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A Longitudinal Study of Employee Adaptation to Organizational Change: The Role of Change-Related Information and Change-Related Self-Efficacy

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Abstract

This study examined the role of information, efficacy, and 3 stressors in predicting adjustment to organizational change. Participants were 589 government employees undergoing an 18-month process of regionalization. To examine if the predictor variables had long-term effects on adjustment, the authors assessed psychological well-being, client engagement, and job satisfaction again at a 2-year follow-up. At Time 1, there was evidence to suggest that information was indirectly related to psychological well-being, client engagement, and job satisfaction, via its positive relationship to efficacy. There also was evidence to suggest that efficacy was related to reduced stress appraisals, thereby heightening client engagement. Last, there was consistent support for the stress-buffering role of Time 1 self-efficacy in the prediction of Time 2 job satisfaction.

Organizational change is typically activated by a relevant environmental shift that, once recognized by the organization, leads to an intentionally generated response (Porras & Silvers, 1991). In this respect, organizational change is intended to alter key organizational variables that then affect the members of the organization and their work-related behaviors, resulting in changes in a variety of organizational outcomes. Thus, organizational change can be viewed as a critical life event, which has the potential to evoke stress reactions and other negative consequences in employees. In this respect, employees are confronted with a unique set of workplace stressors resulting from a changing work environment. Because organizational change by its very nature is not linear, the most frequent psychological state resulting from organizational change is uncertainty (see Ashford, 1988; Begley, 1998; Callan, 1993; Carnall, 1986; Gemmil & Smith, 1985; Jick, 1985; Nelson, Cooper, & Jackson, 1995; Olsen & Tetrick, 1988; Sagie & Koslowsky, 1994; Schweiger & Ivancevich, 1985; Sverke, Hellgren, & Öhrming, 1997).

Indeed, employees are likely to experience uncertainty over many different facets of a changing work environment. For instance, Shaw, Fields, Thacker, and Fisher (1993) argued that role stress is likely to result from uncertainty associated with organizational change. Role conflict may be particularly prevalent during organizational change, given that the expectations of the new organization may be in direct contrast to the expectations of the old organization. Similarly, role ambiguity may occur when the expectations applicable to the old organization have not been replaced with clear expectations set by the new organization. Employees also may experience role overload when too many tasks are assigned in a given time period or when new job duties go beyond employees' current knowledge, skills, and abilities. In addition to experiencing uncertainty over the nature of present and future job responsibilities, employees may perceive organizational change as a major source of threat to their personal career paths and financial well-being (Callan, 1993). Employees also may experience the loss of many intangible features associated with their work environment, such as power and prestige, and a sense of community at work (Greenhalgh & Rosenblatt, 1984).

Role of Information During Organizational Change

One of the managerial challenges facing organizations is the effective implementation of organizational change programs that minimize feelings of uncertainty and associated threat. As discussed by Milliken (1987), uncertainty in the work context points to the crucial need for the provision of information during periods of organizational change. Indeed, Sutton and Kahn (1986) argued that when profound organizational change is imminent, employees go through a process of sense-making in which they need information to help them establish a sense of prediction (e.g., the time frame for organizational change) and understanding (e.g., the need for organizational change) of the situation. Thus, feelings of workplace uncertainty can be reduced by providing employees with timely and accurate information concerning the organizational changes, either through formal or informal communication channels (see also Ashford, 1988). It is important to note, however, that providing detailed information about the change event may be difficult or simply not possible, especially during the early phases of the implementation process. As noted by DiFonzo, Bordia, and Rosnow (1994), if a particular issue cannot be addressed, then it is best to explain why it cannot be answered. In a case study analysis of a manufacturing firm that had developed an effective change communication strategy, DiFonzo and Bordia (1998) found that letting employees know when the provision of information was incomplete and providing them with a timeline for when information would become available helped to minimize the emergence of damaging rumors, as well as reducing anxiety associated with uncertainty. However, as noted by Sutton and Kahn (1986), it is still preferable for those responsible for the implementation process to keep such periods of uncertainty to a minimum.

