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### A two-wave trend study of organizational climate and psychological distress among general and psychiatric nurses in Hong Kong

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**A TWO-WAVE TREND STUDY OF  
ORGANIZATIONAL CLIMATE AND PSYCHOLOGICAL  
DISTRESS AMONG GENERAL AND PSYCHIATRIC  
NURSES IN HONG KONG**

by

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**September 2000**

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## Abstract

This study adopts a two-wave design examining relationships between organizational climate and psychological distress among nurses in Hong Kong, and comparing levels of psychological distress and work pressure between general and psychiatric nurses, by drawing samples from acute and psychiatric hospitals in Hong Kong, using self-administered questionnaires. The samples include 144 nurses (74 general nurses, 70 psychiatric nurses; 47 males, 97 females) and 114 nurses (85 general nurses, 29 psychiatric nurses; 17 males, 97 females) in the respective first and second wave of study. Stepwise multiple regression analyses revealed that 'immediate upper level' was an important predictor of psychological distress in both the first wave and second wave of study. Further, psychiatric nurses perceived higher work pressure, had higher psychological distress and lower job satisfaction than general nurses.

## Introduction

Since the early 1980s, there has been a growing amount of job stress research using nurses as the targets of investigations (Ivancevich & Matteson, 1980; Tyler & Cushway, 1992). It has been found that nurses, amongst health professionals, suffer more stress-related disease and psychological distress (Heim, 1991; Jain, Lall, McLaughlin, & Johnson, 1996).

Job stress in nurses is also high in Chinese societies (Siu & Donald, 1996; Lu, Shiau, & Cooper, 1997). A report of a survey on medical and nursing staff in Hong Kong Hospital Authority (HKHA) revealed that many of the complaints given by nurses are due to organizational change in privatization since the establishment of the Hong Kong Hospital Authority in 1991 (Social Science Research Centre, University of Hong Kong, February, 1996). Researchers working in the West have found a relationship between organizational climate and stress. However, it cannot be assumed that their results can be generalized to Chinese nurses. Büssing and Glaser (1999), for example, have pointed out that there are considerable differences in the nature of nursing between Western countries, such as Germany and the UK and USA, suggesting the need to examine nurses' stress in different cultures. Consequently the present paper will examine the relationship between organizational climate and psychological distress among nurses in Hong Kong.

### *Organizational Climate and Job Stress in Nurses*

In recent years, organizational climate has been found to be a potential source of stress among nurses in western societies (Hemingway & Smith, 1999; Revicki & May, 1989). For instance, Revicki et al. (1989) reported that organizational climate, supervisor behaviour, and work group relations directly influenced role perception; and increased role ambiguity led to decreased job satisfaction and increased perceived stress. Further, organizational climate directly influenced job stress, which exerted a strong direct influence on depressive symptoms in nurses. In Hong Kong, Siu and Donald (1996) also found that 'relationships to superiors' was a strong predictor of health complaints and job satisfaction.

In research concerning organizational climate, the role of an organization, a supervisor, or coworkers has been found to be a main

cause of job strains among employees in general. For instance, Winnubst and Schabracq (1996) summarised that interaction with others - including clients, colleagues, boss or head of the department- is related to stress and strain.

One of the shortcomings of previous research investigating the relationship between organizational climate and stress among nurses has been the use of global climate measures. As Hemingway and Smith (1999) have argued, attempts to reduce stress amongst nurses using a global climate change approach are likely to be unsuccessful. The present study therefore adopts a multifaceted approach to climate that allows specific components to be related to nurses' stress

#### *A Multifaceted Measure of Climate*

Climate has been defined as "shared perceptions of organizational policies, practices, and procedures, both formal and informal . . . indicative of the organizations goals and appropriate means to goal attainment" (Reichers & Schneider, 1990, p. 22). While some authors have argued that the concept of organizational climate is "ambiguous, nebulous and controversial" (Gunter & Furham, 1996, p. 194), there is some consensus about many of the main characteristics of organizational climate: it is perceptual and descriptive, rather than evaluative; has a cognitive basis; is relatively stable over time; and is multidimensional. These attributes imply that climates in work settings have numerous facets and would benefit from a faceted specification of its content.

