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Promoting role breadth self-efficacy through involvement, work redesign and training

Carolyn M. Axtell and Sharon K. Parker

ABSTRACT

This article examines the influence of organizational practices on role breadth self-efficacy (RBSE); a person's confidence in performing proactive, interpersonal tasks that go beyond traditional boundaries. A longitudinal study showed that increased task control, membership of an active improvement group, and breadth of training were associated with increased RBSE. Providing a stronger basis for causal inference, membership of active improvement groups at Time 1 also had a positive lagged effect on later RBSE. These findings support the proposition that RBSE can be enhanced via organizational intervention. The study also showed that, after controlling for greater involvement, job enlargement had a negative lagged effect on RBSE. This suggests the potential detrimental consequences of enlarging jobs without also expanding employees' autonomy and influence.

KEYWORDS

autonomy ■ breadth of training ■ improvement groups ■ influence ■ role breadth self-efficacy

Organizations increasingly need capable employees who can take on broader and more proactive work roles (Bateman & Crant, 1993; Dean & Snell, 1991). For instance, it has been suggested that employees who conduct activities that go beyond the technical core of their particular job (e.g. exhibit organizational citizenship behaviour) help to ensure that organizations

function smoothly (Borman & Motowidlo, 1993; Organ, 1988). Furthermore, with the high level of change in modern organizations, such as wide-scale downsizing, de-layering and empowerment, employees also need to be more flexible, self-directed and proactive than in the past (e.g. Crant, 2000). In short, the performance expectations for employees in today's flexible organizations can be substantial.

The question arises as to how to promote the development of more flexible and proactive employees. To date, much of the focus has been on promoting either standard task performance or contextual performance and citizenship behaviours, such as helping colleagues. Contextual performance and organizational citizenship behaviour (OCB) include dimensions that have been considered rather passive or reactive in their orientation, such as complying with organizational procedures (George & Brief, 1992; Speier and Frese, 1997). Much less research has been concerned with the question of how to promote proactivity in the workplace, such as what motivational or cognitive processes underpin this change.

A very important motivational concept to draw on in this endeavour is self-efficacy (Bandura, 1986). Self-efficacy refers to people's judgements about their capability to perform particular tasks. Task-related self-efficacy increases the effort and persistence towards challenging tasks, and therefore increases the likelihood that they will be completed (e.g. Barling & Beattie, 1983). There is much evidence linking self-efficacy with actual behaviour. For instance, a recent meta-analysis of 114 studies showed a significant correlation between self-efficacy and work-related performance (Stajkovic & Luthans, 1998). Relationships between self-efficacy and contextual performance have also been found (Somech & Drach-Zahavy, 2000).

A type of self-efficacy that has been suggested to be particularly relevant to carrying out the wider and more proactive roles that characterize today's work environment is that of role breadth self-efficacy (RBSE, Parker, 1998). RBSE refers to 'the extent to which people feel confident that they can carry out a broader and more proactive role, beyond traditional prescribed technical requirements' (Parker, 1998: 835). The concept has a broader focus than other forms of self-efficacy that are typically concerned with a specific task or activity. RBSE focuses on a range of proactive, integrative, and interpersonal tasks that make up an expanded role – such as solving long-term problems, designing improved procedures, and contacting customers and suppliers. RBSE relates to, but is distinct from, notions such as contextual performance, OCB, and prosocial behaviour towards the organization (e.g. Borman & Motowidlo, 1993; McNeely & Meglino, 1994; Organ, 1988). Although some dimensions of OCB (notably conscientious initiative, Coleman & Borman, 2000) share some common ground in relation to the

role that is the focus of RBSE, OCB is about the actual behaviours performed, whereas RBSE is concerned with a person's perceived capability to perform these tasks and behaviours.

RBSE, and related forms of self-efficacy, have been found to be an important determinant of proactive behaviours. For instance, RBSE has been found to be an important predictor of employee innovation (Axtell et al., 2000). Griffin et al. (2002) found that RBSE was the strongest predictor of proactive performance relative to other predictors, and that other types of performance (task and adaptive performance) were influenced more by other antecedents. Other studies have also shown that self-efficacy is an important determinant of two types of proactivity: personal initiative (Fay & Frese, 2001; Frese et al., 1996; Speier & Frese, 1997) and taking charge (Morrison & Phelps, 1999).

