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Jerry Sheppard
Faculty of Business Administration
Simon Fraser University

THE NATURE OF CHANGE IN CHOICE AND DETERMINISM

Bedeian's (1990) critique of the Lawless & Finch (1989) Choice/Determinism typology is addressed. Typology changes over two periods were investigated by using an abbreviated Dess & Beard (1984) environment data set. Results confirm Lawless & Finch's four types and found that two types may represent unstable revolutionary change environments.

Constant change seems to be the only norm in our lives, in the organizations we work in and the environments we inhabit (D'Aveni, 1994). Within this maelstrom we look for possible calm -- a deeper structure where even a short lived equilibrium can be contrasted with the observed turbulence (Gersick, 1991). For management researchers the punctuated equilibrium paradigm presents just such a model. According to Lawless & Anderson (1996: 1185) "Punctuated equilibrium models (Gersick, 1991) dominate current thinking about organizations and environmental change. They capture well what happens over extended periods of time: abrupt and revolutionary transformations interrupt eras of incremental change".

The Punctuated Equilibrium Paradigm

The punctuated equilibrium paradigm has three components: *deep structure*, *equilibrium periods* and *revolutionary periods* (Gersick, 1991). Gersick's game metaphor is the simplest way to explain the three concepts. *Deep structure* refers to the design of the playing field and the rules of the game - these are stable. *Equilibrium periods* are basically a game in play. During the equilibrium period there may be incremental changes - e.g., basketball hoops are set higher in the court. Yet the field of play is relatively stable (e.g., the size of the court remains the same) and rules have integrity (e.g., fouls are still called) but every match is different. *Revolutionary periods* represent dismantling the game's structure - instead of changing the height of the hoop in basketball we remove it. The deep structure comes apart and the system is temporarily disorganized. Eventually, the system puts itself back together with new (and some old) rules.

In both equilibrium and revolutionary periods, managers may be able to control some but not all of the impacts from environmental change (Pfeffer & Salancik, 1978; Miller & Friesen, 1984). The degree to which managers are allowed choice or subject to deterministic forces is a hotly contested topic (e.g., D'Aveni, 1987; Lawless & Finch, 1989; Marlin, Lamont & Hoffman, 1994). In this choice/determinism debate, free will Managerial or Strategic Choice perspectives (Thompson, 1967; Child, 1972; D'Aveni, 1987) are often contrasted with more deterministic Population Ecology perspectives (Campbell, 1969; Aldrich, 1979; Hannan & Freeman, 1984).

Choice and Determinism

A 1989 *Strategic Management Journal* article by Lawless & Finch looked at the proposition put forth by Hrebiniak & Joyce (1985) which served to blend these two conflicting schools of thought. To do this, the Hrebiniak & Joyce created a model which saw the perspectives as independent dimensions of choice and determinism. By employing these two dimensions between four environment categories could be created. Figure 1 shows the two dimensions that define the four environment types as well as the types of strategies Hrebiniak & Joyce hypothesized would be successful in each. While Lawless & Finch present a concise

typology with which to view environmental choice and determinism, they do not well address issues regarding environmental change over time (Bedeian, 1990). In order to address this issue this study will replicate the Lawless & Finch typology over two time periods. Before doing so, a quick review of the Lawless & Finch typology is necessary.

Figure 1: Strategic Choice and Environmental Determinism Framework

STRATEGIC CHOICE			
	High	**Quadrant 3** Maximum Choice (High dynamism environment) Adaptation by design Differentiation Focus-Prospector	**Quadrant 2** Differentiated Choice (High complexity environment) Adaptation within constraints Differentiation Focus-Analyzer
	Low	**Quadrant 4** Incremental Choice Adaptation by chance Reactor	**Quadrant 1** Minimum Choice (Low munificent environment) Adaptation or selection out Defender Cost Leader
		Low	High
		ENVIRONMENTAL DETERMINISM	

Lawless & Finch's operationalization of the model was developed via a cluster analysis based upon Dess & Beard's (1984) dimensions of organizational task environment: munificence, dynamism and complexity. These dimensions are widely considered important environmental considerations that impact an organization's strategy (Pfeffer & Salanick, 1978; Aldrich, 1979; Keats & Hitt 1988). The relationship between Dess & Beard's dimensions of organizational task environment and Hrebiniak & Joyce's framework is summarized in Figure 2.

