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# Performance consequences of psychological empowerment

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**Abstract:** The relationship between psychological empowerment and job performance, and whether three intermediate performance determinants; motivation, ability and opportunity to perform hold the key to unlocking the empowerment-performance relationship dilemma are addressed. Using Hierarchical Linear Modeling (HLM) to analyze responses from 380 project management-level staff, the results show that psychological empowerment not only has direct and positive performance consequences, but also indirect effects, mediated by intrinsic motivation, opportunity to perform and ability to perform. The findings provide preliminary evidence in support of a comprehensive model of work performance that takes into consideration not only motivation and ability but opportunity to perform. Indeed, opportunity to perform actually emerged as a stronger mediator in the psychological empowerment-contextual performance behaviors relationship than ability to perform. The findings of both direct and indirect relationships however demonstrate that the relationship between empowerment and performance is more complex than previously thought. Yet, by demonstrating that empowered employees exhibit positive performance behaviors, psychological empowerment clearly emerges as a valuable path for organizations to pursue in their search for performance improvement in project settings.

**CE Database subject headings:** Construction industry; Construction management; Motivation; Performance characteristics; Personnel management

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## INTRODUCTION

Emerging project delivery arrangements, increasing complexity of projects and client requirements are having substantial impact upon the roles and responsibilities of individuals and teams across the entire construction supply chain. Yet, the continually changing patterns of responsibility are often not matched with a corresponding redistribution of power, to ensure that project participants can move out of the ascendancy to match their pattern of responsibility (Loosemore 1999). The concept of employee empowerment has thus been emphasized as key to closing the emergent power-gaps, to curb the growing powerlessness in project settings and thereby engender the performance of project participants. Incidentally, lack of empowerment of key project participants has particularly been cited as a problematic issue in successful partnering and other collaborative practices been advocated (c.f. Ng *et al.* 2002). Emerging empirical evidence also suggests that manager's power-sharing behaviors are significantly related to project participant's motivation and performance (Liu and Fang 2006). This resonates with prior findings of the productive nature of power-sharing and the appropriateness of such leadership behaviors in complex and uncertain work settings such as construction (c.f. Kanter 1977). The empirical evidence of a direct relationship between empowerment and performance in the extant management literature is however mixed (c.f. Chen *et al.* 2007; Seibert *et al.* 2004; Dewettinck *et al.* 2003; Thomas and Tymon 1994). Thus, this study re-examines the relationship between empowerment and performance behaviors and proposes that three intermediate performance determinants; motivation, ability and opportunity to perform may hold the key to unlocking the empowerment-performance relationship dilemma. The study is also in response to the growing convergence in views among researchers and practitioners alike that the fundamental issues surrounding construction performance improvement are organizational and behavioral (Courtney and Winch 2003).

Although empowerment has also been conceptualized as a structural construct (c.f. Kanter 1977; 1993; Tuuli 2009; Tuuli and Rowlinson 2007a; 2007b; in press), our focus here is on empowerment as a psychological experience of individuals (c.f. Spreitzer 1995a; Spreitzer 1995b; Spreitzer 1997;

Spreitzer *et al.* 1997). We take this approach on the premise that empowerment can really only be said to have occurred if the individual believes that he or she has been empowered (Dainty *et al.* 2002). We also adopt a behavioral view of job performance, enabling the exposition of the theoretical basis of the direct and indirect links between psychological empowerment and job performance behaviors. A set of hypotheses are consequently derived and tested with a Hong Kong sample of project management-level staff.

## **CONCEPTUAL FRAMEWORK AND HYPOTHESES**

### **Conceptualization of Psychological Empowerment**

*Psychological empowerment* is a constellation of experienced cognitions manifested as sense of meaning, competence, impact and self-determination (Conger and Kanungo 1988; Spreitzer 1995a; Thomas and Velthouse 1990). *Meaning* is the congruence between one's values and the values associated with a task, work-unit or organization (Thomas and Velthouse 1990). A typical manifestation of sense of meaning within the project context is 'project affinity', "the commitment and attachment by stakeholders or participants to projects and their outcomes" (Dainty *et al.* 2005). *Competence* is the conviction that work activities can be carried out skillfully and successfully, and is analogous with Bandura's (1977) notion of self-efficacy. *Self-determination* is the belief that one is free to choose how to perform work activities. *Impact* reflects one's capacity to influence strategic, administrative and operational decisions within the organization or work-unit (Spreitzer 1997). Viewing these dimensions from an expectancy theory perspective (c.f. Vroom 1964), impact represents performance-outcome expectancy; competence, effort-performance expectancy; and meaning, an anticipated outcome valence; whereas the self-determination dimension represents the perceived opportunity for a decision based on the other dimensions (Thomas and Velthouse 1990). These four cognitions therefore represent an active orientation to one's work role in which the individual is both willing and feels able to shape his or her work role and context (Spreitzer 1995a). The four dimensions, thus, combine additively to create an overall gestalt of psychological

empowerment so that, lack of any single dimension will deflate but not completely eliminate the overall degree of psychological empowerment (Spreitzer 1995a).

### **Conceptualization of Job Performance**

Job performance has behavioral and outcome perspectives (Campbell *et al.* 1993; Sonnentag and Frese 2002). The behavioral perspective views job performance in terms of the measurable behaviors that are relevant to the achievement of organizational goals (Campbell *et al.* 1993) while the outcome perspective refers to the objective consequences of behavior (Sonnentag and Frese 2002). Tying performance to behavior, however, has practical and conceptual advantages in terms of performance criteria and diagnosing performance (Motowidlo 2003). We adopt the behavioral view of job performance here, in line with Dainty *et al.*'s (2003) call for a shift towards more balanced human performance criteria that consider the softer aspects of behavior necessary for achieving project success. This behavioral perspective of job performance comprises task performance behaviors, valuable behaviors that contribute to the core technical activities of the organization/project, and contextual performance behaviors, those behaviors that maintain and enhance the psychological, social and organizational context of the work (Borman and Motowidlo 1993). Task performance behaviors are thus formally recognized as part of an individual's job description, whereas contextual performance behaviors are generally discretionary (Borman and Motowidlo 1993). Yet, discretionary behaviors are often necessary in many work contexts especially project settings, where due to the dynamic and uncertain work environment it is often impossible to anticipate and specify all possible desirable behaviors in job descriptions.

### **Linking Psychological Empowerment and Performance Behaviors**

A key presumption of empowerment theory is that empowered individuals perform better than those relatively less empowered (c.f. Thomas and Velthouse 1990). The performance gains arise from the flexibility of being able to resolve problems at source, rather than escalating to specialists or senior management (Parker and Turner 2002). This is consistent with the view that employees generally have more complete knowledge and information about their work than top managers and are therefore

better positioned to plan and schedule their work, as well as identify and resolve the obstacles that constrain their performance (Cooke 1994). Thomas and Velthouse (1990) particularly opined that when individuals feel empowered, proactive behaviors such as flexibility, resilience and persistence ensue. Thus, individuals who feel that their jobs are meaningful and that by completing their job responsibilities they have an impact on others within and outside of the organization are motivated to perform well (Liden *et al.* 2000). Individuals who perceive they have the necessary job skills and can choose how to do their job also out-perform their counterparts who do not. Indeed, the effect of competence or self-efficacy on performance is reported as profound in the literature (c.f. Bandura 1977; 1986; Gist and Mitchell 1992). The relationship between the four dimensions of psychological empowerment and performance from an expectancy theory point of view is also axiomatic (c.f. Vroom 1964). We therefore posit that;

H1: *Psychological empowerment will be significantly and positively related to both (a) task and (b) contextual performance behaviors.*

### **Mediating role of motivation, ability and opportunity**

Notwithstanding the above, empirical evidence of a direct relationship between empowerment and performance is mixed (c.f. Chen *et al.* 2007; Seibert *et al.* 2004; Dewettinck *et al.* 2003; Thomas and Tymon 1994). In a recent review, Dewettinck *et al.* (2003) concluded that whilst psychological empowerment has a significant and considerable relationship with employee affective outcomes, empowerment only marginally explains the variance in employee performance. Across the studies reviewed, empowerment consistently explained only about 6% of the variance in employee performance.