These findings, combined with the recent growth in interest in citizenship behaviours and proactive expanded roles, mean that RBSE is likely to be an important explanatory construct to consider in modern organizations. In the current article, we focus particularly on how RBSE is affected by organizational practices and interventions.

Determinants of change in RBSE

It has been found that task characteristics (such as intrinsically satisfying jobs) and some organizational characteristics (such as leader support) have consistent positive relationships with a range of OCB dimensions, and typically stronger and more consistent relationships than personality has with OCB (e.g. Podsakoff et al., 2000). One might likewise expect task and organizational characteristics to have an impact on self-efficacy to perform similar proactive behaviours, through providing opportunities to conduct related tasks. If organizational practices can be shown to enhance RBSE, then this will suggest using interventions that develop employees so that they can respond more effectively to today's demanding performance requirements. To date, only one article (Parker, 1998) has investigated how RBSE might be enhanced. The underlying rationale of this approach was Bandura's (1986) notion that enactive mastery, defined as repeated performance accomplishments, is an important pre-condition for the development of self-efficacy. Other mechanisms of self-efficacy may also be at work, such as vicarious experience through seeing others model target behaviours, or through persuasive suggestion, which may help to convince employees they can perform such tasks. However, research suggests that mastery leads to stronger and more generalized self-efficacy expectations (Bandura et al., 1977). Parker

(1998) argued that enactive mastery towards an expanded, proactive role is likely to be increased when, for example, employees are able to make autonomous decisions, use their abilities and work on challenging tasks. Thus initiatives such as work design (e.g. task control, job enlargement) training, workplace communication and involvement in improvement groups might be important facilitators of RBSE (see Figure 1).

Certain work designs are likely to provide opportunities for self-efficacy enhancing experiences. For instance, improvement groups may help to expand the boundaries of previously narrow jobs by enabling employees to have greater influence on workplace decisions and to conduct activities they would not normally do. Job enlargement may also be important as the breadth of activities is increased, thus allowing enactive mastery of a range of day-to-day tasks. Increased responsibility and decision-making authority over one's immediate set of tasks (i.e. task control) is likely to lead to feelings of increased personal control, which is crucial in building self-efficacy (Bandura, 1986; Bandura & Wood, 1989).

Training in role-relevant behaviours or skills also provides opportunities for mastery and modelling (Gist, 1989). Workplace communication may increase self-efficacy through verbal persuasion but can also help ensure that employees are aware of the direction and boundaries of the expanded role in which to develop their mastery (Conger & Kanungo, 1988).

Two studies were conducted to test these ideas in Parker (1998). Study 1, a cross-sectional study (which is extended in the current article), showed that two individual difference variables (proactive personality and self-esteem) and three organizational variables (membership of improvement

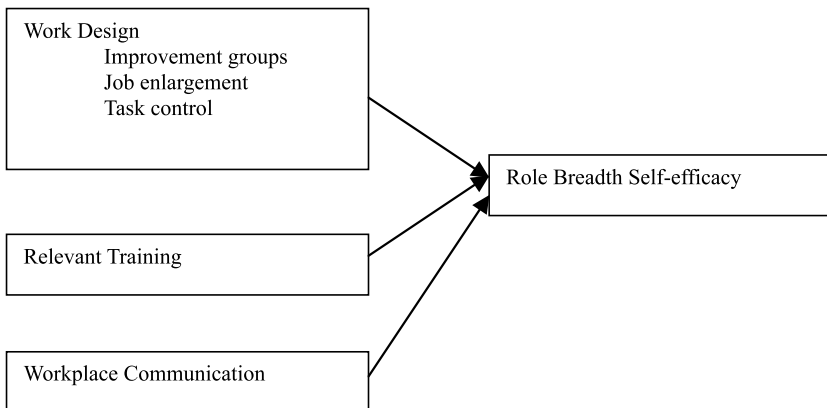


Figure 1 Model of organizational antecedents of RBSE

groups, job enlargement, and task control) were positively associated with RBSE. However, an obvious limitation of Study 1 was its cross-sectional design. Study 2 was a longitudinal investigation in a second company that examined two additional predictors: relevant training and quality of communication. Analyses showed that the most important predictors of enhanced RBSE were improved communication quality (rather than communication frequency) and increased task control. A key finding was that enriching jobs by increasing task control was more important than simply enlarging jobs to incorporate more tasks. Increases in relevant training and membership of improvement groups were shown to be unimportant.

