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# A Report on the Ratings of Psychiatrists Using the Psychiatric Impairment Rating Scale: Some Australian Data

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## Abstract

The *Psychiatric Impairment Rating Scale* has been used in Australia for over 20 years to determine a compensable proportion for patients with a personal injury. This study examined the records of the ratings of 30 psychiatrists on the scale. Psychological injury versus other injury was distinguished by the *PIRS*. Correlations between the aggregate score, the median class and the overall percentage impairment rating were all high (.819 to .960). The distribution of ratings on each of the six sub-functions varied markedly. There was a preponderance of category 3 ratings and the distribution of overall percentage impairment was skewed negatively. The coefficient alpha based on the aggregate score was .731. Independent ratings (N=15) of the same patients, however, showed substantial concurrent stability of judgements.

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## I. Introduction

The *Psychiatric Impairment Rating Scale* (Parmegiani, Lovell, Skinner, & Milton, 2001) has been used widely in Australia for over 20 years. It determines legal compensation for personal injury. The purpose of this paper is to evaluate the *Psychiatric Impairment Rating Scale* with results from psychiatric ratings for compensable personal injury cases.

The origin of this *Psychiatric Impairment Rating Scale* which has been used and mandated in compensation cases in Australia, lies in the *American Medical Association Guides to the Evaluation of Permanent Impairment* (now in its sixth edition, American Medical Association, 2008). Here, impairment is related specifically to mood disorders (e.g., major

depressive disorder, bipolar affective disorder), anxiety disorders and psychotic disorders but excludes disorders such as reactions to pain, somatoform disorders, dissociative disorders, personality disorders, psychosexual disorders, factitious disorders, substance abuse disorders, sleep disorders, dementia and delirium (Brigham, 2011, p. 39). Reference was made there to a *Psychiatric Impairment Rating Scale* as one method for rating the behavioural consequences of psychiatric disorders.

In 1999, the *Psychiatric Impairment Rating Scale* was introduced at the request of the New South Wales Motor Accidents Authority in response to dissatisfaction with the prevailing systems of psychiatric impairment rating for compensation purposes. It was intended to be analogous in its function to the system of physical impairment ratings, that is, with a similar requirement of around a 10% threshold for compensable whole person impairment (Parmegiani, 2009) and it has now found application in other jurisdictions in Australia (albeit with amendments):

The scale is referred to specifically in the section, titled “Mental and Behavioural Disorders” in the *Motor Accident Permanent Impairment Guidelines* (State Insurance Regulatory Authority, 2018, pp. 43-52). It sets out the six “areas of function” to be considered. Under the heading of Activities of Daily Living are included: (a) Self-care and personal hygiene; (b) Social and recreational activities; (c) Travel; and there are three additional areas of function, (d) Social functioning (relationships); (e) Concentration, persistence and pace; and (f) Adaptation/employability. Each area is rated from 1 to 5 and there are specific descriptions for each category. Each class from 1 to 5 represents a range of impairment: class 1 = 0-3%; class 2 = 4-10%, class 3 = 11-30%, class 4 = 31-60% and class 5 = 61-100%. The lowest aggregate score is 6 and the highest aggregate is 30. A sample of the *Psychiatric Impairment Rating Scale* and the conversion table is provided in the Appendix.

As in the American Medical Association guidelines, the impairment must be attributable to a psychiatric diagnosis (State Insurance Regulatory Authority, 2018, para 1.213). The State Insurance Regulatory Authority sets out a three- step method for rating psychiatric impairment that includes (a) determining the median class of the six areas; (b) calculating an aggregate of the class scores from the six areas; and (c) converting the median class and aggregate to a percentage whole person impairment (2018, para. 1.225).

## Previous research on the PIRS

Given the importance of the *Psychiatric Impairment Rating Scale* within a compensation context for many thousands of Australians, there has been little research on the scale. This lack of evaluation was mentioned almost from the outset and has been noted elsewhere in discussion of the American Medical Association guides to the evaluation of impairment. For instance, Young asserted: “...the modified PIRS has not been subject to research on its psychometric properties. Importantly, the system of taking the median value of the three ratings applied to individuals being assessed has not been subject to research on its validity” (Young, 2008, p. 173).

In discussing the origins and nature of the scale, Parmegiani noted that there was “No time to conduct research”. In 2009, he reported that there had been little research some ten years since its adoption. Still later, in 2013, Davies reiterated that the scale “was introduced without prior studies of reliability and validity” (p. 700) and in 2017 Mendelson and Mendelson

had commented: “There has been no published empirical study of the psychiatric impairment rating scale from any of the editions of the AMA Guides. (p. 304). In 2016, Warren complained that the scales have not undergone “rigorous standardization processes and do not have validity and reliability scales” (p. 324).

Davies (2008), however, had studied 148 patients undergoing a medico-legal assessment. He administered the *Psychiatric Impairment Rating Scale* together with other questionnaires: *Depression Anxiety Stress Scale* (Lovibond & Lovibond, 1995) and the *General Health Questionnaire* (Goldberg, 1972). The percentage impairment correlated .55 with depression, .61 with anxiety, .61 with stress and .55 with the general health. The intercorrelation between the scales was highest for Concentration and Employability (.58) and lowest for Social Functioning and Social and Recreation (.10).

