

On Not Reinventing Wheels and making a WAIS-R look like a WAIS

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There is an old psychologist joke about the two psychologists who meet on the street. One opens the conversation with, "You're fine. How am I"? If this has any humor it is because it is unexpected both by social convention and by the fact that we really don't believe psychologists know enough to make the statement. The PAS might someday make it possible, and ruin the joke.

*It was suggested for this occasion I might tell something about my interactions with John Gittinger, how I met him, and how he and the PAS influenced my career. To do this means I have to talk about myself in public. As an I*fug I I need an excuse to do so. But, now I have it, so here goes!*

In the 1960's several of us at the University of Missouri spent a noon to noon retreat discussing possible research emphases for the University's Counseling Psychology program. A previous program focused on the nature of problems brought to counseling services by college students and methods of dealing with them had been very productive., 100 published papers, but had seemed to running down. Our goal was to find a new area of research and a plan for a research program. As I recall the other participants in the marathon discussion were Bill Chestnut, Carl Willis, Randolph Thrush and Helen Roehlke. We, of course, did not finish in 24 hours, but around 3 or 4 am we has agreed on some things:

Counseling Psychology had defined itself as being interested in "normal" people, but the heroes in the area were clinical psychologists and psychiatrists like Wolpe, Bandura, Freud, Alexander, Rogers, Ellis, and Murray, who seemed to look at the personality as dividing the sick from the sicker and the sickest. Rogers was a possible exception but his notions of becoming and self actualization did not seem to offer very good operational handles for research. We agreed we would begin with a search for a model that would better reflect the philosophy if counseling psychology rather than create our own.

We might end up creating our own, but it would be more efficient to have something to start with if we could find it. We had some requirements for the model. (1) It should reflect the rich variety of behavior that we could easily see; (2) It had to have a description of good psychological functioning (better than average) that also reflected the fact that well functioning people we knew were not like each other; and, (3) There should be the possibility if good psychometric assessment.

We found a possible model in a book titled "The Reasonable Adventurer and Others" by S. Roy Heath (1964). Heath's model was a typology developed from two dimensions, an inherited (primitive) dimension of impulsivity and a learned (compensated) dimension of ego integration. We had discussed a paper by Wallace (1966) who suggested that the possibility to do things was important in determining personality and that there might also be psychometric advantages in using such an approach. Wallace's idea of ability through was to give the Thematic Apperception test (TAT) conventionally and then again asking for the "sexiest" story to a card, or the most "hostile" story. The only instrument we could find that has usedability related to personality was the old Michigan Vocabulary Profile Test by E.B. Greene (1949)

The fundamental assumption underlying this test was that a person who was more interested in a general area would acquire more vocabulary, and more sophisticated vocabulary, in his/her area of special interest than in other areas.

This test never achieved any great popularity, and we never got around to trying it.

We did adopt the Heath model as a beginning and set about to see if others could reliably make the judgements Heath made and to search for ideas of assessment.

Poe's dissertation (1967) used three judges with a structured interview and the Myers-Briggs Type Indicator to investigate both the reliability of placement in Heath's model. Part of the structured interview was one TAT card presented normally and followed by asking for the most hostile story they could make up. The results were very promising. Interrater reliability for placement in six cells was about .70. A study by Ted Richardson (1967) followed with similar results. We were pleased so far, but at this point fate intervened.

The Big 8 Conference has an annual meeting of counseling and testing people, meeting serially at each institution to discuss common problems and any solutions found. It is an intriguing conference. They have four rules:

1. The name will be the Big 8 counseling and test conference;
2. There will be an annual meeting hosted serially by each university;
3. There will be no officers and no dues;
4. There will be no further rules. The custom developed that first session was sort of a cocktail party during which people would catch up on the year and a round table

where each university bragged about what they had been doing. The round table always concludes with the construction of a schedule of topical sessions for discussion during the next day and a half. I was excited about our beginning and was telling Jim Banning of the University of Colorado about what we had been doing. He kept saying, "That sounds like Dave Saunders." I said, "Who the hell is Dave Saunders?" When I got it straight, I had heard of Saunders, but in the context of factor analysis and moderator variables, not personality. Ted Volsky, Dean Lund, and Keith Davis held a discussion group where several of us learned the outlines of the Personality Assessment System (PAS).

