Physical and Mental Impairment-of-Function Evaluation in the Aged: The PAMIE Scale

Lee Gurel, PhD, Margaret W. Linn, MSSW, and Bernard S. Linn, MD

The literature is replete with methodologically sophisticated instruments for quantifying the behavioral and symptomatic manifestations of mental disorder. Citations to major works in these areas can be found in studies by Cohen, Gurel, and Stumpf (1966), Gurel (1967), and Lyerly and Abbott (1966). However, little of this instrumentation is directly applicable to broader populations of the aging and non-psychiatric chronically ill. Typically, such measures were developed within fairly traditional and narrowly defined psychiatric contexts, on S samples from which the aged were usually systematically excluded, and without coverage of impaired functioning in the physical realm.

By way of contrast, a viable technology for the systematic recording of behavior in non-psychiatric chronically ill populations is presently much more a hope than a reality. Most published studies in this area reflect one basic strategy, one, interestingly, which goes to an opposite extreme of neglecting disturbed mental processes. This approach usually involves rating disability or handicap in some combination of self-care activities: feeding, bathing, dressing, toileting/continence, and locomotion/transfer. Such an approach is exemplified in the work of Kelman and Muller (Kelman, 1962; Kelman & Muller, 1962; Muller, 1961), Watson and Fulton (1967), Katz, Ford, Moskowitz, Jackson, and Jaffe (1963), and Gurel and Davis (1967). The latter two groups of investigators combined ratings in the separate functional areas into categorical (Katz et al.) or additive (Gurel & Davis) total scores. Although less explicitly so, the same self-care areas would seem to be central to the three-category classification of “physical capacity” of Kahn, Goldfarb, Pollack, and Gerber (1960) and to Miller’s (1965) five-point scales of “physical capacity” and of “behavioral capacity.”

Perhaps the most comprehensive and methodologically advanced effort to date is the Stockton Geriatric Rating Scale (Meer & Baker, 1966). The Stockton scale also served as the nucleus for a similar type of instrument used at the Bronx State Hospital (Plutchik, Conte, Lieberman, Bakur, Grossman, & Lehrman, 1970). It is to this kind of instrument that the Physical and Mental Impairment-of-Function Evaluation (PAMIE) is most closely related.

The present paper reports the development and use of the PAMIE as an instrument for the quantitative description of a wide range of behaviors relevant to the adult chronically ill generally and to institutionalized geriatric patients specifically. Factor analytic data as to the dimensionality of the PAMIE are presented, as are validity data based on relationships with external criteria.

Method

Rationale

The several theoretical considerations and the scale construction preferences which guided development of the PAMIE are best made explicit. The most important of these was the intent that the PAMIE reflect the psychobi-
logical unity of behavior in the chronically ill. In light of the multiple pathology and complex interplay of psyche and soma in the aged, it was our view that a scale should adequately reflect the essential unity and organicism integrity of the individual. A corollary requirement was that the PAMIE yield a multifunctional assessment, one that would reflect physical, psychological, and social/interpersonal disabilities.

In the matter of item selection and format, we attempted to develop simply worded items which required a maximum of straightforward reporting of overt behavior and a minimum of inference as to the meaning of that behavior. In addition to considerations of maximizing reliability, the emphasis on reporting observable behavior was intended to thwart the implicit categorizing and stereotyping which characterize all such ratings.

Finally, we chose to use a predominantly yes-no response format in preference to scales with a greater number of rating points. While for the same number of items, the latter structure usually yields better differentiation of ratees, the dichotomized response format is less dependent on having well trained and highly motivated raters and is therefore suitable for use in a wider range of care settings.