Previous research (Siu, 1999) has developed a model and measure of climate using the facet theory approach to research (Canter, 1985; Donald, 1995; Guttman, 1954). This model of climate was previously validated in samples of white and blue collar workers in Hong Kong and China (Siu, 1999). As Siu's model and measure has been used and validated using samples drawn from Chinese societies, it was considered appropriate to use the measure in the context of the current study.

Siu's (1999) model, based on a more general conceptualization of climate Donald (1996), comprises three facets: organizational level, trait, and referent. The first facet acknowledges workers' experience of different levels of an organization. Following Siu's research, three elements of the organizational unit facet are proposed:

*organization, immediate upper level* (e.g. supervisors, head nurses), and *coworkers* (colleagues). The organizational trait is hypothesized as shaping the interaction between the worker and the organization. Two elements of the trait facet are proposed: *flexibility* towards employees (the degree of flexibility which is frequently used in an organization or shown by coworkers and supervisors, for instance, autonomy, personalization) and *involvement* in employees (the degree of commitment displayed towards employees by the organization, for example). Both of these elements relate to issues of care and support that have previously been shown to be of importance in relations to nurses' stress (e.g. Hemingway & Smith, 1999). The organizational referent facet refers to the area of organizational or work life to which the traits apply. Siu (1999) proposed three referents: *work* (eg. the challenge and variety of work, decision-making, and communication), *environment* (the physical conditions in the work area), and *well-being* (social relations, welfare, and health issues). Again there is a correspondence between these elements and issues covered in previous research examining stress amongst nurses (e.g. Landeweerd and Boumans, 1994; Hemingway and Smith, 1999). However, using the present model allows the issues covered by those authors to be integrated into a more coherent framework.

The mapping sentence linking the facets is shown in Table 1. Items were directly generated from the mapping sentence by combining elements from each facet to form what are technically termed *structuples*. Based on the mapping sentence shown in Table 1, 18 structuples (3 x 2 x 3) are possible. Using these templates Siu (1999) developed 26 items to measure climate. Example items, translated from the original Chinese, are "My views about the ways in which I carry out my work are listened to and respected in the organization (U1T1R1)" and "If I get sick, my supervisor will make allowances until I recover (U2T2R3)".

[Insert Table 1 about here]

#### *General Nurses Compared to Other Nurses or Other Occupational Groups*

In Western societies, nurses working in specialized settings, say an intensive care unit, cancer ward, or psychiatric unit, reported

more depression, burnout, and less job satisfaction than general nurses (Jones, Janman, Payne, & Rick, 1987; Ullrich & FitzGerald, 1990). Similar findings were obtained in Chinese societies. For instance, Lu, Shiau, and Cooper (1997) studied occupational stress in clinical nurses who worked in various hospitals in southern Taiwan. The nurses reported that, when compared with industrial workers, they experienced higher work stress, more physical and mental ill-health, and lower job satisfaction.

### The Present Study

The objectives of the study are:

1. To study the relationship between organizational climate and psychological distress,
2. To compare perceived work pressure, job satisfaction, and psychological distress between general and psychiatric nurses.

It is hypothesised that the facets of organizational climate that are experienced positively will be negatively related to psychological distress in both general and psychiatric nurses. It is also hypothesised that psychiatric nurses would perceive greater work pressure, lower job satisfaction, and higher psychological distress than general nurses.

### Methodology

#### *Participants and Procedures*

A Self administered questionnaire survey method was used to collect the data. Data were collected from broad cross-sectional samples of Hong Kong nurses at two points in a 10-month interval. This would still be considered cross-sectional because it is for the individual sampling units that each has all data collected at one time. The purpose of which is to arrive at a high convergent validity of results, and therefore to achieve a higher generalizability of findings.

#### *Wave 1*

Purposive and random sampling methods were employed to recruit nurses from eight clusters of hospitals in Hong Kong for the study. One hundred and forty-four nurses (74 general nurses, 70 psychiatric nurses) were recruited from one psychiatric and three

acute hospitals. The questionnaires were distributed and collected by the same nurse who worked in one of the wards of the chosen hospital. The data from psychiatric nurses was conducted in April 1998, and from general nurses was conducted in June 1998. The response rate was 100%. The two sets of data were not collected simultaneously due to limited manpower available.