For Dess & Beard, munificence reflected the degree of resource slack or scarcity. Growth rates impact the ability of firms to attract resources and industry growth rates are closely related to munificence (Dess & Beard, 1984). Complexity dealt with "the heterogeneity of and range of an organization's activities" in an environment (Child, 1972: 3; Dess & Beard, 1984: 56). Complexity increases as environmental density increases (Aldrich, 1979; Starbuck, 1976). Dynamism is change that is hard to predict (Lawless & Finch, 1989). Uncertainty and turbulence which exist in such industries are represented by the absence of a pattern of environmental change – e.g., high deviation from a linear growth rate over time (Dess & Beard, 1984).

Lawless & Finch employed the values Dess & Beard calculated for munificence, complexity and dynamism. Dess & Beard's values were calculated for the years 1967 to 1977, from reports from the U.S. Bureau of the Census (1977) and the U.S. Office of Business Economics (1973).Lawless & Finch then clustered Dess & Beard's 1967 to 1977 factor scores for munificence, complexity and dynamism to derive Hrebiniak and Joyce's four environment types. Their result were that Quadrant 1 (Minimum Choice) had significantly lower munificence, Quadrant 2 (Differentiated Choice) had significantly higher complexity, Quadrant 3 (Maximum Choice) had significantly higher dynamism, and Quadrant 4 (Incremental Choice) was not particularly distinguished along the three dimensions.

Figure 2: Hrebiniak & Joyce's Typology and its Relation to Dess & Beard's Organizational Task Environments

	Munificence	Dynamism	Complexity
In General	Munificence reflects resource slack or scarcity. Growth rates impact the ability of firms to attract resources and are closely related to munificence (Dess & Beard, 1984).	Dynamism is change that is hard to predict (Lawless & Finch, 1989). Uncertainty and turbulence are the absence of a pattern of environmental change (Dess & Beard, 1984).	Complexity is "heterogeneity of and range of an organization's activities" (Child, 1972). It rises with environmental density due to firms dealing with more stakeholders (Starbuck, 1976).
Quadrant 1 **Minimum Choice** high determinism & low choice	**Low munificence** Strategic choice is difficult due to scarce resources and firm resource dependence (Pfeffer & Salanick, 1978; Hrebiniak & Joyce 1985; Lawless & Finch, 1989).	Higher dynamism Firms are price takers whose survival depends on a well-drawn market change response. Firms adapt, are selec-ted out or move to other environments (Lawless & Finch, 1989).	Higher complexity Firms face price competition or other environmental constraints (Hrebiniak & Joyce, 1985) that require them to closely monitor other actors and adapt accord-ingly (Lawless & Finch, 1989).
Quadrant 2 **Differentiated Choice** high determinism & high choice	Higher munificence Resources are greater. Strategic choice is greater since there are a range of tactics which can be pursued to serve variety of niches (Hrebiniak & Joyce 1985; Lawless & Finch, 1989).	Lower dynamism To reduce dynamism firms will segment homogeneous elements of their environment (March & Simon, 1958) and form inter-firm contacts as environmental buffers (Pfeffer& Salanick, 1978).	**Highest Complexity** Niche variety means firms need to monitor more environmental elements. Choice is high since firms can adapt by picking niches within deterministic environmental constraints (Hrebiniak & Joyce 1985).
Quadrant 3 **Maximum Choice** low determinism & high choice	Higher munificence Resources & strategic choice are greater. "Firms can define & choose their domains envi-ronmental influence is relatively low" (Lawless & Finch, 1989: 354).	**Highest dynamism** Increased dynamism due to the greater environmental munificence attracting new entrants (Aldrich, 1979). In turn, new entrants create a less certain environment.	Lower complexity Higher munificence, slack re-sources & flexibility mean lower dependencies. Firms change/reduce institutional ar-rangements by choice (Lawless & Finch, 1989).
Quadrant 4 **Incremental Choice** low determinism & high choice	Higher munificence Benign environment, yet firms have low choice due to an "in-appropriate mix or insufficient number of internal capabilities will prevent organizations from acting…" (Hrebiniak & Joyce, 1985: 342).	Lower dynamism What little dynamism is there is has few felt impacts on firms since connections between the firm and the environment are weak (Emery & Trist, 1965).	Lower complexity Internal arrangements prevent development of relations out-side the firm (Hrebiniak & Joyce, 1985). Few linkages between the firm and its environment lead to lower complexity. (Lawless & Finch, 1989).