Background

The PAMIE was an outgrowth of two previously used instruments. The first of these, the Self-care Inventory (SCI), consisted simply of severity ratings in the areas of ambulation, feeding, dressing, toileting, and bathing. The SCI had been used in several studies by the VA's Program Evaluation Staff: in a comparison of outcomes of patients transferred to nursing homes with patients who remained hospitalized (Dobson & Patterson, 1961), in a survey to identify infirm patients in VA hospitals (Gurel & Davis, 1967), and in evaluating the effectiveness of augmented treatment programs for geriatric patients (Watson & Fulton, 1967). That the SCI was found to be fairly useful is noteworthy in view of its simplicity. It would appear that even elementary and limited quantification offered a useful technique for studying the behavior of the chronically ill. A similar conclusion was reached by Katz, Downs, Cash, and Gratz (1970) in reviewing work with the Index of ADL—to which the SCI is similar in item content and format.

An effort to improve the SCI led to development of the 43-item Patient Evaluation Scale (PES). In addition to its major use in assessing the outplacement potential of patients in 18 VA hospitals (Gurel, 1968a, b), Walker and Dempsey (1967) used the PES to differentiate psychiatric patients with different release outcomes, and Watson and Fulton (1968) employed it as part of a broader measure used to evaluate a treatment program for seriously disabled geriatric patients.

The immediate relevance here of the PES lies in the factor analytic explorations of its dimensionality, since these provided a framework for addition, deletion, and revision of items in what was to become the PAMIE. Factor analyses of PES ratings on a medically heterogeneous sample of 3,668 patients suggested the following dimensions: Impairment in Ambulation, Self-care Dependency, Verbal Hostility, Bedfastness, Sensorimotor Impairment, Mental Disorganization/Confusion, and Cooperation. Revision of the PES into the 77-item PAMIE was intended to improve measurement of these seven factors and to yield five additional factors reflecting Deteriorated Appearance, Withdrawal/Apathy, Anxiety/Depression, Irritability, and Paranoid/Suspicion. In addition, several items not measuring any factor were included so as to measure specific points of concern when making a nursing home placement, e.g., blindness, ability to eat a regular diet, assaultiveness, etc.

Subjects

PAMIE ratings were obtained on all male veterans (N = 845) directly placed in nursing home care during a 6-mo. period from nine predominantly psychiatric and nine general medical VA hospitals. Their mean age was 66, and they had been hospitalized anywhere from almost literally 48 hours to 48 years. Forty-seven percent were general medical and surgical (GM&S) patients, and 53% were predominantly psychiatric (NP), although almost three-fourths of the NP patients also had an important concomitant medical condition. Ratings were completed by nursing personnel identified by local research staffs as having the best knowledge of a patient. Unless otherwise specified, PAMIE ratings were to be based on behavior during the week preceding rating.
Nurses provided other information, as did physicians and social workers, as part of a broader descriptive study (Gurel, Linn, Linn, Davis, & Maroney, 1970).

**Statistical analysis**

PAMIE intercorrelations were factored by the principal factor solution (Harman, 1960) with unities in the diagonal. Using Kaiser's normal varimax method (1958), 9-14 factors were rotated. Parallel analyses were run for the total sample and for the NP and GM&S sub-samples. Similarities among the rotated solutions were compared by computing $\theta$, a coefficient of congruence or factor similarity (Harman, 1960).

After selection of what appeared to be the optimal factor solution, factor scores were obtained on the basis of both simple unit weighting and differential weighting according to the magnitude of factor loadings.

Validity of the PAMIE factor scores was assessed by relating them to diagnostic data, impairment ratings on the Cumulative Illness Rating Scale (Linn, Linn, & Gurel, 1968), estimates of nursing time requirements, and other descriptive and biographic information.

**Results and Discussion**

**Factor Structure**

In contrast to the anticipated 12 dimensions, inspection of the rotated factor matrices indicated that the PAMIE could best be understood in terms of 10 factors plus the special issues items. These factors, with adjectival labels, and the items defining each of them are presented in Table 1. Strictly speaking, the preferred factor solution yielded only the first nine factors shown in Table 1. The tenth, Ambulatory (AMB), was arbitrarily extracted from the Self-care Dependent (SCD) factor in order to preserve the uniqueness of ambulation as an issue meriting separate attention.