One problem with the longitudinal study reported by Parker, however, concerned the test of the effects of involvement in improvement groups. The non-significant finding was likely to have arisen because membership of improvement groups had declined within the host organization. This meant that the data were only able to test the effect of leaving a group rather than joining one. Moreover, the assessment of involvement in improvement groups did not determine whether the group members were actively involved in improvement activities, rather than being a member of a group in name only. It would not be surprising if membership of inactive groups had little effect on their RBSE (given no opportunity for mastery experiences).

It is important to assess fully the impact of such improvement initiatives for two reasons. First, upward problem-solving techniques such as these are very popular as evidenced in a study by Lawler et al. (1992) which found that 66 percent of Fortune 1000 companies in the USA had employee improvement groups in operation. Evidence suggests that involvement structures such as these still feature strongly in many organizations (Corbitt et al., 2000; Osterman, 1994). Second, involvement in initiatives such as improvement groups might serve as a springboard or the initial phase for wider scale work redesigns such as increasing employee autonomy or team-working (Cordery, 1996). For instance, it might be difficult for employees who have had long-term exposure to simplified jobs to perform effectively when introduced to full-scale self-managing teams, whereas they might be able to perform in improvement groups that have structured problem-solving activities (Parker & Sprigg, 1999). It is important to ascertain whether involvement in active, effective improvement groups leads to greater employee self-confidence in conducting a broader role, which would support the idea that such initiatives are indeed a useful springboard for more substantive work redesign.

A second problem with the longitudinal study reported in Parker (1998) was that no effect was found for relevant training – suggesting that this variable had little importance with regard to promoting RBSE. This

finding contrasted with previous literature that has shown a strong link between training and self-efficacy (e.g. Gist, 1989). However, the measure of training in Parker (1998) was rather restrictive in scope as it assessed only three types (team-working, improvement, and cost-awareness training) and did not consider on-the-job or other forms of technical training. As we describe next, there is a need for research that captures a broader range of training, including technical and on-the-job training, before it can be concluded that training is unimportant in promoting RBSE.

The present study

The aim of this article was to expand our understanding of RBSE and how it can be enhanced through organizational intervention. This may also provide some insight into enhancing the more proactive aspects of contextual performance and OCB. We expanded Parker's (1998) findings by extending the original cross-sectional study (Study 1) with a longitudinal component, and by improving the tests for the effects of improvement groups and relevant training that were problematic in the original longitudinal study. In the current organization, the use of improvement groups was increased across the site, and a measure of how actively employees were involved in improvement activities was included at both times. Thus an opportunity existed to test whether being involved in an active improvement group enhanced RBSE. Based on the assumption that employees in active groups will experience influence and mastery over a wide range of activities, such as solving problems and making improvements, our hypothesis was:

Hypothesis 1: Membership of an active improvement group will be positively related to improvements in RBSE.

Moreover, by asking the longitudinal survey respondents what types of training they had attended since the last survey, an analysis of the contribution of a range of training to RBSE was undertaken. We used a comprehensive measure that assessed the full range of training received by employees in the organization, including on-the-job and technical training. It was expected that training over a range of skills would predict higher levels of RBSE, as presumably in order to have self-efficacy to conduct a broader role, one requires a wider range of mastery or modelling experiences. The increased and broader competence and skills achieved through training are likely to enhance employees' confidence in a range of behaviours, such as making suggestions for improvement and problem-solving. Thus:

Hypothesis 2: The greater the breadth of training received, the greater the development of RBSE.

This study also provided an opportunity to replicate the finding that task control rather than job enlargement was the most important intervention in the longitudinal study cited in Parker's (1998) article. This is because task control is more likely to enhance feelings of personal control (which is important in developing self-efficacy) due to the increased responsibility and decision-making authority afforded (Bandura & Wood, 1989). Simple job enlargement (carrying out more tasks but without any greater decision-making authority) is less likely to have such an impact on personal control. Thus our hypothesis is:

Hypothesis 3: An increase in the degree of perceived task control will predict increased RBSE.

Consistent with the original cross-sectional study, we also examined both communication briefs and job enlargement as predictors. However, consistent with Parker (1998), we did not expect either to be significant longitudinal determinants of RBSE.

