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IN VITA VERITAS

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A CRITIQUE OF THE THESIS OF A.J. WILLIAMS

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Attached are eleven crucial pages copied from the thesis. Here are a few critical comments, to demonstrate the invalidity of the main conclusions of the thesis.

Page 273: Figure 3.4 allegedly represents a causal model, with time moving from left to right, as usual. Trouble is, the alleged predictor variable called Affective Reaction was measured after the alleged criterion, hence should be shown at the right, as a dependent variable, consequent to success/failure.

Pages 276-7: According to the second paragraph on page 277, Affective Reaction is the "key variable in the thesis".

Page 358: The last paragraph admits that the key variable, the criterion, and need for achievement (another important alleged predictor, which was also measured after failure for 30% of the subjects!), are all bimodally distributed. As any user of elementary statistics should know, Pearson product-moment correlation coefficients calculated from such data are spuriously inflated.

Page 362: The first paragraph again acknowledges the bimodality of two important variables. Also, Paragraph 6.2 in effect states the main hypothesis of the thesis. The next paragraph states that the validity of the fundamental proposition (and therefore the validity of the thesis as a whole) is to be determined by means of step-wise multiple regression, which utilizes Pearson product-moment correlation coefficients. The results of this analysis are shown on p. 364.

Page 364: Table 6.2, which allegedly supports the main conclusions of the thesis, is completely invalid, as any competent user of elementary statistics would immediately recognize, knowing the peculiar characteristics of the input data, as well as on the basis of information contained in the table itself.

Page 366: The first sentence of the second paragraph is therefore incorrect.

Page 438: The first sentence of paragraph 7.1 (which is in the Conclusion section of the thesis) is therefore incorrect also.

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Page 445: The first sentence of the second paragraph (which is also from the Conclusions) is therefore incorrect also.

Page 542: Obviously, Affective Reaction scores are bimodally distributed; the left mode basically represents the bankrupted group, and the right the group still in business. (Similar charts are provided for all other variables in the study, many of which are bimodal, extremely skewed and/or based on nominal data.)

Page 643: This scatter diagram is obviously of dumbbell shape, closely resembling figure d) on the attached Fig. 45, which is from H. Walker, Elementary Statistical Methods, p. 238. A reasonable estimate of the true correlation between the variables would be about 0.40. However, since the causal direction has been inverted (see comments on page 273 above), the proper conclusion would then be that "failure tends to be followed by verbal affective reactions".

In conclusion, the main findings of this thesis must be rejected as pseudo-scientific.

author has used measures of earnings, growth and financial stability to produce entrepreneurial performance scores.

Thus, there is suggested a pattern of sequential relationships linking the mental/emotional state of the entrepreneur with his role effectiveness, and, consequently, with the quality of his entrepreneurial performance. These relationships, in schematic presentation, are:

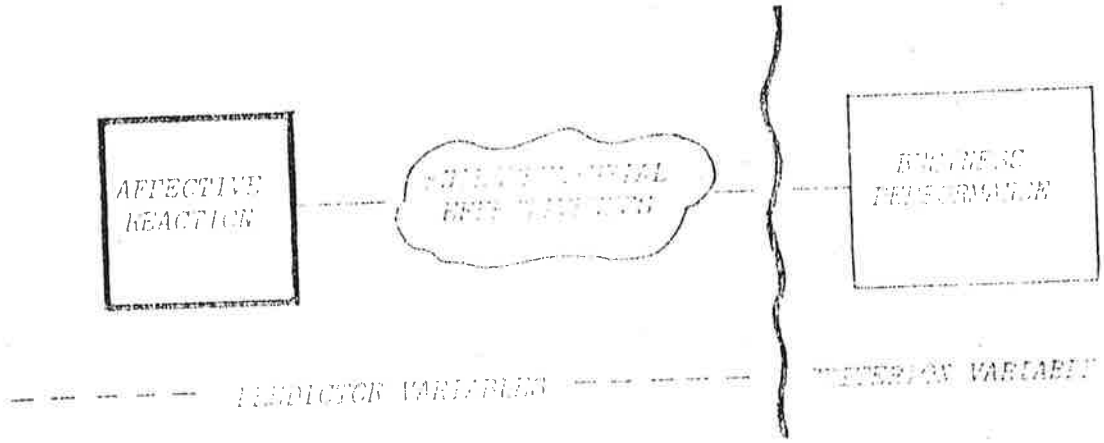


FIGURE 3.4 THE KEY VARIABLES IN A MODEL OF ENTREPRENEURIAL EFFECTIVENESS

3.5 A MODEL OF ENTREPRENEURIAL EFFECTIVENESS

The model of entrepreneurial effectiveness, the substance of this study, has been built from a group of segments each composed of postulated factors and their primary inter-relationships. The broad propositions and a number of suggested hypotheses, emanating from the model, required elaboration and testing. The following chapters indicate how this was undertaken.

The complete conceptual model is illustrated in Figure 3.5.

finally, a wide range of secondary hypotheses is introduced, incorporating all other variables and the more significant of their possible inter-relationships. In a model involving as many as 40 individual variables, the number of potential inter-relationships would be unmanageable. There exists much scope for future study.

4.1 FUNDAMENTAL PROPOSITION

As a foundation for the following exposition of the hypotheses which guide the empirical stage of this study, it is submitted that a model of small business/entrepreneurial behavior is both justifiable and viable.

Study of the wide but fragmentary research literature relating to the role of the independent entrepreneur in the small business situation, strongly suggests that the locus of concern, in endeavouring to ascertain true "causes" of small business success or failure, should be found in those factors which can be identified as bearing on the individual's ability and propensity to function effectively in a potentially highly stressful role. The explanation of why a particular firm fails will stem not so much from an examination of what the entrepreneur does, or how he does it, or what he neglects to do, but rather from the analysis of why he behaves as he does. Therefore, observation of the results of business management does little to develop a plausible insight to, or theory of, entrepreneurial effectiveness, with acceptable external validity. Faulty or

successful managerial/entrepreneurial practice is presented as justification for this study and for the explanatory model it offers and tests, in the nature of an intervening variable. The chain of causal inference has been traced back to identify root factors, which have then been proposed as relevant contributory variables.

The focal point and key variable in the theory of entrepreneurial effectiveness here postulated is the individual's ability and propensity to cope with the many and varied stressors inherent in that role. This factor, here labelled *affective reaction*, is proposed as a consequence of three interlocking sets of "independent" variables, all of which, in particular ways, contribute to, or detract from, the individual 's stress handling capacity and/or propensity.

If certain proposed factors are found to be consistently associated with affective reaction, and the latter with the quality of entrepreneurial performance, then knowledge of the possession or lack of these factors should permit the prediction of subsequent success or failure in the role of small business entrepreneur. If such associations are found to exist, and causal inferences are justified, an embryo theory of entrepreneurial effectivess may have been conceived. It is therefore proposed that:

The quality of entrepreneurial performance, in the small business context, can be confidently predicted from a knowledge of the particular personal characteristics postulated in this model.

the degree to which children were required and encouraged to attain high standards of performance and independence of activity. Scores ranged from 7 to 24, with a mean of 14.468 and standard deviation of 4.628. The distribution was positively skewed (.318) indicating a tendency for owners in this sample to have experienced rather low and indifferent parental expectation and encouragement. These scores correlated .7318 with n-Achievement scores, thereby supporting Winterbottom's (1958) findings on the relation of achievement motivation to learning experiences in independence and mastery.

6.16 BUSINESS PERFORMANCE (Figure F40)

As well as being stratified on the basis of industrial grouping, the sample used in this study deliberately included a number of owners of failed small firms. There was no known basis on which to select an appropriate number of failures, but to provide as wide a range of performance as possible, 75 failures (30.0% of the sample) were included.