#### *Wave 2*

In the second wave of the study, a two-stage cluster sampling method was employed to select the sample. One hundred and fourteen nurses were recruited from one psychiatric and four acute hospitals drawn from the eight clusters of hospitals in Hong Kong. The same distribution and collection procedures were followed. Data collection took place between December 1998 and February 1999. The response rate was 57%.

#### *Measures*

*Organizational Climate.* Siu's (1999) 26 items were used to measure organizational climate. Each item is rated by a 7-point scale from strongly agree (7) to strongly disagree (1) (high score = positive climate). The eight facet elements depicted in the mapping sentence in Table 1 include: *Organization (U1)* (items 1, 9, 15, 17), *Immediate Upper Level (U2)* (items 3, 5, 22, 25), *Coworker (U3)* (items 7, 8, 23, 24), *Involvement (T1)* (items 1, 16, 21, 22), *Flexibility (T2)* (items 2, 6, 11, 19), *Work (R1)* (items 2, 3, 4, 5), *Environment (R2)*, (items 10, 12, 13, 14), *Well-being (R3)* (items 18, 23, 25, 26).

*Psychological Distress.* Thirteen items were constructed to measure the psychological consequences of distress including measures of physical ill-health (three items: e.g. feeling exhausted and tired), mental ill-health (seven items: e.g. nervous strain), and depression (three items: e.g. work retardation). Each item is rated on a six point scale ranging from very often (6) to never (1) (high score = high distress). Ten items of this measure (excluding the three items measuring physical ill-health) were used by Siu and Cooper (1998), and were found to be reliable ( $\alpha = 0.85$ ).

*Perceived Work Pressure.* Two items were constructed to measure perceived work pressure: "I usually feel that I am under a lot of pressure when I am at work", and "The level of pressure at

work is very high". Each item is rated on a 6-point scale from strongly agree (6) to strongly disagree (1).

*Job Satisfaction.* Three items were constructed to measure overall satisfaction with the job itself, the hospital they work at, and the Hong Kong Hospital Authority: "All in all, how satisfied are you with your job?", "All in all, how satisfied are you with the hospital you work at?", and "All in all, how satisfied are you with the Hong Kong Hospital Authority?". In Siu's et al. study (1998), the first item was found to be correlated highly with the 5 items measuring satisfaction with the job itself devised by Cooper and Williams (1996) ( $r = 0.78, p < .001$ ), the second item was found to be correlated highly with the 6 items measuring satisfaction with the organization devised by Cooper et al. (1996) ( $r = 0.58, p < .001$ ).

In addition, 13 items were constructed to measure demographic information.

## Results

### *Demographics*

#### *Wave 1*

The sample comprised of 47 (32.6%) males and 97 (67.4%) females. Amongst them, 74 (51.4%) were general nurses and 70 (48.6%) were psychiatric nurses. The majority of the nurses were from 26 to 30 (30.6%) and from 31 to 35 (25%) years of age. Concerning education level, 77.8% received secondary education and 22.2 % received tertiary education. Most of the respondents' current job experience was between 3 to 5 years (39.6%). In terms of marital status, 42.4 % were single, 55.6 % were married, and 2.1 % were divorced.

#### *Wave 2*

The sample comprised of 17 (14.9%) males and 97 (85.1%) females. Amongst them, 85 (76.3%) were general nurses and 29 (23.7%) were psychiatric nurses. The majority of the nurses were from 21 to 25 (35.1%) years of age. Concerning education level, 69.3% received secondary education and 30.7 % received tertiary education. Most of the respondents' current job experience was between 1 to 5 years (39.6%). In terms of marital status, 58.8 % were single, 36.8 % were married, and 0.9 % were divorced.

### *Validation of Model of Organizational Climate by Smallest Space Analysis (SSA)*

The structure and validity of the climate measure was examined using the Multidimensional Scaling (MDS) procedure of Smallest Space Analysis (SSA-I). The use of MDS procedures has a number of advantages over the more usual factor analytic approaches. For instance, non-linear structures that may not be evident from factor analysis can be represented using MDS.

Essentially, an association matrix is produced in which the correlation between each pair of items is calculated. The items are then represented in  $n$ -dimensional space such that the rank distance between the items is the inverse of the rank of the inter-item association coefficients. Therefore, the closer two points in the space, the higher the positive association between those items. The procedure calculates a 'goodness of fit' or stress measure, the coefficient of alienation. A coefficient of .2 or below is considered acceptable (Donald & Canter, 1990), although more substantive criteria are often used in judging the adequacy of a solution.

