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Transformational and transactional leadership predictors of job autonomy in self-managing teams: the consequences for performance

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**TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP PREDICTORS
OF JOB AUTONOMY IN SELF-MANAGING TEAMS: THE CONSEQUENCES
FOR PERFORMANCE**

Abstract:

Performance is a key concern for organisations in the rapidly changing global economy. Although both leadership and the ability of employees to work in an autonomous manner are often cited as being essential for effectiveness of self-managed teams, little is known on the effect of leadership style of team leaders on the job autonomy of team members, and the consequences for team performance. A survey of 239 members of self-managing teams was carried out in a manufacturing organisation to investigate the relationship between Bass's leadership dimensions, a number of job autonomy dimensions and team performance. The analyses indicated that most, but not all, of Bass's leadership dimensions are positively related to the variables of job autonomy. Moreover, the results showed that the effects of 'transformational and transactional' leadership on team performance to a large extent are mediated by the intervening variables of the job autonomy.

Key Words: Transformational leadership, transactional leadership, job autonomy, self-managing teams, and team performance.

1. Introduction

One of the most notable trends of the 1990s that will continue to dominate the work environment of the twenty-first century (Manz & Sims, 2001) was the explosion of work teams in manufacturing and service organisations (Cohen, Ledford & Spreitzer, 1996; Donovan, 1998). The popularity of work teams stems from the idea that, by

identifying and solving work-related problems, teams can contribute to improved performance (Beckham, 1998). Although much has been written in the form of anecdotes or descriptive case studies about the success of self-managing teams, very little information exists on the effect of leadership on the dimensions of the job autonomy of workers, which is essential for solving work-related problems in the new self-managing work environment.

In a self-managing environment the challenge for most leaders is to create an atmosphere that encourages autonomy and self-direction (Manz & Sims, 1993; 2001; Yeh, 1995). A leadership study reported by Yeh (1995) revealed a high association between supportive leadership style and the overall job autonomy. This demonstrates the importance of the leaders' presence in the research and development work environment. The data also supported the view that the design of R&D work needs an atmosphere that encourages autonomy and self-direction, which constitutes an environment of self-management and self-leadership. Furthermore, Ferris and Rowland (1981) suggested that an 'Initiation of Structure' leadership style induces in subordinates a perception of greater job autonomy, which in turn may contribute to the subordinates' performance.

In relation to transformational and transactional leadership, Griffin (1980) investigated the relationships among individual, task design and leader

behaviour variables. For a subset of employees who had tasks with high variety, involvement and autonomy but a low need for personal growth, a more directive leadership style resulted in higher satisfaction. But for those who had tasks with low variety, involvement and autonomy (i.e. simple and routine tasks), satisfaction resulted from a more supportive and more management-by-exception leadership style (transactional style). However, the relationship between leadership variables, job autonomy and team performance was not addressed in Griffin's study.

Despite the conceptualisation of transformational leadership as being capable of eliciting extraordinary levels of motivation (Pillai, 1995) and 'performance beyond expectations' (Bass, 1985) there is a lack of empirical research on which of Bass's leadership dimensions best facilitate job autonomy and the extent to which this leads to high performances. In particular, there is an interest from academics and practitioners in addressing whether 'transformational and transactional' leadership enable follower's job autonomy and what the consequences are for performance in a self-managing environment. This is done in the present study by examining the impact of transformational and transactional leadership of team leaders on employees' perception of job autonomy, and how this affects team performances. The study involves a questionnaire-based survey of members of self-managing teams from a large high-technology, aerospace, manufacturing organisation in Australia.

2.Team Performance

Performance is of considerable importance for quality of life, for national economies and for increasing organisational competitiveness in the rapidly changing global economy. Hence, the issue of measuring team performance has become one of the major concerns for business managers, engineers, economists, public administrators, community leaders, consultants, labour unions, trade associations and governments. Consequently, the issue of measuring team performance has received a great deal of scientific attention in the last twenty years (Cohen & Bailey, 1997; Peters, O'Connor & Rudolf, 1980).

Despite the general utility of the performance concept, Dunnette (1963) and Lent, Aurbach and Levin (1971) complained about the absence of an adequate framework to account for what it is exactly that researchers should be trying to measure when they attempt to measure team performance. In the decision of what to measure, the use of financial versus non-financial measures is a controversial issue. While some companies advocate the use of purely financial measures, others argue for the use of non-financial measures, and a third group insists on a balanced use of the two (Manoochehri, 1999). The Shell Oil Company is an example of the first group. In the early 1990s it established its Shell Business Model, which requires managers of operating units to think in the context of running the business profitably. Their primary yardsticks

are purely financial, with indicators such as revenue growth and return on investment. Alternatively, a company such as Motorola almost ignores the financial measures in monitoring manufacturing performance and focuses instead on the key drivers of operations such as the manufacturing yield rate managed, cycle time and operating unit productivity. It is argued that if the key drivers are managed, the financial results will follow. While such companies do not totally ignore the financial measures, they do play them down. It is argued that 'soft' measures (related to human factors) determine the 'hard' productivity outcomes (related to financial measures) (Lemmink & Mattsson, 1998).

For the purpose of this paper, indirect or 'soft' measures of performance and 'hard' productivity outcomes (related to financial measures) were both included in the research model. In terms of the 'soft' performance measures, a review of the literature revealed a subjective scale, which is simple, accessible, easy in administration and scoring, and used previously in self-managing populations. This scale has been developed by Crouch (1980) and it measures perceptions of team performance. The scale consists of five items that used a seven-point Likert-type response scale: *definitely disagree* (1); *disagree* (2); *inclined to disagree* (3); *neither agree nor disagree* (4); *inclined to agree* (5); *agree* (6) and *definitely agree* (7). Individual team members assess their own group performance by indicating the degree of agreement or disagreement on each of the statements in the scale.

In relation to 'hard' performance measures, a number of performance indicators were chosen which were used by the participating organisation to monitor and report teams' performances. Each team was rated by its supervisor (the team leader) on three 'target indicators' (Schedule, Quality and Profit). Team leaders were asked to estimate the team's performance in terms of what it had achieved over the previous six months, as a percentage of the agreed target values for each of the three target indicators shown in Appendix I. The agreed values for the performance indicators were being jointly developed between the members of the self-managing teams and the external team leaders and published on notice boards monthly. The composite scale of schedule, quality and profit was included in the research model of this paper.

3.Determinants of Job Characteristics and Autonomy

The topic of job design and job characteristics has been studied extensively by management researchers and practitioners over the last seven decades (Herzberg, 1966; Hackman & Oldham, 1976; Marchese, 1998). Since the 1930s numerous studies have supported the connection of job design and job characteristics with (i) subordinates' satisfaction (Campion, Medsker & Higgs, 1993; Pollock, Whitbred, & Contract, 2000); (ii) employees' wellbeing (Hackman & Oldham, 1980; Karasek & Theorell, 1990); (iii) employee motivation, involvement and attendance (Herzberg, 1966; Griffin & Chonko, 1977); (iv) organisational commitment (Batt & Appelbaum, 1995; Cohen *et al.* 1996); (v) organisational and team performance (Hackman & Oldham, 1975; Hackman, 1986; Campion *et al.* 1993; Wageman, 1995); and (vi) leadership (Hunt & Liebscher, 1973; Miles & Petty, 1977; Landeweerd & Boumans, 1994; Yeh, 1996).