In 2013, Davies examined 21 replies received from 135 psychiatrists. He compared the valuation on a scale from 0 to 100 with those obtained using the PIRS score conversion table. He also examined the ratings of a similar size sample of patients and concluded: “Valuations of the degree of disability for each class were, in all cases, much larger than the value obtained using the standard scoring system, suggesting that the level of impairment measured by the PIRS is undervalued” (p. 700). Although Davies referred to this as a study of “reliability” it was actually an indicator of concurrent validity between scale scores and psychiatrist ratings. It was not an indicator of psychometric reliability in the sense of stability, consistency or homogeneity of results (see the *Standards for Educational and Psychological Testing*—American Educational Research Association, American Psychological Association, National Council on Measurement in Education, 1999).

Within this limited background of research on a widely-used scale that has major implications for personal injury victims, some features of the ratings on the *Psychiatric Impairment Rating Scale* are examined. The research questions for the study were: (a) what are the distributions of the overall psychiatrist ratings of capacity on the *Psychiatric Impairment Rating Scale*; (b) what is the relationship between the aggregate score, the class of impairment and the percentage impairment; (c) what is the relationship between the six areas of sub-function; (d) is the *Psychiatric Impairment Rating Scale* able to distinguish psychiatric injury from other injury cases with psychological sequelae; (e) what is the stability of psychiatrist ratings on the *Psychiatric Impairment Rating Scale*; and (f) are there differences between psychiatrists in their ratings? Details of the procedure followed together with the assessments that were undertaken are outlined in the following section.

## II. Method

This study examined the ratings of 30 psychiatrists for 55 patients on the *Psychiatric Impairment Rating Scale*. The 55 records comprised: 22 work accident, 26 motor vehicle accident and there were seven accidents of a general nature (e.g., liability, medical negligence).

In 23 instances the original claim was for a purely psychiatric injury (e.g., anxiety, depression). In 32 instances the original injury was not psychiatric (e.g., traumatic brain injury, musculoskeletal injuries - upper extremity, lower extremity, back or

neck injury) but with psychological sequelae such as post-traumatic stress disorder.

**Instruments.** The *Psychiatric Impairment Rating Scale* comprises six sub-areas of function that are rated from 1 to 5: (a) self-care and personal hygiene; (b) social and recreational activities; (c) travel; (d) social functioning (relationships); (e) concentration; and (f) adaptation or employability. There are three measures that are derived: firstly, an aggregate score, secondly a median of the six ratings and finally, by reference to a table the percentage impairment is derived from the intersection of the median and the aggregate.

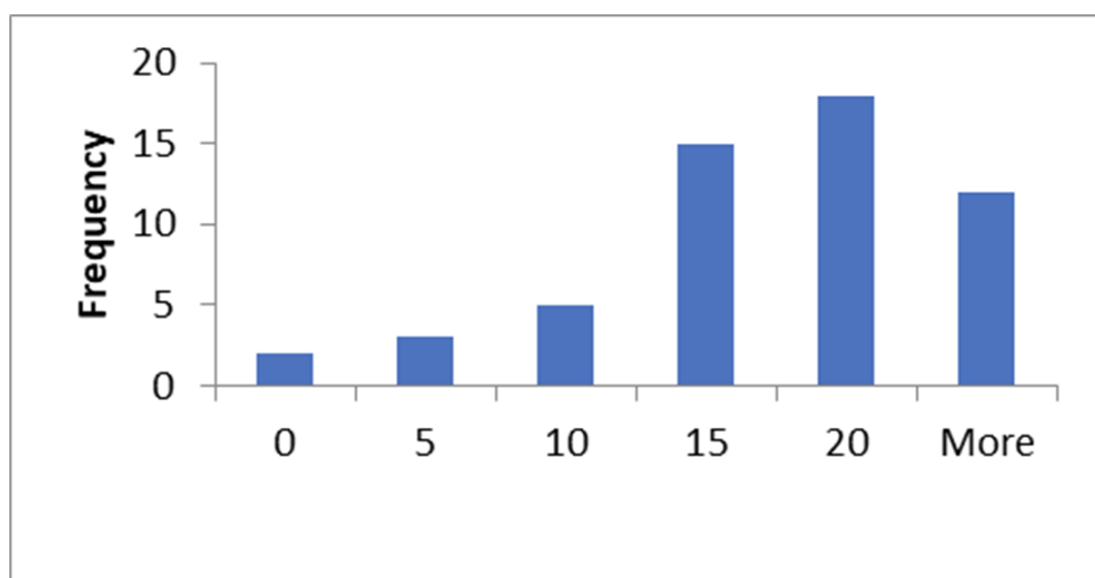
**Procedure.** The *Psychiatric Impairment Rating Scale* was derived from 55 separately reported medico-legal assessments of 30 psychiatrists. All were independent of the author. There were ratings from 17 psychiatrists on just one case; six psychiatrists had rated two cases; four rated three cases; two rated four cases; and one psychiatrist rated six cases, making up the total of 55 cases in all.

Serendipitously, results were available in 15 cases from two or more independent reports of the *Psychiatric Impairment Rating Scale* on the same patient and these findings were used to establish the stability of judgements. The 15 additional ratings were not included in the sample of 55 in order to avoid any double counting.

