Comparative Description of the SADS and PSE

by Richard E. Luria and Robert J. Guziec

Abstract

The Schedule for Affective Disorders and Schizophrenia (SADS), Part I, and the Present State Examination (PSE) are both structured interviews to assess the present psychiatric condition. The present article attempts to provide researchers with information that may help them to decide which of the two instruments would be most suitable for their purposes. We describe the similarities and differences in the instruments' development, purpose, method, content, training requirements, reliability, and validity to point out their relative strengths and weaknesses for psychiatric assessment. Essentially, the PSE is, by both content and method, a mental status examination. The SADS, Part I, is, by content, an amalgam of a mental status examination and a history of the present illness, but, by method, is a history of the present illness. Neither comprise a complete traditional assessment of the current condition.

The use of structured interview schedules to improve reliability of diagnosis and case description has recently increased (Spitzer et al. 1964; Wing et al. 1967; Kendell et al. 1968; Spitzer et al. 1970; Saghir 1971; Endicott and Spitzer 1972a, 1972b, 1972c; Gurland et al. 1972; Helzer et al. 1977). Prominent among such instruments are the Schedule for Affective Disorders and Schizophrenia (SADS) (Spitzer and Endicott 1978; Endicott and Spitzer 1978) and the Present State Examination (PSE) (Wing, Cooper, and Sartorius 1974), both presently employed in multicenter research projects (Cooper et al. 1972; World Health Organization 1973; National Institute of Mental Health 1977). Despite their importance, however, we know of no studies comparing the two instruments.

Nevertheless, psychiatric researchers interested in these schedules need a rational basis for deciding which would be most useful for their purposes. We, therefore, give a comparative description of these two instruments, focusing on the similarities and differences in their development, purpose, method, content, training requirements, reliability, and validity. Since the PSE pertains only to the patient's current condition, we restricted the comparison of the PSE to Part I of the SADS, which also focuses on the current condition.

Both instruments are used for psychiatric assessment. To facilitate our comparison of them, we reviewed the procedures pertaining to assessment. Traditionally, clinical assessment for diagnosis and case description consists chiefly of the mental status examination and the history (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Stevenson and Sheppe 1974; Detre and Kupfer 1975; Leff and Isaacs 1978; Noyes and Kolb 1978). The mental status examination focuses on the patient's current behavior, symptoms, sensorium, and cognitive faculties (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Stevenson and Sheppe 1974; Detre and Kupfer 1975; Leff and Isaacs 1978; Noyes and Kolb 1978).
Current behavior consists of directly observed appearance, psychomotor activity, quantity and form of speech (from which inferences are made about thought processes), and expressions of affect (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Leff and Isaacs 1978). Symptoms consist of the patient's conscious experiences as he describes them and as the examiner evaluates them. The evaluation of symptoms uses not only the patient's self-report, but also observed behavior and affect associated with the self-report, and historical information as a context within which to evaluate the patient's report (Mayer-Gross, Slater, and Roth 1969; Leff and Isaacs 1978). Sensorium and cognitive faculties broadly consist of the state of consciousness, orientation, attention, concentration, and memory (evaluated by the patient's performance of prescribed tasks), and such global capabilities as intelligence, judgment, and insight (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Stevenson and Sheppe 1974; Detre and Kuffer 1975; Leff and Isaacs 1978; Noyes and Kolb 1978). Mental status examinations are restricted to a defined cross-section of time. In the case of behaviors, sensorium, and cognitive faculties, this period is usually defined by the interview itself (Henderson and Batchelor 1962; Leff and Isaacs 1978). In the case of symptoms, which exist only in time, the period is longer—although there is no generally accepted standard for this interval. Various authorities suggest that it include a period before the interview of 1 week to 1 month (Spitzer et al. 1964; Endicott and Spitzer 1972b; Wing, Cooper, and Sartorius 1974).