The factors indicated in Table 1 seem generally self-descriptive, and an extended discussion of each would not appear to be necessary. SCD, the first and largest, reflects the usual self-care activities: dressing, toileting, grooming, bathing, and eating. That these areas do, in fact, cluster into a single dimension lends support to the validity of the practice of combining scores in these areas into a single measure of independence.

The second factor, Belligerent/Irritable (BELL), also contains elements of resistiveness, hostility, and lack of cooperation. High scores on this factor would describe a person who is not only irritable, in the sense of disagreeable, but who is probably also irritating to those around him. The two predicted factors, Verbal Hostility and Cooperation, which (in addition to Ambulation) failed to appear as clearly separable factors, can be seen to have fused with the elements of resistiveness and irritability to produce a single dimension. It would appear that raters could not meaningfully distinguish these as three separate issues, perhaps because of the irritating quality common to them all. In a solution with 10 factors rotated instead of 9, the more expressive forms of hostility would have been identified as a separate factor defined primarily by items 30, 40, 69, and 74; however, there seemed to be no useful purpose to be served by retaining overt hostility as a separate dimension.

As has been found by others to be the case, anxiety and depression, their conceptual distinction notwithstanding, were not empirically distinguished by the present analyses. The interested reader is referred to Cohen et al. (1966) for a discussion of this point.

Table 1 presents all item loadings of .30 or greater. As such, the one item (excluding the special issues items) which failed to load on any factor has been omitted. This was item 29, "Says he has special or superior abilities." Its highest loading was .25 on Paranoid/Suspicious (SUSP), the factor on which it had been expected to load, but at a considerably higher level.