Method

Participants and procedure

Participants were employees at one site of a glass manufacturing organization in the north of England who had completed two surveys 18 months apart. The sample was a sub-set of the cross-sectional sample in Study 1 (Parker, 1998) as it included only those with complete data on all relevant measures at both time periods ($N = 94$). This sample also excluded members of inactive improvement groups (see the improvement group measure below). Questionnaires were administered during work time in sessions facilitated by the researchers. Participants were given guarantees of confidentiality and participation was voluntary. The response rate on the first occasion was 75 percent and on the second was 55 percent. The matched sample consisted of employees who at Time 1 were 19 to 62 years of age ($M = 39.63$, $SD = 11.10$), with tenure ranging from a few months to 36 years ($M = 11.66$, $SD = 8.92$). Thirty-six percent were women and only 2 percent had temporary employment contracts. Shopfloor employees made up 57 percent of the sample, 14 percent were managers, 7 percent admin staff, 3 percent professional white collar employees and 19 percent other grades. This matched sample was similar to the full samples at both Time 1 (T1) and Time 2 (T2) and was used for all the analysis.

Measures

Biographical information

Respondents indicated their age in years, tenure in years, gender (male = 1, female = 0), employment status (permanent = 1, temporary = 0), and job title. From the job titles, participants were classified into occupational groups: shopfloor employees, managers/supervisors, clerical/administration, white-collar professional staff (i.e. sales and marketing, etc.) and other (i.e. those who did not indicate their job title). Occupational group membership was dummy coded.

RBSE

Role breadth self-efficacy (Parker, 1998) was assessed by respondents to rate how confident they would feel if asked to carry out each of 10 tasks using a 5-point Likert scale from 1 (not at all confident) to 5 (very confident). Illustrative tasks include analysing long-term problems to find a solution, designing new procedures, visiting people from different departments to suggest doing things differently, and presenting information to colleagues. Scores from the 10 items were summed to form a single scale. Cronbach's (1951) alpha at both T1 and T2 was .96.

Membership of an active improvement group

Respondents indicated whether they were currently in an improvement group (yes = 1, no = 0). Using additional items available in the survey at T1 and T2, we identified and excluded from the sample those individuals who were in inactive improvement groups. Thus those who were in improvement groups were asked the extent to which they had influence over important decisions, were encouraged to contribute ideas, and had made significant improvements. These items were answered on a scale from 1 (not at all) to 5 (a great deal) and combined into a single measure (Cronbach's alpha at T1 was .79 and at T2 was .78). Employees reporting an average score of less than 2 (signifying less than 'a little' or 'no' influence, contribution, or improvement) were excluded from the sample. The active group membership measure at both time points was therefore a more stringent measure than that used in Parker (1998) and was coded as follows: (no group membership = 0, active group membership = 1).

Breadth of training

Within the Time 2 survey, respondents were asked to indicate the training they had undergone over the last 18 months (i.e. since the first survey). All

the major training courses or qualifications supported by or run by the organization over the period were listed, including National Vocational Qualifications (NVQs), which are qualifications based on gathering behavioural evidence towards defined job competence standards. On-the-job training was also included. Employees were asked to indicate whether they had undertaken each of the types of training (yes = 1, no = 0). Breadth of training was the sum of employee responses to the following types of training: management/leadership skills, team-building, communications, on-the-job training, technical/maintenance training, National Vocational Qualifications, and health and safety training. Thus the greater the amount of training received, the higher the score on this variable.

Task control

Wall et al.'s (1995) measure was used to assess task control. Items assessed both timing control (i.e. control over the work pace and scheduling) and method control (i.e. choice in how to carry out work tasks). Cronbach's alpha for the 10-item scale at T1 was .92 and at T2 was .93. The response format was from 1 (not at all) to 5 (a great deal).

Job enlargement

Job enlargement refers to the breadth of tasks and activities present in a job. This contrasts with task control, which concerns the degree of decision-making and autonomy in a job. Employees indicated the extent that they do a range of different things, use a variety of skills, and make full use of their skills on a response scale from 1 (not at all) to 5 (a great deal). Cronbach's alpha for this three-item scale at T1 was .82 and at T2 was .75. Principal components analysis with varimax rotation confirmed that job enlargement and task control are distinct constructs.

Communication briefs

Respondents indicated how often they had regular communication briefings (less than once a month = 0, approximately once or twice a month = 1, approximately once a week = 2, more than once a week = 3).