The total range of possible scores was 0 - 60, actual scores being distributed from 5 to 59. The distribution of scores was bi-modal (also a feature of the distribution of n-Achievement and affective reaction scores!), with 30.4% of scores falling within the lowest quarter of the range, 11.2% in the next quarter, 24.4% in the third and 34.0% within the uppermost quarter. The distribution was negatively skewed (-.261) indicating a greater concentration of cases with higher scores. The modal score was 53 and the mean 33.896. Scores were widely dispersed, as evidenced by the bi-modal distribution and the standard

deviation of 17.549.

The unexpected feature of this distribution was the dearth of cases in the middle of the range. The similarity of this bi-modal distribution with those on both the achievement motivation and affective reaction scales strongly suggests significant relationships existing.

6.2 FUNDAMENTAL PROPOSITION

The quality of entrepreneurial performance, in the small business context, can be confidently predicted from a knowledge of the particular personal characteristics postulated in this model.

As outlined in Section 5.5, multiple linear regression analysis has been used as the basis for determining the efficacy of the model of entrepreneurial effectiveness proposed in this study. The step-wise mode of multiple regression has been adopted to provide the best possible prediction with a minimum of independent variables. No pre-determined sub-set of independent variables was presumed, all such variables being eligible for entry into the analysis until the F level or tolerance measure became insufficient to warrant further computation. Of the 35 eligible independent variables in the study, the SPSS REGRESSION sub-programme entered 29 into the equation before the process became unprofitable.

The resolution of the question of whether the knowledge of an individual's particular configuration of personal characteristics is capable of permitting prediction (at the required level of confidence) of his potential for success as a small business owner/manager, is consequent upon the consideration of the multiple co-efficient of

TABLE 6.2 MULTIPLE REGRESSION SUMMARY (DEPENDENT VARIABLE = SMALL BUSINESS PERFORMANCE)

Step	Variable Entered	Multiple R	R^2	Change in R^2	Standard Deviation	Change in Std. Deviation	B*	Standard Error of B*	Beta *	Overall F	Significance
1	REACTION	.89924	.80863	+.80863	7.69249	–	.36151	.42783	.42739	1047.88694	< .001
2	IRTAGGRE	.91478	.83682	+.02819	7.11770	-.57479	.43635	.88822	.26690	633.31898	< .001
3	IRTCOMPL	.92819	.86154	+.02472	6.56381	-.[illegible]739	-.22560	.61244	-.11825	510.20748	< .001
4	[illegible]OCUPREL	.93500	.87440	+.01287	6.26989	-.29392	.75827	.54104	.06711	426.41432	< .001
5	[illegible]	.93801	.87986	+.00546	6.14460	-.12520	.17038	.51660	.14932	357.39159	< .001
6	[illegible]	.93981	[illegible]	+.00[illegible]	6.00[illegible]4	-.07475	.[illegible]192	.10010	.11121	306.38072	< .001
7	[illegible]	.94156	[illegible]	+.00[illegible]	5.93[illegible]10	-.07[illegible]1	-1.03304	.36171	-.06550	270.12361	< .001
8	[illegible]	.94257	.88[illegible]0	+.00246	5.9[illegible]06	-.03304	.[illegible]	.19[illegible]	.05339	241.26279	< .001
9	IODOTHER	.94332	.89030	+.00130	5.[illegible]	-.03516	.[illegible]23	.96074	.05865	217.52973	< .001
10	IRTDETA[illegible]	.94435	.89275	+.00195	5.88[illegible]	-.04[illegible]1	-.2[illegible]	.10011	-.09955	198.94552	< .001
11	MARISTAT	.94531	.89456	+.00131	5.[illegible]	-.03761	-.[illegible]67	.10490	-.03456	183.57331	< .001
12	AGESTART	.94644	.89575	+.00118	5.80795	-.02056	-.[illegible]	.39022	-.04513	169.69124	< .001
13	PREOCCUP	.94708	.89696	+.00121	5.78624	-.02171	.[illegible]1627	.35823	.09476	158.02946	< .001
14	MANAGREL	.94758	.89791	+.00095	5.77166	-.01[illegible]	-.60321	.34380	-.05817	147.64034	< .001
15	PREPADUR	.94790	.89851	+.00060	5.76[illegible]95	-.0[illegible]71	-.[illegible]273	.35565	-.03420	138.11516	< .001
16	ORGAMEMB	.94821	.89909	+.00058	5.76275	-.00420	1.02753	.86329	.02668	129.75566	< .001
17	EDULEVEL	.94846	.89957	+.00048	5.76150	-.00125	-.67857	.46354	-.08897	122.24072	< .001
18	EDUTOTAL	.94876	.90015	+.00058	5.75716	-.00434	.47077	.40515	.07575	115.69884	< .001