The total sample factor structure presented in Table 1 proved to be gratifyingly stable when the data for the GM&S and NP sub-samples were factored separately. The only deviation from complete stability was the result of the ninth factor, Withdrawn/Apathetic (WAP), splitting apart in the GM&S group, with items going to MENT, ANX, and BED. The ninth factor found for the GM&S sub-sample consisted of the more overt expressions of hostility which would have emerged as a tenth factor in the total sample data. The mean $\theta$ values between total sample and sub-sample factor structures were as follows: .898 for the nine factors common to both total and NP samples, .904 for the eight factors common to both total and GM&S samples, .770 for the eight factors common to both NP and GM&S samples, and
Table 1. Factor Structure of the PAMIE.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCD</td>
<td>Care dependent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>62. Dresses w/o any help or supervision</td>
<td>- .82</td>
</tr>
<tr>
<td></td>
<td>75. Is dressed or has his clothes changed by someone</td>
<td>- .82</td>
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<tr>
<td></td>
<td>55. Uses the toilet w/o help or supervision</td>
<td>- .80</td>
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<tr>
<td></td>
<td>60. Is shaved by someone else</td>
<td>- .78</td>
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<tr>
<td></td>
<td>72. Shaves w/o help or supervision, other than being given supplies</td>
<td>- .78</td>
</tr>
<tr>
<td></td>
<td>7. Takes a bath, shower w/o help or supervision</td>
<td>- .73</td>
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<tr>
<td></td>
<td>49. Wets or soils once a week or more (MENT, .30)</td>
<td>- .65</td>
</tr>
<tr>
<td></td>
<td>68. Denies things for himself, like what to wear, items from kitchen or</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>45. Does things like brush teeth, comb hair, and clean nails w/o help or</td>
<td>- .61</td>
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<td></td>
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<td></td>
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<td></td>
<td>11. Eats w/o being closely supervised or encouraged</td>
<td>- .51</td>
</tr>
<tr>
<td>BELL</td>
<td>Belligerent/irritable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. Is irritable and grumpy</td>
<td>- .76</td>
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<td></td>
<td>36. Objects or gives you an argument before doing what he's told</td>
<td>- .75</td>
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<tr>
<td></td>
<td>61. Seems to resent it when asked to do things</td>
<td>- .74</td>
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<td></td>
<td>6. Gives sarcastic answers</td>
<td>- .72</td>
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<td></td>
<td>21. Given the staff a &quot;hard time.&quot;</td>
<td>- .70</td>
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<tr>
<td></td>
<td>13. Resists when asked to do things</td>
<td>- .69</td>
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<td></td>
<td>74. Yells at people when he's angry or upset</td>
<td>- .59</td>
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<tr>
<td></td>
<td>6. Acts as though he has a chip on his shoulder</td>
<td>- .56</td>
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<tr>
<td></td>
<td>63. Is often demanding (ANX, .31)</td>
<td>- .56</td>
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<td></td>
<td>27. Grabs and complains a lot (ANX, .34)</td>
<td>- .54</td>
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<tr>
<td></td>
<td>69. Swears; uses vulgar or obscene words</td>
<td>- .52</td>
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<tr>
<td></td>
<td>19. Is cooperative (BED, - .32)</td>
<td>- .32</td>
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<tr>
<td></td>
<td>40. Says he's going to hit people</td>
<td>- .30</td>
</tr>
<tr>
<td>MENT</td>
<td>Mentally disorganized/confused/used</td>
<td></td>
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<td></td>
<td>43. Keeps wandering off the subject when you talk w/ him</td>
<td>- .72</td>
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<td></td>
<td>66. Is confused</td>
<td>- .69</td>
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<td></td>
<td>15. Doesn't make much sense when he talks to you</td>
<td>- .67</td>
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<tr>
<td></td>
<td>77. Is watched closely so he doesn't wander</td>
<td>- .59</td>
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<tr>
<td></td>
<td>58. Sometimes talks out loud to himself</td>
<td>- .58</td>
</tr>
<tr>
<td></td>
<td>50. Has trouble remembering things (SCD, .32)</td>
<td>- .51</td>
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<tr>
<td></td>
<td>72. Most people would think him a mental patient</td>
<td>- .50</td>
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<td></td>
<td>70. When you try to get his attention, acts as though lost in a dream world</td>
<td>- .44</td>
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<tr>
<td></td>
<td>39. Seems unusually restless (ANX, .34)</td>
<td>- .43</td>
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<tr>
<td></td>
<td>34. Has taken his clothes off at the wrong time or place during the last 6</td>
<td>- .42</td>
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<tr>
<td></td>
<td>23. Knows who he is and where he is (BED, - .33)</td>
<td>- .42</td>
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<tr>
<td></td>
<td>41. Receives almost constant safety supervision (for careless smoking,</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>ANX</td>
<td>Anxious depressed</td>
<td></td>
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<tr>
<td></td>
<td>32. Says he's blue and depressed</td>
<td>.63</td>
</tr>
<tr>
<td></td>
<td>71. Looks worried and sad (WAP, .39)</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td>14. Seems unhappy (WAP, .34)</td>
<td>.59</td>
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<tr>
<td></td>
<td>54. Is easily upset when little things go wrong (BELL, .47)</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>47. Cries for no obvious reason</td>