Although it appears that there is a connection between job characteristics and job related attitudes and team performance, a review of the literature revealed that there is no agreement as to which particular job characteristics framework best explains employees' satisfaction, commitment, job involvement and employees' wellbeing (Politis, 2001a). However, it is generally accepted that job characteristics and especially autonomy are important in relation to different aspects of employees'

wellbeing and organisational outcomes. It is suggested that the autonomy of the job and some organisational characteristics play an important role in fostering organisational success (Hackman & Oldham, 1976).

In relation to job autonomy instruments, a review of the literature revealed a set of job autonomy dimensions that are sensitive to expected differences between different types of jobs of advanced manufacturing technology and have been previously tested on a sample of blue-collar workers. Jackson, Wall, Martin and Davids (1992) have developed a questionnaire which consists of 22 items. The questionnaire items use a five-point Likert-type response scale: *not at all* (1); *just a little* (2); *a moderate amount* (3); *quite a lot* (4); and *a great deal* (5). Respondents indicate their degree of agreement or disagreement with each statement on the questionnaire. The questionnaire measures five job characteristics factors salient to employee wellbeing and behaviour: *timing control*, *method control*, *monitoring demand*, and *problem-solving demand* and *production responsibility*. According to Jackson *et al.* (1993: 754) *timing control* refers to individuals' opportunity to determine the scheduling of his or her work behaviour. *Method control* refers to individual choice in how to carry out given tasks. *Monitoring demand* refers to the extent of passive monitoring demand. *Problem-solving demand* reflects the more active, cognitive processing required for preventing or recovering errors. Finally, *production responsibility* refers to the employee's responsibility

for the cost of errors in terms of both lost output and damage to expensive equipment.

With regards to leadership, there are numerous studies that have supported the connection between job characteristics, and especially job autonomy and leadership (Bass, 1990; Johns, 1978; Miles & Petty, 1977; Seers & Graen, 1984; Yeh, 1996). Moreover, much has been written in the form of anecdotes or descriptive case studies about the success of self-managing teams, but very little is known about the effect of leadership on the dimensions of job autonomy and the performance of work-teams functioning in a self-managing environment. In particular, there is an interest from academics and practitioners in addressing whether 'transformational and transactional' leadership enable follower's job autonomy and what the consequences are for performance in a self-managing environment. The present study is addressing the impact of transformational and transactional leadership of team leaders on employees' perception of job autonomy and how this affects team performance in a self-managing environment. The following section focuses on the more recent approach to theories of leadership (transformational and transactional leadership) where the emphasis is on the leader's role of 'managing meaning' (Bryman, 1986).

4. Transformational and Transactional Leadership

In the last fifteen years, the focus of leadership research has shifted from traditional models of leadership—the Trait Theory, Behaviour Theory and Situational Theories—to a new genre of leadership theories, all of which have charisma as their central concept. This ‘new leadership’ approach to theories of leadership was initially developed by Burns (1978) and further refined by Bass (1985).

The term ‘new leadership’ has been used to describe and categorise a number of approaches to leadership which emerged in the 1980s and which seemed to exhibit common or at least similar themes, although there were undoubtedly differences between them (Bryman, 1992). New leadership approaches influence workers via the leader’s ability to manage ‘meaning’ (that is, sense making, culture change, etc.). Writers employed a variety of terms to describe the new kinds of leadership with which they were concerned: transformational leadership (Bass, 1985), charismatic leadership (House, 1977), visionary leadership (Westley & Mintzberg, 1989), and simply, leadership (Bennis & Nanus, 1985).

Most of the leadership theories presented in the literature, such as the Ohio State University studies and Fiedler’s model path-goal theory (Fiedler, 1967), have addressed transactional leaders. These leaders motivate their subordinates in the direction of established goals by clarifying roles and task requirements and by dispensing rewards and

punishments as appropriate. However, there is another type of leadership that inspires followers to exceed their own self-interests for the good of the organisation. This style of leadership is capable of having an extraordinary effect on followers and is described in the literature as transformational leadership.

As stated in Bass and Stogdill's *Handbook of Leadership* (Bass, 1990), transactional leaders 'approach followers with an eye to exchanging one thing for another: jobs for voters or subsidies for campaign contributions. Such transactions comprise the bulk of the relationships among leaders and followers, especially in groups, legislatures and parties' (Burns, 1978: 3). Thus transactional leadership is based on an exchange process in which the leader provides rewards in return for the subordinate's effort and performance. In contrast to transactional leadership, transformational leadership is the process in which 'leaders and followers raise one another to higher levels of morality and motivation' (Burns, 1978: 20). Transformational leaders seek to raise the consciousness of followers by appealing to higher ideas and moral values such as liberty, justice, equality, peace and humanitarianism (Bass, 1985).

Burns's (1978) comprehensive theory formed the foundation for Bass's (1985) transformational-transactional differentiation which has become of considerable importance in the study of leadership in organisations. The model of transactional leadership is based 'on a series of exchanges

between leaders and followers' (Bass, 1985: 12). Transactional leaders clarify followers' roles and what they must do to obtain designated outcomes. Also leaders recognise followers' needs and how need fulfilment will be exchanged for enacting the role to attain designated outcomes. This leadership behaviour provides followers with confidence and motivation to achieve desirable performance.

The model of transformational leadership includes 'additional effort by further increasing subordinates' confidence and by elevating the value of the outcomes for the subordinates' (Bass, 1985: 23). Transformational leaders expand the followers' portfolio of 'needs and wants' and, in terms of Maslow's hierarchical needs, elevate followers' needs to a higher Maslow level (in (Sarros, 2001 terms, that is, esteem and self-actualisation). They focus on transcending followers' self-interest and elevate followers' subjective probability of success. Yet transformational leaders change their culture by first understanding it and then re-aligning the organisation's culture with a new vision and a revision of its values and norms (Bass, 1985). According to Jassawalla and Sashittal, (2000) in transformational leadership, team leaders are facilitators and they 'take inordinate steps to scout for the right mix of talents and coach each team member ... they encourage team members to improve their inherent, and necessarily distinctive, talents'(p. 39). It is plausible that this leadership behaviour enables followers' knowledge acquisition and further increases confidence and motivation to obtain performance beyond expectations.

For the purposes of this study, the components of leadership dimensions that are associated with Bass's model were employed as predictors of employees' perception of job autonomy and their team performances. The primary factors of transformational leadership model conceptualised by Bass (1985) include *attributed charisma*, *intellectual stimulation* and *individual consideration*; and the factors of transactional leadership model include *contingent rewards* and *management-by-exception*.