We did not include the personality variables (proactive personality and self-esteem) that were in the original cross-sectional study because the longitudinal design of the present study controls for stable individual differences. Moreover, increasing the number of variables will also reduce the power of the analysis. As we are concerned with how organizations can develop RBSE, we concentrate on variables that are amenable to change in this study.

Results

The means, standard deviations and correlations for variables measured at T1 and T2 for the matched sample ($N = 94$) are shown in Table 1. It is important to observe that there were significant correlations between several background variables and key study variables, thus highlighting the need to control for their effects. Background variables without such significant associations (i.e. age, professional grade and tenure) were excluded from further analysis.

In order to test the hypotheses, a hierarchical regression technique was used, with RBSE at T2 as the dependent variable. On the first step, RBSE scores at T1 were entered to control for the effect of previous levels of self-efficacy, thus capturing change in the dependent variable. Background variables were added on the second step so as to control for their effects. T1 organizational variables were entered on the third step to control for their previous levels and to test for lagged effects. On the fourth step the T2 organizational variables were added. Any variance accounted for at this final step (estimated by the increase in R^2) is the contribution of T2 independent variables to T2 RBSE, having controlled for prior levels of all relevant variables. Thus we are able to examine the contribution of change in the independent variables to change in RBSE. As the direction of effects has been predicted, one-tailed significance tests were used to assess the hypothesized relationships on the third and fourth steps.

Table 2 shows the results of the regression analysis. Step 3 shows the lagged effect of T1 variables on later RBSE. It can be seen that there is a positive lagged effect of active group membership at T1 ($\beta = .28, p < .001$), indicating that being actively involved in improvement activities enhances employees' self-efficacy over the long term. There is also a negative lagged effect of job enlargement at T1 ($\beta = -.16, p < .05$), suggesting that those with a greater breadth of tasks at T1 had a decline in RBSE. This effect remains significant at step 4 and is explored further in supplementary analysis below. Focusing on step 4, significant effects were found for T2 task control ($\beta = .19, p < .01$), and T2 membership of active improvement groups ($\beta = .13, p < .05$), suggesting that positive change in these variables had a significant effect on change in RBSE. T2 breadth of training also had a significant relationship with T2 RBSE after controlling for T1 levels of these variables ($\beta = .16, p < .05$). A negative relationship between T1 task control and RBSE was approaching significance after accounting for task control at T2, which is the pattern one would expect if job autonomy promotes RBSE.¹

There was also a negative association between shopfloor employees and change in RBSE ($\beta = -.18, p < .01$), suggesting either a reduction in RBSE

Table 1 Cross-sectional and longitudinal correlations for variables at Time 1 and at Time 2 within the matched sample (N = 94)

Variable	M	SD	S-floor	Mgr/sup	Prof	Admin	Age	Gender	Tenure	Emp-stat	RBSE		Communication		Group		Job enlargement		Task control	
			T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T2	T1	T2	T1	T2	T1	T2	T1
Shopfloor employees T1	.57	.50	-																	
Managers/supervisors T1	.14	.35	-.47***	-																
Professional staff T1	.03	.18	-.21*	-.07	-															
Clerical/administration T1	.07	.26	-.33**	-.11	-.05	-														
Age T1	39.64	11.10	-.12	.04	-.02	-.04	-													
Gender T1	.64	.48	-.07	.17	.14	-.29**	.47***	-												
Tenure T1	11.66	8.92	-.11	.11	.06	-.11	.41***	.24*	-											
Employment status (permanent) T1	.98	.15	-.13	.06	.03	.04	-.01	.04	.17	-										
Role breadth self-efficacy T1	2.85	1.12	-.46***	.52***	.09	.13	.13	.14	.19	.17	-									
Role breadth self-efficacy T2	2.75	1.09	-.54***	.50***	.09	.13	.17	.26**	.16	.18	.80***	-								
Communication briefs T1	.61	.68	-.01	.24*	-.16	-.05	.01	.02	-.01	.09	.28**	.16	-							
Communication briefs T2	.53	.60	-.21*	.37***	-.06	.09	.18	.26*	.10	.01	.28**	.21	.31**	-						
Membership of active group T1	.33	.47	-.40***	.51***	.00	.06	.06	.06	.19	-.10	.52***	.60***	.21*	.21*	-					
Membership of active group T2	.35	.48	-.27**	.55***	-.01	-.04	.11	.18	.18	-.11	.44***	.52***	.23*	.28**	.62***	-				
Job enlargement T1	3.68	.90	-.15	.27**	.09	-.08	.01	-.07	.13	.19	.38***	.20	.20*	.12	.41***	.32**	-			
Job enlargement T2	3.71	.79	-.17	.19	-.02	.02	-.15	-.14	.14	.01	.15	.21	.10	.15	.34***	.24*	.38***	-		
Task control T1	3.32	1.04	-.44***	.45***	.01	.24*	-.05	-.06	.08	.20*	.52***	.47***	.20*	.31**	.45***	.43**	.54***	.33**	-	
Task control T2	3.49	.99	-.33***	.34***	-.09	.25*	-.12	.06	.05	.23*	.40***	.48***	.15	.14	.45***	.32**	.33**	.48***	.63***	-
Breadth of training T2	.92	1.34	-.37***	.60***	.01	-.05	.01	.24*	-.01	.10	.46***	.57***	.22*	.31**	.45***	.48***	.15	.27**	.34***	.28**