The psychiatric history is the longitudinal account of past and present illnesses, personal development, lifestyle and circumstances, and family history (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Detre and Kuffer 1975; Leff and Isaacs 1978; Noyes and Kolb 1978). It includes data obtained not only from the patient, but also from informants and other sources such as case records (Henderson and Batchelor 1962; Mayer-Gross, Slater, and Roth 1969; Leff and Isaacs 1978; Noyes and Kolb 1978). It covers part of the content of the mental status examination (recent symptoms) and, in addition, much information unique to history, e.g., temporal patterns of behavior, overall functioning, onset and duration of psychiatric disorder, and the temporal relationship among many factors—the relationship of stress, behavior, and state of sensorium to symptoms, to name but a few. In short, the history has a broader scope than the mental status examination in both content and method of inquiry. Unlike the mental status examination, it does not usually include data derived from the direct examination of the patient's current behavior, sensorium, or cognitive faculties (Leff and Isaacs 1978).

Description and Historical Background of the SADS

"The SADS is an instrument designed specifically to record information necessary for making diagnoses based on the Research Diagnostic Criteria" (Spitzer, Endicott, and Robins 1978). The method of first developing operational diagnostic criteria, and then subsequently designing specific interview schedules to gather the data required by such criteria has been used most notably by the St. Louis group (Purtell, Robins, and Cohen 1951; Perley and Guze 1962; Woodruff 1967; Woodruff, Murphy, and Herjanic 1967; Farley et al. 1968; Woodruff, Clayton, and Guze 1969). Their criteria have consistently emphasized historical information as well as mental status data. The RDC, evolving largely from the St. Louis group's criteria (Feighner et al. 1972), similarly stress areas covered by history as well as mental status (Spitzer, Endicott, and Robins 1978). Consequently, the SADS, Part I, focuses on both historical and mental status information, and is an amalgam of the history of the present illness and the mental status examination. It is designed for adult patients suffering from a selected group of psychiatric disorders (primarily schizophrenia and affective disorders).

The latest or third edition of the SADS, Part I, focuses on the 1-week period during the present illness when the feature or features under evaluation were most intense. The instructions note that some symptoms may be worse 1 week, and other symptoms worse another week (Spitzer and Endicott 1977a, 1977b, 1978). The time period evaluated for each symptom is thus defined independently of other symptoms. Consequently, the resulting SADS profile can be a composite of symptoms that were separated by long periods of time. If at the time of the evaluation, the patient was well, or his present illness had persisted for over 1 year, Part I focuses on the week during the past...
year when the feature or features under evaluation were most intense. In this case, there is a greater possibility that the SADS profile can be a composite of temporally separated symptoms. It should be noted that the SADS, Part I, is an integral component of an overall system of clinical assessment, including past history (SADS, Part II), ongoing clinical assessment (SADS-C), and followup or epidemiological assessment (SADS-L) (Endicott and Spitzer 1978; Spitzer and Endicott 1978).

Part I contains approximately 200 items to describe the current episode, and takes from about 45 minutes to 1 hour to complete. Most items are rated on a 6-point scale of increasing severity. The interviewer is instructed to make judgments based on all available sources of information, such as interviews with family members, case records, and referral notes, as well as the interview with the subject (Spitzer and Endicott 1977a, 1977b, 1978). In other words, the historical method of data collection is prescribed throughout the SADS, Part I, regardless of whether the item covers information unique to history (e.g., temporal patterns of behavior or overall functioning), unique to mental status (e.g., current behaviors such as flight of ideas, catatonic phenomena, or inappropriate affect), or common to both (e.g., recent symptoms).

Scattered throughout the instrument are instructions concerning definitions of items and scoring. There is also available to the interviewer a set of general instructions for the use of the SADS (Spitzer and Endicott 1977a), and a list of 22 suggestions for handling common rating problems (Spitzer and Endicott 1977b). After completion of the SADS, an RDC diagnosis can be made (Spitzer and Endicott 1977a, 1978). In addition, the data can be collapsed to give subscores and syndrome profiles for case description. These can be used to compare patients, as well as follow change over time in an individual patient.