According to Sutton and Kahn (1986), prediction and understanding are likely to have a direct relationship with employee adjustment to organizational change, as well as acting as potential buffers in the stress-strain relationship. In this respect, prediction and understanding may reduce the negative effects of change-related stressors on employee adjustment. Indeed, the notions of prediction and understanding have received research attention as potential buffers of the negative effects of work stress on employee adjustment. In this respect, there is some evidence in the broader occupational stress literature indicating that the negative effects of role stress on employee adjustment are most apparent for individuals with low levels of prediction and understanding concerning the work environment (e.g., Jimmieson & Terry, 1993; Tetrick & LaRocco, 1987). In the context of organizational change, there is a growing body of research examining the main, and to a lesser extent, the moderating effects of a variety of different information-related constructs on employee adjustment. Several of these studies are reviewed below.

For example, Miller and Monge (1985) found that the provision of information was associated with lower levels of anxiety for 146 employees about to relocate to a new building that would have significant implications for their work practices. Brockner, DeWitt, Grover, and Reed (1990) found that better reactions to job redundancies were observed when information about why resources were allocated in particular ways was provided to employees. Schweiger and DeNisi (1991) also found that providing employees with a series of realistic communications (via telephone hotlines, weekly meetings, and fortnightly newsletters) about an impending merger reduced the dysfunctional outcomes associated with the organizational change program. Shaw et al. (1993) found that open communications with others was correlated with job satisfaction for 110 employees about to experience the divestiture of AT & T into a series of independent companies. In addition, the positive influence of open communications with others (assessed again at a 1-year follow-up) was predictive of employees' attitudes toward the divestiture, job satisfaction, and organizational commitment. In this follow-up phase of the research, there also was evidence to suggest that a composite social support measure (of which open communications with others was one) buffered the negative effects of role stress on organizational commitment.

Role of Self-Efficacy During Organizational Change

In light of theoretical and empirical support for the role of information in determining adjustment for employees undergoing specific organizational change events, an important avenue for future research is to examine the cognitive mechanisms through which change-related information is related to employee adjustment. In the present research, the extent to which the provision of change-related information engenders a sense of change-related self-

efficacy for employees experiencing organizational change is explored. A key element in Bandura's (1977) theory of social learning, self-efficacy refers to an individual's belief in his or her capability to execute a course of action needed to meet the demands of a situation. Bandura noted that self-efficacy should not be conceptualized and measured in terms of generalized feelings of mastery but rather in reference to handling a specific situation or performing a specific behavior. Thus, in the context of organizational change, change-related self-efficacy can be defined as an employee's perceived ability to function well on the job, despite the demands of a changing work environment (see Ashford, 1988; Wanberg & Banas, 2000). Employees who doubt their ability to respond to the demands of a specific organizational change event are likely to focus attention on their feelings of incompetence, which will be accompanied by feelings of psychological distress, and a failure to deal with the situation (Bandura, 1977). In contrast, employees who have high levels of change-related efficacy are unlikely to be distressed by feelings of inadequacy and, for this reason, are expected to persist in their efforts to manage the organizational change process.

Bandura (1977) identified several sources of information that may engender perceptions of self-efficacy. These include internal cues drawn from an individual's own state of physiological arousal, verbal persuasion aimed at convincing an individual of his or her capability of performing a task, vicarious experience by way of behavior modeling, and enactive mastery through repeated performance accomplishments. Although Bell and Staw (1989) argued that opportunities for more direct forms of employee involvement, such as participation in work-related decisions, are likely to be stronger determinants of self-efficacy expectations, they suggested that self-efficacy expectations also are likely to mediate the effects of information on employee adjustment. Some initial evidence in support of this proposition comes from research conducted in an experimental setting. For instance, Pond and Hay (1989) found that self-efficacy expectations increased for university students who received information designed to familiarize them with the type of job performed by customs inspectors prior to processing the paperwork for 16 import shipments. Earley (1986) speculated that the influence of his strategic information manipulation on goal acceptance and subsequent task performance for employees working in two tire manufacturing companies would be through an enhancement of employees' self-efficacy expectations. However, research of this nature has not been extended to applied settings undergoing specific organizational change initiatives. Thus, the present study was designed to examine the extent to which employees who feel they have received change-related information also believe they have the ability to meet the situational demands of organizational change (i.e., change-related self-efficacy).