The marginal and sometimes inconsistent findings are somewhat surprising, given the strong theoretical expectation of a direct link between empowerment and performance. In a recent construction industry study of empowerment and performance, however, Liu and Fang (2006) found that power-sharing behaviors significantly predicted and substantially explained the variance in individual performance through extrinsic and intrinsic motivation ( $R^2 = .69$ ). This finding is

instructive, as it suggests that despite the inclination to directly link empowerment to performance behaviors, such a relationship may be indirect. This expectation is based on the apparent relationship between empowerment and key intermediate performance determinants. For example, performance has long been viewed as a function of *motivation* and *ability* (Vroom 1964). Peters and O'Connor (1980) and subsequently Blumberg and Pringles (1982) also contended that an often overlooked additional function of performance is "*opportunity to perform*", "the particular configuration of the field of forces surrounding a person and his or her task that enables or constrains that person's task performance and that are beyond the person's direct control" (Blumberg and Pringle 1982, p. 565). From this perspective, motivation, ability and opportunity emerge as plausible mechanisms through which empowerment may engender performance. While support for the role of ability and motivation in performance is particularly profound, that of opportunity is often less explicit. In many work situations, however, persons who are both motivated and capable of successfully accomplishing tasks, may either be inhibited in or prevented from doing so due to situational constraints beyond their control (Peters and O'Connor 1980). This assertion is supported by the findings of Ford *et al.* (1992) that lack of opportunity to perform tasks is related to performance decrements.

The link between empowerment and the three intermediate performance determinants, especially motivation is axiomatic (c.f. Spreitzer 1995a; Thomas and Velthouse 1990). For example, individuals are known to take a more proactive attitude towards their personal development and advancement when empowered. Empowerment is also purported to remove organizational constraints by enhancing self-determination and control. Indeed, Ford *et al.* (1992) found that individuals high in self-efficacy were more likely to have the opportunity to perform more of the tasks they were trained for and also to perform more complex and difficult tasks. The mediating role of these three variables in the empowerment-performance relationship has also been echoed recently by Wall *et al.* (2002) as well as Parker and Turner (2002). They concur that inconsistent findings suggest that the link between empowerment and performance is both indirect and contingent. Given the personal disposition of psychological empowerment and the potential that individuals are more likely to ascribe any resulting motivation to the self, as opposed to any external conditions, psychological empowerment may be

associated with intrinsic motivation as opposed to extrinsic motivation (c.f. Brief and Aldag 1977; Deci and Ryan 1985). There is also no prima facie evidence that motivation, opportunity and ability are the only mediators in the empowerment-performance relationship, we therefore propose that these will play only a partial mediating role. Consequently, we hypothesize that;

*H2: Intrinsic motivation will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors;*

*H3: Opportunity to perform will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors; and*

*H4: Ability to perform will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors.*

The hypotheses delineated above are depicted in Figure 1. Hypotheses with the letter “a” are related to task performance behaviors while those with the letter “b” are related to contextual performance behaviors.

## ***INSERT FIGURE 1***

## **RESEARCH METHOD**

### **Sample**

The data were collected as part of a larger research project exploring human resource development among “project management teams” in the Hong Kong construction industry. A comprehensive list of 526 key contact persons from 526 organizations (105 client, 158 consultant and 263 contractor organizations) was compiled for the data collection. A sub-sample of 26 contact persons (i.e. 5% of sample) was used in the pre-test and the remaining 500 in the main survey. Based partially on the pre-test results and cost considerations, each contact person in the main survey was mailed a questionnaire pack containing a cover letter, 5 questionnaires and 5 FREEPOST return envelopes. Three contact persons, however, wrote back to request 3 additional questionnaires each for their teams. The contact persons were requested to select an ongoing construction project that the organization was involved in



and have up to 5 members of the organization's project management team on the project fill out the questionnaires. The first administration of the questionnaire yielded 232 responses (104 from contractors, 50 from consultants and 78 from clients). A second administration to contact persons from whom one or no questionnaire was received in the first administration, yielded a further 150 responses (70 from contractors, 44 from consultants and 36 from clients), giving a total of 382 individual responses from 115 organizations (52 contractor, 34 client and 29 consultant). Deducting 859 undelivered questionnaires due to wrong/change of address, change of job or demise of contact persons as well as those who declined to participate citing no ongoing projects or unsuitability of projects and assuming that that all effectively contacted contact-persons administered all 5 questionnaires, gives a 23% response rate.

Upon examination of the responses, 39 respondents from 11 organizations initially classified as client organizations, indicated that they were working in dual roles as both client and consultant. This was subsequently confirmed by the contact persons. The sample sizes for the client and dual sub-groups are however small as a result (i.e. 75 and 39 respectively), precluding any meaningful sub-sample analysis. A missing data pattern analysis resulted in the exclusion of 2 responses for excessive missing data (>50%) (c.f. Hair *et al.* 1998). The effective sample size for the analysis was therefore 380.

We also checked non-response bias, following Armstrong and Overton's (1977) time trend extrapolation procedure. The premise of this test is that differences between those who responded to the first administration and those who did in the second closely reflect differences between respondents to the survey and non-respondents. A comparison of the first and second administration respondents showed no significant differences in age ( $\chi^2 = 3.75$ ,  $df = 4$ ,  $p > .441$ ), gender ( $\chi^2 = .050$ ,  $df = 1$ ,  $p > .824$ ), education ( $\chi^2 = 7.46$ ,  $df = 4$ ,  $p > .113$ ), nationality ( $\chi^2 = 7.64$ ,  $df = 6$ ,  $p > .266$ ) and organizational rank ( $\chi^2 = 3.50$ ,  $df = 3$ ,  $p > .321$ ). While the presence of non-response bias cannot be completely ruled out, it can be inferred from the above results that the sample is representative of the population.

Overall, 53% of the respondents are older than 40 years and 94% fall under the ranks of middle-management (40%), senior management (41%) and director level (13%). This distribution corresponds favorably to the target population of management-level staff. Males make up 89% of the sample, nationals of Hong Kong and China combined make up 82% and persons of Chinese ethnicity make up 87%. Average tenure in the construction industry is 17 years. In terms of education, 89% have a Bachelors degree or higher. Regarding organizational characteristics, 82% employ 50 or more people. The average management team size is 10 persons. Contractors tended to have much larger project management teams (average size of 12), about twice the average team size for consultant and client organizations.

## **Measures**

*Psychological empowerment* was measured with the 12-item scale developed by Spreitzer (1995a), which comprises 3 items each for the 4 sub-dimensions; *meaning* ( $\alpha = .85$ ), *competence* ( $\alpha = .84$ ), *self-determination* ( $\alpha = .80$ ) and *impact* ( $\alpha = .85$ ). Sample items include “The work I do is very important to me” for the meaning dimension and “I am confident about my ability to do my job” for competence.

*Task performance behaviors* were measured with a 6-item scale ( $\alpha = .91$ ) of employee in-role behaviors (IRB) developed by Williams and Anderson (1991). A sample item reads, “I adequately complete assigned duties”.

*Contextual performance behaviors* were assessed with an adapted version of Van Scotter and Motowidlo’s (1996) 15-item scale [*interpersonal facilitation* (7 items;  $\alpha = .93$ ) and *job dedication* (8 items;  $\alpha = .95$ )]. Respondents indicated the likelihood of engaging in discretionary performance behaviors ranging from cooperative acts to self discipline acts in the course of performing their work role.