Dave Saunders, John Gittinger, Keith Davis, and Ted Volsky had a symposium (1967) on the PAS, with papers by Davis, Gittinger, and Saunders, at the American Personnel and Guidance Association (now the American Counseling Association) convention that Spring and I arranged to meet with them after the symposium session.

Saunders offered to supply interpretations for several WAIS's if we would send them to him. We picked seven from the first batch we could find, which were from an inpatient alcoholic treatment program. The interpretations were from the Atlas (Gittinger, 1964) and 4 or 5 of them mentioned alcoholism in the interpretation as a potential problem.

It did not take long for me to realize what I had been doing for about two years was trying to invent something like the PAS. And, that these folks were at least ten years ahead of me. Shortly after we arranged for Dave to come to Missouri to give us lessons in PAS. He left a computer printout of

the Gittinger Atlas without an index or table of contents. It was an interesting exercise to construct a table of contents with Wine's book, a general description by John G. (The APGA paper) and a couple of research studies as the guides. It was a lot of work, but I might still recommend it as a way of getting *very* familiar with PAS interpretations. In the summer of 1968 I was in the Washington area for two weeks and called John to see if I could visit his operation and learn more about the system. I spent a whole Friday, mostly with John Wine who turned me loose in the files of Psychological Assessment Associates and copied much of the unpublished research that had been done, American Psychological Association symposia and so forth. At four that afternoon John Gittinger, Bob Goodnow, Bill Rook, a couple of other people and I adjourned to the Royal Warrant down the street for extended discussion.

After a couple of his usuals, John decided I should come home with him for dinner. Mary Frances met us at the door with a question, "Are you totaled?" We said no, but we might do that later. We talked for another five or six hours. I left Washington with about five pounds of xerox paper and enough work to keep me busy for the next 25 years. Discovery of the PAS led me to revise my thinking about Wechler scales. I had accepted the conventional wisdom that the reliabilities of the subtests were too low to allow differential interpretation, and the factor structure did not allow for interpretation of more than three to five factors. This conventional wisdom causes many psychologists to be offended by the PAS. To the scientist it should be a challenge to find out how it is done. I found Saunders' factor analysis easy to follow and persuasive. They were especially persuasive after we at

the Missouri factor analyzed a sample of our own WAIS's and got very similar results

Later John came to Missouri to give us advanced PAS lessons.

These incidents 24 years ago reoriented our research priorities at Missouri toward the PAS. We have had numerous (16) dissertations, a few master's theses, and a few other studies in addition. Some were very good studies, some were unfortunate. Some gave us results we expected and some were surprises.

Early on we managed to get two research grants, one from USOE and one from Social and Rehabilitation Services. Later John's organization gave us some research money. This money enabled us to do research not otherwise possible, for example, Mojonier's eye movement study (1975), Schowengerdt's calculus student study (1969), Cartwright's risk taking study (1968).

At present I am involved in writing a book with David Saunders about basic PAS theory. We hope this will be followed by a book on current Reference Group theory and an interpretive book.

All in all, meeting John Gittinger and his associates has resulted in a career which has been very satisfying. And, after 24 years, and learning to do a reasonably good job of interpreting PAS patterns, I am still amazed at some of the things John can infer from the test. We are not through with research in the system until we can get our rules to give us interpretations much closer than we do now to what John does on his feet. John continues to be very helpful in this process, supplying hypotheses and helping with interpretations of confusing

data, always with his ever present quirky sense of humor. An example of which is:

There was a young pilot named
Hyde Who crashed in an outhouse
and died. His partner named Pace
Crashed in the same place. And
now they're interred side by side.