**Personnel and Training for the SADS**

Raters should be psychiatrists, clinical psychologists, or psychiatric social workers who are familiar with the SADS and RDC. The authors of the SADS suggest that experience and training come from conducting several interviews with a rater assuming the role of the patient or with actual patients. They also recommend standardization of ratings by several joint interviews in which independent ratings are made (Spitzer and Endicott 1977b).

**Reliability and Validity of the SADS**

To our knowledge, there have been only two published reliability studies on Part I of the SADS, both using carefully screened patients for research (Endicott and Spitzer 1978; Spitzer, Endicott, and Robins 1978). The first, using the interviewer-observer design, involved 150 newly admitted patients with an affective syndrome. The second, using the test-retest design, involved 60 such patients. Pairs of raters at four facilities participating in the Pilot Study of the Psychobiology of the Depressive Disorders were used. In the interviewer-observer design, 90 percent of the items had an intraclass correlation coefficient (ICC) of .6 or greater; in the test-retest design, 82 percent had an ICC of .6 or greater. The ICC for scale scores (summed scores of groups of related items) ranged from .82 (formal thought disorder) to .99 (manic syndrome) in the interviewer-observer design, and from .49 to .93 in the test-retest design. To date there have been no empirical studies on the validity of SADS findings.

**Description and Historical Background of the PSE**

The PSE is a structured interview schedule for conducting the mental status examination and scoring the findings (Wing, Cooper, and Sartorius 1974). Like the SADS, it is designed for adult patients suffering from a functional psychosis or neurosis. It is a crystallization of Anglo-European clinical methods and concepts, much influenced by the phenomenological approach of Jaspers and Schneider (Schneider 1959; Jaspers 1963; Wing, Cooper, and Sartorius 1974). Careful description of abnormal forms of conscious experience (symptoms), based on direct interview of the patient (mental status examination), is of prime importance in this approach to clinical assessment.

The PSE was developed to provide a thorough and reliable description of abnormal symptoms and behaviors traditionally covered by the mental status examination (Wing, Cooper, and Sartorius 1974). Whereas the development of the SADS followed and was dictated by diagnostic criteria, the development of the PSE, particularly the earlier editions, preceded the establishment of specific diagnostic criteria. The development of the
latest or 9th edition, however, is similar to that of the SADS; it was a modification of the 8th edition designed with an emphasis on gathering data required by the CATEGO diagnostic criteria (Wing, Cooper, and Sartorius 1974). This involved dropping and collapsing items, thereby omitting descriptive data not required by the CATEGO criteria and shortening the average length of the interview from 1 hour to 45 minutes. Because we felt that the differences between the 8th and the 9th editions are significant, and that the 9th does not replace the 8th, we compared the SADS, Part I, with both the 8th and 9th editions of the PSE.

Like the usual mental status examination, the PSE focuses on a current cross-section of time: for behavior, sensorium, and cognitive faculties, the time period is defined by the interview itself; for symptoms, the time period includes the month before the interview. Both shorter and longer periods were tried unsuccessfully. Like the SADS, the PSE is also one component of an overall system of clinical assessment, including history pertinent to the current condition (the Aetiology Schedule), past history (the Syndrome Checklist), and modified versions of the PSE for epidemiological case finding, using the Index of Definition (Wing, Cooper, and Sartorius 1974; Wing et al. 1978).

There are approximately 500 items in the 8th edition of the PSE, and 150 in the 9th, to describe the current mental state. Most items are rated on a 3-point scale of increasing severity. The interviewer is instructed to base his judgments on observation of the patient’s behavior, expression, and self-report, often after direct questioning and cross-examination (Wing, Cooper, and Sartorius 1974). The instructions prescribe that historical data should be used only as a background against which to make judgments, and should not predetermine ratings. Unlike the SADS, the PSE requires that symptoms be rated only during the interview, and behavior immediately afterward. However, the interview itself can be divided over 2 to 3 days if needed. Like the SADS, the PSE has scattered throughout the instrument instructions concerning definitions of items and scoring, as well as a set of general instructions in an accompanying manual. In addition, the PSE, unlike the SADS, has a comprehensive glossary defining all the phenomena it explores. Many of the differential definitions attempt to make rather fine distinctions among symptoms, such as distinguishing pseudo- from true hallucinations, partial from full delusions, and nervous from muscular tension. Whether many of these distinctions are practical or useful remains to be proven. Like SADS data, PSE data can also be collapsed to give subscores and syndrome profiles for case description. These can be used to compare patients, as well as follow changes over time in an individual patient.