*Opportunity to perform* was measured by adapting the 11-item organizational constraints scale ( $\alpha = .85$ ) developed by Spector and Jex (1998), which covers each of the situational constraint areas proposed by Peters and O’Connor (1980). Two potential constraint areas specific to the operational

circumstance of construction projects were also added; the need to comply with safety requirements and statutory regulations.

*Intrinsic motivation* was assessed with Hackman and Oldham's (1976) 6-item internal work motivation scale ( $\alpha = .75$ ). A sample item is "I feel a great sense of personal satisfaction when I do my job well".

*Ability to perform* was operationalized with a 7-item subscale ( $\alpha = .76$ ) of ability, experience, training and knowledge (AETK) developed by Podsakoff *et al.* (1993). A sample item reads, "My job knowledge is sufficient enough that I do not have to depend on my supervisor to get my work accomplished".

All the above measures were anchored with a 5-point Likert scale. A number of control and demographic variables were also measured. At the individual level, *gender*, *age*, *educational*, *ethnicity*, *nationality* and *tenure* were measured using single item questions. Organizational characteristics such as *firm age* and *size* were also measured.

Given the tendency for individuals to "fake good" in self-report surveys, we also measured *social desirability* using the 10-item short version of the Marlowe-Crowne 33-item scale of social desirability (Crowne and Marlowe 1960), proposed by Strahan and Gerbasi (1972). Reliabilities of between .73 and .88 have been reported (c.f. Robinson *et al.* 1991). Respondents indicated "True" or "False" to five positively worded statements and five negatively worded statements, measuring two streams of behavior; desirable but uncommon behaviors (e.g. practicing what one preaches) and undesirable but common behaviors (e.g. taking advantage of others). The full questionnaire containing the measures of the key constructs described above are shown in Appendix 1

### **Data Analysis Strategy**

A consequence of the data collection procedure as described earlier is non-independence of the observations. Non-independence describes the degree to which responses of individuals are influenced by, depend on, or cluster by group membership due to social interaction or their

arrangement spatially or sequentially in time (Kenny and Judd 1986; 1996). Non-independence renders statistical analysis techniques such as Analysis of Variance (ANOVA) and Ordinary Least Square (OLS) Regression inappropriate. This stems from their fundamental assumption that observations are independent (Baron and Kenny 1986; Raudenbush and Bryk 2002). Ignoring non-independence leads to bias in significance tests (Kenny and Judd 1986) and loss of power (Bliese and Hanges 2004). A suitable method of analysis for overcoming the impact of non-independence is Hierarchical Linear Modeling (HLM, Bliese and Hanges 2004; Raudenbush and Bryk 2002).

A key difference between HLM and OLS regression is that HLM decomposes the variance in the outcome variable into its within-team and between-team components (i.e.  $\sigma^2$  and  $\tau_{00}$  respectively), through the estimation of a *null model*, a model without predictors. Generally, lower-level predictors explain the within-team variance ( $\sigma^2$ ) while higher-level predictors explain the between-team variance ( $\tau_{00}$ ). The parameters  $\sigma^2$  and  $\tau_{00}$  are also used to estimate the Intraclass Correlation Coefficient (ICC) which is a measure of non-independence (Bliese 2000). ICC is calculated as a ratio of the between-team variance ( $\tau_{00}$ ) and the total variance ( $\sigma^2 + \tau_{00}$ ). An ICC of .15 for e.g. task performance behaviors means that 15% of the variance in an individual's rating of task performance behaviors is attributable to his group membership. Barcikowski (1981) has shown that relatively low levels of non-independence (e.g., an ICC of .05) combined with a relatively large group size of 25, results in an observed Type I error rate of .19. This means that applying OLS regression in a situation like that will mean that significance tests assumed to be at .05 are actually being tested at .19. It is to avoid misspecifications of this nature and the subsequent misinterpretations that, HLM instead of OLS regression is employed in testing the relationships as outlined in Hypotheses H1 to H4.

Baron and Kenny's (1986) three causal steps approach was employed to test the mediated relationships (i.e. Hypotheses H2, H3 and H4). First (*Step 1*), the independent variable (i.e. psychological empowerment) must be related to the outcome variable (i.e. task or contextual behaviors). Second (*Step 2*), the independent variable must be related to the mediator (i.e. intrinsic motivation, ability or opportunity). Third (*Step 3*), when the mediator is controlled for, the relationship

between the independent variable and outcome variable becomes zero, for full mediation to be inferred, or is no longer significant or substantially reduces compared with that in the first step, for partial mediation to be inferred.

MacKinnon *et al.* (2002) have however suggested that Baron and Kenny's (1986) approach is too conservative, such that significant indirect effects may still exist even when Baron and Kenny's steps are not fully met. MacKinnon *et al.* (2002) proposed testing the significance of the indirect effects in accordance with the propositions of Sobel (1982), which they found to provide a best balance of Type I error and statistical power. Sobel's (1982) approach calculates the indirect effect as the product of the coefficient of the relationship between the independent variable and the mediator variable in Step 2 of Baron and Kenny's approach and the coefficient of the relationship between the mediator variable and the outcome variable in Step 3. This indirect effect is then tested for statistical significance. Thus, the mediating role of motivation, ability and opportunity to perform (i.e. Hypotheses H2, H3 and H4) were also assessed with Sobel's test.

## **RESULTS**

### **Descriptive Statistics**

The reliabilities and dimensionality of all multi-item measures were assessed by exploratory factor analysis. The scale items loaded as hypothesized or meaningfully and the measures also exhibited acceptable reliabilities as shown by their Cronbach's alphas in the diagonal of Table 1. Table 1 also shows the descriptive statistics and zero-order correlations. The interrelationships among psychological empowerment, the mediators and performance behaviors are as expected. In particular, psychological empowerment relates positively to both task performance behaviors ( $r = .69, p < .001$ ) and contextual performance behaviors ( $r = .67, p < .001$ ). All correlations are also below .80, the threshold of very high correlations when multicollinearity is obvious (Field 2005). To further reduce the effect of multicollinearity, all variables were grand-mean centered in the analysis (c.f. Hofmann 1997). The correlations between the social desirability measure and team type 1 dummy variable ( $r = -$

.29,  $p < .001$ ) is higher than the threshold of between -.20 and +.20 suggested by Mitchell and Jolley (2001) while that for team type 2 dummy ( $r = .20, p < .001$ ), contextual behaviors ( $r = .20, p < .001$ ) and task behaviors ( $r = .19, p < .001$ ) are also high. Social desirability bias therefore appears to have a moderate influence on the outcome measures and thus warrants controlling for in the analysis.

### ***INSERT TABLE 1***

#### **Tests of Hypotheses**

Hypotheses H1 to H4 were tested through a series of HLM regression analyses. Age, gender, education, nationality, ethnicity, firm size and age, tenure and organization type as well as social desirability were included as control variables in all the analyses due to their possible confounding effect on the relationships examined (c.f. Dimitriades and Kufidu 2004; Kanter 1977; Spreitzer 1995b; Spreitzer *et al.* 1997). It was particularly important to control for nationality and ethnicity, given the predominantly Chinese sample and the impact of cultural differences on empowerment (Eylon and Au 1999). Given the large number of control variables, we examined the shared variance between the predictor variables of interest and the control variables in accord with Breugh (2008), to check over control of predictor variance. The results show that only 6% of the variance in psychological empowerment is shared with the control variables, 13% in the case of ability to perform and less than 1% for opportunity to perform and intrinsic motivation. This suggests that on average 95% of the original construct is still reflected in the residual predictors. Thus, lack of construct validity resulting from over control should not be an issue in the analysis.