<td>.45</td>
</tr>
<tr>
<td></td>
<td>27. Grips and complains a lot (BELL, .47)</td>
<td>.39+</td>
</tr>
<tr>
<td></td>
<td>39. Seems unusually restless (MENT, .45)</td>
<td>.34</td>
</tr>
<tr>
<td>BED</td>
<td>Bedfast/moribund</td>
<td></td>
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<tr>
<td></td>
<td>17. Is IV or tube fed once a week or more</td>
<td>.61</td>
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<tr>
<td></td>
<td>53. When needed, takes medication by mouth</td>
<td>- .51</td>
</tr>
<tr>
<td></td>
<td>3. Which of the following best fits the patient? (SCD, - .51)</td>
<td>- .47</td>
</tr>
<tr>
<td></td>
<td>1. In bed all or almost all day</td>
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<tr>
<td></td>
<td>2. More of the waking day in bed than out of bed</td>
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<td></td>
<td>3. About half the waking day in bed, about half out of bed</td>
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<td></td>
<td>4. More of the waking day out of bed than in bed</td>
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<td></td>
<td>5. Out of bed all or almost all day</td>
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<td></td>
<td>6. Is given bed baths (SCD, .50)</td>
<td>.40</td>
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<td></td>
<td>56. Conforms to hospital routine and treatment program (MENT, - .33)</td>
<td>- .39</td>
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<tr>
<td></td>
<td>26. Is toileted in bed by catheter and/or enema (SCD, .54)</td>
<td>.28</td>
</tr>
<tr>
<td></td>
<td>23. Knows who he is and where he is</td>
<td>- .33</td>
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<tr>
<td>DETER</td>
<td>Behaviorally deteriorated</td>
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<td></td>
<td>42. Looks sloppy</td>
<td>.66</td>
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<td></td>
<td>9. Is messy in eating (SCD, .36)</td>
<td>.54</td>
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<tr>
<td></td>
<td>8. Leaves his clothes unbuttoned (SCD, .31)</td>
<td>.47</td>
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<tr>
<td></td>
<td>38. Looks especially neat and clean</td>
<td>- .46</td>
</tr>
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<td></td>
<td>44. Is noisy: talks very loudly (MENT, .37)</td>
<td>- .31</td>
</tr>
<tr>
<td>SUSP</td>
<td>Paranoid suspicious</td>
<td></td>
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<td></td>
<td>28. Says other people dislike him or even hate him</td>
<td>.68</td>
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<td></td>
<td>26. Says, without good reason, that he's being mistreated or getting a raw</td>
<td>.68</td>
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<td></td>
<td>65. Says others are jealous of him</td>
<td>.64</td>
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<td></td>
<td>25. Blames other people for his difficulties</td>
<td>.58</td>
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<tr>
<td></td>
<td>12. Says he's not getting good care and treatment (BELL, .35)</td>
<td>.53</td>
</tr>
<tr>
<td></td>
<td>37. Is distrustful and suspicious (BELL, .32)</td>
<td>.47</td>
</tr>
<tr>
<td>SENSS</td>
<td>Sensorimotor impaired</td>
<td></td>
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<tr>
<td></td>
<td>18. Has one or both hands/arms missing or paralyzed (SCD, .30)</td>
<td>.69</td>
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<tr>
<td></td>
<td>51. Has one or both feet/legs missing or paralyzed (SCD, .37)</td>
<td>.64</td>
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<td></td>
<td>2. As far as you know, has the patient had one or more strokes (CVA)? (SCD,</td>
<td>.64</td>
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<tr>
<td></td>
<td>33. Is not interested in much of anything</td>
<td>.56</td>
</tr>
<tr>
<td></td>
<td>59. Chats with other patients</td>
<td>- .54</td>
</tr>
<tr>
<td></td>
<td>22. Ignores what goes on around him (MENT, .32)</td>
<td>.49</td>
</tr>
<tr>
<td>AMB</td>
<td>Ambulatory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Which of the following best fits the patient? (SCD, .73; BED, .32)</td>
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<tr>
<td></td>
<td>1. Has no problem in walking</td>
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<td>2. Slight difficulty in walking, but manages; may use cane</td>
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<td></td>
<td>3. Great difficulty in walking, but manages; may use crutches or stutter</td>
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<td></td>
<td>4. Uses wheelchair to get around by himself</td>
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<td></td>
<td>5. Uses wheelchair pushed by others</td>
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<td></td>
<td>6. Doesn't get around much; mostly or completely bedfast, or restricted to</td>
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<td></td>
<td>70. Gets own tray and takes it to eating place (SCD, - .72)</td>
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<td></td>
<td>52. Walks several steps w/o help (SCD, -.66)</td>
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<td></td>
<td>Special issues; note factor scored</td>
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<td>4. Eats a regular diet</td>
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<td>21. Is deaf or practically deaf, even with hearing aid</td>
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<td></td>
<td>30. Has hit someone or been in a fight in last 6 mo. (BELL, .34)</td>
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<td>35. Makes sexually suggestive remarks or gestures</td>
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<td></td>
<td>48. Says he would like to leave the hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>67. Is blind or practically so, even w/ glasses</td>
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</tbody>
</table>
a grand mean of .856 for all 25 instances of corresponding factors. In effect, what these values indicate is a high degree of uniformity in dimensionality of the PAMIE between the total sample and its component NP and GM&S sub-samples.