### III. Results

#### (a) What are the distributions of ratings on the Psychiatric Impairment Rating Scale (PIRS)

Psychiatrists rated the percentage impairment rating for the group from 0 to 26 with an average of 15.8% (SD=6.30, 95% CI=1.70). As expected, the distribution of percentage impairments is skewed negatively as the scale is applied only in select cases (see Figure 1).



**Figure 1.** PIRS percentage impairment.

The distribution of the aggregate score, however is more evenly distributed (see Figure 2). The mean total score on the scale was 15.4 (SD=2.91, 95% CI=0.78).

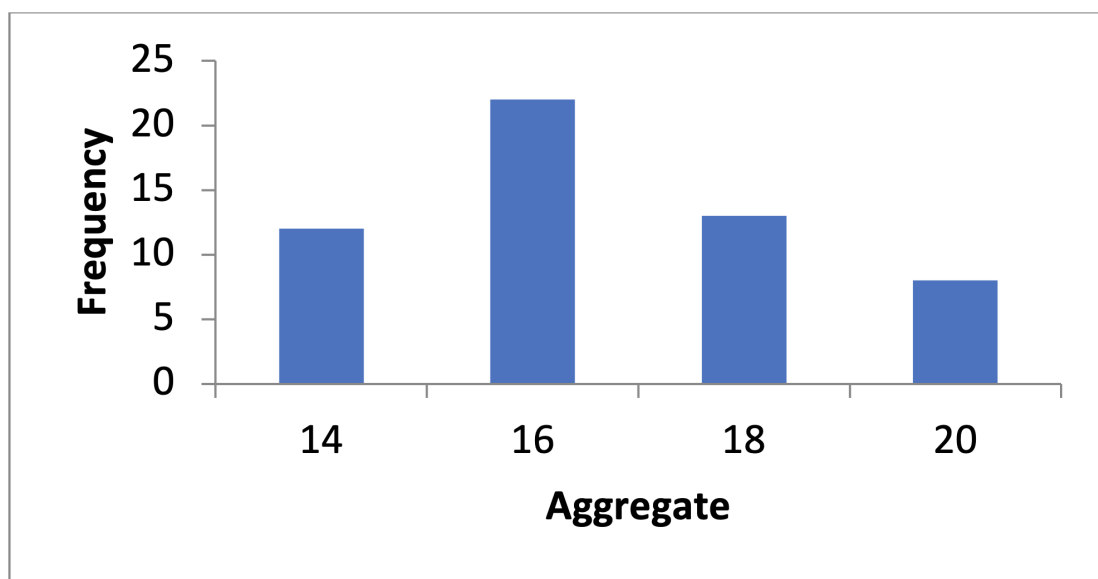


Figure 2. PIRS aggregate score.

The mean of the median class ratings was 2.76 (SD=0.49, 95% CI=0.13) and the preponderance of a category three rating is displayed in Figure 3.

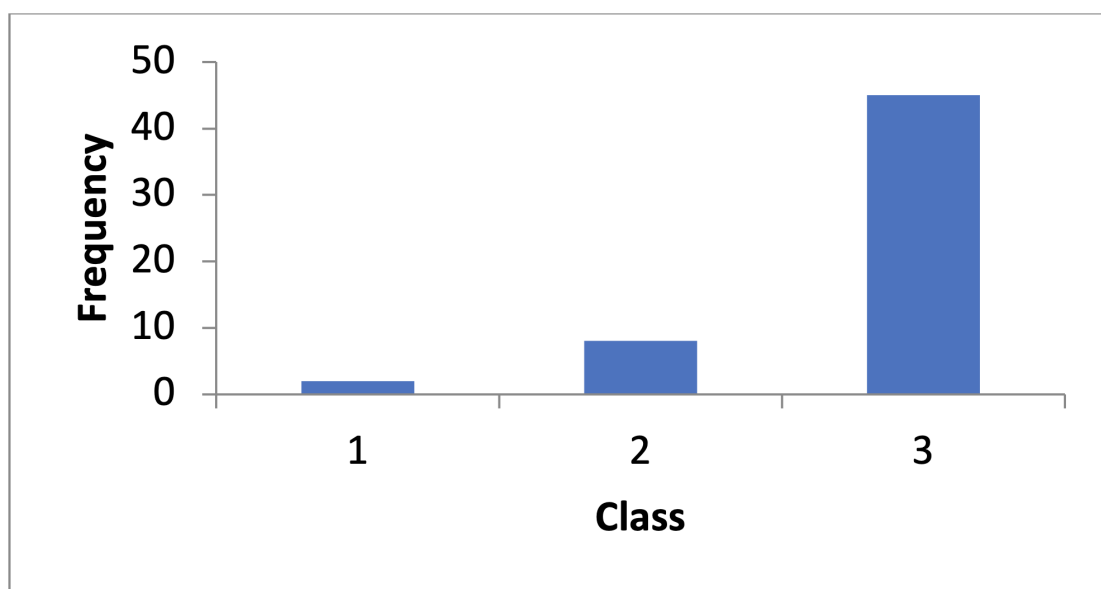


Figure 3. PIRS median class.

(b) What is the relationship between the aggregate score, the class of impairment and the percentage impairment?

The correlations between the aggregate score, the median class and the overall percentage impairment rating are listed in Table 1 and were all high (.819 to .960) indicating considerable overlap in the construct being assessed. Moreover, the multiple correlation between aggregate score and the median class in predicting the percentage impairment was 0.979 (adjusted R-square = .959).