Since the Lawless & Finch typology employed Dess & Beard's data, their study was constrained to the 1967 to 1977 time frame. This presents a problem: how can Lawless & Finch's typology be extended such that impact of industry changes over time can be judged? A first step to addressing that question is replicating the Lawless and Finch work for more than one time period. Though the current study is only an exploratory, two working hypothesis can be generated prior to the replication. One, environments are relatively stable. Two, the most stable environment is likely to be the Incremental Choice environment.

That environments are fairly stable does not mean that environments and organizations do not evolve through incremental changes (Gersick, 1991). However, one should find that most

of industries will fall into the same environmental quadrants in the Lawless & Finch typology in earlier or later periods of time. The punctuated equilibrium model dictates that long periods of stability are likely to exist and this would be reflected in the stability of membership in the quadrants in the Lawless and Finch typology.

That the most stable environment will be an Incremental Choice environment fits with the punctuated equilibrium paradigm in that most environments will be stable with incremental change. Thus, Incremental Choice environments become a steady state from which periods of revolutionary change come and to which they return. While Marlin, Lamont & Hoffman, (1994) implied that the Incremental Choice environments may not be the most frequent ones, their study was idiosyncratic as to industry (one certain types of health care facility) and location (Florida) and thus is less generalizable than the Lawless & Finch results, This would thus explain why 29 of 52 of the industries in the Lawless & Finch study were to be found in the Incremental Choice environment.

Since the current study is concerned with Lawless & Finch's work regarding industry environments, investigation into appropriate firm adaptation strategies must be considered a subject for future research. Our attention must therefore turn to methods by which Lawless and Finch's typology can be replicated.

Methodology

To replicate Lawless & Finch's work discriminant analysis employing their classification of industries as the dependent variable was used to create a predictive model. Logit or Probit analysis could also be employed. While their use is preferred with data that is not normally distributed, the results they produce do not differ significantly from those obtained by discriminant analysis (Lo, 1986). Also, use of discriminant analysis is preferred in this case since it can produce three linear dimensions that will more intuitively demonstrate the three dimensions of organizational task environments. Finally, the relatively large sample size (50 industries) drawn from the relatively small population (460 industries) means that the sampling error has been minimized (Kerlinger, 1973).

Independent variables were derived from Dess Beard's (1984) study[1] upon which Lawless & Finch base their work. A stepwise model minimizing Wilks' Lambda was employed to create parsimony and minimize variance in discriminant (Klecka, 1976).

Figures were collected for two periods: 1967 to 1977 and 1977 to 1987. Data for the 1967 to 1977 period was collected for the 52 industries in the Dess and Beard sample plus an additional 36 randomly selected industries. Due to limitations in data availability, data for the 1977 to 1987 period was collected on only 75 of the industries included in the earlier period. To reduce the impact of differences in general economic conditions over time, the data was normalized such that scores employed in the discriminant analysis reflected the number of standard deviations from the mean for all companies in the period (summary statistics showing the calculations and values employed in the procedure are shown in Appendices 1 and 2).

The Dess & Beard study involved extensive data collection in order to generate factors of organizational task environments. Since, one of the objectives of the current study is to employ a simpler method to replicate and update Lawless & Finch's work, a way was needed to replicate Dess & Beard's results from a more parsimonious set of variables than the ones they employed.

The variables used to create the parsimonious list were the ones which loaded highly on Dess & Beard's munificence, complexity and dynamism scores (detailed calculations are shown

[1] An abbreviated data set of independent variables could be regressed against Dess & Beard's dimensions. Results of the regressions could then be used to run a discriminant analysis. Loss of information involved in such a two step process would too seriously reduce the predictive accuracy of the model developed.

in Appendix 1). Munificence was represented by growth in sales, price cost margin, employment, and value of manufacture. Dynamism was represented by instability in sales, price cost margin, employment, and value of manufacture. Complexity was represented by industry specialization ratio and geographic concentration of industry establishments. In addition to Dess & Beard's variables, a second set of variables with simplified calculations was also included.

Simplified munificence measures – i.e., growth measures – were the increase in the tenth over the first year of observation (see Appendix 1 for detailed calculations). Though, not as accurate as using the regression slope coefficient, data collection is simplified and the end result may be suitable for the purposes of predicting the Lawless & Finch clusters.

Simplified dynamism measures were the standard deviation of the figures for the previous three censuses over their average. These additional measures, while fairly consistent with earlier work (Snyder & Glueck, 1982), account for absolute dispersion without accounting for trends. They therefore do not distinguish between consistent linear growth and stochastic market changes (Dess & Beard, 1984: 58). However, their ease of calculation prompted their inclusion.