RBSE = Role breadth self-efficacy, S-floor = Shopfloor, Mgr/sup = Manager/supervisor, Prof = Professional staff, Admin = Clerical/administration, Communication = Communication briefs, Group = Membership of group, Emp-stat = Employment status, T1 = Time 1, T2 = Time 2. Stability coefficients are in bold. *p < .05; **p < .01; ***p < .001

Table 2 Summary of hierarchical regression analysis ($N = 94$)

<i>Step and predictor</i>	1	2	3	4
1. Time 1 RBSE	.80***	.67***	.66***	.64***
2. Background variables				
Shopfloor		-.19*	-.15*	-.18**
Managers/supervisors		.03	-.02	-.13
Clerical/administration		.02	.01	.03
Gender		.15*	.13*	.08
Employment status		.03	.05	.02
3. Time 1 organizational variables				
Communication briefs			-.03	-.04
Membership of active group			.28***	.16*
Job enlargement			-.16*	-.14*
Task control			-.03	-.13
4. Time 2 organizational variables				
Communication briefs				-.05
Membership of active group				.13*
Job enlargement				.00
Task control				.19**
Breadth of training				.16*
R^2		.70	.76	.81
Adjusted R^2	.64	.68	.73	.77
ΔR^2	.64	.06**	.06**	.05**

The displayed coefficients are standardized beta weights at each step. RBSE = Role breadth self-efficacy. * $p < .05$; ** $p < .01$; *** $p < .001$ (one-tailed tests are used on the third and fourth steps)

for this group or a smaller positive change. This may be due to the fact that although there was an increase in active improvement group membership for shopfloor employees (from 17% to 24.5%), and 32 percent had received at least one form of training, this is still a minority of such employees. Moreover, as we point out in the discussion, the potential for increasing employees' job control might be more restricted in the shopfloor group.

In addition to the regression analysis described earlier, we conducted separate hierarchical regressions for each predictor (in each case controlling for T1 RBSE and background variables). The purpose of these supplementary analyses was to investigate whether there were causal effects that were masked or attenuated by the existence of overlapping variance among predictors (Meyer & Allen, 1988). The pattern of results was the same as that in Table 2. The only exception was that, without controlling for other

organizational variables, T2 job enlargement had a significant positive association with T2 RBSE ($\beta = .24, p < .01$) and there was no negative lagged effect of job enlargement at T1. Further analysis revealed that, after controlling for either task control or active group membership, the positive association between T2 job enlargement and Time 2 RBSE was removed. Furthermore, the negative lagged effect from T1 job enlargement became evident after controlling for active group membership. Thus the effects of job enlargement on RBSE are only negative if the shared variance with active improvement group membership is partialled out. Essentially, this suggests that expanding the breadth of tasks employees carry out, without simultaneously increasing decision-making influence and involvement (such as is possible in improvement groups), is unlikely to enhance RBSE and, indeed, could decrease it.

In relation to breadth of training, a question that arises is whether any particular type of training is more strongly associated with changes in RBSE. A further regression entering the individual training courses as a block, without other organizational variables, showed that three types of training had significant beta weights, namely: technical/maintenance ($\beta = .15, p < .05$), health & safety ($\beta = .19, p < .05$) and team-building ($\beta = .17, p < .05$). This is not to say that the other types of training were unimportant (the types of training were moderately intercorrelated with each other); rather that these types of training were particularly important.