#### ***Tests of Hypotheses H1a and H1b***

Hypothesis 1 posited that psychological empowerment will be significantly and positively related to both (a) task and (b) contextual performance behaviors. Prior to testing Hypothesis 1, we ran two null models (i.e. a model without predictors) with task and contextual behaviors as the dependent variables, (i.e. models 1a and 2a respectively in Table 2). The results provide evidence of significant within-team and between-team variance in both task performance behaviors ( $\sigma^2 = .55, p < .001$ ;  $\tau_{00} = .09, p < .01$ ) and contextual performance behaviors ( $\sigma^2 = .45, p < .001$ ;  $\tau_{00} = .09, p < .01$ ). This also gives

an interclass correlation coefficient (ICC) of .14 (or 14% of variance) for task behaviors and .17 (or 17% of variance) for contextual behaviors, confirming the presence of non-independence in the observations and justifying the use of HLM to overcome the associated problems.

We then ran models *1b* and *2b* (Table 2) with only the control variables as predictors. In model *1b*, only gender ( $B = -.36, p < .01$ ), team type 2-client ( $B = -.38, p < .05$ ) and social desirability ( $B = .08, p < .01$ ) significantly predict task behaviors. Similarly, gender ( $B = -.32, p < .01$ ) and social desirability ( $B = .08, p < .01$ ) are significant predictors in model *2b*. However, an examination of the zero-order bivariate correlations (see Table 1) show that gender is actually positively and significantly related to task behaviors ( $r = .12, p < .05$ ) but has no significant association with contextual behaviors ( $r = .10, ns$ ). Also, team type 2-client has no significant association with task behaviors ( $r = .07, ns$ ). This suggests that the regression findings pertaining to effects of gender and team type on individual performance behaviors may be *spurious* as a result of *suppressor effects*. The spurious nature of the regression findings on team type effects is the *classical suppression* scenario (c.f. Courville and Thompson, 2001; Cramer, 2003; Maassen and Bakker, 2001, Cohen and Cohen, 1983), where an independent variable (the suppressor) has no association with the dependent variable but correlates positively with other independent variables in the model thereby acquiring a negative regression coefficient when entered together in the same model. The case of gender is the *negative or net suppression* scenario (Cohen and Cohen, 1983; Tabachnick and Fidell, 2001), where the sign of the regression weight of the independent variable is the opposite of what should be expected on the basis of the correlation with the dependent variable. Although suppression improves predictive power, no explanatory benefits are gained (Anvuur, 2008; Tabachnick and Fidell, 2001). Thus, in interpreting the results in such circumstances greater weight is normally placed on the zero-order correlation (Courville and Thompson, 2001; Cramer, 2003). Based on this logic therefore the significant regression finding for the link between both gender and team type and individual performance behaviors are rejected for being spurious. The significant finding in terms of the control variables therefore is that involving the social desirability measure and suggests that the levels of both task and

contextual behaviors reported are affected by the respondent's propensity to fake good or bad, justifying the decision to control for its effects. The results also show that the control variables together account for only 6% of the variance in task behaviors and 4% in contextual behaviors (lower part of Table 2). Finally, we estimated models *1c* and *2c* to directly test Hypotheses H1a and H1b respectively. The results indicate highly significant relationships between psychological empowerment and both task ( $B = .81, p < .001$ ) and contextual ( $B = .75, p < .001$ ) performance behaviors. Psychological empowerment also explains 46% of the variance in task behaviors and 42% in contextual behaviors (lower part of Table 2). Thus, Hypotheses H1a and H1b are supported.

### ***INSERT TABLE 2***

#### *Tests of Hypotheses H2a and H2b*

Hypothesis 2 stated that, intrinsic motivation will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors. Baron and Kenny's (1986) three-step approach and Sobel's (1982) test of significance of the indirect effect as described earlier, were used to test these hypotheses. The free online Sobel's test calculator developed by Preacher and Leonardelli (2001) was used to test the significance of the indirect effects. Tables 3 and 4 summarize the results for Baron and Kenny's (1986) Steps 2 and 3, while Table 5 summarizes the results for Sobel's tests. The confirmation of Hypotheses H1a and H1b above satisfy Step 1. Model *3a* in Table 3 shows that psychological empowerment is significantly related to intrinsic motivation ( $B = .73, p < .001$ ), thus Step 2 for this hypothesis is met. Model *4a* (Table 4) shows that when psychological empowerment and intrinsic motivation are simultaneously entered (Step 3), they both significantly predict task behaviors ( $B = .48, p < .001$  for psychological empowerment and  $B = .46, p < .001$  for intrinsic motivation), with the regression coefficient for psychological empowerment dropping by 41%, from  $B = .81$  in Step 1 to  $B = .48$ . In addition, Sobel's tests shows that psychological empowerment has a significant indirect effect on task behaviors through its positive relationship with intrinsic motivation (see upper part of Table 5), supporting Hypothesis H2a.

### ***INSERT TABLE 3***



Model 5a (Table 4) also shows that when psychological empowerment and intrinsic motivation are simultaneously entered (Step 3), they both significantly predict contextual performance behaviors ( $B = .44, p < .001$  for psychological empowerment and  $B = .42, p < .001$  for intrinsic motivation), with the regression coefficient for psychological empowerment also dropping by 41%, from  $B = .75$  in Step 1 to  $B = .44$ . Sobel's test further confirms that psychological empowerment has a significant indirect effect on contextual behaviors through its positive relationship with intrinsic motivation (see upper part of Table 5). Thus, Hypothesis H2b is also supported.

#### ***INSERT TABLE 4***

##### *Tests of Hypotheses H3a and H3b*

Hypothesis 3 also stated that opportunity to perform will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors. The same approach as in Hypothesis 2 above was employed to test these hypotheses. Model 3b (Table 3) shows that psychological empowerment is significantly related to opportunity to perform ( $B = .74, p < .001$ ). Model 4b (Table 4) also shows that when psychological empowerment and opportunity to perform are simultaneously entered (Step 3), psychological empowerment significantly predicts task behaviors ( $B = .72, p < .001$ ), and so does opportunity to perform ( $B = .12, p < .01$ ). The regression coefficient for psychological empowerment also dropped by 11% from  $B = .81$  in Step 1 to  $B = .72$ . Sobel's test also confirms the significance of the indirect effect (see middle of Table 5). Thus, Hypothesis H3a is supported.

Model 5b (Table 4) also shows that when psychological empowerment and opportunity to perform are simultaneously entered (Step 3), they both significantly predict contextual performance behaviors ( $B = .54, p < .001$ , for psychological empowerment and  $B = .28, p < .001$ , for opportunity to perform), with the regression coefficient for psychological empowerment dropping by 28%, from  $B = .75$  in Step 1 to  $B = .54$ . In addition, Sobel's test is also significant (see middle of Table 5). Thus, Hypothesis H3b is supported.

#### ***INSERT TABLE 5***

### *Tests of Hypotheses H4a and H4b*

Hypothesis 4 further stated that ability to perform will partially mediate the positive relationship between psychological empowerment and both (a) task and (b) contextual performance behaviors. Using the same approach as in Hypotheses 2 and 3 above, Model 3c (Table 3) shows that psychological empowerment is significantly related to ability to perform ( $B = .64, p < .001$ ). Model 4c (Table 4) shows that when psychological empowerment and ability to perform are simultaneously entered (Step 3), they both significantly predict task behaviors ( $B = .66, p < .001$  for psychological empowerment and  $B = .22, p < .001$  for ability to perform). The regression coefficient for psychological empowerment also dropped by 19%, from  $B = .81$  in Step 1 to  $B = .66$ . The indirect effect is also significant (see bottom of Table 5). Thus, Hypothesis H4a is supported.