Correlations between the two sets of nine factor scores (excluding AMB) computed for each S by the unit and the differential weighting procedures ranged between .878 and .996, with a mean value of .975. The two sets of scores were therefore considered equivalent for purposes of further statistical analysis, and only the unit weighted scores are at issue in what follows.

Internal consistency (Cronbach alpha) coefficients and intercorrelations of the factor scores are presented in Table 2. Using Nunnally’s standard (1967), the alpha values would indicate that the PAMIE factors are sufficiently reliable for further use and exploration.

It can be seen in Table 2 that several of the factor scores were substantially correlated. This finding suggests that, although conceptually separable, the several kinds of disability measured by the PAMIE are often found together in the same S—at least as these disabilities are reported by observers. Confirmation of this interpretation was obtained by subjecting the matrix of factor score correlations in Table 2 to a second order factoring. Results of this analysis are presented in Table 3. As can be seen there, the clustering of PAMIE factor scores into three higher order dimensions is remarkably clearcut. That Self-care Dependency was the one score found to be importantly loaded on two factors, one reflecting Physical Infirmity and the second reflecting Psychological Deterioration, is of particular interest. This finding suggests that the need for assistance in

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**Table 2. Intercorrelation of PAMIE Factors (N = 845).**

<table>
<thead>
<tr>
<th></th>
<th>SCD</th>
<th>BELL</th>
<th>MENT</th>
<th>ANX</th>
<th>BED</th>
<th>DET</th>
<th>SUP</th>
<th>SENS</th>
<th>WAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-care dependent</td>
<td>914</td>
<td>161</td>
<td>494</td>
<td>181</td>
<td>585</td>
<td>474</td>
<td>006</td>
<td>459</td>
<td>336</td>
</tr>
<tr>
<td>Belligerent/irritable</td>
<td>885</td>
<td>255</td>
<td>411</td>
<td>154</td>
<td>296</td>
<td>545</td>
<td>058</td>
<td>187</td>
<td>099</td>
</tr>
<tr>
<td>Mentally disorganized</td>
<td>815</td>
<td>220</td>
<td>281</td>
<td>484</td>
<td>135</td>
<td>083</td>
<td>368</td>
<td>398</td>
<td>126</td>
</tr>
<tr>
<td>Anxious/depressed</td>
<td>765</td>
<td>165</td>
<td>190</td>
<td>342</td>
<td>113</td>
<td>276</td>
<td>084</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bedfast/moribund</td>
<td>669</td>
<td>292</td>
<td>927</td>
<td>325</td>
<td>301</td>
<td>062</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviorally deteriorated</td>
<td>681</td>
<td>150</td>
<td>203</td>
<td>267</td>
<td>288</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paranoid/suspicious</td>
<td>766</td>
<td>045</td>
<td>075</td>
<td>016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensorimotor impaired</td>
<td>735</td>
<td>086</td>
<td>047</td>
<td>016</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Withdrawn/apathetic</td>
<td>704</td>
<td>093</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambulatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note.—Diagonal entries are Cronbach alphas. For N = 845, values of .070, .092, and .118 are significant at the .05, .01, and .001 levels, respectively. Decimal points omitted in body of table.

