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## A Rating Instrument For Anxiety Disorders

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■ Diagnosis and diagnostic criteria enable clinicians and researchers alike to communicate with one another about their patients and make comparisons of cases and data meaningful. The fact there is a need for assessing anxiety, whether as an affect, a symptom, or a disorder is obvious by the numerous rating scales available and in use. However, the need for a standardized method of evaluating and recording the presence of anxiety as a clinical disorder has not been met by most scales today. We were interested in having a rating instrument which would fulfill the following: it should be inclusive with respect to symptoms of anxiety as a psychiatric disorder, it should quantitate the symptoms, it should be short and simple, and it should be available in two formats so that, 1) the patient can indicate his own responses on a self-administered scale, and 2) the observer can indicate his clinical evaluation of the patient's status on the same set of criteria. This report summarizes our efforts at devising a rating instrument for anxiety disorders which we felt fulfilled our needs and purposes.

### METHOD

In the construction of the present rating instrument the symptoms of the illness were delineated by using the descriptive approach, since the basis of definition and classification in psychiatric nosology continues to be based upon presenting symptomatology<sup>1</sup>.

Anxiety as a disorder is defined in the

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*Diagnostic and Statistical Manual, Second Edition or DSM-II* as a neurosis characterized by anxious overconcern extending to panic and frequently associated with somatic symptoms<sup>2</sup>. More detailed definitions and descriptions of anxiety and its characteristic symptoms are described by the following authors and summarized in Table I: Kolb in *Noyes' Modern Clinical Psychiatry*<sup>3</sup>, Lief in *Comprehensive Textbook of Psychiatry*<sup>4</sup>, Portnoy in the *American Handbook of Psychiatry*<sup>1</sup>, and a report on anxiety neurosis by Wheeler, White, Reed and Cohen<sup>5</sup>.

In devising our rating instrument, diagnostic criteria used were comprised of the most commonly found characteristics of an anxiety disorder, such as those listed in Table I. From this list of criteria, an observer rated Anxiety Status Inventory (ASI) and a patient Self-rating Anxiety Scale (SAS) were constructed.

### *Anxiety Status Inventory (ASI)*

Table II is the form of the ASI which is the clinician rated instrument. It contains the diagnostic criteria for anxiety as a psychiatric disorder (5 affective and 15 somatic symptoms) and the interview guide for eliciting each of the symptoms. The data upon which the judgments are based come from the interview with the patient. The items in the scale are to be quantified by using all of the information available to the rater. This includes both clinical observations and the material reported by the patient.

Use of the *Interview Guide* assures coverage of all of the areas in which judgments are required. However, the rater has the flexibility

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of interposing other questions or probing for details which allow for a smooth interview without sounding like a question-answer examination. In rating the patient's current status, an arbitrary period of one week prior to the evaluation is adopted in order to standardize the data.

In making the judgment, the following

rules are used:

1. Each item should be independently rated as a unit by itself in order to eliminate any "halo" effect.
2. Each score should be the average of the full range of responses observed or elicited, and not necessarily the extreme in severity.
3. The items are judged on a four-point

**TABLE I — A comparison of symptoms found in anxiety as reported by various authors. (\*Percentage of each symptom present in patients with anxiety disorder)**