Model 5c (Table 4) also shows that when psychological empowerment and ability to perform are simultaneously entered (Step 3), they both significantly predict contextual performance behaviors ( $B = .58, p < .001$ , for psychological empowerment and  $B = .24, p < .001$ , for ability to perform), with the regression coefficient for psychological empowerment dropping by 23%, from  $B = .75$  in Step 1 to  $B = .58$ . In addition, Sobel's test again confirms a significant indirect effect (see bottom of Table 5). Thus, Hypothesis H4b is also supported.

## **Diagnostics**

We ran three diagnostic checks for misspecification and to assert the goodness of fit of all the HLM models. The level-1 and level-2 residuals were checked respectively for normal and multivariate normal distribution (Bickel 2007) and they all showed no signs of departure from normality. We also checked whether the level-1 and level-2 residuals are uncorrelated and have a uniform variance (Bickel 2007). Scatter plots of the level 1 and 2 residuals showed no signs of significant correlations. Lastly, we compared the fit (*deviance*) of each substantive model with that of the null and controls-only models (Bickel 2007; Luke 2004). As shown by the change in deviance parameters (lower parts of Tables 2, 3 and 4) the substantive models fit the data significantly better than both alternative models. Taken together, all the diagnostics confirm proper specification and goodness of fit of the HLM models.

## **DISCUSSION AND CONCLUSIONS**

The results show that psychological empowerment not only has direct and positive task and contextual behavioral consequences, but also indirect effects, partially mediated by intrinsic motivation, opportunity to perform and ability to perform. These are interesting findings for a sample of predominantly Chinese (87%) management staff. Positive performance effects from psychological empowerment will seem contra-indicated in a cultural context that emphasizes social hierarchy, order and certainty. Yet, our results are consistent with findings in other Western cultural contexts (c.f. Chen *et al.* 2007; Seibert *et al.* 2004; Thomas and Tymon 1994), and thus suggest that despite the cultural differences, psychological empowerment appears to be effective in engendering positive performance behaviors across cultures. Similar findings of positive outcomes within Chinese context have also been reported recently by Aryee and Chen (2006), Liu *et al.* (2007) as well as Humborstad *et al.*

(2008). Hui *et al.* (2004) however found in a cross-cultural study that empowerment had a stronger effect on job satisfaction in low power-distance cultures than in high power-distance cultures.

These findings may however not be that surprising given the work context of the sample and two plausible explanations can be offered in this regard. First, Walker (2002) asserts that empowerment within the project setting occurs naturally due to the nature of the tasks which requires the use of highly skilled, self-motivated professionals. This is in accord with the transient nature of projects, characterized by uncertainty and complexity, which imposes limits on the exercise of direct managerial control on site activities and perpetuates instable hierarchical structures. These characteristics make the project context a theoretically suitable setting for the devolvement of decision-making authority to avoid excessive upward referrals and thereby, guarantee the rapid actions warranted by the uncertain and dynamic project environment. Psychological empowerment and its positive effects in this context may therefore be a response to the operational circumstances of construction projects and an indication that the individuals in this study accept empowerment as necessary in such work context despite the seemingly inconsistency with their cultural values. The results therefore appear to suggest that work context or conditions trumps cultural differences in this regard.

Second, Rothbaum *et al.* (1982) and subsequently Hui *et al.* (2004) argue that positive consequences of psychological empowerment may actually be universal even if cultural differences persist. To explain this reasoning, Rothbaum *et al.* (1982) differentiate between *primary control* and *secondary control* through which one can achieve mastery over his/her environment in accomplishing outcomes. In primary control one makes use of power to actively manipulate the environment while in secondary control this is done by relying on adaptation and powerful others. Since psychological empowerment depends on internal feelings of self-control and efficacy beliefs, psychological empowerment is more aligned

with secondary control. The effect of psychological empowerment on job performance behaviours therefore transcends cultural specificity (Hui *et al.* 2004; Rothbaum *et al.* 1982). Thus, in terms of cross-cultural effectiveness it appears that it is also a question of what form empowerment takes. It will seem therefore that culture is not a barrier to psychological empowerment and the ensuing positive performance consequences.

In support of Wall *et al.* (2002) as well as Parker and Turner (2002), our results confirm the mediating role of intrinsic motivation, ability to perform and opportunity to perform, and also validates the preliminary findings of Liu and Fang (2006) regarding the mediating role of motivation. More importantly, the results provide preliminary evidence in support of Peters and O'Connor (1980) and Blumberg and Pringles (1982) that in addition to the long held view of motivation and ability to perform as the main intermediate determinants of performance, opportunity to perform is a vital addition that deserves attention. Indeed, in terms of contextual performance behaviors, opportunity to perform actually emerged as a stronger mediator than ability to perform.

### **Theoretical Implications**

Taken together, these findings have a number of theoretical implications that contribute to the body of knowledge in construction management. First, they add to our understanding of the important determinants of task (in-role) and contextual (extra-role) performance behaviors in construction project settings. These are important findings in view of recent studies that have shown that task and contextual behaviors are in turn, key determinants of project success (Ahadzie *et al.* 2008; Anvuur 2008; Cheng *et al.* 2007). More specifically, we have demonstrated that when individuals feel that they possess work-related competence and control over work decisions and derive meaning and sense of impact from their jobs, they are more likely to exhibit task and contextual performance behaviors. Further, such individuals are intrinsically motivated, develop competencies regarding their work and may also have

greater opportunity to perform in ways that contribute to the achievement of organizational and project goals.

Second, the positive effects of psychological empowerment on performance in a mainly Chinese sample adds to the growing evidence of convergence in management practices across cultures as well as different work settings (c.f. Bakalis *et al.* 2007; Scott *et al.* 2003). Extending previous work in permanent organizational settings, our findings indicate that psychological empowerment also has positive performance consequences in transient project settings.

Thirdly, the study also provides the much needed empirical support for a comprehensive model of work performance that takes into consideration not only motivation and ability but also opportunity to perform. Taken together, the results show that the link between empowerment and performance becomes even stronger when these intermediate determinants are taken into account; explaining additionally 1% to 7% of variance in task behaviors and 4% to 11% in contextual behaviors, over and above that explained by psychological empowerment alone (see lower part of Table 4). Although psychological empowerment has been linked theoretically to performance (Thomas and Velthouse 1990), direct relationships have been marginal and inconsistent (c.f. Chen *et al.* 2007; Dewettinck *et al.* 2003; Seibert *et al.* 2004). The current findings of both direct and indirect relationships further demonstrate that the relationship between empowerment and performance is more complex than previously thought.

### **Practical/Managerial Implications**

Practically, by clearly demonstrating that empowered employees exhibit positive performance behaviors, psychological empowerment clearly emerges as a valuable path in the search for performance improvement in project settings, still bedeviled with lack of

cooperation and true teamwork. That psychological empowerment promotes contextual behaviors such as cooperation and teamwork, imperative in project management performance, this study provides critical supporting evidence to help the project management discipline better advocate this important relationship. The finding of a mediating role of motivation, ability and opportunity to perform also has important practical/managerial implications for the competence and competency agenda in project organizations. It particularly suggests that while for example “belief in capability” or perceived competence/self-efficacy is enhanced when individuals are psychologically empowered, managers must simultaneously pursue avenues that facilitate the development of employee capability (ability) and thus create a ‘self-confident’ workforce (Dewettinck *et al.* 2003). It also implies that while not all individuals can be engaged in projects or tasks which they find meaningful (c.f. Dainty *et al.* 2005) and hence intrinsically motivating, organizations must continually ensure that conditions that inhibit individual performance and foster helplessness are eliminated, while providing individuals opportunity to perform.