Cognitive-Phenomenological Model of Stress and Coping

The cognitive-phenomenological model of stress and coping provides an appropriate theoretical framework for this research (Lazarus, 1990; Lazarus & Folkman; 1984). This model proposes that an understanding of how individuals adjust to stressful life events requires a consideration of the dual role of event characteristics and coping resources in shaping one's appraisal of the situation. Terry and Callan (2000) used this approach to develop a model of employee adjustment to organizational change. They proposed that the way in which organizational change is implemented represents the characteristics of the event that are likely to have a strong impact on subsequent stress and coping processes for employees. Key event characteristics include the effectiveness of the leadership provided, the extent to which the implementation process is consultative, and how much information is communicated to employees. Coping resources are relatively stable characteristics of employees' dispositions and refer to what is available to them when they develop their coping responses. As noted by Terry and Callan, negative affectivity is considered to be the key personality characteristic that needs to be considered in studies of employee stress and strain. For example, Parkes (1990) found that employees high in negative affectivity showed more reactivity to work stressors (in the prediction of affective symptoms). In addition to its substantive effects in the stress and coping process, Terry and Callan argued that negative affectivity is an important control variable because of its demonstrated ability to spuriously inflate correlations between stress and strain (see Parkes, 1990).

Next, to understand how employees adjust to organizational change, Terry and Callan (2000) noted that it is necessary to consider not only event characteristics and coping resources but also how employees cognitively construe the situation. This is referred to as situational appraisal and consists of both primary appraisal and secondary appraisal processes. Primary appraisal reflects the individual's subjective judgment of the relevance of the situation to his or her level of well-being, whereas secondary appraisal reflects the individual's assessment of what can be done to manage the situation. Terry and Callan reviewed evidence to suggest that secondary appraisal

comprises two separate judgments: the employee's perceived controllability of the situation and the employee's efficacy expectancies. Employees who appraise the impending organizational change as being amenable to personal control and believe that they have the ability to cope with the demands of the situation are more likely to experience better adjustment. A number of interrelationships among event characteristics, coping resources, and situational appraisals can be derived from this model to predict employee adjustment to change. In particular, event characteristics and coping resources are hypothesized to be directly related to situational appraisals of control and efficacy. In addition, situational appraisals are expected to facilitate the use of more effective coping strategies and higher levels of employee adjustment.

Very few studies have tested the extent to which event characteristics are directly related to situational appraisals of control and efficacy in the context of organizational change. An exception was a study conducted by Shaw et al. (1993), who examined the extent to which certain characteristics of the change event (i.e., social support in the form of supervisor support and open communication with others) were positively related to control appraisals (operationalized as job-related autonomy) in their sample of AT & T employees before (Phase 1) and after (Phase 2) divestiture of the company. As expected, perceived social support from supervisors was related to employees' beliefs about job-related autonomy at Phase 1. At Phase 2, both types of social support were positively related to job-related autonomy. The cross-lagged analyses also revealed that the Phase 1 social support measures were predictive of Phase 2 job-related autonomy. Although the relationship between change-related information and change-related self-efficacy was not examined in the study conducted by Shaw et al., it does suggest that event characteristics have the potential to influence employees' appraisal of the change event which, in turn, should lead to better employee adjustment outcomes. Thus, a key aim of the present study was to test the mediating role of change-related self-efficacy in the relationship between change-related information and employee adjustment to organizational change.