**Personnel and Training for the PSE**

As in the case of the SADS, raters should be psychiatrists, clinical psychologists, or psychiatric social workers (although the latter group has thus far been restricted to using the nonpsychotic sections). A more detailed outline of the training procedures has been set forth for the PSE than for the SADS (Wing, Cooper, and Sartorius 1974; Cooper et al. 1977; Luria and Berry 1980). The learning program begins with reading about the content and principles of the PSE. Next, the student rates videotaped and live interviews conducted by experienced users, and lastly conducts interviews himself with an experienced rater as an observer. All interviews are followed by a discussion of the rating agreements and disagreements. Between 10 and 20 teaching interviews are recommended.

**Reliability and Validity of the PSE**

There have been more reliability studies on the PSE than the SADS. Moreover, these studies used a considerably wider range of patients, in terms of cultural and national backgrounds, diagnosis, and severity of illness, and a wider range of psychiatrists in terms of training and background (Cooper et al. 1972; World Health Organization 1973; Luria and McHugh 1974; Luria and Berry 1979). The study by Wing et al. (1967), involving 172 inpatients rated by psychiatrists in an interviewer-observer design, showed product-moment correlation coefficients ranging from .2 to .45 in the nonpsychotic scale scores, and from .62 to .97 in the psychotic scale scores. In a study involving 37 newly admitted patients rated by three psychiatrists, Kendell et al. (1968) found that, for items, the mean kappa coefficient of agreement was .71 for the interobserver reliability and .41 for the test-retest reliability; for scale scores, mean kappa was .84 and .64, respectively. Similar results
have been obtained with nonpsychiatrists interviewing outpatients and nonpatients. A study by Cooper et al. (1977) with 30 adult outpatients showed that, for items, mean kappa was .74 for the interobserver reliability and .54 for the test-retest reliability. Three of the five raters were nonpsychiatrists—one psychologist, one sociologist, and one sociology student. In a general population survey of 237 adult females (nonpatients) rated by three psychiatrists and four nonpsychiatrists, Wing et al. (1977) found a somewhat lower but nevertheless satisfactory degree of reliability. As with the SADS, reliability has been studied more than has validity of PSE findings. However, there have been studies concerning the validity of classification based on PSE data (Luria and McHugh 1974; Wing et al. 1978; Luria and Berry 1979; Orley and Wing 1979).

**Detailed Comparison of Content**

To facilitate comparison of the item content of the 8th and 9th editions of the PSE with that of the SADS, Part I, we grouped the items of each schedule under 1 of 16 major areas of clinical interest. Thirteen were psychopathological dimensions explored by both history and mental status examination, such as depressive, manic, and schizophrenic. One was a set of historical data concerning drug and alcohol abuse and antisocial behavior. Another was a set of mostly historical features pertaining to the present illness, such as onset, course, and severity. Last was a set of data concerning the quality of the interview itself. In the psychopathological dimensions, items were counted as symptoms or behaviors where possible; otherwise they were counted simply as phenomena. The latter included

**Figure 1. Total number of phenomena (items) that can be both elicited/observed and recorded**

<table>
<thead>
<tr>
<th>Area</th>
<th>SADS</th>
<th>8th edition PSE</th>
<th>9th edition PSE</th>
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</thead>
<tbody>
<tr>
<td><strong>Psychopathological</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Depressive</td>
<td>10</td>
<td>15</td>
<td>10</td>
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<tr>
<td>2. Manic</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>3. Schizophrenic</td>
<td>20</td>
<td>25</td>
<td>20</td>
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<tr>
<td>4. Psychotic perceptual</td>
<td>15</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>5. Neurotic</td>
<td>10</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>6. Anxiety</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>7. Affective schizoaffective</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>8. Psychomotor retardation</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>9. Agitation/excitement</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>10. Sensorium cognitive</td>
<td>5</td>
<td>10</td>
<td>5</td>
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<tr>
<td>11. Insight</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>12. Alcohol, drug, antisocial</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>13. Features of present illness</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>14. Quality of interview</td>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

**Diagram**

- **SADS**
- 8 = 8th edition PSE
- 9 = 9th edition PSE

**Key**
- Symptoms
- Behavior
- Phenomena
features of the illness that were more complex than symptoms or behavior, such as temporal relationship of affective and psychot
tic symptoms, and course or duration of illness.