**Table 1.** Intercorrelation of class, aggregate PIRS and impairment percentage

	Class	Aggregate	Impairment
Class	-		
Aggregate	.819	-	
%Impairment	.846	.960	-

### (c) Distribution and relationship of the six areas of sub-function on the Psychiatric Impairment Rating Scale (PIRS)

The distribution of ratings on each of the six sub-functions varied markedly. Self-care and personal hygiene (Figure 4), social and recreational activities (Figure 5), travel (Figure 6), social functioning (relationships) (Figure 7) and concentration (Figure 8) tended to be positively skewed. There was no category 5 rating on these sub-functions.

**Table 2.** Mean values on the sub-functions of the *Psychiatric Impairment Rating Scale*

	Mean	Standard Deviation	Confidence Level(95.0%)
Self care	2.24	0.67	0.18
Recreation	2.78	0.57	0.15
Travel	2.07	0.54	0.15
Social functioning	2.27	0.65	0.18
Concentration	2.67	0.58	0.16
Adaptation	3.44	1.15	0.31

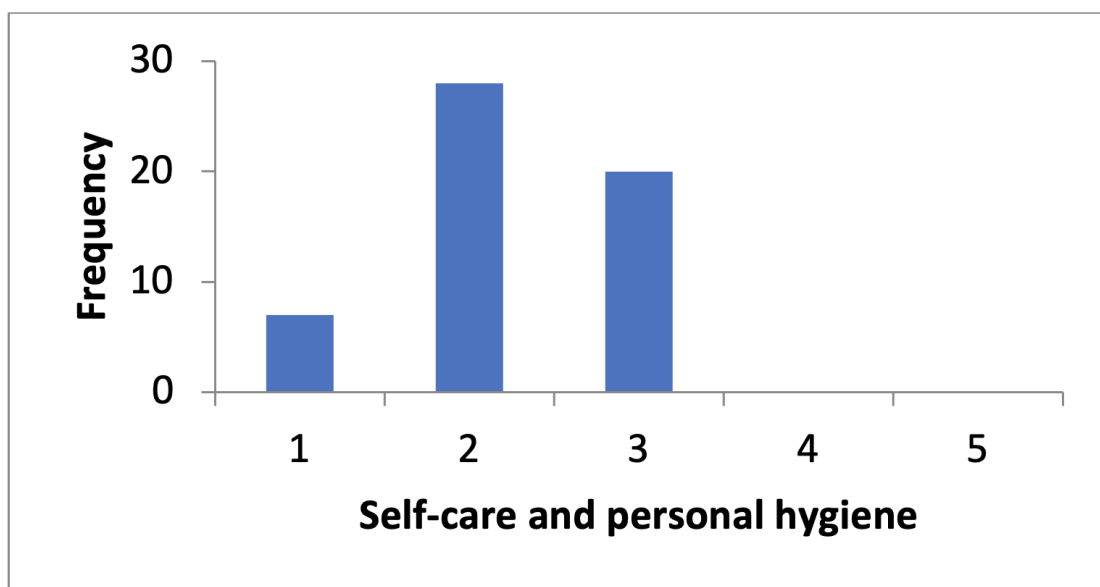


Figure 4. Self-care and personal hygiene.

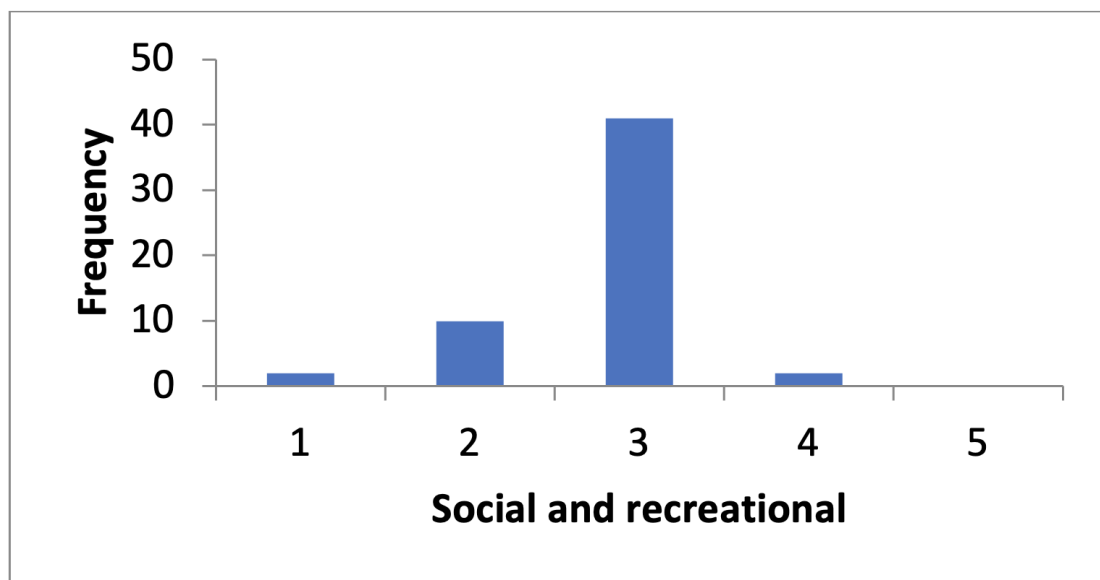


Figure 5. Social and recreational activities.