Results

Table 1 summarizes the classification results for the discriminant analysis. Overall, 96.2% of industries were correctly classified. The data set employed allowed 50 of 52 industries to be classified in their Lawless & Finch groups. Only two Maximum Choice industries were misclassified SIC industry 2441 (nailed wooden boxes) classified as Minimum Choice. Industry 2421 (sawmills) was classified as Incremental Choice. The resulting 139.8 chi square demonstrates that a degree of predictive validity this high has a .0001 probability of occurring due to the chance. The accuracy rate is about 150% higher than the naïve guess (of 38.8%). Over two periods the accuracy rate would thus be 92.5% over a naïve guess of 15.1%

Table 1: Discriminant Analysis Classification Results

		Predicted Group Membership			
Actual Group		Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Quadrants	**Cases**	**Minimum Choice**	**Differentiated Choice**	**Maximum Choice**	**Incremental Choice**
Quadrant 1 **Minimum Choice**	7	7 100.0%	0 0.0%	0 0.0%	0 0.0%
Quadrant 2 **Differentiated Choice**	4	0 0.0%	4 100.0%	0 0.0%	0 0.0%
Quadrant 3 **Maximum Choice**	12	1 8.3%	0 0.0%	10 83.4%	1 8.3%
Quadrant 4 **Incremental Choice**	29	0 0.0%	0 0.0%	0 0.0%	29 100.0%

The discriminant variables produced three functions in order to differentiate Lawless & Finch's four categories (results are available from the author). Most of the simplified measures were not included in the stepwise discriminant results. This supports Dess & Beard's contention as to the superiority of their measurements. Where the simplified measures entered into the equation they tended to correlate with growth/munificence measures. This lends support to the idea that the Dess & Beard measures more accurately separate variability due to growth from random variation.

By using the discriminant analysis based on the Lawless & Finch classifications the remaining industries were classified for 1987. A summary of the results are shown in Table 3. The Chi Square statistic for Table 3 is 76.08 ($p<.0001$).

As can be seen from Table 3, Differentiated Choice environments and Incremental Choice environments showed great stability. Of the fifty-two industries in these quadrants in 1987, forty-two of them (80.8%) had been in the same quadrants in 1977. 1977 to 1987. Overall, fifty-two of the seventy-five industries (69.3%) were in the same quadrants in 1987 as they were in 1977. In general, there is some support for the working hypothesis that environments are stable over time.

Table 3: Two Period Industry Classification Results

	1977 Group Membership			
1987 Group Membership	Quadrant 1	Quadrant 2	Quadrant 3	Quadrant 4
Quadrants	**Minimum Choice**	**Differentiated Choice**	**Maximum Choice**	**Incremental Choice**
Quadrant 1 **Minimum Choice**	3 33.3%	0 0.0%	3 33.3%	3 33.3%
Quadrant 2 **Differentiated Choice**	0 0.0%	5 71.4%	1 14.3%	1 14.3%
Quadrant 3 **Maximum Choice**	4 28.6%	0 0.0%	7 50.0%	3 21.4%
Quadrant 4 **Incremental Choice**	2 4.4%	0 0.0%	6 13.4%	37 82.2%

There is also some support for the idea that certain types of environments are in a continuous state of change (D'Aveni, 1994). Maximum and Minimum Choice environments were quite unstable. Two thirds of the industries in the Minimum Choice environment in 1987 were in other quadrants in 1977 and one half of the industries in the Maximum Choice environment in 1987 were in other quadrants in 1977.

The second working hypothesis that the most stable environment would be the Incremental Choice environment has support. Of all environments, the largest percentage of this quadrant's 1987 membership was from 1977.

Discussion

The results of this study suggest that industry environment types are fairly stable over time. However, some environments did experience a punctuated equilibrium (Porter 1990, Gersick, 1991). Therefore, the main thrust of the discussion here is to discuss these changes.

Findings regarding movement out of the Minimum Choice environment support Lawless & Finch's discussion. They contend that firms in Minimum Choice environments are more likely move to lower determinism environments than to try to find a successful strategy that fits with the environment. This would explain why many of the Minimum Choice industries studied here moved out of the quadrant to more munificent quadrants. The movement of industries into the quadrant is possibly representative of the turbulent period an industry must pass through in order to arrive at a new equilibrium point (Gersick, 1991; Hill & Jones, 1995).