Lastly, the evidence of convergence in management practices across cultures and contexts is instructive for organizations, managers and academics worldwide that increasingly operate in and with multicultural project teams. In particular, as Chinese companies increasingly make inroads into markets in Africa and the West, and companies from Western markets also expand into China, knowledge of transferrable management practices is indispensable. Psychological empowerment appears to be one such practice with promise of positive effects across cultures. Determining and promoting conditions that foster psychological empowerment may therefore be worthwhile and the work of Tuuli and Rowlinson (in press) provides pointers in this regard.

## **Limitations and Future Research**

Notwithstanding the above contributions, the study also has several limitations. Its cross-sectional nature precludes inferring causality. For example it is possible that individuals who perform better subsequently feel more empowered due to the impact they may perceive their performance makes in their organization. Also, the small sample size for the client and dual sub-samples precluded any meaningful exploration of the relationships in the separate sub-samples for any subtle differences, especially given that the contractor and client organization dummy variables were consistently significant in almost all the models. The study also focused on project management-level staff due to their strategic role in the project delivery process. It will, however, be interesting to examine these relationships among front-line staff. Given their lower formal power at the project level, psychological empowerment may even be a more important driver of performance for them.

This study also highlights avenues for further research. For example, future studies employing longitudinal research designs are required to validate the conclusions regarding the causal direction between psychological empowerment and performance behaviors. As the study did not also examine antecedents of psychological empowerment, a clear line of enquiry is to unravel the conditions that foster psychological empowerment among project participants. Such research will further broaden our understanding of the empowerment concept and provide managers with targets of concrete interventions to promote employee empowerment and job performance in project settings.



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## **APPENDIX 1: QUESTIONNAIRE**

The full list of questions and preambles used to measure the key constructs in this study are shown below:

### **Psychological Empowerment** (Spreitzer 1995a)

*Think about your job on the project. To what extent do you agree or disagree (1 = strongly disagree, 3 = neutral, 5 = strongly agree) with each of the following:*

#### *Competence*

1. I am confident about my ability to do my job
2. I am self-assured about my capabilities to perform my work activities
3. I have mastered the skills necessary for my job

#### *Self-determination*

4. I have significant autonomy in determining how I do my job
5. I have considerable opportunity for independence and freedom in how I do my job
6. I can decide on my own how to go about doing my work

#### *Impact*

7. I have a great deal of control over what happens in my department
8. I have significant influence over what happens in my department
9. My impact on what happens in my department is large

#### *Meaning*

10. The work I do is very important to me

11. The work I do is meaningful to me
12. My job activities are personally meaningful to me

**Task Performance Behaviours** (Williams and Anderson, 1991)

*How much do you agree or disagree (1 = strongly disagree, 3 = neutral, 5 = strongly agree) with each of the following statements about how you do your job:*

1. I adequately complete assigned duties
2. I fulfil responsibilities specified in my job description
3. I perform tasks that are expected of me
4. I meet the formal performance requirements of my job
5. I do things that will directly affect my performance appraisal
6. I neglect aspects of the job I am obliged to perform (R)

**Contextual Performance Behaviours** (Van Scotter and Motowidlo, 1996)

*Now, think about your job, on a scale of 1-5, 1 being "not at all likely" and 5 being "extremely likely", how likely or unlikely is it that while performing your job, you will exhibit the following behaviours:*

*Interpersonal facilitation behaviours*

1. Praise team members when they are successful
2. Support or encourage a team member with a personal problem
3. Talk to other team members before taking actions that might affect them
4. Say things to make team members feel good about themselves & the team
5. Encourage team members to overcome their differences and get along
6. Treat team members fairly
7. Help a team member without being asked

*Job dedication behaviours*

1. Put in extra hours to get work done on time
2. Pay close attention to important details

3. Work harder than necessary
4. Ask for challenging work assignment
5. Exercise personal discipline and self-control
6. Take the initiative to solve a work problem
7. Persist in overcoming obstacles to complete a task
8. Tackle a difficult work assignment enthusiastically

**Intrinsic Motivation** (Hackman and Oldham, 1976)

*We will also like to know how you feel about yourself and your job. To what extent do you agree or disagree (1 = strongly disagree, 3 = neutral, 5 = strongly agree) with each of the following statements:*

1. My opinion of myself goes up when I do my job well
2. I feel a great sense of personal satisfaction when I do my job well
3. I feel bad and unhappy when I discover that I have performed poorly on my job
4. My own feelings generally are not affected much by how well I do on my job
5. Most of my team members on this project feel a great sense of personal satisfaction when they do their job well
6. Most of my team members on this project feel bad and unhappy when they find they have performed their job poorly

**Opportunity to Perform-Organisational Constraints** (Spector and Jex, 1998)

*On a scale of 1-5, 1 being "less than once per month or never" and 5 being "several times per day", please indicate how often it is difficult or impossible for you to perform your job due to each of the following situations:*

1. Unavailability of job-related information
2. Unavailability of tools
3. Unavailability of equipment
4. Unavailability of materials

5. Unavailability of supplies
6. Unavailability of budgetary support
7. Unavailability of required services
8. Unavailability of help from other team members
9. Inadequate training
10. Unavailability of time
11. Absence of a facilitative work environment
12. Safety requirements/regulations
13. Statutory requirements/regulations

**Ability to Perform** (Poksakoff *et al.* 1993)

*Think about your ability, experience, training and job knowledge. To what extent do you agree or disagree (1=strongly disagree, 3=neutral, 5=strongly agree) with each of the following statements:*

1. I have the ability, experience, training or job knowledge to act independent of my immediate supervisor in performing my duties
2. I have enough training and job knowledge to handle most situations that I face in my job
3. I have all the required ability and experience to be my own boss
4. Few people in my organisation have more experience or job knowledge than I do
5. My job knowledge is sufficient enough that I do not have to depend on my supervisor to get my work accomplished
6. My performance could be much better if I just had more work experience
7. Due to my lack of experience in this job, I depend upon my superior to give me advice about how to do my job

**Social Desirability** (Strahan and Gerbesi, 1972)

*Listed below are a number of statements concerning personal attitudes and traits. Read each item and respond whether the statement is "True" or "False" as it pertains to you:*

1. I am always willing to admit it when I make a mistake

2. I always try to practice what I preach
3. I never resent being asked a favour
4. I have never deliberately said something that hurt someone's feelings
5. I like to gossip at times
6. There have been occasions when I took advantage of someone
7. I sometimes try to get even, rather than forgive and forget
8. At times I have really insisted on having things my own way
9. There have been occasions when I felt like smashing things
10. I have never been annoyed when people express ideas very different from my own