Other Effects of Change-Related Self-Efficacy

In addition to the proposed mediating role of change-related self-efficacy in the relationship between information provision and employee adjustment, it is anticipated that change-related self-efficacy may have other effects in the stress-strain relationship. First, employees high in change-related self-efficacy may, in fact, appraise the changing work environment as less stressful, thereby experiencing less strain, than employees who possess low levels of change-related self-efficacy. Such a proposal is consistent with Bandura's (1986, 1988) suggestion that self-doubts produce substantial increases in perceived threat when appraising environmental demands. Second, the extent to which change-related self-efficacy buffers the negative effects of change-related stress on employee adjustment has been investigated (see Ashford, 1988). Although earlier studies found limited support for the moderating role of job-related self-efficacy in the stress-strain relationship (e.g., Jex & Gudanowski, 1992), Jex and Bliese (1999) found that job-related self-efficacy moderated the relationship between objective workload (i.e., working hours) and psychological strain, as well as the relationship among subjective workload on physical strain, psychological strain, and organizational commitment in a sample of U.S. Army soldiers. In all instances, the negative effects of these workload variables on the outcome variables were more marked for employees who reported low levels of job-related self-efficacy than for those who perceived high levels of job-related self-efficacy. As noted by Baron and Kenny (1986), testing for mediation and moderation effects in a single study can serve to clarify the nature of the relationships among the variables of interest (see also James & Brett, 1984).

Working Hypotheses

In summary, a number of propositions were examined in the present research. First, we hypothesized that high levels of change-related information would be positively related to levels of employee adjustment (Hypothesis 1). Second, we anticipated that high levels of change-related self-efficacy would be positively related to levels of employee adjustment (Hypothesis 2). Third, consistent with the occupational stress literature, we predicted that each of the work stress variables would be negatively related to levels of employee adjustment (Hypothesis 3). In addition to the direct effects just outlined, we anticipated that high levels of change-related information would be indirectly related to employee adjustment, via its positive relationship with change-related self-efficacy (Hypothesis 4). We further hypothesized that high levels of change-related self-efficacy would be associated with reduced perceptions of work stress, thereby heightening levels of employee adjustment (Hypothesis 5). Consistent with Sutton and Kahn's (1986) suggestion that the provision of information during times of organizational change may act as a buffer in the stress-strain relationship, the possibility that high levels of change-related information would reduce the strength of the

negative relationship between work stress and employee adjustment was examined (Hypothesis 6). Given that Jex and Bliese (1999) recently found some evidence in support of the moderating role of job-related self-efficacy in the relationship between work stress and employee adjustment, we anticipated that high levels of change-related self-efficacy also would buffer the negative effects of work stress on levels of employee adjustment (Hypothesis 7).

Method

Organizational Background

The context for this research was a state government department in the Queensland Public Service (QPS) undergoing a significant change in its strategic direction. The changes were brought about by a change in government and the recommendations of an independent review body rather than any identified lack of performance by the organization. Implemented by a committee internal to the organization, the changes were presented as a means to increase program efficiency while maintaining quality service for its external clients. Of particular significance was an 18-month process of partial regionalization in which divisional responsibilities were devolved to industry-based subprograms, overlaid by its corresponding regional center (representing five geographical regions). This resulted in substantial changes to reporting structures, the abolition of many middle management positions, the relocation of divisional personnel to subprogram structures, the reorganization of staff into new work units, and modifications to established methods of operating, all of which substantially affected the immediate job responsibilities of employees. Formally implemented changes that are strategic in content and result in a period of fundamental change in the activity patterns of an organization have been described by Weick and Quinn (1999) as episodic change. As pointed out by Callan (1993), such large-scale changes are likely to be particularly stressful for employees.

Design

A longitudinal research design was used in which the predictor variables (including negative affectivity) and the indicators of employee adjustment were measured at Time 1 (T1), approximately 3 months into the implementation phase of the organizational changes described earlier. To examine the extent to which the predictor variables had any long-term effects on employee adjustment, we assessed the outcome measures again at Time 2 (T2), 2 years after the collection of the T1 data. At this point in time, the regionalization process was complete and the new organizational structure had been in place for a period of 6 months.

Sample

Questionnaires were sent to 1,222 employees statewide. Five hundred and eighty-nine employees provided data at T1, providing a response rate of 48%. Employees who completed the T2 questionnaire amounted to 36% of the T1 sample (N = 213). Table 1 provides an overview of the demographic characteristics for the T1 and T2 samples (i.e., gender, age, job classification, and length of service in the QPS). It is important to note that a series of t tests established that employees who did not respond to the second questionnaire did not differ significantly from those employees who provided data at both points in time on any of the predictor variables, negative affectivity, or the T1 outcome measures.