In sum, supporting hypothesis 1, the results show that being a member of an active improvement group had a positive long-term effect on RBSE as well as a contemporaneous effect. In support of hypothesis 2, breadth of training had a significant positive impact on change in RBSE. Increased task control was also associated with enhanced RBSE, supporting hypothesis 3. Job enlargement had either no effect or a negative long-term effect, after removing the impact of employee involvement and decision-making influence. Communication briefs, as predicted, had no impact on RBSE.

Discussion

This longitudinal study supports the idea that employees' RBSE can be enhanced via organizational intervention. This is an important finding because it suggests that managers can take actions to enhance employees' level of self-efficacy and thereby develop their potential, and ultimately enhance their proactivity. Three key points are highlighted. First, the lagged effect of involvement in active improvement groups at T1 on subsequent RBSE 18 months later shows good evidence of a causal association between

active participation in improvement activities and RBSE. There is also an impact of joining an improvement group as evidenced by the fact that T2 group membership predicts T2 RBSE. Importantly, the finding that membership of an active improvement group has a long-term positive effect on RBSE is consistent with the idea that improvement initiatives might be suitable springboards towards more substantive job redesign (Cordery, 1996). One plausible explanation for the value of improvement group activities is that, through the use of problem-solving tools, such activities provide a highly structured way of facilitating participation and hence of developing initial mastery that can then be applied in more self-directed ways when work is redesigned.

A second key addition to the study of RBSE concerns the important role of training. Parker (1998) previously found that training was not an important determinant of RBSE, but the current study suggests this was probably due to the use of an overly restricted measure. Using a measure that incorporated a broad range of training, we found it had a significant impact on increased RBSE. Further analysis suggests that, in particular, training involving interpersonal skills (such as team-building) or proactive technical mastery (such as preventative maintenance and health & safety, which both require employees to have the competence to anticipate and take action before problems arise within the workplace) is another vehicle for enhancing employees' RBSE. The implication from these results is that, if organizations want to enhance employees' confidence to carry out a range of interpersonal and proactive tasks, they must equip them with the appropriate range of skills.

Third, the current study replicates the finding that increased task control is associated with increased role breadth self-efficacy, although the time period over which it exerts its effects is unknown. No lagged effect of initial task control on RBSE was found, suggesting that the 18-month period examined is either too long or too short. The finding for task control supports the idea that job control, or increasing employees' decision-making, provides a rich source of relevant mastery experiences. This might enhance the feelings of personal control that are so important in the development of self-efficacy (Bandura, 1986; Bandura & Wood, 1989). The importance of control is highlighted by the key finding that, when included with the other organizational predictors, job enlargement has a negative lagged effect on RBSE. This suggests that simply expanding the breadth of tasks without increasing job autonomy or involvement in improvement activities might actually reduce employees' RBSE, perhaps because it represents a form of work intensification rather than a means of enhancing feelings of personal control. This finding is important because organizations often believe they are 'empowering' the workforce when in fact all they are doing is enlarging their tasks. It

highlights the importance of actually changing the distribution of control and power; which is one of the most challenging work redesigns to achieve (Parker & Wall, 1998). This may be a particular problem for shopfloor employees where there can be technological restrictions on autonomy, as well as supervisors being unwilling to give up their authority. This may help to explain the lower increases in RBSE for this group in the organization, as well as the fact that only a minority of them had the opportunity to be involved in a range of training and active improvement groups.

In sum, this article points to the importance of various organizational initiatives for developing RBSE. Work design that involves decision-making influence and control (rather than simply increasing the number of tasks); interpersonal and proactive technical training; and the introduction of active improvement groups are all ways of enhancing an individual's self-efficacy for carrying out the more proactive, integrative and interpersonal tasks that are increasingly required in modern, flexible organizations.