Transformational and transactional leadership dimensions

Transformational and transactional leadership dimensions were derived from Bass's (1985) theory and research. The purpose of Bass's (1985) research work was to find the independent dimensions of leader behaviour that are appropriate to obtain performance beyond expectations. Bass (1985) developed the Multifactor Leadership Questionnaire (MLQ) as a measure of such leader dimensions. The five dimensions tapped by the MLQ are listed below, with the first three being components of transformational leadership, and the last two those of transactional leadership.

- *Attributed Charisma* so that the leader instils pride, faith and respect, has a gift for seeing what is really important and transmits a sense of mission.

- *Individual Consideration* so that the leader delegates projects to stimulate learning experiences, provides coaching and teaching and treats each follower as an individual.
- *Intellectual Stimulation* so that the leader arouses followers to think in new ways and emphasises problem solving and the use of reasoning before taking action.
- *Contingent Reward* so that the leader provides rewards if followers perform in accordance with contracts or expend the necessary effort.
- *Management-by-Exception* so that the leader avoids giving directions if the old ways are working and allows followers to continue doing their jobs as always if performance goals are met.

Studies in this genre of leadership, using a wide variety of samples, have shown that transformational leadership is positively related to employee satisfaction and to those in-role behaviours which constitute job performance (Bass, 1990; Bass & Avolio, 1993a; Pillai, 1995).

5.The Study

Despite the conceptualisation of transformational leadership as being capable of eliciting extraordinary levels of motivation (Pillai, 1995) and 'performance beyond expectations' (Bass, 1985), Bass (1995) observed that 'there has been relatively little basic research testing of the many

networks of linkages proposed to explain how transformational leadership works' (p. 475).

The present study, thus, attempts to extend previous work on the components of leadership dimensions (first order factors) that are associated with Bass's leadership model and its relationship with job autonomy, and to integrate team performance measures obtained from the team members 'soft' and from external team leaders 'hard'. This is done by investigating the impact of transformational and transactional leadership on employee's perceptions of job autonomy, and how these in turn, influence team performances.

This study assumes that each of the first order factors of transformational and transactional leadership will predict the factors derived from Jackson *et al.* (1993) job autonomy questionnaire (e.g., timing control, method control, monitoring demand, problem-solving demand, and production responsibility) which in turn influence team performance. This functional relationship is shown in the schematic diagram (model) below (see Figure 1). Moving from left to the right, the model shows the antecedents of job autonomy followed by the employees' perception of job autonomy and the outcomes of job autonomy.

Insert Figure 1 about here

Research findings have also confirmed that transformational leadership is more highly related to perceived satisfaction and effectiveness than is transactional leadership (Bass, Avolio & Goodheim, 1987; Yammarino & Bass, 1990). Moreover, empirical evidence suggests that leaders who rely more on management-by-exception will obtain lower levels of follower performance (Howell & Avolio, 1993). Therefore, an assumption was made that job autonomy will be more strongly and more positively correlated with the factors representing transformational leadership than with the factors representing transactional leadership. The hypotheses associated with each part of the research model, linking antecedents to job autonomy, and job autonomy to consequences, are presented below.

Hypothesis 1: Attributed charisma will be more strongly and more positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire than will be the factors representing transactional leadership.

Hypothesis 2: Individual consideration will be more strongly and more positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire than will be the factors representing transactional leadership.

Hypothesis 3: Intellectual stimulation will be more strongly and more positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire than will be the factors representing transactional leadership.

Hypothesis 4: Contingent reward will be positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire.

Hypothesis 5: Management-by-exception will be positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire.

Hypothesis 6: Factors representing employee's perception of job autonomy will be positively related with perceived organisational performance.

Hypothesis 7: Factors representing employee's perception of job autonomy will be positively related with actual organisational performance.

6. Method

A quantitative research design was chosen to examine the proposed relationships among the various constructs in the research model. A questionnaire was used in order to facilitate collection of data from a

high-technology manufacturing organisation. This section describes the sampling method, and analysis method used.

Sample

The sample was drawn from a large high-technology manufacturing (aerospace) organisation operating in Sydney, Australia. The sample consisted of members of self-managing teams from 49 teams, together with 36 team leaders of 36 of these 49 teams. The team leaders had been with team members for at least 6 months. They were what are commonly termed 'external' team leaders as they were not directly involved in the functions/operations of their groups. All teams had been engaged in the process of teamwork for more than 5 years and team members had received training covering core team skills, new administrative skills, new technical skills and interpersonal skills. Team members were closely linked to manufacturing operations and included design engineers, manufacturing engineers, industrial engineers, production planners, production controllers, and clerical staff. Respondents were engaged in the design and manufacture of aerospace products that require high levels of knowledge and of job autonomy.

All respondents were full-time unionised employees and volunteered to participate in the study. A questionnaire containing items measuring the above five leadership-style dimensions, job autonomy and team performance was distributed to 280 self-managing employees. A total of

239 employees (85.4 per cent response rate) returned usable questionnaires. Eleven incomplete questionnaires were excluded from the final sample.

The final sample consisted of 7.9% females and 92.1% males. Approximately one quarter of the sample had attained a university degree or postgraduate qualifications and almost one half had received technical college qualifications or equivalent technical training.

Analytical procedure

The Analysis of Moment Structures (AMOS, version 4.0) was used for the factor analysis (measurement model) and for the regression analysis (path model). Following the recommendations of Holmes-Smith (1998) and Sommer *et al.* (1995), the measurement model was developed first and then, with this held fixed, a path model was developed. Confirmatory factor analysis (CFA) was used initially to assess the validity of the measurement model of the variables. Given adequate validity of those measures, the number of indicators in the model was reduced by creating a composite scale for each latent variable. A mixture of fit-indices was employed to assess the overall fit of the measurement and path models. The ratio of Chi-square to degrees of freedom (χ^2/df) has been computed, with ratios of less than 2.0 indicating a good fit. However, since absolute indices may be adversely effected by sample size (Loehlin, 1992), four other relative indices

(GFI, AGFI, CFI, and TLI) were computed to provide a more robust evaluation of model fit (Tucker & Lewis, 1973; Tanaka, 1987). For the GFI, AGFI, CFI and TLI, coefficients closer to unity indicate a good fit, with acceptable levels of fit being above 0.90 (Marsh, Balla & McDonald, 1988). The analytical procedure used to calculate the regression coefficient λ and measurement error θ of each variable used in this paper is detailed in Politis's (2001b) paper. The parameters of λ and θ were used as fixed parameters in the path model.

Prior to all analyses, the indices of skewness of all observed indicators of the original latent constructs were calculated. It was found that the z-value of the indices of skewness exceed the critical values of ± 1.96 for many of the observed variables, indicating that the majority of the data being analysed are non-normal at the 0.05 probability level (Hair *et al.* 1995: 66). Therefore, in preference to the more commonly used maximum likelihood method, the alternative asymptotic distribution free (ADF) procedure was used, which is more appropriate for the analysis of non-normal data.