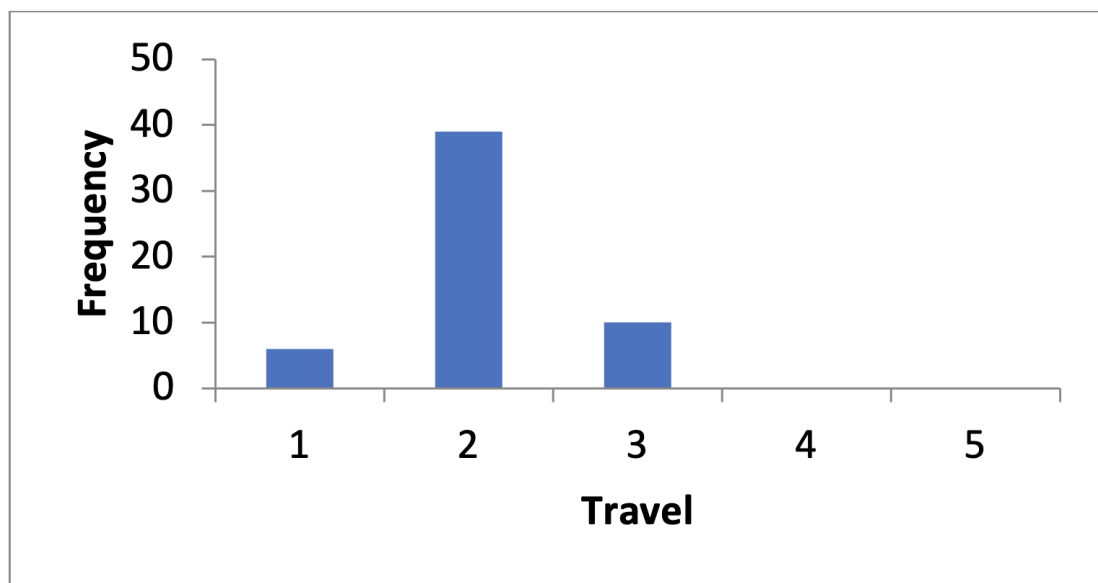


Figure 6. Travel.

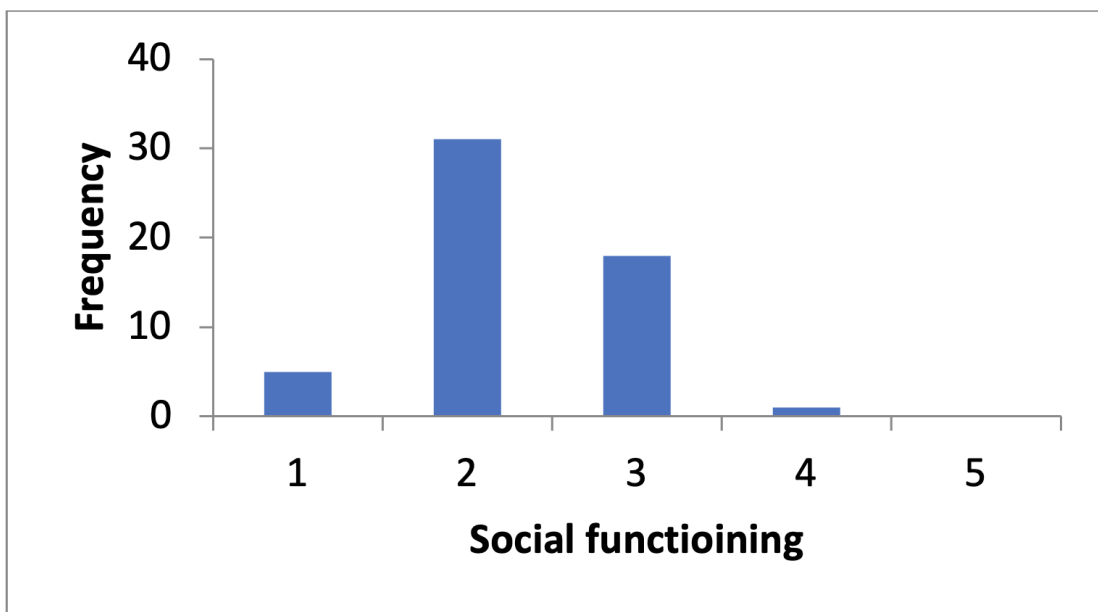


Figure 7. Social functioning (relationships).