The depressive dimension included the behavioral, vegetative, and subjective phenomena of depre
ession, and depressive delusions and hallucinations. The manic dimension included the behaviors and symptoms of elation, and grandiose delusions. The schizo
phrenic dimension included Schneiderian first-rank symptoms (Schneider 1959; Mellor 1970), elaborate auditory hallucinations, multiple and bizarre delusions, blunted and inappropriate affect, formal thought disorder, and catatonic behavior. The psychotic dimension included referential and persecutory delusions, other hallucinations, perplexed affect, odd appearance, and self-neglect. The perceptual dimension included depersonalization and derealization experiences, illusions, and pseudohallucinations. The affective and schizoaffective dimen
sions included delusions secondary to mood change, and the temporal relationship of psychotic phenomena with an affective syn
drome.

Figure 1 shows the number of items in each instrument within the 16 clinical areas. Considering only areas 1 through 13, explored by both history and mental status examination, the 8th PSE generally has more items than the SADS, and the SADS has somewhat more items than the 9th PSE. In particular, the 8th PSE has more depressive, schizophrenic, psychotic, perceptual, and neurotic items than the SADS. The SADS has more depressive, manic, and affective items than the 9th PSE. Only the SADS has schizoaffective items. Not surprisingly, the SADS has more items in the historical areas 14 and 15, and the PSE has more items concerning the quality of the interview with the patient.

We noted that the SADS and 9th PSE, but not the 8th, contain many "compound" items, i.e., items representing more than one phenomenon (a construct of phenomena). For example, item #42 in the 9th PSE, entitled subjective ideomotor pressure, includes increased energy, exciting ideas, decreased need for sleep, and new interests. A positive rating of a compound item indicates the presence of one or more of its compo
nents. However, these compo
nents cannot be separately rated (recorded). The SADS and 9th PSE, with many compound items, provide a less descriptive record than does the 8th PSE.

We next directly compared the range of phenomena explored by the SADS and PSE. At times, one instrument contained only some of the phenomena which were present within a single item of the other instruments. For example, SADS item #246 covered fleeting and serious suicidal thoughts, but the 9th PSE included only serious suicidal thoughts (item #25). In this case, the construct "serious suicidal thoughts" was considered present in both instruments, and the construct "fleeting suicidal thoughts" was considered present only in the SADS. We then counted the total number of phenomenal constructs unique to the SADS, unique to the PSE, and present in both.

Figure 2 shows these counts under the major areas of clinical interest, comparing the SADS with the 8th and 9th PSEs. Because the PSE covers essentially only mental status data, figure 2 excludes phenomena covered only by history. The 8th PSE includes most of the ground covered by the SADS in the depressive, manic, schizophrenic, perceptual, and anxiety dimensions, and, in addition, covers much that the SADS does not. They are fairly equivalent in the first-rank symptoms and neurotic dimensions. The 9th PSE explores more constructs than the SADS in the manic, perceptual, neurotic, and anxiety dimensions. The SADS, however, explores more constructs in the depressive dimension than the 9th PSE. In addition, the SADS covers more constructs in the affective and schizoaffective dimensions than either PSE edition.

It should be noted that the SADS explores 16 manic constructs not shown in figure 2 because they are strictly historical in nature. Taking these into account, the SADS is considerably more thorough than the 9th PSE, and is at least comparable to, if not more thorough than, the 8th PSE in the manic dimension. A detailed listing of the constructs unique to each instrument is available from the authors upon request.