KOLB (3)	LIEF (4)	PORTNOY (1)	WHEELER et al. (5)	
<b>AFFECTIVE SYMPTOMS</b>				
Apprehension, worried, inexpressible dread, painful uneasiness of mind	Apprehension, fearful, feeling of impending death, helplessness, mental disintegration	Apprehension, uneasiness, anticipation of danger, helplessness	Apprehension Fear of death Nervousness	60.7* 41.8 87.6
<b>SOMATIC SYMPTOMS</b>				
<u>Musculoskeletal System</u>				
Tremor,	Muscle tightness, tremors, spasms, painful movements,	Increased tension, tremors, stiffness	Trembling Shakiness	53.5 46.5
Tension headache,	headaches, neck and back pains		Headache Tires easily	58.3 95.0
Weakness, Restlessness	Weakness, Restlessness		Weakness Fatigued all the time	56.0 45.1
<u>Cardiovascular System</u>				
Palpitation, rapid heartbeat	Palpitation, throbbing pain in chest	Palpitation, rapid pulse, increased BP	Palpitation	96.7
<u>Respiratory System</u>				
<u>Hyperventilation:</u>				
dizziness, fainting, shortness of breath, feeling of choking, pressure on thorax, paresthesias	Dizziness, shortness of breath, constriction in chest, paresthesias	Rapid or irregular breathing	Dizziness Faintness Breathlessness Breath unsatisfactory Paresthesias	78.3 70.0 90.0 52.7 58.2
<u>Gastro-intestinal System</u>				
Nausea and vomiting	Nausea, vomiting, diarrhea, anorexia	Nausea, vomiting, diarrhea	Vomiting and diarrhea Anorexia	14.0 12.3
<u>Genito-urinary System</u>				
Increased desire to urinate	Urinary frequency, urgency	Urinary frequency	Frequency	18.6
<u>Skin</u>				
Face flushed, perspiration	Flushing of face, sensation of heat	Flushing or pallor, cold, wet extremities	Flushing Sweating	36.2 44.9
<u>Central Nervous System</u>				
Mind in constant daze, absent minded	Lack of concentration, decreased memory, perceptual defects, irritability			
Difficulty in falling asleep, fearful dreams	Difficulty in falling asleep, fitful sleep, unpleasant dreams	Sleep disturbances	Insomnia Nightmares	52.7 18.3

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system, taking into account *Severity* in terms of: intensity, duration, and frequency. These are defined as follows:

- 1 = none or insignificant in intensity or duration, present none or a little of the time in frequency
- 2 = mild in intensity or duration, present some of the time in frequency
- 3 = of moderate severity, present a good

part of the time in frequency  
 4 = severe in intensity or duration, present most or all of the time in frequency.

To help establish severity, the following questions may be necessary: *Intensity* — “How bad was it?” *Duration* — “How long did it last?” *Frequency* — “How much of the time did you feel that way?”

TABLE II — *The Anxiety Status Inventory (ASI) containing the diagnostic criteria of an anxiety disorder and their respective interview guide items*

AFFECTIVE & SOMATIC SYMPTOMS OF ANXIETY	INTERVIEW GUIDE FOR ANXIETY STATUS INVENTORY (ASI)	SEVERITY OF OBSERVED OR REPORTED RESPONSES:			
		NONE	MILD	MOD	SEV
1. Anxiousness	Do you ever feel nervous and anxious?	1	2	3	4
2. Fear	Have you ever felt afraid?	1	2	3	4
3. Panic	How easily do you get upset? Ever have panic spells or feel like it?	1	2	3	4
4. Mental disintegration	Do you ever feel like you're falling apart? Going to pieces?	1	2	3	4
5. Apprehension	Have you ever felt uneasy? or that something terrible was going to happen?	1	2	3	4
6. Tremors	Have you had times when you felt yourself trembling? shaking?	1	2	3	4
7. Body aches & pains	Do you have headaches? neck or back pains?	1	2	3	4
8. Easy fatiguability, weakness	How easily do you get tired? Ever have spells of weakness?	1	2	3	4
9. Restlessness	Do you find yourself restless and can't sit still?	1	2	3	4
10. Palpitation	Have you ever felt that your heart was running away?	1	2	3	4
11. Dizziness	Do you have dizzy spells?	1	2	3	4
12. Faintness	Do you have fainting spells? or feel like it?	1	2	3	4
13. Dyspnea	Ever have trouble with your breathing?	1	2	3	4
14. Paresthesias	Ever have feelings of numbness and tingling in your fingertips? or around your mouth?	1	2	3	4
15. Nausea & vomiting	Do you ever feel sick to your stomach or feel like vomiting?	1	2	3	4
16. Urinary frequency	How often do you need to empty your bladder?	1	2	3	4
17. Sweating	Do you ever get wet, clammy hands?	1	2	3	4
18. Face flushing	Do you ever feel your face getting hot and blushing?	1	2	3	4
19. Insomnia	How have you been sleeping?	1	2	3	4
20. Nightmares	Do you have dreams that scare you?	1	2	3	4