Table 1
Demographic Characteristics (in Percentages) for the T1 (N = 589) and T2 (N = 213) Samples

Demographics	T1	T2
Gender		
Male	83	87
Female	15	11
Age		
< 30 years	14	7
30–40 years	35	36
41–50 years	34	38
> 50 years	15	16
Job classification		
Professional officers	49	56
Technical officers	37	36
Other QPS employees	10	6
Length of service in the QPS		
1–5 years	22	15
6–10 years	14	15
11–20 years	31	31
21 years or more	29	35

Note. T1 = Time 1; T2 = Time 2; QPS = Queensland Public Service. Percentages do not always total 100% because of missing data.

Chi-square analyses comparing the 376 individuals who failed to complete the second questionnaire with the 213 individuals who provided panel data revealed a proportional difference on age, $\chi^2(3, N = 578) = 11.64, p < .01$; job classification, $\chi^2(2, N = 564) = 9.63, p < .01$; and length of service in the QPS, $\chi^2(3, N = 567) = 9.95, p < .01$. In this respect, there was a greater proportion of employees from the youngest age category (i.e., less than 30 years) in the sample of employees who provided data at T1 only (18%) compared with those who completed both questionnaires (8%). There was a smaller proportion of professional staff in the sample of employees who provided data at T1 only (47%) than in the T2 sample (57%). Employees allocated to the “other” category for job classifications had greater representation among the 376 individuals who failed to complete the T2 survey (14%) in comparison with the T2 sample (6%). A greater proportion of employees with the shortest length of service in the QPS (i.e., 1 to 5 years) provided data at T1 only (26%) compared with those who provided data at both T1 and T2 (16%). Employees with the longest length of service in the QPS (i.e., 21 years or more) had smaller representation among employees who participated at T1 only (27%) compared with those who participated at both times (36%). Overall, this pattern of results is likely to be a reflection of the changing nature of the work environment, as well as the relatively long period of time between the collection of the T1 and T2 data.

Measures

Multi-item scales were used to ensure adequate measurement of each variable. For the same reason, previously established scales were used where suitable. Reliability of the measures was assessed using Cronbach's (1951) alpha coefficient, and these are presented in Tables 2 and 3. As can be seen from these tables, all measures used in the present research were considered to have adequate internal consistency at both T1 and T2.

Quantitative workload

Perceptions of task-related stress were measured at T1 with four items from the Quantitative Workload Scale developed by Caplan, Cobb, French, Harrison, and Pinneau (1980). Items assessed the extent to which employees experience time demands in their job. Response choices ranged from 1 (rarely) to 5 (very often).

Role ambiguity

Levels of role-related stress were measured at T1 with four items taken from Caplan et al.'s (1980) Role Ambiguity Scale. Items assessed the extent to which employees were unclear about their job responsibilities. Response choices ranged from 1 (rarely) to 5 (very often). All items were reverse-scored because of positively worded questions.

Change-related difficulties

An eight-item measure of work stress specific to the organizational changes described earlier was developed for use in the present study (measured at T1). Items reflected the extent to which employees had experienced difficulties (during the last 3 months) associated with the planned structural changes, such as disruptions related to the loss of personnel, alterations to methods of working, changes to personal workloads, and concern about long-term career prospects (see also Ashford, 1988, for a similar measure of change-related disruption). Responses were made on a 4-point scale, ranging from 1 (have not experienced) to 4 (experienced and very difficult).

Change-related information

Perceptions of change-related information were measured at T1 with six items designed to assess the extent to which employees felt they had been provided with sufficient information about the organizational changes taking place (e.g., "Information about the changes has been directly communicated to me"). Response choices ranged from 1 (not at all) to 5 (very much).

Change-related self-efficacy

According to Maurer and Pierce (1998), Likert-type measures of self-efficacy have similar psychometric properties and predictive utility to traditional self-efficacy assessments that combine measures of magnitude, strength, and generality (see Bandura, 1986). Moreover, the use of Likert-type scales is an approach that is consistent with other research examining self-efficacy in the organizational context (e.g., Jex & Bliese, 1999; Jex & Gudanowski, 1992; Schaubroeck & Merritt, 1997). Levels of change-related self-efficacy were measured at T1 with five items asking employees to make generalized judgments of self-mastery about the organizational changes (see Ashford, 1988; Wanberg & Banas, 2000). An example item is: "I am confident in my ability to deal with the planned structural changes." Participants responded on a 5-point scale, ranging from 1 (not at all) to 5 (very much). Three of the items were reverse-scored because they were negatively worded.