With regard to Maximum Choice environments, Lawless & Finch proposed that the lack of a single high performing strategy in this quadrant suggested that this environment was less restrictive than the Hrebiniak & Joyce model suggests. Lawless & Finch thus proposed to extend Hrebiniak & Joyce's model to support the contention that Maximum Choice environments will support all of Porter's (1980) generic strategies. Results here call into question Lawless & Finch's extension. Instability in Maximum Choice environment membership may create an appearance that firms in this environment are able to profitably pursue a wide range of strategies. Industries in the Maximum Choice environment may have been new arrivals. The profits of these companies may be the result of successful strategies employed in the context of the industry's past quadrant membership rather than the Maximum Choice quadrant membership indicated by Lawless & Finch. Lawless & Finch may have thus unknowingly and erroneously compared past profits and strategies with current industry quadrant membership.

It is worth noting that the most stable environments (Differentiated and Incremental Choice environments) were the ones that, according to Lawless & Finch, best support Differentiation and Lost Leadership strategies. This lends support to the usefulness of Porter's Generic strategies in stable environments (Porter, 1980; Hill & Jones, 1995).

The stability and predominance of Incremental Choice environments is consistent with Lawless and Finch. It is also consistent with the contention that managers may prefer less complex environments due to limits on their information processing ability (March & Simon, 1958)

As Lawless & Finch suggest, one step to determining the type of industry under study is determining the degree of choice and determinism present. Only then might one be able to asses the appropriateness of a strategy (Hill & Jones, 1995). In order to further develop a Choice/Determinism typology, the current study was able to replicate Lawless & Finch's work over two periods of time.

Limitations and Directions for Further Research

The methodology employed here – discriminant analysis – tends to overstate accuracy rates which would occur when subjects not included in the sample are tested (Klecka, 1976). To obtain more realistic estimates, jackknife procedures are usually performed (Gong, 1986). However, in the current study, some classes of industries contained such small numbers of observations (four for Differentiated and seven for Minimum Choice) that confirmation of the model's predictive validity was not possible. With small numbers, leaving out even one observation significantly alters the attributes of the class (Klecka, 1976). Thus a jackknife procedure would not be appropriate (Gong, 1986). This remains a limitation until Dess & Beard's (1984) study is replicated on a larger sample. Thus, results of the current study must be considered more exploratory than conclusive.

The current study is limited to further development of the Hrebiniak & Joyce / Lawless & Finch model as it relates to industry environments and changes in environments over time. Thus, the contingent impact of environment on strategy and profitability was not undertaken. However, this study makes a *significant* contribution by creating updated measures upon which future researchers might undertake such work. A potentially fruitful avenue of research would be to discover if industries return to more a stable quadrant (i.e., an Incremental Choice environment) after having moved to less stable ones (i.e., minimum or maximum Choice environments). If this were the case, it would lend more support to the Punctuated equilibrium model.

While this study has addressed some of Bedeian's (1990) concerns regarding changes in industry environment over time, the analysis is not truly longitudinal. It is really two snapshots over time. Thus the degree of change which could be occurring between snapshots is not being observed. Future research is need to undertake more truly longitudinal research and uncover the degree of change which may be occurring from year to year. Then organizational response to short-run changes can be evaluated for their effectiveness.

Appendix 1: Dess & Beard's Operationalization of Organizational Task Environments with Added Simplified Measures