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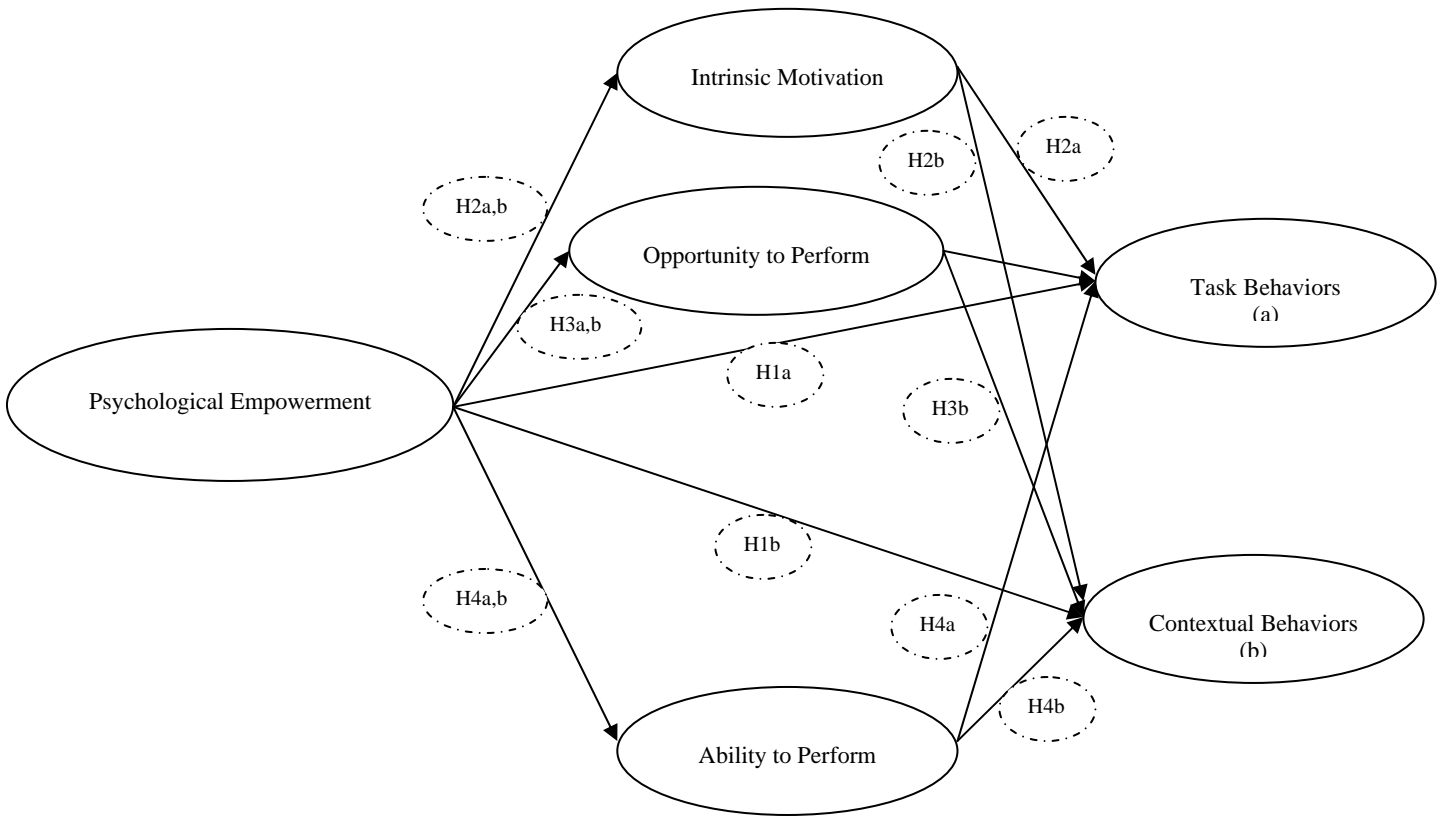


Figure 1: Conceptual Framework

Table 1 Descriptive Statistics and Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1 Age	0.53	0.50	-											
2 Gender	0.89	0.31	.09	-										
3 Education	0.43	0.50	.21*	-.08	-									
4 Nationality	0.82	0.39	-.10	.02	-.09	-								
5 Ethnicity	0.87	0.34	.11 <sup>†</sup>	-.03	-.03	.66*	-							
6 Firm Size	0.77	0.42	.03	.01	-.02	.07	.03	-						
7 Firm age	35.49	18.88	.07	.01	.07	-.08	-.02	.19*	-					
8 Team Type 1 (Cont.)	0.46	0.50	-.16 <sup>†</sup>	.22*	-.25*	.03	-.05	.02	.03	-				
9 Team Type 2 (Client)	0.20	0.40	.14 <sup>†</sup>	-.01	.20*	-.04	-.03	.11 <sup>~</sup>	.06	-.46*	-			
10 Team Type 3 (Dual)	0.10	0.30	.07	-.02	.07	.09	.08	.18*	.08	-.31*	-.17*	-		
11 Tenure	16.89	8.46	.79*	.04	.18*	-.17 <sup>†</sup>	.07	-.01	.09	-.09	.06	.09	-	
12 Psych. Empowerment	3.60	0.74	.11 <sup>~</sup>	.08	-.02	-.08	-.11 <sup>~</sup>	-.19*	.00	.04	-.14 <sup>†</sup>	-.07	.15*	(.91-.82)
13 Cont. Behaviors	3.66	0.73	.12 <sup>~</sup>	.10	-.02	.03	-.03	.04	-.02	-.11 <sup>~</sup>	.05	.10 <sup>~</sup>	.09	.67*
14 Task Behaviors	3.90	0.80	.18 <sup>†</sup>	.12 <sup>~</sup>	.04	.00	-.05	.01	.07	-.14 <sup>†</sup>	.07	.12 <sup>~</sup>	.17*	.69*
15 Intrinsic Motivation	3.54	0.68	.04	.11 <sup>~</sup>	-.05	.01	-.06	.01	.03	-.10 <sup>~</sup>	.02	.05	.04	.67*
16 Opportunity	3.57	0.84	.08	.09	-.05	.02	-.05	.04	-.02	-.03	.02	.00	.03	.55*
17 Ability	3.40	0.75	.23*	.17*	.03	-.10	-.13 <sup>†</sup>	-.08	.01	-.01	-.05	.05	.27*	.63*
18 Social Desirability	5.95	1.56	.17*	-.10 <sup>~</sup>	.17*	.07	.03	.07	-.04	-.29*	.20*	.04	.13 <sup>†</sup>	.05
			<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>						
13 Cont. Behaviors			(.95)											
14 Task Behaviors			.67*	(.94)										
15 Intrinsic Motivation			.70*	.70*	(.84)									
16 Opportunity			.62*	.50*	.55*	(.95)								
17 Ability			.57*	.59*	.57*	.37*	(.89)							
18 Social Desirability			.20*	.19*	.07	.16*	.13 <sup>†</sup>	-						

NOTE: <sup>~</sup>p < 0.05; <sup>†</sup> p < 0.01; \*p < 0.001.

<sup>a</sup>Sample size = 380 individuals (nested in 115 project teams).

<sup>b</sup>Control variables are coded as follows: Gender is coded 1 = Male, 0 = Female; Age is coded 1 = Old (over 40 years old), 0 = Young (under 40 years old); Education is coded 1 = Graduate degree or higher, 0 = Bachelors degree or lower; Nationality is coded 1 = Hong Kong or China National, 0 = Other; Ethnicity is coded 1 = Chinese, 0 = Other; Firm size is coded 1 = Large (100 or more employees), 0 = Small (less than 100 employees); Team Type 1 (CM) is coded 1 = Contractor, 0 = Others; Team Type 2 (Client) is coded 1 = Client, 0 = Others and Team Type 3 (Dual) is coded 1 = Dual (Client + Consultant), 0 = Others, thus, Consultant is the reference in all cases



Table 2 HLM Analyses of Psychological Empowerment and Performance Behaviors Direct Relationship (Hypotheses H1)

Variables	Task Behaviors			Contextual Behaviors		
	Model			Model		
	1a	1b	1c	2a	2b	2c
	B(S.E)	B(S.E)		B(S.E)	B(S.E)	
Gender		-.36(.14)†	-.14(.09)		-.34(.13)†	-.11(.08)
Age		-.14(.14)	-.09(.10)		-.14(.13)	-.09(.08)
Education		.06(.09)	-.00(.06)		.12(.08)	.06(.05)
Nationality		-.15(.16)	-.04(.10)		-.08(.14)	.04(.09)
Ethnicity		.20(.18)	-.05(.12)		.08(.17)	-.11(.11)
Tenure		.01(.01)	-.00(.01)		.00(.01)	-.01(.00)
Firm Size		.05(.12)	-.16(.10)		-.05(.11)	-.25(.10)†
Firm Age		.00(.00)	.00(.00)		-.00(.00)	-.00(.00)
Team 1 (Cont.)		-.20(.18)	-.41(.15)†		-.19(.18)	-.39(.16)~
Team 2 Client)		-.38(.16)~	-.46(.14)*		-.31(.16)	-.40(.15)†
Team 3 (Dual)		-.20(.18)	-.14(.15)		-.16(.18)	-.09(.16)
Social Desire.		.08(.03)†	.05(.02)~		.08(.03)†	.04(.02)~
<b>Empowerment</b>		-	.81(.04)*		-	.75(.04)*
$\sigma^2$	.55(.05)*	.55(.05)*	.22(.02)*	.45(.04)*	.43(.05)*	.15(.01)*
$\tau_{00}$	.09(.03)†	.05(.04)	.09(.03)*	.09(.03)†	.09(.04)	.14(.03)*
$R^2$	-	.06	.52	-	.04	.46
$\Delta R^2$	-	.06	.46	-	.04	.42
$\Delta$ Deviance (-2LL)	-	-	246.45*	-	-	263.84*

NOTE: ~ p < 0.05; †p < 0.01; \*p < 0.001.