Negative affectivity

Negative affectivity was measured at T1 using Braithwaite's (1987) scale of emotional arousability. Consisting of 15 items, this scale measures a person's vulnerability to neurosis, including a low tolerance for physical or psychological stress. The response scale consists of 5 points, ranging from 1 (no, this is very unlike me) to 5 (yes, this is very much like me). Seven of the items were reverse-scored because of positively worded questions.

Psychological well-being

Perceptions of psychological well-being were measured at T1 and T2 with seven items from the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981). These items assess the extent to which employees are psychologically fatigued by their work. Responses were made on a 7-point scale, ranging from 1 (never) to 7 (every day). All items were recoded so that high scores reflected high levels of psychological well-being.

Client engagement

Given that employees in this sample were involved in relatively high levels of customer contact, perceptions of client engagement were included as a measure of employee adjustment at T1 and T2. Four items, taken from the MBI, assessed the extent to which employees are emotionally attached to their customers. Responses were made on a 7-point scale, ranging from 1 (never) to 7 (every day). All items were recoded so that high scores reflected high levels of client engagement.

Job satisfaction

Job satisfaction was measured at T1 and T2 with four items (Caplan et al., 1980). Each item was designed to assess individuals' global level of satisfaction with their job. Participants responded on a 5-point scale, ranging from 1 (very dissatisfied) to 5 (very satisfied). Three of the items were recoded so that high scores reflected high levels of job satisfaction.

Results

Preliminary Data Analyses

The means, standard deviations, and intercorrelations for the T1 independent and dependent variables are displayed in Table 2, whereas Table 3 contains the descriptive information for the T1 predictors and T2 measures of employee adjustment for the group of employees that provided data at both points in time. The T1 task, role, and change-related stressors were only moderately correlated (for both the full sample and the T2 subgroup), indicating that different types of work stress were measured. In general, intercorrelations among the T1 outcome variables were low to moderate (for both samples of employees), suggesting that distinct aspects of employee adjustment were assessed. Paired sample *t* tests revealed that levels of psychological well-being remained constant over the two time periods, $t(213) = -1.37$, ns. Employees reported significantly lower levels of client engagement, $t(210) = 2.56$, $p < .01$, and job satisfaction, $t(213) = 3.31$, $p < .001$, at T2 compared with T1. The mean differences were, however, relatively small (refer to Table 3 for means and standard deviations). Indeed, the pattern of correlations suggests a general consistency across time in levels of psychological well-being ($r = .67$, $p < .01$), client engagement ($r = .64$, $p < .01$), and job satisfaction ($r = .59$, $p < .01$). Overall, multicollinearity was not considered to be a threat to the stability of the analyses reported below. In no instance did the intercorrelation between any two scales approach their mean scale reliability (Campbell & Fiske, 1959). Further preliminary analyses revealed that the control of gender, age, job classification, and length of service in the QPS (at Step 1 of the hierarchical multiple regression analyses) did not change any of the results reported below.

Table 2
Descriptive Data (Means and Standard Deviations) and Intercorrelations Among the Variables at T1 (N = 589)

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. T1 quantitative workload	3.84	0.76	(.82)								
2. T1 role ambiguity	2.31	0.86	.12**	(.83)							
3. T1 change-related difficulties	2.50	0.66	.32**	.31**	(.79)						
4. T1 change-related information	1.89	0.69	-.04	-.21**	-.23**	(.81)					
5. T1 change-related self-efficacy	3.09	0.79	-.09*	-.25**	-.42**	.57**	(.76)				
6. T1 negative affectivity	2.46	0.52	.05	.13**	.15**	-.01	-.10*				
7. T1 psychological well-being	4.22	1.46	-.48**	-.34**	-.49**	.20**	.36**				
8. T1 client engagement	5.79	1.17	-.19**	-.30**	-.31**	.11**	.20**				(.75)
9. T1 job satisfaction	3.21	0.93	-.04	-.29**	-.34**	.14**	.33**				.28**

Note. Cronbach's (1951) alpha coefficients for each of the variables are in parentheses along the main diagonal. T1 = Time 1.
*p < .05. **p < .01.