One of the strengths of this study is that it is based on longitudinal data that allow change over time to be investigated. Nevertheless, the study's findings need to be interpreted in light of its limitations. The relatively small sample size ($N = 94$) reduces the power of the analysis. The likelihood of finding no difference (Type II errors) is increased when the sample size is low. This means that we might have underestimated the strength of some effects, or neglected to detect relatively weak effects. Importantly, however, the low sample size does not threaten the validity of the effects that were shown to be significant. It is also possible that the relationships found were due to common method variance or other biases, as we rely exclusively on self-report data. However, using longitudinal data helps to counteract such biases because it means that stable personality factors (e.g. negative affectivity) that might have inflated relationships between variables were ruled out. Moreover, such a bias is not consistent with the absence of non-hypothesized effects for other variables. For example, a tendency to respond positively or negatively would result in correlations among all the variables, rather than the differential effects found. The measures used in the present study were also part of a larger questionnaire, which reduces the likelihood that any demand characteristics were evident to respondents.

Another strength of the study is that it is field-based, which provides greater external validity than the many laboratory-based studies of self-efficacy development. Nevertheless, as with many field studies, higher external validity comes at the cost of some potential threats to internal validity (Cook et al., 1990). For instance, in terms of selection \times treatment effects, because employees self-selected into improvement groups, the findings might not apply to employees who do not volunteer for these activities. This is perhaps not

such a great issue given that most improvement group activities operate on a voluntary basis. More generally, it could be that only those employees who were most likely to improve their self-efficacy were given jobs with greater control or were admitted to improvement groups. However, the likelihood of managers correctly spotting this potential without some form of assessment is small. Another potential threat relates to history, or that other co-occurring changes might have caused the results. Two explanations work against this interpretation. First, the statistical analyses link changes in specific variables with change in RBSE, which is a level of precision that is not afforded by many quasi-experimental designs. Second, our extensive contact with the organization during the study period means we are confident that there were no other major initiatives in the organization that were likely to have co-varied with the predictor variables. Testing effects are also unlikely to be a real threat in the present study, given the long period between each questionnaire administration (18 months). Mortality effects, however, might apply in the current study. We cannot be sure that those employees who did not respond at Time 2 (e.g. because they left the organization) would have responded in the same way. Thus, even though the research design was a longitudinal one, and one that statistically linked variations in work characteristics to outcomes, there are some potential rival explanations to the findings that cannot be ruled out. The present findings cannot therefore be considered definitive. One suggestion for future research is a dual strategy of additional field studies to replicate these findings in other settings, complemented by laboratory studies where it is more feasible to control threats to internal validity.

A further issue is that the training aspect of this study used a retrospective measure of the degree of training received. Nevertheless, the 'with hindsight' biases that can limit retrospective measures are less likely to apply to the current assessment of training, which was relatively objective (i.e. answering whether attended or not), than other variables. One issue in the current study is that we did not distinguish between volitional training and compulsory training. This was because employees met with their supervisors to discuss what training was required or wanted during appraisals and, as such, it was not possible to ascertain the degree to which attendance at training was employee-initiated or supervisor-directed. Yet self-initiated training could enhance RBSE more than compulsory training because the employee may be more motivated in the former case. On the other hand, it might be that the more important aspect for raising self-efficacy is the content and method of training. Chou (2001), for example, found that training involving behavioural modelling resulted in consistently higher self-efficacy for a computer task than an instruction-based training method. Future research could investigate these possibilities for raising RBSE.

Another area for future research is to look in more detail at how task control, training or involvement in improvement groups assists the development of RBSE. To date, we have assumed that the effect occurs primarily via a mechanism of enactive mastery, but this has not been tested and so other mechanisms (such as persuasion) may be having an impact. Different types of improvement activity could also be examined, as some may offer greater opportunity for enactive mastery (or enhancing other mechanisms) than others. Other possible organizational antecedents could also be examined – such as different forms of communication, role clarity, feedback and reward – which may have an impact on the persuasion or mastery routes to self-efficacy. Future work is also required to examine the relationship between RBSE and actual behaviours (such as OCB). Finally, RBSE and its antecedents should be examined in other settings (e.g. those involved in more cognitive tasks as opposed to manual work) in order to establish the generalizability of the findings.

Note

- 1 One would expect the beta of task control at Time 1 to be negative when Time 2 task control is entered if a change in task control is associated with change in RBSE. As an illustration, a person scoring 1 at Time 1 and 4 at Time 2 will have increased their task control a lot, whereas someone who scored 3 at Time 1 and 4 at Time 2 has not changed much at all. Low scores on task control at Time 1, once task control at Time 2 is in the equation, are therefore indicative of greater change in task control. A negative value is therefore expected at this stage in the regression equation.

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