co-efficients indicate the relative strength of relationship between each independent variable and the criterion variable, as well as the direction of the relationship. In fulfilling this role in multiple regression analysis, the regression co-efficients reflect the weight of each independent variable necessary to minimize the unexplained or error variance, or residual.

On the basis of the data compiled in this study and presented in summary form in Table 6.2, the fundamental proposition of this research study is supported. With the inclusion of 29 (from 35) independent variables in the regression equation 90.164% of the variance in small business performance scores was accounted for. Placement of the first 18 predictors in the equation resulted in prediction of 90.015% of the variance in the dependent variable. The improvement in prediction by the inclusion of eleven more variables does not warrant such inclusion, particularly as the standard deviation of the residual (typical error in prediction) increases after step 18.

The variables included in the multiple regression equation, and accepted for the significance of their individual and interactive contributions to the predictive-ability of that equation, are those shown above the horizontal line in Table 6.2; those involved in the first 18 steps of the step-wise selection process.

6.3 PRIMARY PROPOSITIONS AND HYPOTHESES

All tables referred to in the following discussion of the hypotheses are located in Appendix G (e.g. Table G1 refers to Table 1 of Appendix

more plausible causal inference) has involved variables from more than one of the disciplines drawn upon. In other words, it is obvious that the validity of a particular variable in the model may depend on its statistical relationship with antecedent or subsequent variables possibly deriving from another discipline. As an example, achievement motivation (from the realm of psychology) has strong statistical association with experiential and preparatory factors (suggested by research in business management). This rather complex interaction between variables indicates the need for further detailed investigation. Fortunately data exist on many more inter-relationships than have been hypothesised and examined in this study, and follow-up research is being planned. This will be a dividend from the author's programme of intensive data collection with a fairly large sample. This study could not, and did not, adequately investigate further combinations of suggested discriminatory and predictive variables. Of particular interest are the possible interactional effects among sets of variables.

7.1 THE PREDICTIVE MODEL

The confident acceptance of the Fundamental Proposition (Section 6.2) has justified the conclusion that the synthesis of a prediction model with pragmatic value was successfully achieved. The extent to which variance in the dependent variable has been explained by the variables included (R^2 = 90.015, with 18 variables placed in the regression equation) has demonstrated that prediction of small business performance at a high level of confidence is possible.

Personality Characteristics

It has been demonstrated that, in large measure, entrepreneurial effectiveness is associated with the possession of appropriate personality traits.

The highly significant statistical relationship between affective reaction and entrepreneurial effectiveness supports the conclusion that the true causes of small business success or failure are to be found in factors which influence the entrepreneur's capacity and propensity for operating effectively within a potentially stressful situation. That the role of independent entrepreneur can be very stress evoking is strongly indicated by empirical observation (in the author's interviewing programme, for example) and suggested in prior research (Section 2.45). Those individuals who have developed a certain configuration of personality characteristics and who, by design or otherwise, have attained an appropriate combination of relevant experience and veridical role perception have been shown to be able to cope with entrepreneurial role stress and perform effectively.