Interpretation of the plots is achieved by partitioning the space into contiguous regions that contain items from the same element of a facet. If elements of a facet are valid, they will form discrete regions with continuous boundaries. The region partitions for the elements of any one facet should not cross those of other elements of that facet. It is possible for more than one facet to be represented in a single plane of the SSA space, depending on the substantive relationship between the facets.

Pearson product moment correlations were used as the original association matrices for the present data.

The results of the SSAs in Wave 1 and Wave 2 consistently corroborate previous findings (Siu, 1999). A detailed description of those results is presented in another article just submitted to *Work & Stress*. Figures 1 to 3 depict the SSAs in the combined samples (Wave 1 and 2). The coefficient of alienation for the 3-d solution was 0.11, which indicates a good degree of fit (Donald & Canter, 1990).

### *Organizational Unit*

Figure 1 shows the plot of 26 items on projections 1 x 2 of the 3-dimensional SSA-I. It has been partitioned clearly into three



regions in relation to the elements of the organizational unit facet. The elements are ordered from left to right across the plot. The left region contains all the items comprised by the *coworker* element. In the middle region, all items include the *immediate upper level* element. In the right region, are items that include the *organization* element.

[Insert Figure 1 about here]

#### *Organizational Trait*

Figure 2 shows the plot of 26 items on projections 1 x 3 of the 3-dimensional SSA-I. The plot shows two concentric regions that accord with the organizational trait facet. Items including the *involvement* element are located in the inner region, and outer region contains all items that belong to the *flexibility* element.

[Insert Figure 2 about here]

#### *Organizational Referent*

In Figure 3 it has been partitioned in relation to the referent facet. It is presented separately simply to clarify the partitioning. The SSA space shows three wedge shape regions. The upper region contains all items belonging to the *environment* element. The bottom right region contains all the items belonging to the *work* element. The final region contains all the items belonging to the *well-being* element.

[Insert Figure 3 about here]

Therefore, the model of organizational climate comprising the eight climate scales depicted in Table 1 has been confirmed.

#### *Reliability of Scales*

Table 2 depicts the means, standard deviations, and reliability (coefficient alphas) of the eight climate scales, job satisfaction, psychological distress, and perceived pressure in the both samples. The coefficient alphas are of acceptably high values.

[Insert Table 2 about here]

#### *Relationship between Organizational Climate and Psychological Distress*

Table 3 presents the correlation coefficients between climate scales and psychological distress. It can be seen from Table 3 that most of the climate scales correlated negatively, and most, statistically significantly with psychological distress. Particularly, the scales of 'immediate upper level' and 'well-being' were highly correlated with distress.

[Insert Table 3 about here]

#### *Predictors of Psychological Distress*

A number of stepwise regression analyses were conducted to find out the important predictors of psychological distress among general and psychiatric nurses in the two samples of study. The eight climate scales were entered into the equation as independent variables. As suggested by Kerlinger and Pedhazzer (1973), predictor variables were considered to be those that contributed a minimum of 1% to the variance ( $R^2$  change), and were significant at the .05 level or greater. The predictors of psychological distress in the two samples are quite similar. In Wave 1, 'immediate upper level' appeared to be an important predictor of distress, explaining 6.9% of the variance ( $\beta = -.26, F = 10.48, P < .01$ ); whereas in Wave 2, 'immediate upper level' and 'coworker' were important predictors of psychological distress, explaining a total of 15.2% of the variance ( $\beta = -.31, F = 9.86, P < .001$ ).

Since there are differences in age, gender, marital status, and occupation (general and psychiatric type) between the two samples, a number of t-tests were conducted to establish if there were statistically significant differences in psychological distress between age, gender, marital status, and occupation. The results generally showed no statistically significant differences in psychological distress between these variables in either of the two waves of the study. However, older nurses did report less psychological distress in the second wave of the study ( $t = -2.04, p < .05$ ).

#### *Comparisons between General Nurses and Psychiatric Nurses*

To address objective 2, a series of t-tests were performed. Table 4 presents the t-tests of perceived work pressure,

psychological distress, and job satisfaction between general and psychiatric nurses. As hypothesised, Table 4 shows that psychiatric nurses perceived higher work pressure, and had lower job satisfaction than general nurses in Wave 1. In Wave 2, psychiatric nurses reported had higher psychological distress than general nurses.