And, now a small addition which I hope will make the PAS more useful.

How to Make a WAIS-R Look More Like a WAIS

C.J. Krauskopf

Except for the PAS group and a few other old diehards, the WAIS-R has nearly completely replaced the WAIS in clinical use. For those who wish to use the PAS, there are two situations to be faced when using the WAIS-R. One is where the WAIS-R has been given and one needs to derive PAS formulas, the other is when one wishes to give the WAIS-R and then derive the PAS.

In the first situation one can only use what one has. There are some differences between the two tests which are problematic, but I am encouraged by the comparisons I have made to believe the WAIS-R can give fairly accurate PAS patterns. The first problem is the Digit Span subtest where the administration procedure is quite different. On the WAIS-R, subjects are given both strings of digits at every level, rather than given the second only when they fail the first. PAS practitioners worried considerably about the practice effect which this change might introduce. While this is still a possible problem, two studies give some reassurance that differences will be less than anticipated Quereshi (Quereshi & Ostrowski, 1985) gave WAIS and WAIS-R in

counterbalanced order to a sample of college students and a similar study is reported in the WAIS-R manual (Wechsler, 1981). The test to test correlations (.86) are as high as the estimated reliabilities of the subtest for the WAIS-R (.83) and significantly higher than the reported reliability of the WAIS subtest (.66) suggesting that most classifications as I or E will be correct. Further this suggests the possibility that the WAIS-R may be the better test. The Picture Arrangement subtest is also a problem. The correlations from the manual and Querishi's study are quite low (approximately + .50) suggesting that without time credits (the major change in procedure) too many U's will look like A's. Since speed seems to be a large part of the differentiation of A's and U's it seems unlikely that the WAIS-R is the better test. b.) has problems with retest and on PA also shows that the WAIS-R has less variance than the WAIS, probably due to the elimination of time bonus scoring. A great deal of caution should be exercised when interpreting the A-U dimension from a WAIS-R.

If the PAS is going to be used we have to be more explicit about its use with WAIS-R Procedure

Three of the possible ways of trying to determine equivalence of the WAIS and WAIS-R for PAS purposes are a.) looking at the norms of the two tests to see what it takes in raw score performance to obtain a given standard score, b.) giving both tests to a sample and c.) re-scoring WAIS-R's as if they were WAIS's as far as possible. Each method can be used to project WAIS scores for WAIS-R's. The record forms have the data for method a.), the WAIS-R manual study and the Querishi study are available for method b.). For method c.) I used 44 WAIS-R's given by the Ohio State

University Office of Disability services in learning disability assessments, and in the OSU Psychology Department Clinic.

None of these methods is ideal. a.) has the problem of the equivalence of the norm groups ,b.) has problems with retest and practice effects and c.) requires some assumptions where content is not identical and procedures and scoring methods differ.

I used method c.) to develop procedures and checked their plausibility by the other two methods. In the WAIS-R sample the ages range from 18 to 38 with a median of 21. The IQ's range from 85 to 121 with a median of 108. The reasons for testing were academic achievement for most. This does not mean that they are all in danger of failing, but that someone thought they were not achieving what they should, or they were having special trouble in one or two courses. One was tested for a Mensa application. While some have been determined to be learning disabled, tutoring has been the primary recommendation for many. For the present purpose it should not be necessary to have a completely representative sample as long as there is sufficient range and no pronounced skew.

Each WAIS-R was rescored as if it were a WAIS with the assumptions specified below. Standard scores were plotted and mean differences computed. The plots and mean differences show which subtests on the WAIS-R give different results from the WAIS. If the tests were truly parallel and the standardization samples equivalent, the plots should be straight lines with no mean differences. If not the case then the procedure should show where adjustments should be made.