The impact of stressful situations is first manifest as deterioration in cognitive processes and as disturbed emotional reactions. As the role of independent entrepreneur makes as much, or more demand on mental/emotional activity as it does on physical behavior, the search for plausible explanatory variables centred primarily around those aspects of personal development which were either shown or assumed to be capable of affecting stress tolerance and behavioral adaptation thereto.

Class Intervals	Absolute Frequency	Percentage Frequency	Cumulative Percentage
20 - 26	3	1.2	1.2
27 - 33	25	10.0	11.2
34 - 40	42	16.8	28.0
41 - 47	27	10.8	38.8
48 - 54	18	7.2	46.0
55 - 61	18	7.2	53.2
62 - 68	13	5.2	58.4
69 - 75	24	9.6	68.0
76 - 82	35	14.0	82.0
83 - 89	34	13.6	95.6
90 - 96	11	4.4	100.0%
	250	100.0%	

Mean	59.172	Median	59.100
Standard Deviation	20.747	Mode	34
Standard Error	1.312	Skewness	-.002
Variance	430.424	Range	68

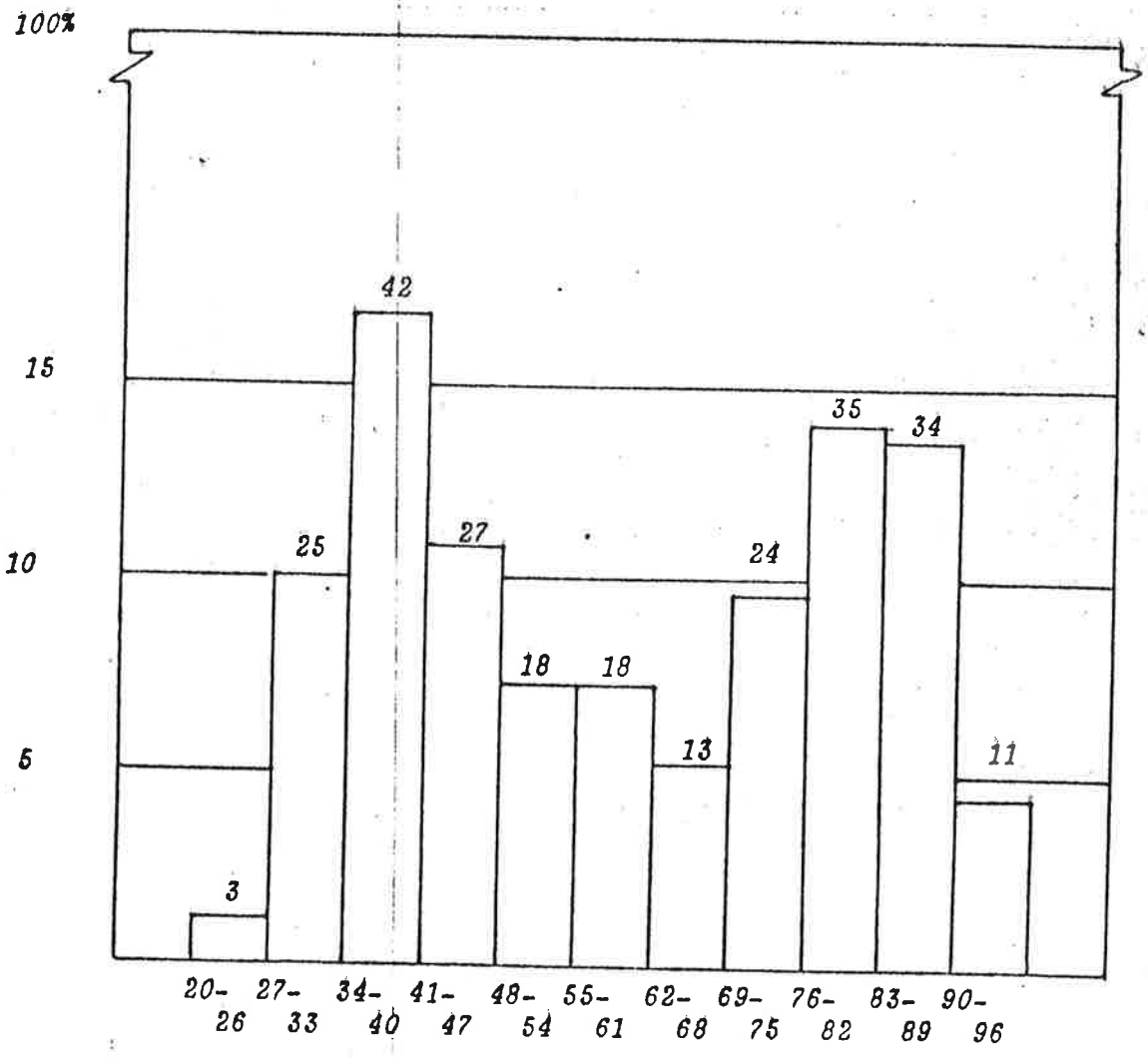
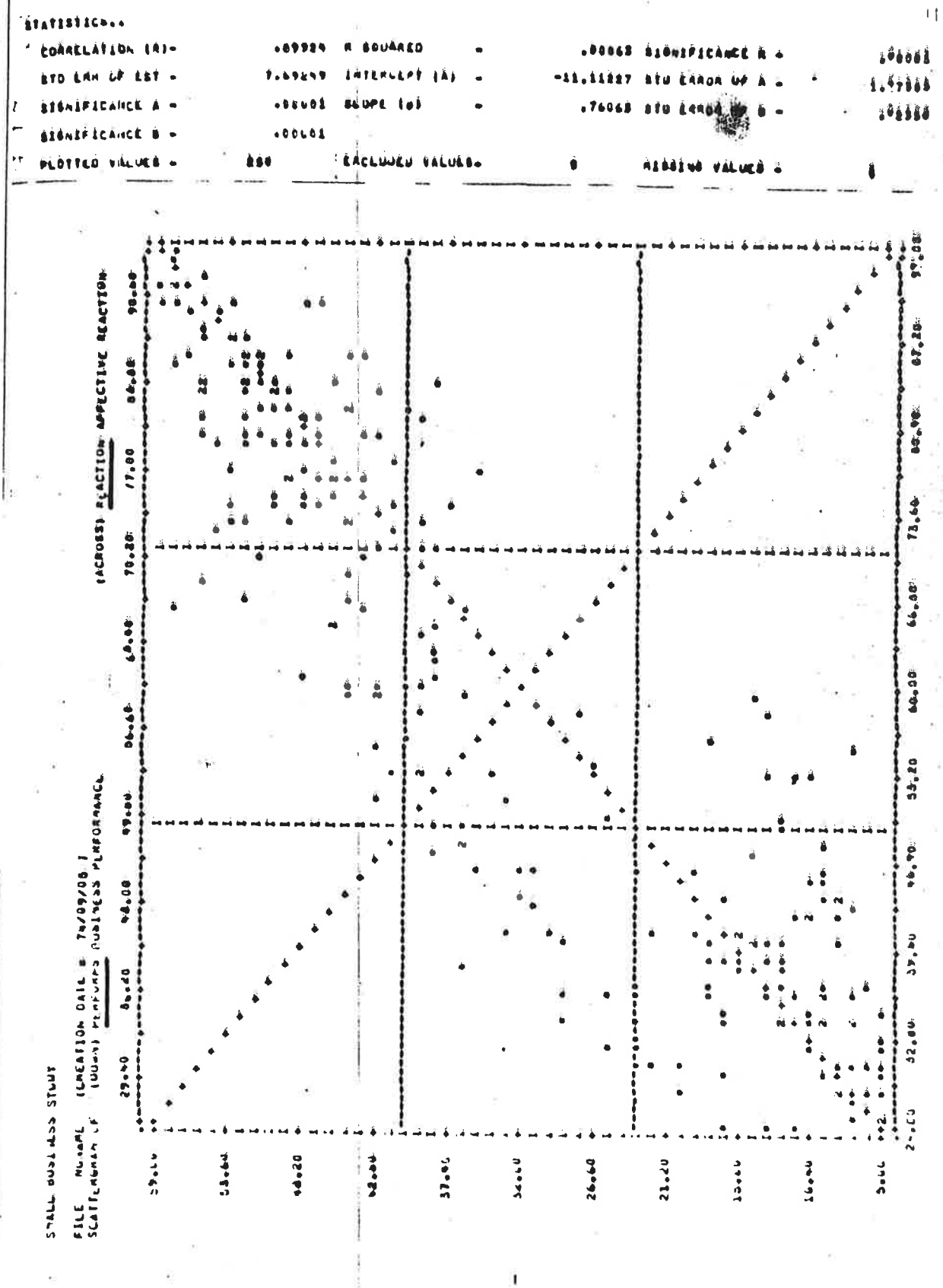
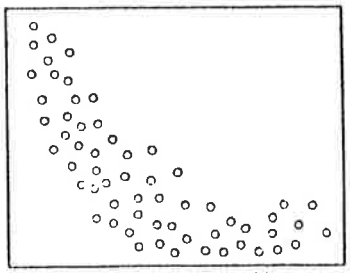