Table 3
Descriptive Data (Means and Standard Deviations) and Intercorrelations Among the Variables at T2 (N = 213)

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. T1 quantitative workload	3.84	0.69	(.75)										
2. T1 role ambiguity	2.29	0.79	-.01	(.78)									
3. T1 change-related difficulties	2.51	0.63	.37**	.26**	(.76)								
4. T1 change-related information	1.91	0.73	.08	-.21**	-.29**	(.83)							
5. T1 change-related self-efficacy	3.09	0.75	.02	-.24**	-.37**	-.41**	(.75)						
6. T1 psychological well-being	4.23	1.37	-.48**	-.28**	-.53**	.18**	.28**	(.89)					
7. T2 psychological well-being	4.33	1.33	-.34**	-.16*	-.37**	-.19**	.12	.67**					
8. T1 client engagement	5.85	1.07	-.13	-.26**	-.27**	.16*	-.14*	.49**					
9. T2 client engagement	5.67	1.20	-.10	-.26**	-.27**	.10	.04	.32**					
10. T1 job satisfaction	3.20	0.91	-.08	-.23**	-.34**	.13	.31**	.40**					
11. T2 job satisfaction	3.00	0.93	-.12	-.13	-.27**	.15*	.24**	.32**					

Note. Cronbach's (1951) alpha coefficients for each of the variables are in parentheses along the main diagonal. T1 = Time 1; T2 = Time 2.
*p < .05. **p < .01.

Data Analysis Overview

We performed four sets of hierarchical multiple regression analyses to examine the main (Hypotheses 1 to 3), mediating (Hypotheses 4 and 5), and moderating (Hypotheses 6 to 8) effects of the T1 focal variables on each of the T1 and T2 dependent variables. In the first two sets of analyses, the direct and indirect effects of T1 change-related information, T1 change-related self-efficacy, and T1 work stress were examined on T1 and T2 employee adjustment. The second two sets of analyses tested the proposed stress-buffering effects of T1 change-related information and T1 change-related self-efficacy on T1 and T2 employee adjustment.

The effects of common method variance that can emanate from the influence of response consistency effects, such as unstable occasion factors (e.g., mood states) and more enduring dispositional variables, make the results of cross-sectional studies in the area of occupational stress difficult to interpret (see Spector, 1992; Spector & Brannick, 1995; Zapf, Dormann, & Frese, 1996). In particular, Watson and Pennebaker (1989) noted that negative affectivity—a general tendency for individuals to evaluate the environment in a negative manner—is likely to act as a nuisance variable in cross-sectional research that relies on self-report measures of stress and strain from a single source (see also Bagozzi & Yi, 1990; Glick, Jenkins, & Gupta, 1986; Williams, Cote, & Buckley, 1989). This is because negative affectivity may be tapped by measures of both stress and strain, thus inflating the correlations between these variables. In the organizational context, it has been shown that statistically controlling for the effects of negative affectivity reduces the strength of the relationship between perceptions of work stress and levels of employee adjustment (e.g., Brief, Burke, George, Robinson, & Webster, 1988; Parkes, 1990). Given the cross-sectional nature of the T1 analyses, it was considered important to partial out the effects of negative affectivity at Step 1 when predicting the T1 dependent variables. For the T2 analyses, T1 scores on psychological well-being, client engagement, or job satisfaction were entered as a covariate at Step 1 when predicting the commensurate measures of employee adjustment at T2.