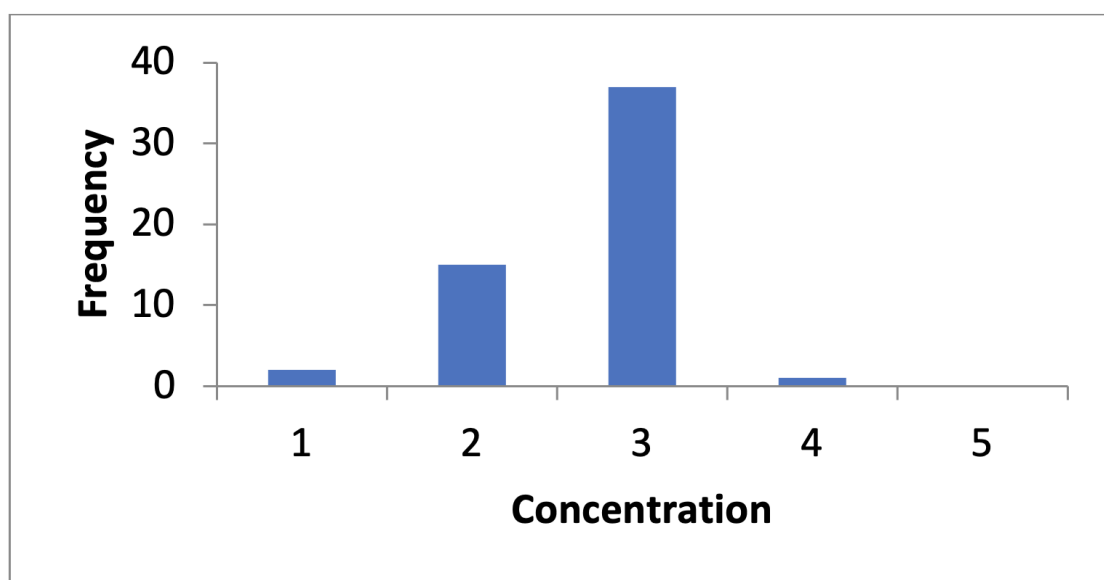


Figure 8. Concentration.

Adaptation or employability, on the other hand attracted ratings of category 5 (see Figure 9). It had the highest mean rating of all the six scales (see Table 2).

Moreover, the inter-correlation of the six areas (see Table 3) was marked by low to moderate inter-correlations. The lowest correlation (.157) was between travel and adaptation; and the highest correlation (.624) was between concentration and recreation. All inter-correlations were positive and suggestive of an underlying dimension of personal adjustment.

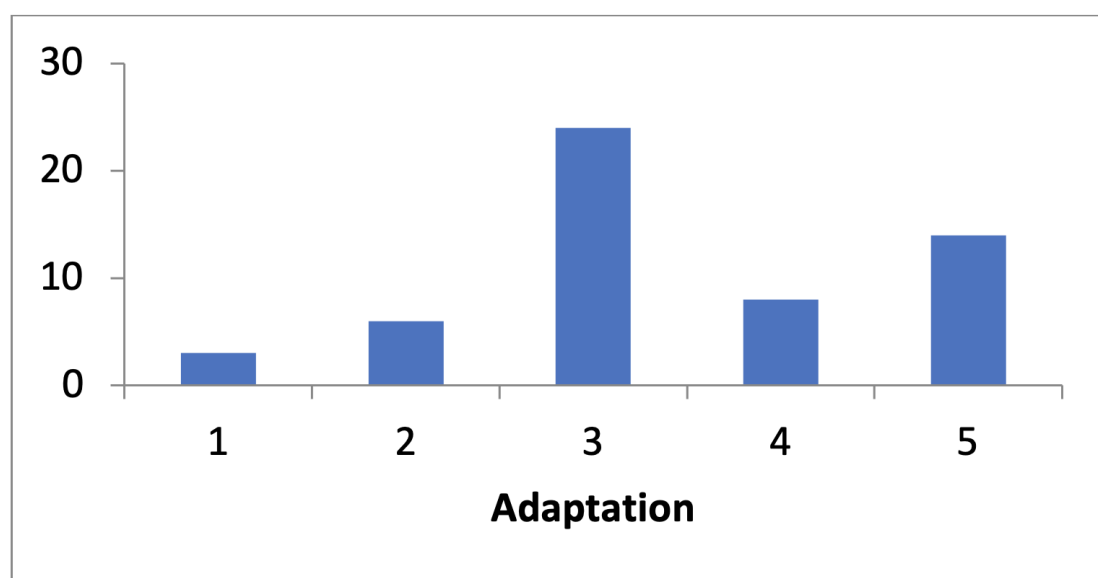


Figure 9. Adaptation (employability).

Adaptation was the sub-function which had the highest correlations with the aggregate score (.762); recreation had the highest correlation with the median class (.796); and adaptation had the highest correlation with the percentage impairment. The general impression was that the results supported the internal consistency or homogeneity of psychiatric

impairment.

**Table 3.** Inter-correlation of the six sub-functions of the PIRS and relationship to aggregate, median class and percentage impairment

	Self care	Recreation	Travel	Social functioning	Concentration	Adaptation
Self care						
Recreation	0.335					
Travel	0.158	0.355				
Social functioning	0.276	0.415	0.364			
Concentration	0.204	0.624	0.374	0.339		
Adaptation	0.395	0.460	0.157	0.209	0.552	
Aggregate	0.573	0.732	0.508	0.606	0.703	0.762
Class	0.506	0.796	0.478	0.487	0.689	0.554
% Impairment	0.567	0.745	0.500	0.567	0.699	0.764

(d) Is the *Psychiatric Impairment Rating Scale* able to distinguish psychiatric injury from non-psychiatric cases with psychological sequelae?