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4. An item is scored positive and present when:  
 A. Behavior is observed  
 B. Behavior was described by the patient as having occurred
- C. Patient admits that symptom is still a problem  
 5. An item is scored negative and not present when:  
 A. Symptom has not occurred and not a

TABLE III — *The Self-rating Anxiety Scale (SAS)*

NAME \_\_\_\_\_ AGE \_\_\_\_\_ SEX: M \_\_\_ F \_\_\_  
 NO. \_\_\_\_\_ DATE \_\_\_\_\_

	None OR A little of the time	Some of the time	Good part of the time	Most OR All of the time
1. I feel more nervous and anxious than usual				
2. I feel afraid for no reason at all				
3. I get upset easily or feel panicky				
4. I feel like I'm falling apart and going to pieces				
5. I feel that everything is all right and nothing bad will happen				
6. My arms and legs shake and tremble				
7. I am bothered by headaches, neck and back pains				
8. I feel weak and get tired easily				
9. I feel calm and can sit still easily				
10. I can feel my heart beating fast				
11. I am bothered by dizzy spells				
12. I have fainting spells or feel like it				
13. I can breathe in and out easily				
14. I get feelings of numbness and tingling in my fingers, toes				
15. I am bothered by stomachaches or indigestion				
16. I have to empty my bladder often				
17. My hands are usually dry and warm				
18. My face gets hot and blushes				
19. I fall asleep easily and get a good night's rest				
20. I have nightmares				

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problem or present

B. Patient gives no information relevant to an item

C. Response is ambiguous even after suitable probing

A total raw score is obtained by a summation of the rated responses obtained for each of the 20 items.

*Self-rating Anxiety Scale (SAS)*

For the purpose of constructing the SAS,

illustrative verbatim records were made from patient interview and examples were selected for inclusion which were most representative for the particular symptom. Table III is the actual form of the SAS as it is used and to be scored by the patient. The SAS is based on the same 20 diagnostic criteria as the observer rated Anxiety Status Inventory.

So that the patient is less able to discern a trend in his answers, the scale was devised

TABLE IV — Key for Scoring Self-rating Anxiety Scale (SAS)

	None OR A little of the time	Some of the time	Good part of the time	Most OR All of the time
1. I feel more nervous and anxious than usual	1	2	3	4
2. I feel afraid for no reason at all	1	2	3	4
3. I get upset easily or feel panicky	1	2	3	4
4. I feel like I'm falling apart and going to pieces	1	2	3	4
5. I feel that everything is all right and nothing bad will happen	4	3	2	1
6. My arms and legs shake and tremble	1	2	3	4
7. I am bothered by headaches, neck and back pains	1	2	3	4
8. I feel weak and get tired easily	1	2	3	4
9. I feel calm and can sit still easily	4	3	2	1
10. I can feel my heart beating fast	1	2	3	4
11. I am bothered by dizzy spells	1	2	3	4
12. I have fainting spells or feel like it	1	2	3	4
13. I can breathe in and out easily	4	3	2	1
14. I get feelings of numbness and tingling in my fingers, toes	1	2	3	4
15. I am bothered by stomachaches or indigestion	1	2	3	4
16. I have to empty my bladder often	1	2	3	4
17. My hands are usually dry and warm	1	3	2	4
18. My face gets hot and blushes	1	2	3	4
19. I fall asleep easily and get a good night's rest	4	3	2	1
20. I have nightmares	1	2	3	4

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so that of the 20 items used, some of the items were worded symptomatically positive, and others symptomatically negative, depending upon their suitability and usage. In addition, an even-number of columns were used to eliminate the possibility of a patient checking middle and extreme columns.