Industry Variable		Measurement Scale	Data Source
V1	Growth in Total sales	Value of Shipments; regression slope coefficient (B), *divided by* mean value (M); 1968-1977 and 1978-1987	U.S. Census Bureau 1967-1987 Census of Manufacturers Table 1
V1a	Simplified Growth in sales	Value of Shipments; simple growth of census figures; 1977 amounts *net of* 1967 amounts *over* 1967 amounts; 1987 amounts *net of* 1977 amounts *over* 1977 amounts.	Same as V1.
V2	Growth in Price cost margin	Value added by manufacture *minus* total wages. Same measurement procedure as V1.	Same as V1.
V2a	Simplified Growth in price cost margin	Value added by manufacture *minus* total wages. Same measurement procedure as V1a.	Same as V1.
V3	Growth in Total employment	Total employment. Same measurement procedure as V1.	Same as V1.
V3a	Simplified Growth in total employment	Total employment. Same measurement procedure as V1a.	Same as V1.
V4	Growth in Value added by manufacture	Value added by manufacture. Same measurement procedure as V1.	Same as V1.
V4a	Simplified Growth in Value added by manufacture	Value added by manufacture. Same measurement procedure as V1a.	Same as V1.
V9	Specialization Ratio	Ratio of primary product shipments to total (primary and secondary, excluding misc.) product shipments for the establishments classified in the industry; 1977 and 1987.	Same as V1.
V11	Instability in Total sales	Value of Shipments; standard error of the regression slope coefficient (S_{b1}), *divided by* mean value (M_{v1}); 1968-1977 and 1978-1987	Same as V1.
V11a	Simplified Instability in total sales	Value of Shipments; standard error of the census figures (S_{b2}), *divided by* mean value of the census figures(M_{v2})**;** 1968, 1972 & 1977 censuses for 1977**;** 1977, 1982 & 1987 censuses for 1987.	Same as V1.
V12	Instability in Price cost margin	Value added by manufacture *minus* total wages. Same measurement procedure as V11.	Same as V1.
V12a	Simplified Price cost margin instability	Value added by manufacture *minus* total wages. Same measurement procedure as V11a.	Same as V1.
V13	Instability in total employment	Total employment. Same measurement procedure as V11.	Same as V1.
V13a	Simplified Total employment instability	Total employment. Same measurement procedure as V11a.	Same as V1.
V15	Instability in Value added	Value added by manufacture. Same measurement procedure as V11.	Same as V1.
V15a	Simplified Instability in Value added	Value added by manufacture. Same measurement procedure as V11a.	Same as V1.
V19	Geographic concentration of Industry establishments	$C = C_j^m IE_j^2 / (C_j^m IE_j)^2$ (1977 and 1987) C = Concentration of Industry establishment index; IE = Number of industry establishments; i = 1, 2,…, n n = number of industries in the sample; j = 1, 2, …, m m = number of census divisions (9).	U.S. Census Bureau 1967-1987 Census of Manufacturers Table 2

Appendix 2: Summary Statistics for Non-Normalized Values

Summary Statistics for the 75 Industries in the current study from 1987																	
Mean	**S.D.**	**Var.**	**V1**	**V2**	**V4**	**V4a**	**V9**	**V11**	**V12**	**V12a**	**V13**	**V13a**	**V15**	**V19**	**Var.**	**Mean**	**S.D.**
.07	.04	**V1**		.78*	.96*	.83*	-.04	-.59*	-.51*	.42*	-.31*	-.64*	-.53*	-.20	**V1**	.04	.04
.04	.04	**V2**	.56*		.76*	.54*	.00	-.56*	-.57*	.21	-.30*	-.57*	-.51*	-.34*	**V2**	.02	.04
.07	.04	**V4**	.89*	.59*		.88*	-.04	-.63*	-.60*	.49*	-.36*	-.63*	-.55*	-.15	**V4**	.04	.05
90.01	60.8	**V4a**	.80*	.53*	.94*		.00	-.44*	-.42*	.68*	-.28*	-.55*	-.33*	.01	**V4a**	66.75	61.67
92.51	5.83	**V9**	.10	.08	.08	.08		-.12	-.22	.09	-.15	-.12	-.06	-.06	**V9**	91.67	6.27
.01	.01	**V11**	.19	.01	.13	.18	-.28		.78*	-.04	.67*	.44*	.93*	.20	**V11**	.01	.01
.01	.01	**V12**	-.21	.39*	-.16	-.15	-.29	.37*		-.10	.72*	.50	.69*	.15	**V12**	.01	.01
.34	.13	**V12a**	.70*	.60*	.84*	.88*	.09	.23	.08		.04	-.27*	.12	-.02	**V12a**	.31	.12
.01	.01	**V13**	.39*	-.13	-.32	-.20	-.28	.55*	.61*	-.10		.41*	.63*	.14	**V13**	.01	.01
.11	.08	**V13a**	.41*	-.27	-.46*	-.33*	-.26	.21	.31	-.32	.47*		.38*	.24	**V13a**	.14	.10
.01	.01	**V15**	.05	.01	.13	.22	-.34*	.76*	.36*	.34*	.61*	.22		.18	**V15**	.01	.01
.25	.12	**V19**	-.22	-.15	-.11	-.08	-.25	-.02	.15	.01	.19	.15	.10		**V19**	.25	.13
Summary Statistics for the 52 industries in the Dess & Beard study from 1977																	

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