian personality. Although the initial inquiries were based on interviews, questionnaires, and inventories using contemporary research participants (Adorno et al. 1950), historical data was eventually used to demonstrate how authoritarianism emerges as a response to conditions of external threat (Sales 1972, 1973; Padgett & Jorgenson 1982; Doty et al. 1991; McCann 1999). One specific behavioral manifestation of this response is the relation between economic downturns and the lynching of blacks in the southern United States (Hovland & Sears 1940, Hepworth & West 1988; but see Green et al. 1998, Mintz 1946).
2. Because the studies just cited were actually dedicated to testing the frustration-aggression hypothesis (Dollard et al. 1939), they could also be used to illustrate how social psychologists have used historical data to study aggression and violence, an important topic in the field. Another instance is the research on whether homicides are a partial consequence of violence displayed in the mass media (Phillips 1986). A considerable literature on the extent to which mass violence and personal aggression are increased by high ambient temperatures has also developed (Baron & Ransberger 1978; Carlsmith & Anderson 1979; Anderson 1987, 1989; Anderson & Anderson 1996). One inquiry on this subject took advantage of sport statistics (Reifman et al. 1991), a form of historical data that has been used to examine other determinants of aggression as well (Frank & Gilovich 1988, Miller et al. 1991).
3. The first social psychological study to exploit historical data also used sports statistics, but this time to assess social facilitation effects (Triplett 1898). Other investigators have used such data to investigate other group processes, such as the home-field effects (Baumeister & Steinhilber 1984, Courneya & Carron 1992, Baumeister 1995). Social psychologists have used many other kinds of historical data to study group phenomena. For instance, data on the differential success of the songs written by the Beatles have been used to assess social loafing (Jackson & Padgett 1982). Political history has been an especially rich source of raw information. One classic application is Janis's

(1982) research on groupthink, which was based on the decision-making processes used during crises of international importance. This investigation is also distinctive in that it represents one of the rare examples in social psychology of a qualitative rather than quantitative analysis. Even so, subsequent inquiries have subjected historical data on groupthink phenomena to quantitative analyses (Tetlock 1979; Herek et al. 1987, 1989).

4. Leadership has perhaps attracted more historical data analyses than any other topic in social psychology. The bulk of this research has concentrated on political and military leaders such as monarchs (Winter 1993), presidents (Simonton 1988c, Zullo & Seligman 1990), Canadian prime ministers (Ballard 1983), Soviet Politburo members (Hermann 1980), army generals (Simonton 1980a, Suedfeld et al. 1986), and revolutionaries (Suedfeld & Rank 1976). Several researchers have scrutinized the elusive phenomenon of leader charisma (Simonton 1988c; House et al. 1991; O'Connor et al. 1995; Deluga 1997, 1998). Other investigators have tried to determine the relative influence of individual and situational factors, a contemporary manifestation of the classic Great Person versus Zeitgeist controversy (Simonton 1984b, Ballard & Suedfeld 1988). Some of these latter inquiries have even tested individual  $\times$  situation interaction effects to detect whether effective leadership demands "the right person at the right place and right time" (e.g., Simonton 1987, Winter 1987b). The research findings have potential practical value insofar as they provide an inventory of variables that can predict leadership in real-world settings.

The foregoing examples do not come close to exhausting all the ways in which social psychologists have taken advantage of the wealth of information available in the historical record (for additional examples see Simonton 1998c).

## METHODS

It should now be evident that historical data have been successfully applied to a great variety of substantive areas in psychology. Because these applications required methodologies that are distinct to this class of data, it is necessary to provide at least an overview of such methods. I begin with data collection and then turn to data analysis.

### Data Collection

The first decision that must be made in almost any psychological study is sampling. When psychologists turn to historical data, the answer to this question is often self-evident (Simonton 1999). The sample for psychobiographers, for example, consists of the historical figures whose lives need some kind of psychological interpretation (Elms 1994). The sampling decision becomes a little more complicated in multiple-case investigations, such as those favored in historiometric analyses



(Simonton 1990b). In the simplest instances the samples are self-defining, because the number of relevant cases is finite and manageable. Examples include presidents of the American Psychological Association (Suedfeld 1985), the first ladies of US presidents (Simonton 1996), Nobel laureates (Manniche & Falk 1957), and Olympic athletes (Schulz & Curnow 1988, Fernandez-Dols & Ruiz-Belda 1995). When the potential samples are more open ended and ill defined, a commonplace sampling strategy is to apply the eminence criterion (Simonton 1999). The most eminent individuals in a domain are not only the most representative of the phenomenon of interest, but information about such subjects is likely to be more extensive and reliable (Cox 1926, Simonton 1976a).