FIGURE F12 AFFECTIVE REACTION SCORES

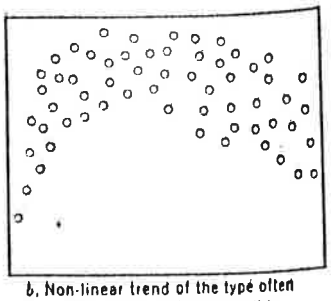
FIGURE H1 BUSINESS PERFORMANCE (PERFORMS) BY AFFECTIVE REACTION (REACTION) (HYPOTHESIS 1)



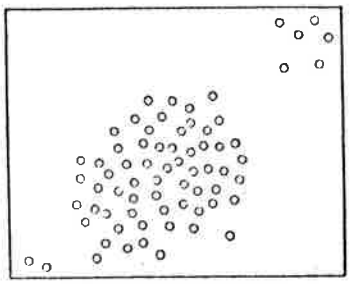
H. Walker, Elem. Stat Methods (3rd/18) p. 238



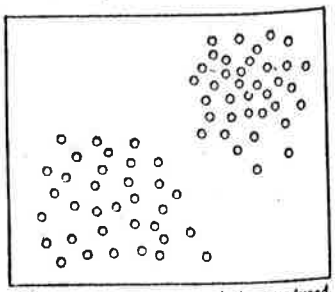
a. Strong, non-linear trend of the type often found when per capita cost is correlated with some measure closely related to size of group.



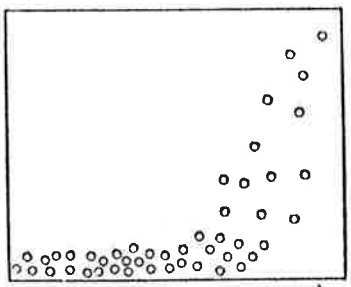
b. Non-linear trend of the type often found when some physical trait is correlated with age over a rather long age range.



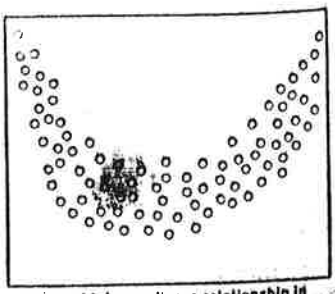
c. Correlation very near zero for most of the group, but spuriously inflated by the presence of a few extreme cases.



d. Spurious positive correlation produced by combining two groups one of which considerably exceeds the other as to the mean of each trait.



e. Correlation meaningless because of large number of cases with nearly uniform scores in trait *Y*.



f. Very high non-linear relationship in data for which r would be approximately zero.

Fig. 45. Sketches illustrating peculiarities of distribution such that the computed value of r misrepresents the true relationship between