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**Table 3. Second Order PAMIE Factors.**

<table>
<thead>
<tr>
<th>Factor 1—Physically infirm</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Ambulatory</td>
<td>.89</td>
</tr>
<tr>
<td>8. Sensorimotor impaired</td>
<td>.73</td>
</tr>
<tr>
<td>1. Self-care dependent</td>
<td>.73</td>
</tr>
<tr>
<td>5. Bedfast/moribund</td>
<td>.71</td>
</tr>
<tr>
<td>Factor 2—Psychologically deteriorated</td>
<td></td>
</tr>
<tr>
<td>3. Mentally disorganized/confused</td>
<td>.83</td>
</tr>
<tr>
<td>9. Withdrawn/apathetic</td>
<td>.73</td>
</tr>
<tr>
<td>6. Behaviorally deteriorated</td>
<td>.62</td>
</tr>
<tr>
<td>1. Self-care dependent</td>
<td>.51</td>
</tr>
<tr>
<td>5. Bedfast/moribund</td>
<td>.31</td>
</tr>
<tr>
<td>Factor 3—Psychologically apathetic</td>
<td></td>
</tr>
<tr>
<td>7. Paranoid/suspicious</td>
<td>.84</td>
</tr>
<tr>
<td>2. Belligerent/irritable</td>
<td>.82</td>
</tr>
<tr>
<td>4. Anxious/depressed</td>
<td>.65</td>
</tr>
</tbody>
</table>

Note.—All loadings of .30 or greater are shown.

---

self-care activities may be as relevant for the psychologically deteriorated patient as for the physically infirm patient, a view consistent with an earlier finding (Gurel & Davis, 1967) that “. . . psychiatric SCD patients need as much assistance as the physically disabled who better fit the stereotype of infirmity and who typically have greater access to assistance from others.”

**Validity**

The total sample was dichotomized into high vs. low scorers on each of the 19 measures shown in the left-hand column of Table 4. Differences between PAMIE factor score means for each of the comparisons were evaluated using t tests. The contrasts were between patients with none vs. some impairment as rated by physicians for 12 of the 13 areas of the Cumulative Illness Rating Scale (CIRS), between patients reported by nurses as needing more vs. less intensive nursing care, between patients seen by staff as having vs. not having a terminal prognosis, between patients for whom staff saw brief recuperation as the goal
of nursing home placement vs. patients for whom the goal was terminal care or long-term (> 6 mo.) stay, between patients seen by staff as appropriate vs. not appropriate for the more independent kinds of placements reflected in foster home or domiciliary care, and between patients who were dead vs. those alive at 6-mo. and 1-year follow-ups. These criteria were selected as particularly appropriate for evaluating the PAMIE with the present sample of nursing home placements, in that the criteria reflect extent of bodily impairment, effect of behavioral disfunction on nursing time requirements, feasibility of other placements requiring greater behavioral integrity, and anticipated and actual outcomes.

Results of these contrasts are summarized in Table 4. Over-all, it is evident that no criterion contrast failed to be distinguished by at least one of the PAMIE scores—albeit, in the case of discriminating those with and without CIRS ratings of hepatic impairment, only BED successfully discriminated, and at only the .05 level of significance. Similarly, no PAMIE score failed to discriminate at least three of the criterion groups. SUSP showed the smallest number of criterion relationships, discriminating only those patients inappropriate for foster home care and those with positive CIRS ratings of psychiatric and of endocrine-metabolic impairment. At the opposite extreme, the PAMIE scores reflecting primarily physical infirmity, SCD, BED, and AMB, discriminated almost all of the criterion dichotomies at the p = .05 level or better.

**COMMENT**

The PAMIE was originally developed to meet the need for an instrument which would yield a comprehensive behavioral evaluation of the disabilities of a heterogeneous group of patients going from hospital to nursing home care. Scales available at the time of data collection were felt to be both too limited in scope and too one-sided in their emphases on either mental disturbance or impaired physical functioning.