In one crucial respect analyses of historical data must address an issue that seldom has a counterpart in more conventional research methodologies: the question of unit definition. In other words, when a study consists of a sample of size  $N$ , what is being counted when determining  $N$ ? What is the unit on which the variables are to be assessed? With the exception of neuroscientists who focus on single neurons and a few other distinctive instances, most psychological research is based on the individual, human or nonhuman. Although most analyses of historical data also use the individual as the unit of analysis, the exceptions are more numerous and diverse. For instance, some researchers will define "micro-units" consisting of creative products (Arnheim 1962, Simonton 1998b, Zickar & Slaughter 1999), leader actions or decisions (Simonton 1980a, Janis 1982, Suedfeld & Bluck 1988), or some other cross-sectional unit smaller than a single human being. Alternatively, psychologists may use "macro-units" such as whole nations (Charness & Gerchak 1996). When investigators turn to longitudinal research, the potential choices proliferate. Thus, a psychologist may study music or literature across consecutive themes or sections (Martindale 1990, Simonton 1990a), creators or leaders across consecutive age periods (Lehman 1953; Simonton 1977a, 1998d; Porter & Suedfeld 1981), US presidents across consecutive congresses (Simonton 1987), and nations or civilizations across consecutive years (Cattell & Adelson 1951, Cattell 1953, Tetlock 1985), generations (deCharms & Moeller 1962; Simonton 1975b, 1976b, 1988c, 1997b), or even larger time units (Cattell 1903, McClelland 1961, McGuire 1976). Complicating matters all the more, the units can sometimes be combined in distinctive combinations, such as individual-generational analysis (Simonton 1976c, 1977b, 1980c, 1984a). Historical data thus offer enormous flexibility in the types of cases that enter into the analysis.

Once the researcher has decided on the most appropriate sample and unit definition, the next step is to find the necessary sources of raw data. In general, there are two types of historical data, primary and secondary (Simonton 1990b). The most commonly used primary source is the written document. Some of these documents may be public, such as campaign speeches, inaugural addresses, diplomatic communiqués, court decisions, poems, short stories, publication titles, and journal abstracts (e.g., Tetlock 1981a,b; Tetlock et al. 1985; Martindale & Martindale 1988; Simonton 1992b), whereas others may be private, such as correspondence and diaries (e.g., Porter & Suedfeld 1981, Schaller 1997, Suedfeld & Bluck 1993).

Nonverbal materials provide another useful primary source, including artworks, musical compositions, architectural monuments, and various cultural artifacts (e.g., McClelland 1961, Simonton 1980b, Hasenfus et al. 1983, Devlin & Nasar 1989, Lindauer 1993). Secondary sources, in contrast, provide information compiled by historians and other scholars. The most common sources are biographies, histories, encyclopedias, biographical dictionaries, bibliographies, and obituaries (Dennis 1954, Deluga 1997, Harrison et al. 1988, Simonton 1998a). These works may be either general (e.g., the *Encyclopaedia Britannica* 1994) or specific (e.g., Zusne 1984). It should be pointed out that often the selection of a data source comes before the sample is determined. That happens when the sampling criterion is whether an individual has an entry in one or more reference works (Galton 1869; Cattell 1903; Simonton 1991a,b).

## Data Analysis

Although data collection procedures are often very similar across diverse applications, the subsequent data analyses differ dramatically depending on whether the study is qualitative or quantitative.

**QUALITATIVE ANALYSES** Some psychologists adopt a comparative method, comparing and contrasting two or more individuals or events to tease out common components or attributes (McCurdy 1960, Gardner 1993). In such investigations the methodology differs very little from the comparisons and contrasts seen in traditional historiography (e.g., Plutarch's *Lives*). Psychobiographers, on the other hand, have developed techniques that depart significantly from historiographic practice. From the very beginning, the psychobiography was treated as a special form of clinical case study; that is, the investigator would interpret the historical information as if it came from an actual session with a client (Freud 1910/1964; Erikson 1958, 1969). The only genuine difference arises from the fact that the psychobiographer is engaged in classical assessment "at a distance"—necessarily so when the subject is a deceased historical celebrity. Eventually, however, researchers began to realize that there are certain methodological pitfalls inherent to psychobiographical analyses. As a consequence, recent psychobiographers have attempted to devise more sophisticated methods to help ensure that these pitfalls can be successfully avoided (Runyan 1982, 1988a; Alexander 1988, 1990; Elms 1994). For instance, great care must be exercised to avoid such problems as negative or positive transference, circular reasoning, psychological reductionism, and the overinterpretation of biographical particulars.