NL29 was computed on each test as a WAIS-R and again when scored as a WAIS. Using these data, data from the WAIS-R Manual (Wechsler, 1981) and Querishi's (1986) results, a threshold chart was constructed for the WAIS-R and NL29 which yield the same proportion of high and low scores in PAS terms. PAS formulas were then derived and compared for each test.

Results and Discussion

Rescoring 44 WAIS-R's by taking only the maximum digits forward plus the maximum digits backward and applying WAIS norms results in eight shifts from I on the WAIS-R to E on the WAIS. Most of the shifts occur when a change of one point will cross the threshold. Some of these discrepancies look like "anxious I's " who get more digits backwards than forward.

The rescoring of 44 WAIS-R's, however, only resulted in two A-U shifts. The threshold will produce about the same proportion of A's and U's.

On the other subtests plots of WAIS and WAIS-R scores produce nearly straight lines, with small shifts which appear due to slight differences in distributions of the two standardization samples. For example, Figure 1 presents plots of the Block Design and information subtests. The plots of A, DS and PC look much like the I plot. The plots of C, S and D look much like BD plot. OA looks quite neat in the range of 7 to 13, then curves upward, giving slightly higher standard scores for WAIS-R. The plot for PA is more mixed up, looking like a plot for a correlation of .50, which is what both the WAIS-R Manual and Querishi report.

If the original protocol is available, it looks better to rescore WAIS-R as if it were a WAIS.

It is interesting to speculate on why S, I and C appear to be easier tasks for the WAIS-R norm group than for the original WAIS group. In spite of the efforts of Psychological Corporation to make the norm sample representative of the US population, there has to be some distortion. For example, they use telephone books for sampling and not everyone has a telephone. Certainly, there was a difference in the distribution of telephones between 1955 and 1981. The volunteer effect is unknown. This might have more effect on the Fourth dimension, given the Stroop relation to volunteer and coerced research samples (Saunders, 1980). Still there is probably some effect of different patterns being more or less willing to volunteer to be tested. Another possibility given the nature of the subtests is that the kind of information tested is learned better by the current generation. Normal Level is lower on the WAIS-R by about a point, and IQ lower by 7 or 8 points. That means the new sample finds even the primitive tests a bit easier. But there is a larger difference in S, I and C. Since these three subtests, especially C and I, should be more influenced by schooling, maybe our schools are not as bad as advertised.

Table 1 is the major result of this exercise. It is a threshold chart which can be used with NL29 when only the WAIS-R scores are available. To use it compute NL29 in the usual manner (Wine, 1966), then use this chart to determine the PAS formula. Table 2 is Wine's threshold chart for comparison. Differences are in the thresholds for S, I, C and OA.

Giving and Scoring WAIS-R/PAS

When one has the opportunity to administer the WAIS-R, it is possible to obtain better PAS profiles while retaining the ability to score the test consistent with the WAIS-R manual. If one is able to do all of the following, Reference Group assignments can be made as well as deriving PAS formula. (Much of what follows will appear in more detail in Krauskopf & Saunders, 1994) Each step improves the PAS value:

1. Picture Arrangement - record all times (not just enforce time limits) and do not terminate the test prematurely, make sure items 1,2,3,4,5,8 and 10 are given even if WAIS-R rules might allow termination before some of them. If the subject gets WAIS-R item 1 correct, it can be assumed that WAIS item 2 would be correct. Substitute WAIS-R item 3, which is of appropriate difficulty, for the other missing WAIS item. These items can be scored by WAIS rules.
2. On all timed tests (except Digit Symbol) record all times to be used for WAIS scoring.
3. Administer the subtests in PAS order (I, C,D,A,S,PA,PC,BD,OA and DS - followed by CN and TE. If necessary administer Vocabulary last). This is the original WB-I order.
4. On Picture Completion - give all items to allow for scoring Q1. On Information - Do not terminate this subtest prematurely. Any item a subject might get right should be given and scored to allow for scoring Q2. WAIS-R raw score can be used with both WAIS norms for PAS and WAIS-R norms for IQ scoring.