<sup>a</sup>Unstandardized coefficients are reported with standard errors in parenthesis.

<sup>b</sup>Sample size = 380 individuals (nested in 115 project teams).

Table 3 HLM Analyses of Direct Relationship between Psychological Empowerment and Mediators (Hypotheses H2, H3 and H4)

Variables	Motivation	Opportunity	Ability
	<i>Model</i>		
	<i>3a</i>	<i>3b</i>	<i>3c</i>
	<i>B(S.E)</i>	<i>B(S.E)</i>	<i>B(S.E)</i>
Gender	-.15(.08)	-.08(.11)	-.27(.10)†
Age	.00(.08)	-.13(.11)	-.10(.10)
Education	.05(.05)	.08(.07)	-.02(.07)
Nationality	-.03(.09)	-.05(.12)	-.04(.11)
Ethnicity	-.12(.11)	.02(.14)	.21(.13)
Tenure	-.01(.00)	-.01(.01)	.01(.01)
Firm Size	-.22(.09)~	-.31(.13)~	-.02(.09)
Firm Age	.00(.00)	-.00(.00)	-.00(.00)
Team 1 (Cont.)	-.16(.14)	-.04(.21)	-.17(.14)
Team 2 Client)	-.31(.13)~	-.02(.19)	-.16(.13)
Team 3 (Dual)	-.02(.14)	.17(.21)	-.12(.14)
Social Desire.	-.02(.02)	.04(.03)	.04(.02)~
<b>Empowerment</b>	.73(.04)*	.74(.05)*	.64(.04)*
<i>Random Parameters</i>			
$\sigma^2$	.16(.02)*	.27(.03)*	.26(.03)*
$\tau_{00}$	.09(.02)*	.23(.05)*	.06(.03)~
$R_1^2$	.47	.30	.43
$\Delta R_1^2$	.47	.30	.30
$\Delta$ Deviance (-2LL)	239.24*	163.33*	146.43*

NOTE: ~p < 0.05; †p < 0.01; \*p < 0.001.

<sup>a</sup>Unstandardized coefficients are reported with standard errors in parenthesis.

<sup>b</sup>Sample size = 380 individuals (nested in 115 project teams).

Table 4 HLM Analyses of Mediating Role of Motivation, Opportunity and Ability  
(Hypotheses H2, H3 and H4)

Variables	Task behaviors			Contextual Behaviors		
	Model			Model		
	4a	4b	4c	5a	5b	5c
	B(S.E)	B(S.E)	B(S.E)	B(S.E)	B(S.E)	B(S.E)
Gender	-.07(.09)	-.13(.10)	-.08(.09)	-.05(.07)	-.09(.08)	-.05(.08)
Age	-.09(.09)	-.07(.10)	-.06(.09)	-.09(.07)	-.05(.08)	-.05(.08)
Education	-.02(.06)	-.01(.06)	.01(.06)	.04(.05)	.04(.05)	.07(.05)
Nationality	-.03(.10)	-.06(.10)	-.03(.10)	.05(.08)	.05(.08)	.04(.08)
Ethnicity	.00(.11)	-.03(.10)	-.09(.12)	-.05(.10)	-.11(.10)	-.14(.10)
Tenure (industry)	.00(.01)	-.00(.01)	-.00(.01)	-.00(.00)	-.00(.00)	-.01(.00)
Firm Size	-.06(.09)	-.13(.10)	-.16(.10)	-.16(.09)	-.16(.09)	-.25(.10)†
Firm Age	.00(.00)	.00(.00)	.00(.00)	-.00(.00)	-.00(.00)	-.00(.00)
Team Type 1 (Cont.)	-.33(.14)~	-.40(.15)†	-.37(.15)~	-.31(.15)~	-.38(.15)†	-.34(.16)~
Team Type 2 Client)	-.32(.13)†	-.46(.14)*	-.43(.14)†	-.26(.14)	-.39(.14)†	-.36(.15)~
Team Type 3 (Dual)	-.13(.14)	-.16(.15)	-.11(.15)	-.08(.15)	-.14(.15)	-.06(.16)
Social Desirability	.05(.02)†	.04(.02)	.03(.02)	.05(.02)†	.03(.02)	.03(.02)
<b>Intrinsic Motivation</b>	.46(.06)*	-	-	.42(.05)*	-	-
<b>Opportunity</b>	-	.12(.05)†	-	-	.28(.04)*	-
<b>Ability</b>	-	-	.22(.05)*	-	-	.24(.04)*
<b>Psych. Empowerment</b>	.48(.06)*	.72(.05)*	.66(.05)*	.44(.05)*	.54(.04)*	.58(.05)*
$\Delta\beta \blacktriangledown$	.33	.09	.15	.31	.21	.17
$\sigma^2$	.19(.02)*	.21(.02)*	.20(.02)*	.12(.01)*	.13(.01)*	.13(.01)*
$\tau_{00}$	.07(.02)*	.09(.02)*	.09(.02)*	.11(.02)*	.12(.02)*	.14(.03)*
$R^2$	.59	.53	.55	.57	.54	.50
$\Delta R^2$	.53	.47	.49	.53	.50	.46
$\Delta R^2$	.07	.01	.03	.11	.08	.04
$\Delta$ Deviance (-2LL)	301.40*	249.25*	260.80*	320.59*	269.01*	287.77*

NOTE: ~p < 0.05; †p < 0.01; \*p < 0.001.

<sup>a</sup>Unstandardized coefficients are reported with standard errors in parenthesis.

<sup>b</sup>Sample size = 380 individuals (nested in 115 project teams).

<sup>c</sup>This is the unique variance explained by the mediators, over and above that explained by Psychological Empowerment.

Table 5 Analyses of Indirect Effects (Hypotheses H2, H3 and H4)

	<b>Indirect Path<sup>ab</sup></b>	<b>B' (z)</b>
H2a	Psych. Empow't → Motivation → Task Behaviors	<b>.34(7.07)*</b>
H2b	Psych. Empow't → Motivation → Cont. Behaviors	<b>.31(7.63)*</b>
H3a	Psych. Empow't → Opportunity → Task Behaviors	<b>.09(2.37)~</b>
H3b	Psych. Empow't → Opportunity → Cont. Behaviors	<b>.21(6.33)*</b>
H4a	Psych. Empow't → Ability → Task Behaviors	<b>.14(4.24)*</b>
H4b	Psych. Empow't → Ability → Cont. Behaviors	<b>.15(5.62)†</b>

NOTE: ~p < 0.05; †p < 0.01; \*p < 0.001.

<sup>a</sup>Indirect Effects are the product of the unstandardized coefficients from the direct relationship between Empowerment & the Mediator Variables (Table 3) and the Mediator Variables & Performance Behaviors (Table 4).

<sup>b</sup>Values in parenthesis are z values