In using the scale, the patient was asked to rate each of the 20 items as to how it applied to him within the past week, in the following four quantitative terms: None OR A little of the time, Some of the time, Good part of the time, Most OR All of the time. The SAS is constructed so that the less anxious patient will have a low score on the scale, and the more anxious patient will have

a higher score. In scoring the SAS, a value of 1, 2, 3 and 4 is assigned to a response depending upon whether the item was worded positively or negatively. A key for scoring this scale can be simply made up, as shown in Table IV.

An index for the SAS (and for the observer rated Anxiety Status Inventory or ASI) was derived by dividing the sum of the values (raw scores) obtained on the 20 items by the maximum possible score of 80, converted to a decimal and multiplied by 100 (see Table V).

In order to prevent confusion between the ASI and SAS results, the converted ASI score is called a Z score and the converted SAS

TABLE V

*A table for the conversion of raw scores to ASI and SAS indices*

Raw Score	ASI & SAS Index	Raw Score	ASI & SAS Index	Raw Score	ASI & SAS Index
20	25	40	50	60	75
21	26	41	51	61	76
22	28	42	53	62	78
23	29	43	54	63	79
24	30	44	55	64	80
25	31	45	56	65	81
26	33	46	58	66	83
27	34	47	59	67	84
28	35	48	60	68	85
29	36	49	61	69	86
30	38	50	63	70	88
31	39	51	64	71	89
32	40	52	65	72	90
33	41	53	66	73	91
34	43	54	68	74	92
35	44	55	69	75	94
36	45	56	70	76	95
37	46	57	71	77	96
38	48	58	73	78	98
39	49	59	74	79	99
				80	100

TABLE VI

*Distribution of patients tested by their age, sex, and psychiatric diagnoses at time of discharge*

AGE	N	%
19 & under	8	3.6
20 - 39	97	43.1
40 - 64	112	49.7
65 & over	8	3.6
	225	100.0
SEX		
Males	175	
Females	50	
	225	
DIAGNOSES		
Mental Retardation	1	0.4
Organic Brain Syndrome	5	2.2
Schizophrenia	25	11.1
Anxiety Disorder	22	9.8
Depressive Disorder	96	42.9
Obsessive Compulsive Disorder	7	3.2
Personality Disorders	54	24.2
Psychophysiological Disorders	2	0.9
Transient Situational Disturbances	12	5.3
		100.0
No Psychiatric Diagnosis	1	
	225	

score is called an index.

*Taylor Manifest Anxiety Scale (TMAS)*

The TMAS consists of 50 items drawn from the Minnesota Multiphasic Personality Inventory (MMPI) judged to be indicative of manifest anxiety.<sup>6</sup> Since this is a commonly used scale in anxiety studies, we included it in our investigation.

*Data Collection*

The data for this study were obtained as follows: all new patients admitted to the psychiatric in-patient service of the hospital for 15 consecutive months, and all new patients seen at the out-patient clinic for 4 consecutive months were seen and tested. Patients were first given the self-rating form of the anxiety scales (SAS and TMAS), after which an interview was conducted to complete the interview-rating form of the anxiety scale (ASI).

The self-rated forms were not looked at nor scored until the completion of the study.

The SAS was given on randomly selected days to a normal control group of 100 individuals, who were at work at the hospital. They consisted of approximately an equal number of professional and non-professional staff members.

RESULTS

*Subjects Tested*

A total of 225 patients were tested during the period of study. The inpatient population (N=152) were all men, whose ages ranged from 22 to 75 years (m=45). The out-patient population (N=73) had 23 men and 50 women, whose ages ranged from 14 to 72 years old (m=32). The total mean age for all 225 subjects was 41 years old. Each patient was given a diagnosis at the time of discharge by his psychiatrist, and was done without any knowledge of the scale results. The distribution of all patients tested by their age, sex and diagnoses are presented in Table VI.