6. On Digit Span - follow WAIS rules for administration, i.e. no second trial when the first trial is correct. In forensic or determination of services eligibility cases where this would be improper administration, give Vocabulary to serve as the fifth verbal subtest for computing IQ.

7. BD can be scored by WAIS rules by assuming similar performances on WAIS-R item 1 and WAIS item 2. Then give time bonuses by WAIS/ PAS rules.

8. C requires eliminating two items (from scoring) to get a WAIS score, item 3 and item 16.

9. S requires eliminating one item (from scoring) to get a WAIS score, item 4.

Given all the above, WAIS scores can be obtained for all subtests. When using this procedure follow WAIS rules and norms for obtaining standard scores. And, use traditional PAS procedures for determining pattern formula.

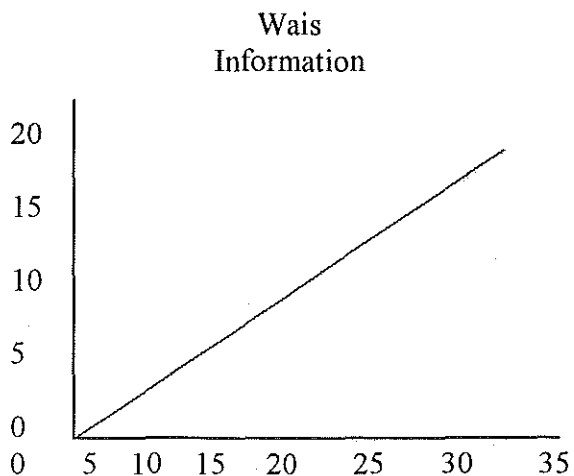
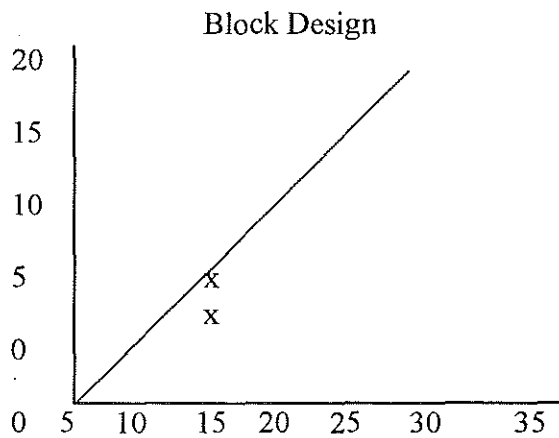
None of these modifications will prevent immediate scoring according to WAIS-R rules and norms. The WAIS-R Manual (Wechsler, 1981) mentions the following allowable exceptions to standard procedure:

1. Administration in two sessions, especially for older adults.
2. Departure from standard order for older adults.
3. Departure from standard order for other reasons when the examiner finds it preferable.
4. Omit one subtest on the Verbal

section and one subtest on the Performance section. Tables are provided to estimate sums of scaled scores when subtests are omitted.

5. Continue beyond failure criterion. When this is done the correct items beyond the failure criterion are not used for determination of IQ.

Normal Level should be computed on WAIS norms when the test was modified, and the WAIS thresholds used. When working with an existing WAIS-R the chart (Table 1) assumes WAIS-R norms. When working with WAIS-R norms NL will be about one point lower on average than it would be with WAIS scoring.



References

Cartwright, J.L., (1986). A comparison of a general and a differential predictor of risk taking. PhD, University of Missouri, Columbia. (*Dissertation Abstracts*, 29B, 3077.)

Gittinger, J.W. (1964). *Personality Assessment Systems (Atlas)*. New York: Human Ecology Fund.

Greene, E.B. (1949). *The Michigan Vocabulary Profile Test: Revised Manual*. Yonkers-on-Hudson: World.

Heath, S.R. (1964) *The Reasonable Adventurer and Others*. Pittsburgh: University of Pittsburgh Press.