**QUANTITATIVE ANALYSES** Psychologists conducting historiometric studies have a special advantage over those doing qualitative studies: The discipline has already accumulated a diverse and powerful repertoire of techniques. Obvious examples are the measurement methods found in psychometrics and psychological assessment. Although these analytical methods were designed for use with contemporary

research participants, they often can be applied directly to historical data with minor or even minimal modifications (Simonton 1990b, 1999). Thus, by adapting already established psychometric measures, historical figures have been assessed on characteristics as diverse as intelligence, cognitive style, personality, motivation, psychopathology, interests, beliefs, and values (McClelland 1961, McCrae 1987, Winter 1987a, Zullow et al. 1988, Tetlock et al. 1994). Admittedly, it is not uncommon for psychologists to devise special measurement strategies unique to historical data. For instance, computerized content analytical schemes have been created to investigate music compositions (Paisley 1964, Simonton 1980c, Cerulo 1989). Even so, the majority of measurements seen in the psychological analysis of historical data have manifest counterparts in more mainstream research.

The latter statement requires even greater emphasis when it comes to statistical analysis. Once historical data has been quantified in the form of concrete variables, those variables can be subjected to the same analytical tools seen in standard correlational studies. These tools include factor analysis (Cattell & Adelson 1951, Cattell 1953, Knapp 1962, Simonton 2000c), cluster analysis (Simonton 1986b, 1988c), multidimensional scaling (Hasenfus et al. 1983), multiple regression (McCann 1992, Cassandro 1998), path analysis (Simonton 1977b), structural equation models (Simonton 1991c, 1996), and mathematical models (Simonton 1979, 1997a). The only departure is the somewhat more prominent place of time-series analysis, a technique otherwise not very conspicuous in most psychological research (Rotton & Frey 1985; Tetlock 1985; Hepworth & West 1988; Simonton 1992a). The relative prominence of time-series analysis stems from the fact that historical data lend themselves quite readily to longitudinal designs, such as studying individuals or civilizations across time. In contrast, the majority of psychological inquiries collect only cross-sectional data in which there is no time dimension, whether historical or biographical.

Despite the fact that quantitative analyses of historical data can proceed in pretty much the same manner as analyses using more conventional data sources, there is one statistical issue that has yet to be resolved. The "significance test controversy," which has been a recurrent problem in mainstream research (Morrison & Henkel 1970, Harlow et al. 1997), becomes even more problematic in many historiometric inquiries (Simonton 1999). The difficulties arise because such studies often sample the entire population of interest. Under such circumstances, it is not clear what inferential statistics are most appropriate, nor even whether inferential statistics are required. If an inquiry samples all Nobel laureates or all US presidents or all Olympic medalists, to what larger population are the results to be generalized?

## EVALUATION

Like any method in psychology, analyses of historical data have both advantages and disadvantages. The following evaluation begins by treating the disadvantages, because they probably represent the main reasons why most psychologists do not

adopt this approach. The evaluation concludes with a discussion of the advantages that provide the rationale for some psychologists departing from the investigative norms (for further discussion, see Simonton 1990b, 1998c, 1999; Elms 1994).

## Disadvantages

Naturally, the drawbacks of historical data are not the same for both qualitative and quantitative analyses, and so they should be examined separately. In the case of qualitative studies, the main disadvantage is the very fact that they are qualitative rather than quantitative. Many psychologists believe that quantitative analyses are far more scientific—more objective and rigorous—than qualitative analyses. Moreover, this belief enjoys some support in the empirical (quantitative) research on human information-processing capacities (Meehl 1954, Faust 1984). The human mind is not very adept at drawing valid qualitative inferences from data as complex as those found in the historical record. Indeed, sometimes conclusions drawn from qualitative studies are disconfirmed when the same historical data are subjected to quantitative analysis (e.g., Tetlock 1979, Simonton 1998d).