Both the PSE and SADS, Part I, require additional historical information to make RDC diagnoses. However, unlike the SADS, the PSE requires some supplementary mental status items as well. Most of these can simply be recorded based on the PSE interview and entail no additional questioning of the patient. For schizophrenic, affective, and schizoaffective diagnoses, these items are ratings of increased appetite, hypersomnia, illogical thinking, bizarre quality
of delusions, multiplicity of delusions, nonaffective quality of hallucinations, preoccupation with nonaffective delusions or hallucinations, and nonaffective verbal hallucinations spoken to the subject (required only by the 8th PSE). For RDC subtyping of the major psychoses, a few other supplementary mental status items are required.

**Discussion**

The SADS, Part I, and the PSE differ in both method and content. The SADS uses the historical method, and the PSE, for the most part, uses the mental status method of obtaining descriptive information. An obvious advantage of the historical method is the wider range of clinically pertinent phenomena that can be covered. Because it uses multiple informants, this method increases the likelihood of cross-validating information.

A disadvantage of the historical method is the absence of guidelines concerning the differential reliability and validity among informants for different kinds of information. For example, in the SADS, one can make a judgment about a first-rank symptom based on information from sources other than the patient. This is a departure from the traditional method of determining the presence of first-rank symptoms, which is based on direct interview with the patient (Schneider 1959; Jaspers 1963). A second and related problem involves replicating studies. In the two reliability studies on the SADS, Part I, there were no rules about which sources to use for different kinds of information. The authors stated that they chiefly used the patient as the source, yet one could remain well within the rules of the SADS and still use quite different sources for key data.

Another disadvantage of the historical method is our ignorance of how best to establish the time frame for organizing descriptive data into a cohesive syndrome. When the focus is on temporal frames defined independently for each symptom, as in the SADS, it is quite possible to construct a composite of temporally unrelated symptoms instead of a syndrome.

The major advantage of the mental status examination is the ease and extent to which it can be operationalized, facilitating reliability and replication. It focuses only on a cross-section of time and uses only one primary source of

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**Figure 2. Relationship of phenomenal constructs of SADS and PSE (8th and 9th editions)**

![Graph showing the relationship of phenomenal constructs of SADS and PSE (8th and 9th editions).](image)
data—the interview with the patient. The major disadvantages of this method are the greater likelihood of being misled by the patient, and the smaller range of relevant clinical data that can be covered.

At present, there are no empirical data concerning the differential utility of the SADS versus the PSE. Moreover, assessment instruments which permit alternative sources of data (like the SADS) may pose a special problem for empirical comparisons. Their results can conceivably vary with the particular source of data selected. We believe, therefore, that comparisons of the SADS with other instruments would be enhanced if only one source of SADS data is specified for each item, although different sources might be used for different items.

We hope this discussion will familiarize researchers with the potential strengths and weaknesses of the SADS and PSE, and how they relate not only to one another, but also to traditional clinical assessment. Lacking an empirical basis for choosing one structured method of assessment over another, we modeled our research assessments on traditional clinical methods. Just as clinical assessment separates history from mental status, we use separate historical and mental status instruments. This permits us to determine operationally which kinds of data are obtained by history and which are obtained by mental status examination. Just as the clinical-descriptive tradition emphasizes evaluating phenomena before considering diagnosis (Schneider 1959; Jaspers 1963; Mayer-Gross, Slater, and Roth 1969), we focus on abnormal phenomena instead of diagnostic criteria by using the 8th PSE as our mental status instrument.

There has been some preliminary work on the development and reliability of a standard psychiatric history (Strauss et al. 1978). To provide a historical complement to the 8th PSE, we also developed a standardized history (the Standard Psychiatric History Schedule) (Luria 1977). Our goal was the collection of sufficient clinical data to satisfy multiple diagnostic criteria, including not only the RDC and CATEGO program, but the criteria of Feighner (Feighner et al. 1972), Carpenter’s Flexible System for Schizophrenia (Carpenter, Strauss, and Bartko 1973), and the New Haven Schizophrenia Index (Astrachan et al. 1972).

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