Krauskopf, C.J. & Saunders, D.R. (1994, in press) *Personality and Ability: The Personality Assessment System*, Lanham, MD: University Press of America.

Mojonnier, T.G. (1975) The Personality Assessment System and reflective eye movement. PhD, University of Missouri, Columbia. (*Dissertation Abstracts*, 37B, 1917.)

Poe, C.(1966) Placement in Heath's model of personality: Reliability and assessment. PhD, University of Missouri, Columbia. (*Dissertation Abstracts*, 28B, 3276.)

Quereshi, M.Y. & Ostrowski, M.J. (1985) The comparability of three Wechsler adult intelligence scales in a college sample. *Journal of Clinical Psychology*, 41, 397-407.

Richardson, T. (1967). Unpublished study.

Saunders, D.R. (1980) Definition of Stroop interference in volunteers. *Perceptual and Motor Skills*, 51, 343-354

Schowengerdt, G.C. (1969) The relationship of student and instructor PAS type to student achievement in calculus. PhD, University of Missouri, Columbia. (*Dissertation Abstracts*, 30B, 528.)

Volsky, T. (Chr.) (1967, March). *A Symposium on clients: A new approach based on abilities*. Presented to the American

Wechsler, D. D. (1981). *WAIS-R Manual*. New York: Psychological Corporation.

Winne, J.F. *Personality Assessment System: A Summary*. Washington, D.C.: Psychological Assessment Associates.

TABLE 1
PAS PERSONALITY FACTORS
WAIS-R

Subtest	Deviation from Normal Level										Notes
	-6	-5	-4	-3	-2	-1	ML	+1	+2	+3	
Digit Span	E	E	E	E	I	I	I	I	I	a	
Arithmetic	u	u	u	u	c	c	c	c	c	b	
Information	u	u	u	u	u	c	c	c	c	c	
Block Design	F	F	F	F	F	F	R	R	R	R	
Similarities	R	u	u	u	u	c	c	c	c	c	R c
Comprehension	F	c	c	c	c	u	u	u	u	F	
Picture Arr.	u	u	u	u	A	A	A	A	A	A	
Picture	A	c	c	c	c	u	u	u	u	A	d, e
Completion	u	u	u	u	c	c	c	c	c	U	
Obj. Assembly	c	c	c	c	c	c	u	u	u	u	
Digit Symbol	1	1	1	1	m	m	m	h	h	h	

Notes:

- If D is 3 points below ML and A is 3 or more points below D, the formulation is Iu (or Iu*, if Arithmetic is u*).
- Regardless of ML, a weighted score on A + 11 is never u.
- Use Row R if BD is R; use Row F if BD is F.
- Use Row A if PA is A; use Row U if PA is U.

TABLE 2
WAIS

Subtest	Deviation from Normal Level										Notes
	-6	-5	-4	-3	-2	-1	ML	+1	+2	+3	
Digit Span	E	E	E	E	I	I	I	I	I	a	
Arithmetic	u	u	u	u	c	c	c	c	c	b	
Information	u	u	u	u	u	u	c	c	c	c	
Block Design	F	F	F	F	F	F	R	R	R	R	
Similarities	R	u	u	u	u	u	c	c	c	c	R c
Comprehension	F	c	c	c	c	c	u	u	u	F	
Picture Arr.	u	u	u	u	A	A	A	A	A	A	
Picture	A	c	c	c	c	u	u	u	u	A	d, e
Completion	u	u	u	u	c	c	c	c	c	U	
Obj. Assembly	c	c	c	c	c	c	u	u	u	u	
Digit Symbol	1	1	1	1	m	m	m	h	h	h	

Notes:

- If D is 3 points below ML and A is 3 or more points below D, the formulation is Iu (or Iu*, if Arithmetic is u*).
- Regardless of ML, a weighted score on A + 12 is never u.
- Use Row R if BD is R; use Row F if BD is F.
- Use Row A if PA is A; use Row U if PA is U.