[Insert Table 4 about here]

### Discussion

When comparing general and psychiatric nurses, the present study revealed that, though not consistently, psychiatric nurses perceived a higher level of work pressure, and reported higher psychological distress and lower job satisfaction than general nurses. These results corroborated previous studies conducted in Western societies (e.g., Ullrich & FitzGerald, 1990). The implications of these findings are that top management of the Hong Kong Hospital Authority should pay attention to the well-being of nurses in Hong Kong, particularly psychiatric nurses. In Hong Kong, the duration of pre-service training for general and psychiatric nurses is the same. It seems that psychiatric nurses should receive longer pre-service training than general nurses, like the European practice. Therefore stress management techniques can be incorporated into pre-service training curriculum to serve as a kind of tertiary prevention methods. Moreover, stress management programmes and counseling services should be provided to hospital nursing staff on regular basis.

The present study also demonstrated that facets of organizational climate were significant predictors of psychological distress. It is the immediate upper level (including ward supervisors and ward managers) and coworkers that were associated with nurses' psychological well-being most. These results corroborated previous studies in Hong Kong (Siu, 1999) and Western societies (e.g., Winnubst & Schabracq, 1996). They also found that immediate supervisor could exert impacts on employees' well-being. These results are self-explanatory. It is always the case that the immediate upper level (the supervisors, and the departmental policies) is of concern to employees, because to a certain extent, it delivers recognition, and decides the promotion and welfare of the workers. It seems that senior staff in hospitals wards could have an

important role in reducing distress among subordinates. They can do something such as giving support to junior staff, to encourage them to participate more in decision-making, and to provide more channels for communication, in order to reduce their distress. The same suggestions can be applied to all nursing staff in that they should give more support to fellow workers and to communicate more among themselves in order to achieve a better climate in the wards they work at, which in turn, might alleviate distress among themselves. Nowadays, most hospital nursing staff complain that inadequate nursing manpower is the major source of stress. It seems that organizational climate also affects them substantially and subtly. They cannot change the policy or the financial situation to suddenly increase manpower, yet each of them can contribute, even minimally, to the organizational climate where they work. Therefore, further research in organizational climate among nurses and other occupational groups should be replicated in both Asian and Western societies.

It was noted in the introduction that global measures of climate tend to be used when examining the relationship between stress and climate (Hemingway and Smith, 1999; Revicki and May, 1989). To overcome this a model and climate measure previously developed by Siu (1999) was used. Smallest Space Analysis of the data derived from Siu's measure provided basic support for the construct validity of facets and elements of the model. The acceptably high alpha coefficients for the scales provide support for the reliability of the proposed climate measure. It can be concluded that the 26-item climate instrument can be used as a diagnostic measure in future research in nursing staff and other occupational groups.

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Table 1  
Mapping Sentence for Organizational Climate

The extent to which person (x) describes their {Organizational Unit (U)} as	
{U1 Organization }	
{U2 Immediate Upper Level }	
{U3 Coworkers }	
exhibiting {Organizational Trait (T)} them in the area of {Organizational Referent (R)}	
{T1 Involvement in }	{ R1 Work }
{T2 Flexibility towards }	{R2 Environment }
	{R3 Well-being }
Very Much	
is → to	
Not at all	
where x is a nurse in Hong Kong.	

Table 2  
Means, Standard Deviations, Reliabilities of Main Variables in Wave 1 and 2

	Wave 1 (N = 144)			Wave 2 (N = 114)		
	M	S D	Alpha	M	S D	Alpha
<b>Organizational Climate</b>						
<b>Organizational Unit:</b>						
Organization (U1)	16.63	3.80	.72	16.73	3.35	.76
<b>Immediate</b>						
Upper Level (U2)	17.58	3.87	.73	16.56	3.58	.80
Coworkers (U3)	19.08	3.67	.82	17.73	3.35	.84
<b>Organizational Trait:</b>						
Involvement (T1)	16.22	3.95	.79	16.35	3.38	.78
Flexibility (T2)	15.87	3.57	.68	15.35	3.55	.78
<b>Organizational Referent:</b>						
Work (R1)	17.02	4.37	.85	16.25	3.85	.89
Environment (R2)	17.13	3.85	.74	17.18	2.90	.67
Well-being (R3)	20.08	3.74	.81	18.99	3.40	.77
<b>Psychological Distress</b>	48.00	9.64	.88	40.97	6.92	.78
<b>Job Satisfaction</b>	7.52	2.39	.81	9.73	1.70	.74
<b>Perceived Work Pressure</b>	8.22	1.89	.83	6.74	1.88	.87

