

RESEARCH REPORT

**CLASSIFICATION OF JOBS INTO LEVELS OF WORK:
FOUR RELIABILITY STUDIES**

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Elliot Jaques (1956, 1961, 1967, 1968, 1970, 1975, 1978, 1982, 1986, 1988) proposed that work is naturally stratified into seven layers defined by their time span of discretion. Time span of discretion is the length of time between the allocation of an assignment and its review (Evans, 1979). At level 1, the time span of discretion is three months or less; at level 7 it is 50 years or more. In the intermediate steps, time span of discretion increases exponentially: 1 year, 2 years, 5 years, 10 years and 20 years.

In Southern Africa the concept of layers of management is widely accepted and is seen in both popular methods of job evaluation: the Paterson (Paterson, 1972a and 1972b) and the Castellion (Jordan, 1989). The Paterson system analyses the decision-making components of work and sorts jobs into six major groups. At the top of the hierarchy is policy making. This is followed by programming decisions, then interpretive decisions, choice of processes, responsibility for part of a process and performance of job elements. These levels correspond to top management, senior management, middle management, junior management and skilled positions, semi-skilled positions and unskilled positions.

The Castellion system, which was developed by Cortis (Biesheuval, 1977) for South African Breweries, is a point-rating system according to six factors: decision making, pressure of work, controls and checks, consequences of error, education and experience. Though all six factors are rated and the final job rating is an aggregate of all six evaluations, the dominant factor is decision making. The decision-making scale ranges from simple decisions, through pragmatic decisions to tactical decisions and strategic decisions.

The relationship of the Paterson and Castellion systems to each other is well known. The earliest conversion chart was presented by Paterson (1972a). The chart is so common that it is known by rote by most practitioners. Castellion grades 16 to 15 correspond to Paterson Band A; Castellion grades 14 to 11 correspond to Paterson Band B; Castellion grades 10 to 7 to Paterson Band C; Castellion grades 6 and 5 to Paterson Band D; Castellion grades 4 and 3 to Paterson Band E; and Castellion grades 2 and 1 to Paterson Band F, in ascending order from unskilled to top management positions.

The relationship of both systems to the Jaques system is less well known but is amply described by Paterson (1972a) and by Biesheuval

(1977). In all three systems, as seniority increases so does the level of decision making. In the Paterson system the decision is graded by the number and difficulty of constituent parts of a decision cycle. In the Jaques system, the longer time span, that is, the longer period between assignment and review, permits decisions with more constituent parts. The Castellion system refers explicitly to decisions involving multiple components. Empirical evidence of the links between the systems was provided by Cortis (in Paterson, 1972a). Cortis confirmed that there is perfect rank correlation between the Castellion grades and time span of discretion. Table I compares the three systems schematically.

In a further development, Stamp (1978, 1981, 1986, 1988, 1989a, 1989b, 1989c and Baker and Stamp, 1990) has used the Jaques grades as the foundation for the assessment of management potential. A key component in the assessment procedure is the grading of work which is performed by the manager at the time of the assessment. This grading takes place using the Jaques categories.

This report details four studies, each of which evaluates how reliably jobs are allocated to levels of work. The first study reviews the reliability of Paterson grades; the second and third studies explore the reliability of Castellion grades; and the fourth examines the reliability of the Stamp/Jaques gradings.

STUDY ONE: RELIABILITY OF PATERSON GRADINGS

Four panels of five social studies students graded six job descriptions which had been prepared professionally and had been graded in a previous exercise. Two panels made no errors at all; one panel made one error; the remaining panel made two errors. A binomial test (Siegel, 1956) rejects this outcome or a more accurate outcome occurring through chance or guessing ($p < 0,001$).¹

STUDY TWO: RELIABILITY OF CASTELLION GRADINGS

Eighteen jobs in a city firm were evaluated by Josephine Jordan. In only ten cases did the evaluations concur with evaluations of the jobs made by the firm's own evaluation committee. This result is consistent with guessing,² with probability under H_0 of 0,10.