7.Measurement Models

As shown in Figure 1, the variables measured in the survey are attributed charisma, individual consideration, intellectual stimulation, contingent reward, and management-by-exception (as rated by team members), employees' perception of job autonomy and team performance obtained

from the team members' responses ('soft') and from the external leaders ('hard').

Antecedent variables

Transformational and transactional leadership measures were assessed using Bass's (1985) Multifactor Leadership Questionnaire (MLQ). Bass's theory posits three dimensions of transformational leadership behaviour (attributed charisma, individual consideration, and intellectual stimulation) and two dimensions of transactional leadership behaviour (contingent reward and management-by-exception). Based on the results of a CFA supporting five factors, these items were used to create five scales: attributed charisma ($\alpha = 0.91$); individual consideration ($\alpha = 0.81$); intellectual stimulation ($\alpha = 0.87$); contingent reward ($\alpha = 0.83$); and management-by-exception ($\alpha = 0.73$). Six items of the MLQ were dropped due to cross loading.

Dependent variables

Employees' perceived job autonomy was assessed using 15 items scale, which is a short version of Jackson *et al's.* (1993) original 22 item questionnaire. The original five dimensions of job autonomy (timing control, method control, monitoring demand, and problem-solving demand and production responsibility) were reduced to three dimensions based on the results of the CFA. The three factors that were supported by

CFA results are: production responsibility/ monitoring demand (three items, $\alpha = 0.70$); timing and method control (five items, $\alpha = 0.82$); and problem solving (four items, $\alpha = 0.72$). Three items were dropped due to cross loading.

As discussed earlier, organisational performance was assessed using indirect 'soft' measures of performance and 'hard' productivity measures related to financial measures.

Indirect, 'soft' measures of performance were assessed using Crouch's (1980) subscale of Crouch's Behavioural Inventory instrument. The scale consists of five items and has been proven by previous research studies to have good psychometric properties. Crouch and Yetton (1985), using 165 established managerial teams, found internal reliability coefficients (Cronbach alpha) ranging from 0.77 to 0.83.) The four-item scale resulting from the CFA of this study showed a good internal reliability coefficient ($\alpha = 0.90$). (One item, 'our group needs constant prodding', was dropped due to poor loading.)

Finally, the productivity measures related to financial measures ('hard' measures) were assessed using a composite scale made up from schedule and profit (two items, $\alpha = 0.82$). The measure of quality was dropped due to poor loading. (Note: as shown in Appendix I, the level of performance for each indicator—schedule, quality and profit—was expressed as a percentage of target value over the previous six months.)

8. Path Modelling

Using the analytical procedure outlined in Politis's (2001b) paper, the computation of the parameters λ and θ was performed. These parameters are used in the path model. Table 1 contains the means, standard deviations, reliability estimates, and estimates of the regression coefficients, λ and measurement errors, θ .

Table 1.
Descriptive statistics, reliabilities, λ and θ estimates

Variable	Mean	SD (σ)	Reliability Estimate	Loading	Error Variance
			Cronbach alpha (α)	$\lambda = \sigma \sqrt{\alpha}$	$\theta = \sigma^2 (1 - \alpha)$
<u>Transformational and Transactional Leadership</u>					
Attributed Charisma	1.90	1.08	.91	1.03	.104
Individual Consideration	2.08	0.96	.81	0.86	.177
Intellectual Stimulation	1.77	1.08	.87	1.01	.147
Contingent Reward	1.66	1.01	.83	0.92	.171
Management-by-Exception	2.48	0.81	.73	0.70	.177
<u>Job Autonomy</u>					
Production Responsibility	3.67	0.91	.70	0.76	.248
Time and Method Control	3.76	0.80	.82	0.72	.115
Problem Solving	3.71	0.84	.72	0.71	.198
<u>Organisational Performance</u>					
Perceived performance ('soft')	5.38	1.19	.90	1.13	.142
Actual performance ('hard')	87.6	16.6	.82	15.0	50.5

Once these parameters—regression coefficients (λ s) which reflect the regression of each composite variable on its latent variable and the measurement error variances (θ s) associated with each composite variable—are calculated, this information is built into the path model to examine the relationships among the latent variables.

The model of Figure 2 contains three transformational leadership dimensions: attributed charisma, individual consideration and intellectual stimulation; two transactional leadership dimensions: contingent reward and management-by-exception; three job autonomy variables: production responsibility/monitoring demand, timing and method control and problem solving and two organisational performance variables: perceived and actual performance.

Insert Figure 2 about here

The analysis reveals that the structural model of Figure 2 fits the data reasonably well, with $\chi^2 = 37.9$; $df = 20$; ($\chi^2/df = 1.90$); $\rho = 0.01$; GFI = 0.97; AGFI = 0.93; CFI = 0.98; TLI = 0.96; RMR = 0.22; and RMSEA = 0.06. Figure 2 displays results of structural equations modelling.

Standardised path estimates (γ s) are provided to facilitate comparison of regression coefficients. (It should be noted that all standardised path coefficients given in the AMOS output are reported in Figure 2.)

Alternative models were examined with either paths added, reversed or removed, but all led to significantly worse model fit.

Hypotheses

Figure 2 indicates the estimated path coefficients (γ values) obtained from the AMOS analysis and the associated significant levels for each path. On the left-hand side of the model, and as predicted by Hypothesis 3, there were significant positive relationships between intellectual stimulation and two component dimensions of employees' perceived job autonomy. Intellectual stimulation is strongly and positively related to production responsibility ($\gamma_4 = 0.59, p < 0.01$) and problem solving ($\gamma_5 = 0.48, p < 0.01$). The expected influence, however, of intellectual stimulation on the third component dimension of perceived job autonomy (timing and method control) was not supported by the data of this study.

Hypothesis 4 proposed that management-by-exception will be positively related with the factors derived from Jackson *et al's.* (1993) job autonomy questionnaire. This hypothesis was partially supported by the data of this study (see Figure 2), in that management-by-exception was positively and significantly related to timing and method control ($\gamma_7 = 0.23, p < 0.01$) and with problem solving ($\gamma_8 = 0.18, p < 0.05$). Although the results showed a significant relation ($p < 0.05$) between management-by-exception and production responsibility (the third component dimension

of job autonomy), this relationship was negative ($\gamma_6 = -0.16$) not supporting our prediction. Moreover, the results showed a direct and significant effect of the management-by-exception dimension on the construct of perceived organisational performance ($\gamma_{12} = 0.14, p < 0.05$).

Hypothesis 1 proposed that attributed charisma will be more strongly and more positively related with the factors derived from Jackson *et al's*. (1993) job autonomy questionnaire than will be the factors representing transactional leadership. Although the standardised path from attributed charisma to timing and method control was positive and significant ($\gamma_2 = 0.13, p < 0.05$), this relationship was not as strong as it was expected. Contrary to our prediction, the standardised path from attributed charisma to the dimension of problem solving although it was strong and significant ($p < 0.01$), it was negative ($\gamma_1 = -0.48$). There was no effect of attributed charisma on the third component dimension of perceived job autonomy (production responsibility).