Table 3

Zero-order Pearson product-moment Correlations between Climate Scales and Psychological Distress

	U1	U2	U3	T1	T2	R1	R2	R3
Wave 1:								
PSYD	-.18*	-.26**	-.06	-.21*	-.21*	-.21*	-.15	-.24**
Wave 2:								
PSYD	-.21*	-.29**	-.06	-.23*	-.26**	-.28**	-.07	-.12
Note.	PSYD-psychological distress			U1-organization		U2-immediate upper level		
	U3-coworkers			T1-involvement		T2-flexibility		
	R1-work		R2-environment		R3-well-being		* p < .05	** p < .01

Table 4

t-tests of Perceived Work Pressure, Psychological Distress, and Job Satisfaction between General Nurses and Psychiatric Nurses

	General Nurses		Psychiatric Nurses		t-value
	Mean	S. D.	Mean	S. D.	
Wave 1:					
Perceived Work					
Pressure ##	7.69	1.80	8.77	1.84	3.57***
Psychological					
Distress	47.00	8.20	49.06	10.93	1.28
Job Satisfaction	8.45	1.85	6.54	2.54	-5.19***
Satisfaction with					
Job Itself	2.68	.88	2.30	.91	-2.53*
Satisfaction with					
Hospital they work at	2.39	.79	1.86	.91	-3.78***
Satisfaction with HKHA	3.38	.72	2.39	1.04	-6.7***
Wave 2:					
Perceived Work					
Pressure ##	7.16	1.94	7.55	1.68	.96
Psychological					
Distress	40.13	6.35	43.44	7.97	2.27*
Job Satisfaction	8.33	1.65	8.10	1.86	-.62
Satisfaction with					
Job Itself	3.34	.65	3.59	.78	1.67

Satisfaction with					
Hospital they work at	3.47	.67	3.59	.73	.79
Satisfaction with HKHA	2.86	.69	2.72	.79	-.87

Note. # summation of scores of the 20 items measuring sources of stress at work

## summation of scores of the two items measuring perceived work pressure

HKHA - Hong Kong Hospital Authority

\* p < .05    \*\* p < .01    \*\*\* p < .001

Figure 1. Organizational Unit (Wave 1 & 2)

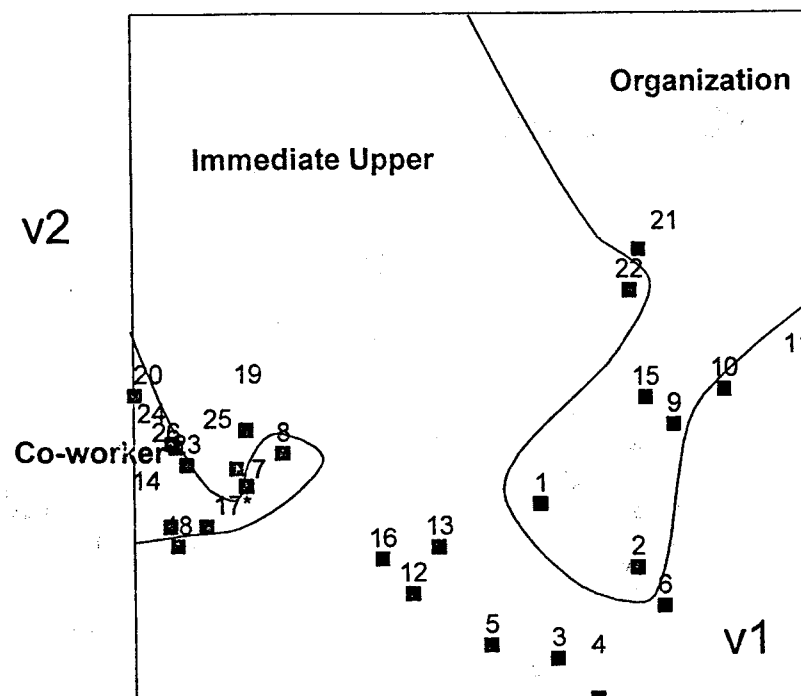


Figure 2. Organizational Trait (Wave 1 & 2)