The *Psychiatric Impairment Rating Scale* distinguished the broad type of type of original injury (i.e., psychiatric from other types of injury). There were statistically significant differences in the mean aggregate score, the mean class and the mean percentage impairment between those with a primary medically certified nervous or mental disease (e.g., post-traumatic stress disorder, anxiety, depression, bi-polar disorder) versus those with other diseases or injuries and claiming some psychological co-morbidity as a consequence of an injury (e.g., musculoskeletal). The results for a t-test are set out in Table 4.

**Table 4.** Mean values on the *Psychiatric Impairment Rating Scale* for persons with psychiatric vs non-psychiatric original injuries

	Psychiatric injury N=23	Other injury N=32	Student's t / Cohen's d
Aggregate	16.8 SD=1.63	14.4 SD=3.22	t(53)=3.32, p<.002, d=.908
Class	2.97 SD=.104	2.60 SD=.605	t(53)=2.88, p=.006, d=.788
% impairment	18.8 SD=3.52	13.6 SD=6.96	t(50)=3.31, p=.002, d=.906

(e) What is the stability of psychiatrist ratings on the *Psychiatric Impairment Rating Scale*?

There were results from 15 patients where they were assessed independently by two psychiatrists and the *Psychiatric Impairment Rating Scale* was used. The intervals ranged from the same month to 12 months difference with a median of

five months. The aggregate score and percentage total impairment were compared. It was not possible to use the median class from the *Psychiatric Impairment Rating Scale* as the ratings from the first group were all category 3 and there was no variation. The correlations across the time interval and psychiatrists are summarised in Table 5.

**Table 5.** Spearman's rho (rank correlation) between psychiatrists (N=15)

Variable	Rank correlation
Aggregate	.845 p<.001
Class	na
% impairment	.778 p=.002

In terms of the internal consistency or homogeneity of the six sub-functions as a scale of psychiatric impairment, the coefficient alpha for this group was .731.

#### (f) Are there differences between psychiatrists in their ratings?

Psychiatrists who had examined three or more patients were selected and the median differences analysed using the non-parametric Kruskal-Wallis one way analysis of variance. There were differences between psychiatrists for the median aggregate score and the median percentage impairment awarded. There was a low effect size for the differences but they were not statistically significant (see Table 6). Of course, the variations may be attributable to the type of cases encountered and affected by the very small sample size.

**Table 6.** Differences between psychiatrists in ratings

Psychiatrist	No. of cases examined	Median % impairment	Median Aggregate
A	3	20	19
B	4	16.5	16
C	3	17	16
D	3	15	15
E	3	15	15
F	6	19.5	15.5
G	4	17.0	16

Kruskal=Wallis one-way ANOVA (non parametric): % impairment  $\chi^2(6)=10.5$  p=.105 effect size=.405; aggregate  $\chi^2(6)=10.0$  p=.124 effect size=.401

## IV. Conclusions

The available evidence from this study lends some support for the use of the *Psychiatric Impairment Rating Scale* in compensation cases. In general it was the case that the *Psychiatric Impairment Rating Scale* distinguished those with an original psychiatric injury from those persons with a non-psychiatric injury and psychological sequelae (see Table 4).

For the most part, psychiatrists rated the cases overall as a median category 3. In one sense, this is not surprising as the cases are a select sample and submitted for examination because there was likely to be some psychological impairment. The aggregate score and the percentage impairment were skewed in opposite directions (see Figures 1 and 2). Notwithstanding this difference in the shape of the distribution, the correlation between the aggregate and percentage impairment was .960.

The construct validity of the assessment is evidenced to a small extent by the correlations between the aggregate score, the median class and the overall percentage impairment rating (see Table 1). Furthermore, the multiple correlation between aggregate score and the median class in predicting the percentage impairment was 0.979 (adjusted R-square = .959) in this group.

At a more detailed level, the distribution of the overall psychiatrist ratings of capacity on the *Psychiatric Impairment Rating Scale* varied depending on whether the aggregate score, the median class or the percentage impairment was considered. Each area of sub-function (self-care and personal hygiene, social and recreational, travel, social functioning, concentration and adaptation/employability) had a unique psychiatric “footprint” in the distribution of ratings. The six sub-functions showed low intercorrelations but were all positively and moderately correlated with aggregate score or percentage impairment (see Table 3).

There were some differences between psychiatrists in their ratings with a low effect size but the differences were not statistically significant and the results need to be treated with caution due to the small sample sizes and lack of equivalence of cases rated.

It is recognised that this study is only preliminary in nature and that the findings are from a small and very select sample but it is one that is typical of its use in medico-legal contexts. Possibly the *Psychiatric Impairment Rating Scale* would show greater validity if the sample comprised a general population or at least if it contrasted psychiatric injury with a sample of persons who had only a physical injury and no claim for psychological co-morbidity.

From another perspective, Mendelson and Mendelson (2017) have criticised the *Psychiatric Impairment Rating Scale*. They argued that it is a measure of disability rather than impairment although the authors (Parmegiani et al., 2001, p. 3) stated that the “impairment must be due to a recognised mental disorder...”. In any event – whether it is a disability or an impairment - it does focus on a restriction or limitation. The findings that have been reported are consistent with the utility of the *Psychiatric Impairment Rating Scale* as a broad indicator of social-psychological-psychiatric impairment. No claim is made, however, that the *Psychiatric Impairment Rating Scale* is a perfect measure.