A total of 100 normal adult subjects were tested. There were 57 men and 43 women. Their ages ranged from 18 to 62 years old (m=34).

*Anxiety Status Inventory (ASI)*

Results of the ASI for the five largest diagnostic groups which comprised 93% of the total patient population tested are presented in Table VII. Statistical tests of significance using analysis of variance indicated that the mean ASI Z score obtained by patients with diagnoses of anxiety disorders was significantly higher than those of the other four diagnostic groups (P = < 0.05).

*Self-rating Anxiety Scale (SAS)*

Results of the SAS for the five largest diagnostic groups are presented in Table VIII. Analysis of variance indicated that the mean SAS index obtained by patients with diagnosis of anxiety disorders was significantly higher than those of the other four diagnostic groups (P = < 0.05). In addition, the mean SAS index obtained from normal control sub-

TABLE VII

*Anxiety Status Inventory (ASI) Z Scores for the various diagnostic groups tested*

Group	Diagnosis	N	ASI Z Score Mean & S.D.
1	Anxiety Disorder	22	62.0 ± 13.8
2	Schizophrenia	25	49.4 ± 15.9
3	Depressive Disorder	96	49.9 ± 12.5
4	Personality Disorder	54	52.6 ± 13.6
5	Transient Situational Disturbances	12	42.0 ± 8.1

TABLE VIII

*Self-rating Anxiety Scale (SAS) indices for the various diagnostic groups tested*

Group	Diagnosis	N	SAS Index Mean & S.D.
1	Anxiety Disorder	22	58.7 ± 13.5
2	Schizophrenia	25	46.4 ± 12.9
3	Depressive Disorder	96	50.7 ± 13.4
4	Personality Disorder	54	51.2 ± 13.2
5	Transient Situational Disturbances	12	45.8 ± 11.9
		209	
6	Controls	100	33.8 ± 5.9

jects was significantly lower than all five of the patient diagnostic groups ( $P = < 0.01$ ).

Table IX rank orders the 20 items of the SAS as quantitated by the patients with anxiety disorders, listed in decreasing order of severity, and arbitrarily divided into thirds. It can be seen that these patients complained

as being the worst (upper third) the following affective symptoms: feelings of mental disintegration, anxiousness and apprehension, and somatically: symptoms referable to the musculoskeletal and gastrointestinal systems. By comparison, Wheeler et al.<sup>5</sup> noted in their study that the most frequent complaints by patients with anxiety neurosis as involving the cardiovascular and respiratory systems (see Table I).

**TABLE IX**

*Severity of Symptoms of Patients with Anxiety Disorders*

Rank Order	Mean SAS Score	Item No.	Items: in Decreasing Order of Severity
1	2.8	4	Mental disintegration
	2.8	6	Tremors
2	2.6	7	Body aches and pains
3	2.5	1	Anxiousness
	2.5	5	Apprehension
	2.5	15	Nausea and vomiting
4	2.4	2	Fear
	2.4	3	Panic
	2.4	10	Palpitation
	2.4	14	Paresthesias
	2.4	16	Urinary frequency
5	2.2	17	Sweating
6	2.1	8	Fatigue
	2.1	13	Dyspnea
	2.1	20	Nightmares
7	2.0	9	Restlessness
	2.0	11	Dizziness
	2.0	12	Faintness
	2.0	18	Face flushing
	2.0	19	Insomnia

**TABLE X**

*Taylor Manifest Anxiety Scale (TMAS) Scores for the various diagnostic groups tested*

Group	Diagnosis	N	TMAS Score Mean & S.D.
1	Anxiety Disorder	22	31.0 ± 15.3
2	Schizophrenia	25	23.0 ± 13.5
3	Depressive Disorder	96	25.1 ± 13.5
4	Personality Disorder	54	31.7 ± 10.8
5	Transient Situational Disturbances	12	29.3 ± 7.0

*Taylor Manifest Anxiety Scale (TMAS)*

Results of the TMAS for the five largest diagnostic groups are presented in Table X. Analysis of variance indicated the mean TMAS scores obtained for these diagnostic groups were not significantly different from each other ( $P = > 0.05$ ).