STUDY THREE: RELIABILITY OF CASTELLION GRADINGS

To double-check the finding in study two, study one was extended to include the Castellion system. The job descriptions in the previous study

¹ $H_0: p = 0,33$; that is, there is a one-in-three probability of guessing a correct grade. The probability of occurrence under H_0 of the observed values or more extreme values was calculated for each panel using the formulas given in 4,2 in Siegel (1956). The probability of four panels achieving this result or more accurate results under H_0 was obtained using the multiplicative rule.

² See fn. 1.

Table I

COMPARISON OF THE WORK LEVELS PROPOSED BY JAQUES,
PATERSON AND CASTELLION

<i>Jaques</i>		<i>Paterson</i>		<i>Castellion</i>		
<i>Level</i>	<i>Time span of discretion</i>	<i>Grade</i>	<i>Decision making</i>	<i>Grade</i>	<i>Decision-making factor</i>	
I	3 months	A	Prescribed decisions	16	Simple decisions	
				15		Pragmatic decisions
		B lower	Automatic decisions	14		
				13		
		B upper	Co-ordinating automatic decisions	12		
				11		
		C lower	Routine decisions	10	Tactical decisions	
9						
II	1 year	C upper	Co-ordinating routine decisions	8		
				7		
III	2 years	D lower	Interpretative decisions	6		
		D upper	Co-ordinating interpretative decisions	5		
IV	5 years	E lower	Programming decisions	4		Strategic decisions
		E upper	Co-ordinating programming decisions	3		
V	10 years	F lower	Policy decisions	2		
		F upper	Co-ordinating policy decisions	1		
VI	20 years					
VII	50 years					

were regraded by the same students using the Castellion method. Two panels made no errors; one panel made two errors; and the last panel made four errors. The probability of this number of errors or fewer errors occurring through guessing ($p < 0,001$) lies in the rejection region (Siegel, 1956).³

STUDY FOUR: RELIABILITY OF STAMP/JAQUES GRADINGS OF CURRENT WORK LEVELS

Sixteen students were each interviewed by two psychologists to establish the highest level of work employed by them in any domain, for example, their studies, sport, vocational work, extramural activities, and so on. The psychologists agreed in 13 cases. The outcome of three or fewer errors rejects the null hypothesis of chance classification ($p > 0,011$).⁴

SUMMARY

The empirical results present a favourable picture of the Paterson and Stamp/Jaques classifications. In study one, students classified jobs on the Paterson system with sufficiently few errors to reject the null hypothesis of guessing. In study four, two psychologists assessed students' current level of work and agreed in 13 cases out of 16. Both schema are sufficiently robust to support consistent gradings by different raters.

The Castellion system did not fare as well. The independent regrading of eighteen jobs in a city firm failed to reject the null hypothesis of guessing and the students in study three made more errors than they did with the Paterson system in study one. The fine gradations in the Castellion system appear to be more difficult to assess consistently.

Additional information revealed by *post hoc* analysis of the rating errors suggests that two issues are important to the reliability of jobs grading. It has been well established that group decision making is sometimes of a higher quality than individual decision making but, if group dynamics are mismanaged, a group may make very bad decisions. The four panels illustrate this social psychological result. The two panels that made no errors were the same panels in both the Paterson and Castellion studies. The panel that made the most errors on the Paterson study also made the most errors on the Castellion. The number of errors this group made was unacceptably high (2/6; 4/6).

In the studies with single raters, disparities in the information base emerged as the main source of errors. In study two, in all eight jobs in which the independent rater disagreed with the committee, subsequent investigation revealed that the committee had had access to information not used by the independent rater. In study four, in all of the three cases in

³ See fn. 1.

⁴ $H_0: p = 0,50$. University students are unlikely to perform above level 2 (see Stamp, 1988). The task was therefore to rate students at level 1 or at level 2. There are two opportunities for the psychologists to agree (1,1; and 2,2) and two opportunities for the psychologists to disagree (1,2; and 2,1). Thus the probability of agreeing by chance is 0,50.

which the psychologists initially disagreed on the level of work of which a student was capable, detailed comparisons of their notes in each case revealed that one or the other of the psychologists had fortuitously discovered one salient feature of the student's activities, usually referring to an activity undertaken some years previously. In each of these cases, the revelation of this information led to concurrence between the psychologists. If group dynamics are adequately managed, and the same information is used to make the rating of level of work, it is possible that levels of reliability reported here are conservative.

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