The data presented above suggest that the PAMIE does, in fact, yield the kind of multifunctional assessment for which it was designed. Factor analyses indicated that most of the 77 PAMIE items reflected a set of dimensions which, while sometimes substantially correlated, were sufficiently separable to be useful in defining a number of parameters within the otherwise overly broad domain of functional disabilities of the chronically ill aged. The factoring resulted in identification of ambulation, sensorimotor impairment, and bedfast/moribund status as dimensions within a broader

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Table 4. Summary of Significance of t Tests of PAMIE Factor Score Means for Contrasting Criterion Groups.

<table>
<thead>
<tr>
<th>Groups contrasted by:</th>
<th>SCD</th>
<th>BELL</th>
<th>MENT</th>
<th>ANX</th>
<th>BED</th>
<th>DET</th>
<th>SUSP</th>
<th>SENS</th>
<th>WAP</th>
<th>AMB</th>
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</thead>
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<tr>
<td>CIRS system impairment:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cardiac</td>
<td>+++</td>
<td>+</td>
<td>+</td>
<td>+++</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vascular</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Respiratory</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Upper GI</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lower GI</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Hepatic</td>
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<td>+</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<td>-</td>
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<tr>
<td>Renal</td>
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<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Other GU</td>
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<td>Psychiatric</td>
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<td>Endo-metabolic</td>
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<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Need for more nursing care</td>
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<td>Terminal prognosis</td>
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<td>Recuperation goal</td>
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<td>+</td>
<td>+</td>
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<td>Foster home appropriateness</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
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<tr>
<td>Domiciliary appropriateness</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Dead at 6 m. FU</td>
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<td>+</td>
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<td>+</td>
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<td>-</td>
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<tr>
<td>Dead at 1 year FU</td>
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<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note.—Sign: + or —, indicates direction of relationship. Number of signs indicates significance: +++ or ——— = p<.001, ++ or —— = p<.01, + or — = p<.05.
area of physical infirmity; also, mental disorganization and confusion, withdrawal and apathy, and behavioral deterioration as dimensions of a more general psychological deterioration; also, paranoid suspicion, belligerence and irritability, and anxiety and depression as dimensions of a broader psychological agitation. A tenth factor, self-care dependency, characterized both physical infirmity and psychological deterioration.

When factor analytic solutions were separately derived for general medical and surgical patients and for psychiatric patients and the solutions then compared, it was found that the solutions were quite similar. This finding would indicate that raters used comparable conceptual frameworks in describing the behavior of the two kinds of patients and that the PAMIE is thus suitable for use with both GM&S and NP patients.

Its other measurement characteristics aside, the most potent evidence for utility of the PAMIE was the fact that the factor scores were significantly related to several external criteria, i.e., that they were valid in the sense of being criterion relevant. These several findings indicate that the PAMIE shows considerable promise of being a useful tool for evaluating impaired functioning of a variety of chronically ill patients.  

**SUMMARY**

Based on experience with two earlier measures, the 77-item Physical and Mental Impairment-of-Function Evaluation was developed as a rating device for the quantitative description of a wide range of behaviors in the chronically ill aged. Ratings were obtained on 845 patients being placed from VA hospitals into nursing home care. Factor analyses of these ratings resulted in identification of 10 adequately reliable dimensions. These were shown to be valid to the extent of being related to several external criteria, including measures of body system impairment and mortality within a 1-year follow-up period. It was concluded that the PAMIE holds considerable promise for assessment of behavioral characteristics of the disabled aged.

---

**REFERENCES**


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Gurel, L. Dorothea Dix revisited: Extended care in the community as an alternative to hospitalization. Paper read at Gerontological Society meetings, Denver, October, 1968. (b)


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1 In this study, all Ss were males, and PAMIE items were written accordingly. However, one need only change the sex of pronouns and delete the two shaving items to make the PAMIE suitable for use with females.