*Correlation between ASI, SAS and TMAS*

Pearson product-moment correlation for calculation of the coefficient  $r$  on data obtained from all patients was performed. All of the coefficients  $r$  calculated were statistically significant, with  $P = < 0.01$  in all instances.

The correlation between the ASI and SAS was 0.66. Correlation between the ASI and TMAS, and SAS and TMAS were 0.33 and 0.30, respectively. Correlation between the ASI and SAS scores for patients with a diagnosis of anxiety disorder was 0.74.

Split half correlations for the ten even-numbered and the ten odd-numbered ASI items, and similarly, for the even-odd SAS items were 0.83 and 0.71, respectively.

Correlations between items 1 through 20 of the ASI with the ASI Z score were as follows: 0.50, 0.56, 0.65, 0.65, 0.64, 0.50, 0.52, 0.34, 0.51, 0.65, 0.61, 0.65, 0.42, 0.63, 0.60, 0.39, 0.54, 0.49, 0.58, and 0.47, respectively.

Correlations between items 1 through 20 of the SAS with the SAS index were as follows: 0.39, 0.53, 0.57, 0.69, 0.50, 0.56, 0.58, 0.40, 0.50, 0.64, 0.47, 0.51, 0.27, 0.55, 0.61, 0.62, 0.42, 0.47, and 0.49, respectively.

**DISCUSSION**

Anxiety scales available and in use today can be divided into those which are general and measure anxiety as a personality trait or



feeling state, and those which are specific and measure anxiety as a clinical entity. They may also be grouped as those which are self-administered and those which are given by a trained interviewer. General instruments include those by Costello and Comrey<sup>7</sup>, whose anxiety scale was designed to measure a predisposition to develop anxious states; Cattell's anxiety scale<sup>8</sup> which is used to measure fluctuations in level of anxiety over short periods of time; and Taylor's manifest anxiety scale<sup>6</sup>. Use of a general scale for the measurement of anxiety as a clinical entity may tend to obscure results more than it would reveal. Thus, in a study of the TMAS, O'Connor et al.<sup>9</sup> did a factor analysis of their results and showed that as many as five different dimensions were involved in the items comprising the scale. Aggregate scores of such a scale may confound by blurring, and analysis by sub-groups of items may fail to indicate differences which may be present. Examples of specific anxiety scales include those by Hamilton<sup>10</sup> and Kellner and Sheffield<sup>11</sup>. These are both interviewer-rated scales and require a trained clinician to complete them.

In developing the presently reported rating instrument for measuring anxiety as a clinical entity, we felt that it would fulfill the previously mentioned criteria and that it would be a useful tool for our purpose. From the results obtained, it did appear to us that the two-part instrument, consisting of the self-rated SAS, and the clinician-rated ASI was useful in quantitating anxiety as an operationally defined disorder.

#### SYNOPSIS

A rating instrument for the measurement of anxiety as a clinical entity was devised as an attempt to quantitate the symptoms of this disorder, using the most commonly agreed upon diagnostic criteria. As a two-part instrument, it can be used as an interviewer-rated inventory (Anxiety Status Inventory or ASI),

or as a self-rated scale (Self-rating Anxiety Scale or SAS). Data was collected from a population of psychiatric patients using the new instrument and the Taylor Manifest Anxiety Scale (TMAS). Statistical analyses of the results indicated that the new instrument was able to differentiate significantly anxiety patients from patients with other diagnoses, whereas the TMAS did not. Correlation between the ASI and SAS, and between the individual items of the two-part instrument with their respective total scores were all significant.

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