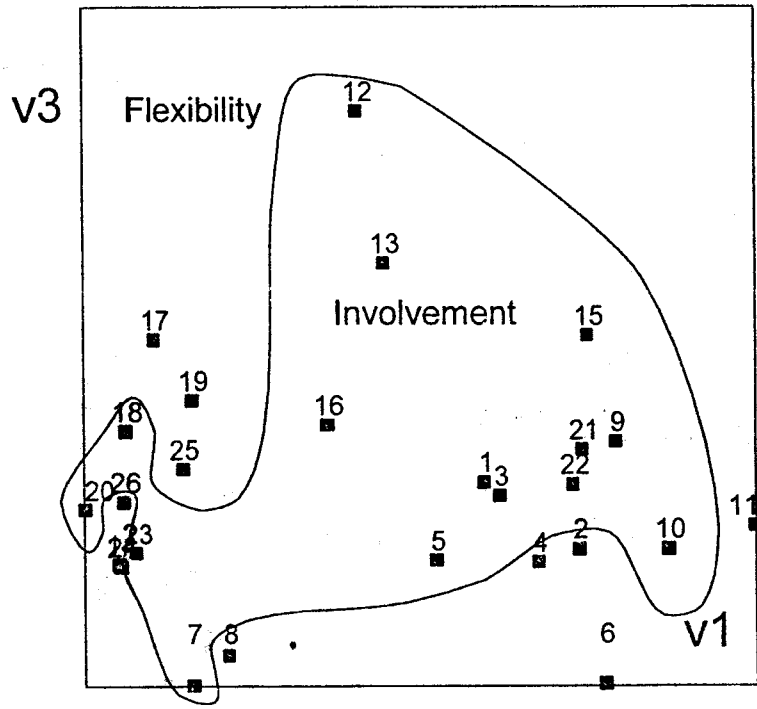
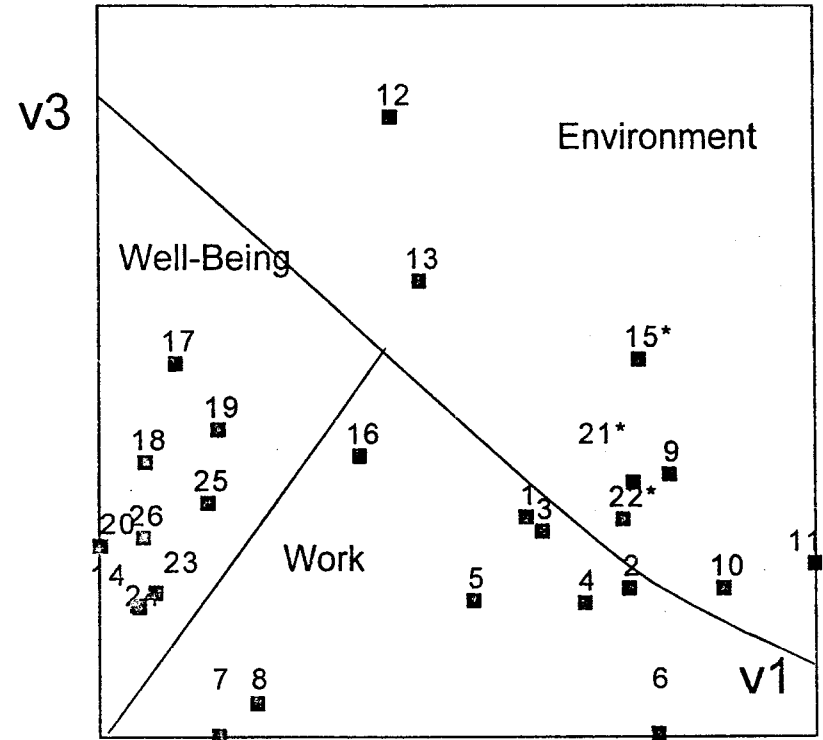


Figure 3. Organizational Referent (Wave 1 & 2)



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