Contrary to Hypothesis 2, individual consideration was negatively, but not significantly related to only one dimension of job autonomy: individual consideration had a negative effect on production responsibility ($\gamma_3 = -0.23$), while the results showed no other effect on timing and method control and problem solving. Moreover, there was no relationship between the component dimensions of job autonomy and the

leadership dimension of contingent reward, hence, not supporting Hypothesis 4.

On the right-hand side of the model, the results showed that two of the three dimensions of job autonomy (production responsibility and problem solving) were positively and significantly related to organisational performance, partially supporting Hypotheses 6 and 7. Specifically, the relationship between the constructs of production responsibility and perceived performance was positive and significant ($\gamma_{10} = 0.17, p < 0.05$), followed by similar relationship between the constructs of problem solving and actual performance ($\gamma_{14} = 0.18, p < 0.05$). Contrary to our prediction, the effect of timing and method control on the performance dimensions of perceived and actual performance was negative and significant ($\gamma_{11} = -0.19, p < 0.05$ and $\gamma_{13} = -0.21, p < 0.05$, respectively). No other paths were significant between perceived and actual performance with the dimensions of job autonomy. Furthermore, adding direct paths from transformational and transactional leadership to team performance has also led to significantly worse model fit. As discussed earlier, alternative models were examined with either paths added, reversed or removed, but all led to significantly worse model fit.

9. Discussion

The overall pattern of relationships between independent and dependent variables in the structural equation model is not consistent with the

hypotheses. Only some of the paths tested were confirmed. Eleven of 21 tested paths between independent and dependent variables were significant. Of the eleven significant paths, seven were found positive while the other four were negative.

The findings from the current study suggest that some of the component dimensions associated with Bass's (1985) model may be inclined to *disable* rather than *enabling* job autonomy of self-managing employees. Specifically, the attributed charisma–problem solving relationship was strong, negative and significant, indicating that the leader who instills pride, faith and respect and transmits a sense of mission of self-managing teams has negative influence on the dimension of problem solving. In other words, the results suggest that employees of self-managing teams perceive that charismatic leadership behaviour does not offer the paths of understanding the concept of cognitive processing required to prevent or recover errors, at least in a work environment where there is a high level of task complexity. (Note: although task complexity was not measured in the present study, it was assumed that an aerospace manufacturing operation is made up of complex tasks.) Moreover, it is suggested that the leadership style of intellectual stimulation creates more autonomy experiences and increases team potency as members decide to prevent and recover errors of complex tasks. This is an important finding because with the expansion of autonomous and empowered work environments the need for intellectual leadership cannot be underestimated, especially

in the situations where complex tasks have to be performed by self-managing teams.

Furthermore, the strong and positive relationship between intellectual stimulation and production responsibility suggests that the leader who arouses members of self-managing teams to think in new ways and emphasises problem solving can spawn a high degree of information exchange and better communication (Barry, 1991). Such leadership may be the mechanism through which members of self-managing teams contributes to having better understanding of their production responsibility: the cost of errors in terms of both lost of output and damage to expensive equipment. The need for intellectual leadership once again cannot be underestimated, especially in work environments where there is a high demand for production responsibility.

The results also suggest that the leader who avoids giving directions if the old ways are working and allows members of self-managing teams to continue doing their jobs as always if performance goals are met (i.e., management-by-exception) positively contributed to the achievement of autonomy in problem solving and timing and method control. Moreover, the results showed a direct and significant effect of the management-by-exception leadership style on the construct of perceived organisational performance. This significant, although weak, link suggests that management-by-exception may enhance the perception of followers

performance if their criticism is perceived as fair, clarifies performance standards, or modifies poor performance in an acceptable way to avoid aversive consequences (Podsakoff *et al.* 1984).

The positive and significant relationships of both intellectual stimulation and management-by-exception with autonomy in problem solving suggests that leaders of self-managing teams need to develop a balanced behaviour between these two leadership styles for effective leadership. These are significant findings because they reinforce Bass and Avolio's (1993b) previous argument that the best leaders are both transactional and transformational. The findings also clarify which of the transactional (management-by-exception) and transformational (intellectual stimulation) first order factors *best* explain the perceived job autonomy of self-managing teams, a research question which was not addressed in Bass and Avolio's study.

Contrary to our expectations, the leadership factor of contingent reward was not related to any of the dimensions of job autonomy. Two explanations may be posited for this finding. First, if self-managing employees perceive leaders (contingent reward leaders) as restricting their freedom of action in developing job autonomy, then it is possible that the rewards to perform in accordance with contracts are ignored and they motivational levels for developing job autonomy may decline or even be disabled. Second, other factors that were not measured in this study, such

as the intelligence of the members of self-managing teams, task complexity and task feedback, may affect this relationship. Future research is clearly needed to examine such factors.

Because prior research has generally shown a positive relationship between attributed charisma and performance (Bass & Yammarino, 1991) alternative models were examined by adding direct paths from attributed charisma to team performance. As discussed earlier, adding these paths led to statistically insignificant paths and significantly worse model fit. Moreover, prior research has generally supported a positive relationship between contingent reward and performance (see Bass & Avolio, 1990). But in the current study adding direct paths from contingent reward to team performance resulted in significantly worse model fit. Several explanations may be posited for this finding. First, if leaders transact with members of self-managing teams but do not consistently fulfil their agreements, then they may be viewed as contingent reward leaders who are less effective (Tsui, 1982). It is also possible that in a high technology environment (aerospace manufacturing) where there is 'a social obligation' to share the experiences required to prevent or recover errors, contingent reward (transactional) leadership is counterproductive and maladaptive.

Although the results only partially support predictions, this study represents the first attempt to assess Bass's (1985) model of

transformational and transactional leadership and a number of job autonomy variables and team performances in a self-managing environment. The findings of this research suggest that some of the transformational (i.e., intellectual stimulation) and some of the transactional (i.e., management-by-exception) leadership dimensions can influence the followers' perception of job autonomy. Moreover, the results suggest that the effects of transformational and transactional leadership on team performance to a large extent are mediated by the intervening variables of job autonomy, such as production responsibility, method control and problem solving and timing.

A brief mention of some limitations of this study should be made to place the results in proper perspective. Although from an analytical perspective SEM has a number of advantages in testing causal relationships, some caution should be noted. First, given the cross-sectional nature of the study, causality cannot be tested directly, although the hypotheses imply causation. So experimental or longitudinal data are needed for more definite results. Second, other factors that were not measured such as intelligence of the members of self-managing teams, task complexity and task feedback should be included in future research models to examine the patterns of relations between leadership style dimensions, job autonomy and team performance of self-managing teams.

The cross-sectional nature of the study renders it vulnerable to problems typically associated with survey research (common method variance). Although the author attempted to collect a variety of performance measures from the participating organisation, this was not possible due to the policy of this organisation not to divulge sensitive information related to profit, productivity ratios, etc. The lack of measures from multiple sources represents a limitation to the study. So the measured relationships may not be attributable to true relationship between the constructs but may be the result of the measurement method. Therefore, future researchers need to develop and use empirically validated measures of performance, including financial measures across supervisory and team samples, and data should be collected from multiple sources.