Although quantitative methods permit more rigorous and precise inferences from the historical record, other disadvantages remain. The following three problems are perhaps the most pervasive:

1. Quantitative analyses of historical data are invariably correlational and thus can be considered weak according to the criterion of internal validity (Campbell & Stanley 1966). That is, the investigator can only draw causal inferences with extreme care. Unlike the laboratory experiment in which the independent variable can be directly manipulated, correlational studies must always be concerned with the possible intrusion of spurious relations (Simonton 1990b). Quasi-experimental designs, such as time-series analysis, cannot completely obliterate this drawback.
2. Historical data are not always as reliable as those found in more conventional data sources. Sometimes the record contains informational gaps or errors that can contaminate any analysis, whether qualitative or quantitative. For instance, Cox's (1926) study of 301 geniuses could not include William Shakespeare simply because so little was known about his early life. Even when she thought the data was sufficiently reliable for a particular historical figure, the resulting IQ estimate would sometimes have an extremely low reliability coefficient.
3. Perhaps the most obvious drawback is that historical data have limited theoretical or substantive applicability. Notwithstanding the tremendous diversity of topics already addressed using these methods, there are probably a great many more issues for which the annals of history can provide no resolution. For example, historical data rarely have any scientific utility for comparative and physiological psychologists (but see Coren & Porac 1977, Macmillan 2000).

Despite all these disadvantages, psychologists who have chosen to exploit this data source usually had excellent reasons for doing so, as will become apparent next.

## Advantages

Probably the single most important reason for analyzing historical data is that such analyses permit the investigation of research topics that cannot be addressed any other way. This rationale is most conspicuous in the case of psychobiography. Psychologists who want to comprehend historic figures have no other option but to resort to the analysis of historical materials (e.g., McCurdy 1953, Rosenberg 1989, Fancher 1998). Yet a psychologist does not have to be a psychobiographer to believe that history might provide useful data for either qualitative or quantitative analysis. Consider the following four potential justifications for such usage:

1. Although correlational studies can be easily criticized for their inferior internal validity, they often compensate by possessing superior external validity (Campbell & Stanley 1966). Laboratory experiments sometimes may have questionable external validity because (a) they introduce artificial situations and manipulations that evoke unrepresentative responses, such as “guinea pig” effects, expectancy effects, and demand characteristics (e.g., Rosenthal 1976) or (b) they sample unrepresentative research participants, especially college students taking introductory psychology courses (e.g., Sears 1986). Historical data are necessarily “unobtrusive” and “nonreactive,” and thus cannot be contaminated with experimenter effects (Webb et al. 1981). Moreover, because historical data come from the “real world,” there can be no doubt that the results are applicable to the world beyond the research laboratory.
2. Even if experimental results seem *prima facie* applicable to the world outside the laboratory, there persists a profound gap between merely extrapolating those findings to the outside world and actually demonstrating that those findings can be so generalized. An outright empirical demonstration removes the intrinsically speculative nature of the extrapolation. Hence, historical data cannot only support research with inherent external validity, but also provide the means to establish the generality of results obtained from more conventional research methods (Sales 1972; Martindale 1973, 1990; Simonton 1980c, 1986a; Jackson & Padgett 1982; Triplett 1898).
3. The historical record contains information about events and personalities of great practical importance. As a result, these data have tremendous value for those researchers wishing to deal with significant issues and problems in the real world. Probably the most dramatic examples concern human violence. Besides studying the factors underlying homicide and other forms of personal aggression (Anderson & Anderson 1984, Phillips & Hensley 1984, Miller et al. 1991), psychologists have made major strides in understanding the psychological roots of war and other forms of collective violence

(Winter 1987a, 1993; Suedfeld & Bluck 1988). This understanding includes increased knowledge about international crises (Raphael 1982, Suedfeld et al. 1993, Guttieri et al. 1995) and what it takes to make adaptive responses to those crises (Suedfeld & Tetlock 1977, Suedfeld et al. 1977). Needless to say, conventional research methodologies can only tackle such problems indirectly and with much less convincing results. Indeed, any attempt to address these issues via laboratory methodology would probably raise severe ethical objections that would terminate the effort.