It was designed with a specific purpose, namely to assess psychiatric outcomes in a standardised fashion and in a way that is broadly consistent with the medico-legal system of physical impairment ratings. The findings of this study, however,

argue for its discriminant validity in quantifying the extent of psychiatric injury in compensable cases.

## Appendix: Psychiatric Impairment Rating Scale

### Self care and personal hygiene

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population
<b>Class 2</b>	Mild impairment: able to live independently; looks after self adequately, although may look unkempt occasionally; sometimes misses a meal or relies on take-away food.
<b>Class 3</b>	Moderate impairment: Can't live independently without regular support. Needs prompting to shower daily and wear clean clothes. Does not prepare own meals, frequently misses meals. Family member or community nurse visits (or should visit) 2–3 times per week to ensure minimum level of hygiene and nutrition.
<b>Class 4</b>	Severe impairment: Needs supervised residential care. If unsupervised, may accidentally or purposefully hurt self.
<b>Class 5</b>	Totally impaired: Needs assistance with basic functions, such as feeding and toileting.

### Social and recreational activities

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population: regularly participates in social activities that are age, sex and culturally appropriate. May belong to clubs or associations and is actively involved with these.
<b>Class 2</b>	Mild impairment: occasionally goes out to such events eg without needing a support person, but does not become actively involved (eg dancing, cheering favourite team).
<b>Class 3</b>	Moderate impairment: rarely goes out to such events, and mostly when prompted by family or close friend. Will not go out without a support person. Not actively involved, remains quiet and withdrawn.
<b>Class 4</b>	Severe impairment: never leaves place of residence. Tolerates the company of family member or close friend, but will go to a different room or garden when others come to visit family or flat mate.
<b>Class 5</b>	Totally impaired: Cannot tolerate living with anybody, extremely uncomfortable when visited by close family member.

### Travel

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population: Can travel to new environments without supervision.
<b>Class 2</b>	Mild impairment: can travel without support person, but only in a familiar area such as local shops, visiting a neighbour.
<b>Class 3</b>	Moderate impairment: cannot travel away from own residence without support person. Problems may be due to excessive anxiety or cognitive impairment.
<b>Class 4</b>	Severe impairment: finds it extremely uncomfortable to leave own residence even with trusted person.
<b>Class 5</b>	Totally impaired: may require two or more persons to supervise when travelling.

### Social functioning

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population: No difficulty in forming and sustaining relationships (eg a partner, close friendships lasting years).
<b>Class 2</b>	Mild impairment: existing relationships strained. Tension and arguments with partner or close family member, loss of some friendships.
<b>Class 3</b>	Moderate impairment: previously established relationships severely strained, evidenced by periods of separation or domestic violence. Spouse, relatives or community services looking after children.
<b>Class 4</b>	Severe impairment: unable to form or sustain long term relationships. Pre-existing relationships ended (eg lost partner, close friends). Unable to care for dependants (eg own children, elderly parent).
<b>Class 5</b>	Totally impaired: unable to function within society. Living away from populated areas, actively avoiding social contact.

#### Concentration, persistence and pace

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population. Able to pass a TAFE or university course within normal time frame.
<b>Class 2</b>	Mild impairment: can undertake a basic retraining course, or a standard course at a slower pace. Can focus on intellectually demanding tasks for periods of up to 30 minutes, then feels fatigued or develops headache.
<b>Class 3</b>	Moderate impairment: unable to read more than newspaper articles. Finds it difficult to follow complex instructions (eg operating manuals, building plans), make significant repairs to motor vehicle, type long documents, follow a pattern for making clothes, tapestry or knitting.
<b>Class 4</b>	Severe impairment: can only read a few lines before losing concentration. Difficulties following simple instructions. Concentration deficits obvious even during brief conversation. Unable to live alone, or needs regular assistance from relatives or community services.
<b>Class 5</b>	Totally impaired: needs constant supervision and assistance within institutional setting.

#### Adaptation/employability

<b>Class 1</b>	No deficit, or minor deficit attributable to the normal variation in the general population. Able to work full time. Duties and performance are consistent with the injured worker's education and training.  The person is able to cope with the normal demands of the job.
<b>Class 2</b>	Mild impairment. Able to work full time but in a different environment from that of the pre-injury job. The duties require comparable skill and intellect as those of the pre-injury job. Can work in the same position, but no more than 20 hours per week (eg no longer happy to work with specific persons, or work in a specific location due to travel required).
<b>Class 3</b>	Moderate impairment: cannot work at all in same position. Can perform less than 20 hours per week in a different position, which requires less skill or is qualitatively different (eg less stressful).
<b>Class 4</b>	Severe impairment: cannot work more than one or two days at a time, less than 20 hours per fortnight. Pace is reduced, attendance is erratic.
<b>Class 5</b>	Totally impaired: Cannot work at all.

### Using the PIRS to measure impairment

1. Determine the median class score.
2. Calculate the aggregate score.
3. Read the percentage impairment from the conversion table

### Statements and Declarations

**Funding:** None.

**Declaration of competing interest:** There is no competing interest and the author has no financial disclosure.

**Ethical statement:** In the absence of an ethics committee in private practice, conduct of the study was in accordance with the provisions of the Privacy Act 1988, the principal Australian legislation protecting the handling of personal information, in accordance with the principles embodied in the Declaration of Helsinki and in line with the ethical requirements of the Australian Psychological Society for confidentiality and privacy.

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