10. Conclusion

The confirmatory factor analysis (CFA) produced positive relations between most, but not all, of the transformational and transactional leadership dimensions and job autonomy. Furthermore, the results suggest that the effects of transformational and transactional leadership dimensions on team performance to a large extent are mediated by the intervening variables of job autonomy, such as production responsibility, method control and problem solving and timing.

This is a significant finding because with the expansion of autonomous and empowered work teams the need for transformational and

transactional leadership cannot be underestimated, especially in the self-managing environment. In particular, transformational (i.e., intellectual stimulation) leadership is essential in arousing followers to think in new ways and emphasising problem solving so that members of self-managing teams can develop the necessary job autonomy skills of production responsibility and problem solving. Similarly, transactional (i.e., management-by-exception) leadership can develop the necessary job autonomy skills of problem solving and timing and method control.

Executive trainers and recruiters may also be able to 'diagnose' a potential leader and help him or her to develop 'transformational' (i.e., intellectual stimulation) and transactional (i.e., management-by-exception) leadership behaviour. Such behaviour may be helpful in creating the autonomous work environment in which members of self-managing teams experience positive personal work outcomes which may be the prime impetus for increasing organisational competitiveness in the rapidly changing global economy.

REFERENCES

1. Barry, D. (1991) Managing the bossless team: lessons in distributed leadership. *Organisational Dynamics*, Vol. 20 (Summer), pp. 31-47.
2. Bass, B. M. (1985) *Leadership and performance beyond expectations*. New York: Free Press.
3. Bass, B. M. (1990) *Bass and Stogdill's handbook of leadership: Theory, research, and managerial applications*. New York: Free Press.
4. Bass, B. M. (1995) Transformational leadership redux. *Leadership Quarterly*, Vol. 6, pp. 463-478.
5. Bass, B. M. & Avolio, B. J. (1990) *Transformational leadership development: Manual for the multifactor leadership questionnaire*. Palo Alto, CA: Consulting Psychologists Press, Inc.
6. Bass, B. M. & Avolio, B. J. (1993a) *Manual for the multifactor leadership questionnaire*. Palo Alto, CA: Consulting Psychologists Press.
7. Bass, B. M. & Avolio, B. J. (1993b) Transformational leadership: a response to critiques. In M.M. Chemers and R. Ayman (Eds.), *Leadership theory and research: respectives and dimensions*: 49-80. San Diego: Academic Press.
8. Bass, B. M. Avolio, B. J. & Goodheim, L. (1987). Quantitative Description of World-Class Industrial, Political and Military Leaders, *Journal of Management*, Vol.13, pp.7-19.

9. Bass, B. M. & Yammarino, F. J. (1991) Congruence of self and other's leadership ratings of naval officers for understanding successful performance. *Applied Psychology: An International Review*, Vol. 40, pp. 437-454.
10. Batt, R. & Appelbaum, B. (1995) Worker participation in diverse settings. Does the form affect the outcomes, and if so, who benefits? *British Journal of Industrial Relations*, Vol.33, No. 3: 353-378.
11. Beckham, R., (1998). Self-Directed Work Teams: The Wave of the Future?, *Hospital Materiel Management Quarterly*, Vol.20, No.1: 48-60.
12. Bennis, W. & Nanus, B. (1985) *Leaders*. New York: Harper & Row.
13. Bryman, A. (1986) *Leadership in organisations*. London: Routledge and Kegan Paul.
14. Bryman, A. (1992) *Charisma and leadership of organisations*. London: Sage.
15. Burns, J. M. (1978) *Leadership*. New York: Harper & Row.
16. Champion, M. A., Medsker, G. J. & Higgs, A. C. (1993) Relations between work group characteristics and effectiveness. Implications for designing effective work groups. *Personnel Psychology*, Vol.46, pp.823-850.
17. Cohen, S. G. & Bailey, D. E. (1997) What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, Vol.23, No.3: 239-290.

18. Cohen, S. G., Ledford, G. E. & Spreitzer, G. M. (1996) A predictive model of self-managing
19. work team effectiveness. *Human Relations*, Vol. 49, No. 5, pp. 643-676.
20. Crouch, A. G. D. (1980) Psychological climate, behaviour, satisfaction and individual differences in managerial work groups. Unpublished Doctoral Dissertation, University of New South Wales, Australia.
21. Crouch, A. G. D. & Yetton, P. W. (1985) The management team: An equilibrium model of manager and subordinate performance and behaviour. The University of Melbourne, The Graduate School of Management, Working Paper 85-022.
22. Donovan, G. (1998) *The customer and the performance power of self-managed work teams*.
23. Perth, Australia: Wellness Australia Pty Ltd, Box 519, Subiaco, Australia, 6904.
24. ISBN 1 875139 10 9.
25. Dunnette, M. D. (1963) A note on the criterion. *Journal of Applied Psychology*, Vol. 47, pp. 251-254.
26. Ferris, G. R. & Rowland, K. M. (1981) Leadership, job perceptions and influence: A conceptual integration. *Human Relations*, Vol.34, No.12:1069-1077.
27. Fiedler, F. E. (1967) *A Theory of Leadership Effectiveness*. New York: McGraw-Hill.

28. Griffin, R. W. (1980) Relationships among individual, task design and leader behaviour variables. *Academy of Management Journal*, Vol.23, pp.665-683.
29. Griffin, R. W. & Chonko, L. B. (1977) Employee preferences for job characteristics. In R. L.
30. Taylor, M. J. O'Donnell, R. A. Zawacki, & D. D. Warrick (Eds.). *Proceedings of the Academy of*
31. *Management*, The Thirty Seventh Annual Meeting, Orlando, Florida
32. Hackman, J. R. (1986) The psychology of self-management in organisations. In M. S. Pollack and R. O. Perloff (Eds.), *Psychology and Work: Productivity Change and Employment* (pp. 85-136). Washington, DC: American Psychological Association.
33. Hackman, J. R. & Oldham, G. R. (1975) Development of the job diagnostic survey. *Journal of Applied Psychology*, Vol.60, pp.159-170.
34. Hackman, J. R. & Oldham, G. R. (1976) Motivation through the design of work: Test of a theory. *Organisational Behaviour and Human Performance*, Vol.16, pp.250-279.
35. Hackman, J. R. & Oldham, G. R. (1980). *Work redesign*. Reading, MA: Addison-Wesley Publishing Company.