4. Psychology aspires to produce scientific knowledge that is truly universal. In other words, psychological theories and findings should apply to all human beings, not just to that subset of *Homo sapiens* who happen to live in the same time and place as the researcher. Yet most of the human research conducted in psychology uses participants who are both contemporaries and compatriots. In contrast, the historical record constitutes a rich repository of information about human behavior in a great diversity of cultures and historical periods. This feature enables the investigator to determine whether certain findings can claim the status of cross-cultural and even transhistorical universals. Indeed, by combining data from several times and places into a single analysis, it is possible to conduct direct statistical tests for the cross-cultural and transhistorical invariance of any observed correlations. For example, key findings concerning the relation between age and achievement have been replicated across both space and time (Lehman 1953; Simonton 1975a, 1988a, 1997a).

Because each method in psychology has its distinctive strengths and weaknesses, the optimum strategy is always to adopt methodological pluralism whenever possible. Accordingly, research using historical data can often be fruitfully combined with laboratory experiments and other standard approaches. Triplett (1898) was the first to show that results obtained by conventional methods could be corroborated by analyses of the historical record, and others have followed suit (Martindale 1973, 1990; Simonton 1986a,b).

## CONCLUSION: THE PROSPECTS

Since 1835, when Quételet published his pioneering analysis of the age-creativity relation, historical data have attracted some of the key figures in psychological science. To name names, this rich data source has been used by such notables as Galton (1869, 1883), Ellis (1926), J.M. Cattell (1903), Freud (1910/1964), Thorndike (1936, 1950), Terman (1917), Hovland (Hovland & Sears 1940), Murray (1981), Erikson (1958, 1969), Skinner (1939, 1942), R.B. Cattell (1953, 1963), Maslow (1970), Sears (Sears et al. 1978), Simon (Kulkarni & Simon 1988), McClelland (1961), Janis (1982), McGuire (1976), Neisser (1981), and Seligman (Satterfield & Seligman 1994). Moreover, studies dealing with historical data have appeared in

numerous journals, both general and specialized (see references below). Given that these researchers and journals represent several subdisciplines and theoretical orientations, it seems likely that this usage will continue well into the future.

In fact, I would argue that several trends encourage such continued applications. First, there have occurred many methodological advances that should render the historical record a far more useful source of scientific data. Among these advances are latent variable models, time-series analysis, and hierarchical linear models (Simonton 1991c, 1998d; Zickar & Slaughter 1999). In addition, the advent of the positive psychology movement has made the discipline more receptive to investigators who wish to examine the best exemplars of positive human traits (Snyder & Lopez 2002). Among these exemplars are those who made a name for themselves for their display of creativity, leadership, talent, wisdom, or spirituality (Gardner 1993, 1997; Simonton 2000b). Another movement that is more open to the analysis of historical data is the recent resurgence of the psychology of science (Feist & Gorman 1998). This field of inquiry encompasses not only the scientific study of eminent scientists, but also the study of great psychologists (Coan 1973, Over 1982, Simonton 2002).

Finally, there are two related trends taking place in the larger society beyond psychology. The first concerns the accelerating richness of the potential historical database. History in antiquity was the luxury of a handful of civilizations, and even then the record was confined largely to the elite classes of society. Now the annals take in the entire human population, and do so in a far more egalitarian fashion. This richness is coupled with the second trend, namely the enhanced availability of this wealth of information. Increasingly more of the historical record is assuming electronic form, especially with the advent of the World Wide Web. Each day it becomes ever more possible to download the raw historical data directly from the internet—such primary sources as speeches, poems, music, film clips, and art prints and such secondary sources as biographical entries and historical chronologies. To illustrate, the Internet Movie Database at <http://us.imdb.com/> offers a wealth of information on over 200,000 motion pictures. The data is rendered all the more accessible by the inclusion of a powerful search engine.

Besides predicting that historical data will continue to have a place in psychology, I also will risk another prediction: The proportion of quantitative analysis should increase relative to qualitative analysis. This forecast is partly founded on the advances in statistical analysis already mentioned, as well as various improvements in the precision and power of computerized content analysis (Martindale 1990; Simonton 1990a, 1992b). Furthermore, several recent investigations have shown how historiometric methods could be fruitfully applied to problems that were traditionally the province of qualitative psychobiography (Swede & Tetlock 1986; Winter & Carlson 1988; Rosenberg 1989; Simonton 1989a, 1998d). Hence, future analyses of historical data may eventually become almost exclusively quantitative. This result would have the added benefit of rendering historical data analyses more compatible with the core research methods used in psychology.

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