36. Hair, J. F. Anderson, R. E. Tathan, R. L. & Black, W. C. (1995) *Multivariate data analysis with readings*, (4th Edition). Prentice Hall, Englewood Cliffs, New Jersey.
37. Herzberg, F. (1966). *Work and the nature of man*. New York: World Publishing.
38. Holmes-Smith, P. (27 Jan. – 6 Feb. 1998) Australian Consortium for Social and Political
39. Research Inc. (ACSPRI) Summer Program. The Australian National University, Canberra,
40. Australia.
41. House, R. J. (1977) A 1976 theory of charismatic leadership. In J.G. Hunt and L.L. Larson (Eds), *Leadership: The cutting edge*. Carbondale, IL: Southern Illinois University Press.
42. Howell, J. M. & Avolio, B. J. (1993) Transformational leadership, transactional leadership, locus of control and support for innovation: Key predictor of consolidated-business-unit performance. *Journal of Applied Psychology*, Vol. 78, No. 6, pp 891-902.
43. Hunt, J. G. & Liebscher, V. K. C. (1973) Leadership preference, leadership behaviour and employee satisfaction. *Organisational Behaviour and Human Performance*, Vol.9, pp.59-77. .

44. Jackson, P. R. Wall, T. D. Martin, R. & Davids, K. (1993) New measures of job control, cognitive demand and production responsibility. *Journal of Applied Psychology*, Vol.78, No.5: 753-762.
45. Jassawalla, A. R. & Sashittal, H. C. (2000) Strategies of effective new product team leaders.
46. *California Management Review*, Vol. 42, No. 2, pp. 34-51.
47. Karasek, R. A. & Theorell, T. (1990) *Healthy work: Stress, productivity and the reconstruction of working life*. Basic Books: New York.
48. Landeweerd, J. A. & Boumans, N. P. G. (1994) The effect of work dimensions and need for autonomy on nurses' work satisfaction and health. *Journal of Occupational and Organisational Psychology*, Vol.67, No.3: 207-217.
49. Lemmink, J. & Mattsson, J. (1998) Warmth during non-productive retail encounters: The hidden side of productivity. *International Journal of Research in Marketing*, Vol. 15, No. 5, pp. 505-517.
50. Lent, R. H. Aurbach, H. A. & Levin, L. S. (1971) Predictors, criteria and significant results. *Personnel Psychology*, Vol. 24, pp. 519-533.
51. Loehlin, J. (1992) *Latent variables models*. Erlbaum, Hillside, N. J.
52. Manoochehri, G. (1999) The role to manufacturing excellence: Using performance measures to become world-class. *Industrial Management*, Vol. 41, No. 2, pp. 7-13.

53. Manz, C. C. & Sims, H. P. Jr. (1993) *Business without bosses: How self-managing teams are building high performance Companies*. New York: Wiley.
54. Manz, C. C. & Sims, H. P. Jr. (2001) *The new superleadership: Leading others to lead*
55. *Themselves*. Berrett-Koehler Publishers, Inc.
56. Marchese, M. C. (1998) Some factors affecting the relationship between job characteristics and job worth: A job-role interpretation. *International Journal of Organisational Analysis*, Vol.6, No.4: 355-369.
57. Marsh, H. W. Balla, J. R. & McDonald, R. P. (1988) Goodness-of-fit indexes in
58. confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, Vol. 103, No.
59. 3, pp. 391-410.
60. Miles, R. H. & Petty, M. M. (1977) Leader effectiveness in small bureaucracies. *Academy of Management Journal*, Vol.20, pp.238-250.
61. Peters, L. H., O'Connor, E. J. & Rudolf, C. J. (1980) The behavioural and affective consequences of performance relevant situational variables. *Organisational Behaviour and Human Performance*, Vol.25, pp.79-96.
62. Pillai, R. (1995) Context and attributed charisma: The relationship of organic structure, collectivism, and crisis to charismatic leadership. Best Paper Proceedings, Academy of Management Meeting, Vancouver, BC: 332-336.

63. Podsakoff, P. M. Todor, W. D. Grover, R. A. & Huber, V. L. (1984) Situational Moderators of Leader Reward and Punishment Behaviours: Fact or Fiction? *Organisational Behaviour and Human Performance*, Vol.34, pp.21-63.
64. Politis, J. D. (2001a) *The relationship between self-management leader behaviour, self-leadership worker behaviour and job related attitudes and perceptions*. Unpublished Doctoral Dissertation, University of Technology, Sydney, Australia.
65. Politis, J. D. (2001b) The relationship of various leadership styles to knowledge management. *The Leadership and Organizational Development Journal*, Vol. 22, No. 8, pp. 354-64.
66. Pollock, T. G. Whitbred, R. C. & Contract, N. (2000) Social information processing and job characteristics: A simultaneous test of two theories with implications for job satisfaction. *Human Communication Research*, Vol.26, No.2: 292-330.
67. Sarros, J. (2001) Management today. Australian Institute of Management, September issue, pp. 20-23.
68. Seers, A. & Graen, G. B. (1984) The dual attachment concept: A longitudinal investigation of the combination of task characteristics and leader-member exchange. *Organisational Behaviour and Human Performance*, Vol.33, pp.283-306.
69. Sommer, S. Bae, S-H. & Luthans, F. (1995) The structure-climate relationship in Korean
70. organisations. *Asia Pacific Journal of Management*, Vol. 12, No. 2, pp. 23-36.

71. Tsui, A. S. (1982) A role set analysis of managerial reputation. Paper presented at the Academy of Management Meeting, New York.
72. Tanaka, J. S. (1987) How big is enough? Sample size and goodness-of-fit in structural equation models with latent variables. *Child Development*, Vol. 58, pp. 134-146.
73. Tucker, L. R. & Lewis, C. (1973) The reliability coefficient for maximum likelihood factoranalysis. *Psychometrika*, Vol. 38, pp. 1-10.
74. Wageman, R. (1995) Interdependence and group effectiveness. *Administrative Science Quartile*, Vol.40, pp.145-180.
75. Westley, F. R. & Mintzberg, H. (1989) Visionary leadership and strategic management. *Strategic Management Journal*, Vol. 10, pp.17-32.
76. Yammarino, F. J. & Bass, B. M. (1990) Long-term forecasting of transformational leadership and its effects among naval officers: Some preliminary findings. In K. E. Clark & M. B. Clark (Eds.), *Measures of Leadership*:151-171. West Orange, NJ: Leadership Library of America.
77. Yeh, Quey-Jen. (1995) Leadership, personal traits and job characteristics in R&D organisation. A Taiwanese Case. *Leadership and Organisational Development Journal*, Vol.16, No.6: 16-26.
78. Yeh, Quey-Jen. (1996) The link between managerial style and the job characteristics of R&D professionals. *Research and Development Management*, Vol.26, No.2:127-140.

Appendix I –

Evaluation of Team Performance (Schedule, Quality and Profit) Completed by External Team Leaders

YOUR EVALUATION ABOUT EACH TEAM'S PERFORMANCE

Instructions:

- This questionnaire asks you (the team leader) to rate the performance **over the last 6 months**, of each of the teams that report directly to you.
- In the first column please write down the names of each of the teams that report directly to you.
- In Column 2 please rank each of the team in terms of their overall performance. Please place; 1 next to the team that you judge to have the best overall performance, place; 2 next to the team with the 2nd best overall performance and so forth.
- In the 3rd column we would like you to estimate the team's performance on each of **3 target indicators** (schedule compliance, quality targets and profit (PBIT)). Please give this estimate as a % of the agreed **Target Values**. For example, if you estimated that a team has achieved 60% of its schedule compliance Target, write 60% in the 3rd column next to schedule compliance. If you estimated that it obtained 150% of its target value (i.e. 50% above the target value) write 150%.
- Remember that all estimates below refer to the team's performance **over the last 6 months**.

	Column 1	Column 2		Column 3
Team No.	List below the names of the teams who report directly to your, i.e. Lay-up B Hangar	Rank the team's overall performance by placing; 1 = Best Performance 2 = Second Best, etc.	Performance Indicator	Write the level of performance for each indicator expressed as a percentage of Target Value over the last 6 months.
			Schedule Compliance	_____ %
			Quality Targets	_____ %
			Profit Targets	_____ %

Figure 1: Summary of variables used

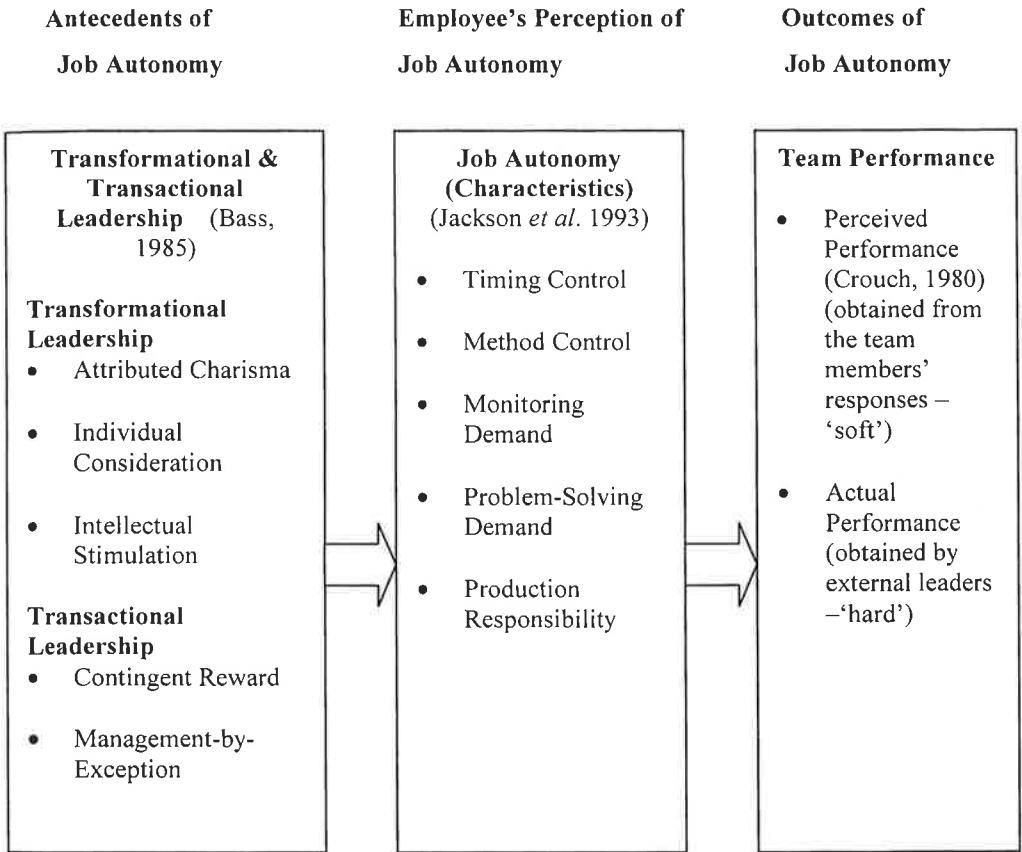
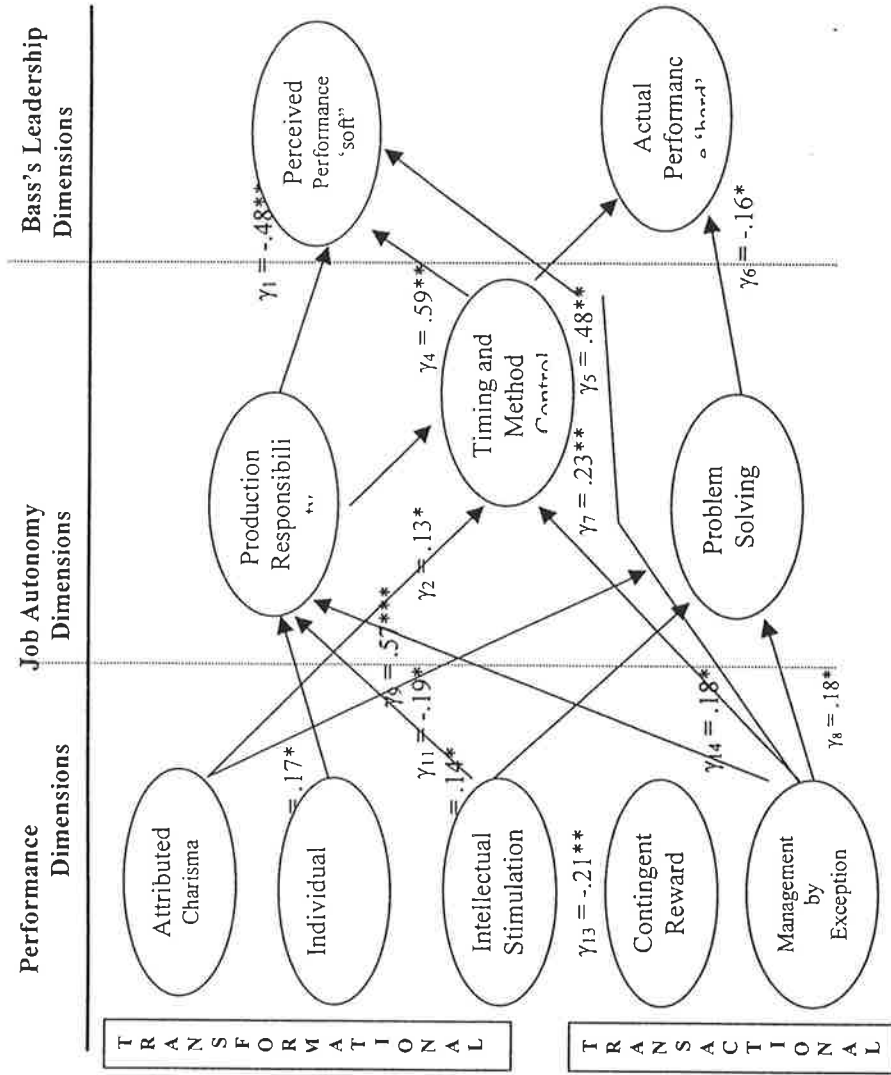


Figure 2: Structural estimates of the hypothesised model ^α

Figure 2: Structural estimates of the hypothesised model ^a



Note: ^a Standardised path coefficients; N = 23^o

*p < 0.05

** p < 0.01

*** p < 0.001