Direct and Indirect Effects of the T1 Variables on T1 Employee Adjustment

As shown in Table 4, entry of T1 change-related information into the second step of the hierarchical multiple regression analyses provided support for Hypothesis 1 in that employees who perceived that they had been provided with change-related information about the organizational changes reported higher T1 psychological well-being, $\beta = .20$, $p < .01$, $R^2 = .04$, $F(2, 586) = 24.46$, $p < .01$; T1 client engagement, $\beta = .10$, $p < .01$, $R^2 = .01$, $F(2, 586) = 6.89$, $p < .01$; and T1 job satisfaction, $\beta = .14$, $p < .01$, $R^2 = .02$, $F(2, 586) = 12.13$, $p < .01$. Similarly, there was support for Hypothesis 2 in that T1 change-related self-efficacy (entered at Step 3) was positively related to T1 psychological well-being, $\beta = .31$, $p < .01$, $R^2 = .08$, $F(3, 585) = 58.51$, $p < .01$; T1 client engagement, $\beta = .16$, $p < .01$, $R^2 = .02$, $F(3, 585) = 13.28$, $p < .01$; and T1 job satisfaction, $\beta = .30$, $p < .01$, $R^2 = .08$, $F(3, 585) = 51.65$, $p < .01$. Entry of the T1 work stress variables into the fourth step of the hierarchical multiple regression analyses accounted for a significant proportion of additional variance in each of the T1 dependent variables. There was support for Hypothesis 3 in that the T1 work stressors were negatively related to T1 psychological well-being, T1 client engagement, and T1 job satisfaction (refer to Table 4 for significant beta weights).

Table 4
Direct and Indirect Effects of the T1 Variables Predicting T1 Employee Adjustment (N = 589)

Predictor	T1 psychological well-being β		T1 client engagement β		T1 job satisfaction β	
Step 1						
T1 negative affectivity	-.21**	-.18**	-.16**	-.17**	-.12**	-.08*
R ²	.55*		.44**		.01**	
Step 2						
T1 change-related information	.20**	.08*	.04	.00	.14**	.03
ΔR^2	.04**				.02**	
Step 3						
T1 change-related self-efficacy	.31**	.08**	.17**	.05	.30**	.19**
ΔR^2	.08**		.02**		.08**	
Step 4						
T1 quantitative workload	-.38**		-.38**	-.12**		.07
T1 role ambiguity	-.16**		-.16**	-.21**		-.18**
T1 change-related difficulties	-.21**		-.21**	-.17**		-.22**
ΔR^2	.27**		.27**	.10**		.07**

Note. T1 = Time 1.
* $p < .05$. ** $p < .01$.

Table 5
Direct and Indirect Effects of the T1 Variables Predicting T2 Employee Adjustment (N = 213)

Predictor	T2 psychological well-being β		T2 client engagement β		T2 job satisfaction β	
Step 1						
T1 employee adjustment	.67**	.68**	.67**	.65**	.60*	.56**
R ²	.45**		.41**		.59**	.34**
Step 2						
T1 change-related information	.07	.11*	.11*	.03	-.01	.06
ΔR^2	.00		.00		.00	
Step 3						
T1 change-related self-efficacy	-.11	.01	-.11	-.07	-.12*	.04
ΔR^2	.00		.00		.00	
Step 4						
T1 quantitative workload	-.02		-.02	.04		-.08
T1 role ambiguity	.02		.02	-.10†		.03
T1 change-related difficulties	-.02		-.02	-.14*		-.02
ΔR^2	.00		.00	.03*		.01

Note. T1 employee adjustment refers to the common-sense measures of T1 psychological well-being, T1 client engagement, and T1 job satisfaction. T1 = Time 1; T2 = Time 2.
† $p < .075$. * $p < .05$. ** $p < .01$.

The analyses presented in Table 4 also permit an examination of the extent to which T1 change-related information was indirectly related to levels of T1 employee adjustment, via its effects on T1 change-related self-efficacy (Hypothesis 4). To provide evidence of full mediation, it is necessary to demonstrate that any significant relationships between T1 change-related information and employee adjustment are no longer significant when the effects of the mediating variable (i.e., T1 change-related self-efficacy) are controlled on the subsequent step (Baron & Kenny, 1986; James & Brett, 1984). If the strength of this relationship is reduced but remains statistically significant, then partial mediation is evident. Entry of T1 change-related self-efficacy into the third step of the hierarchical multiple regression analyses provided some support for this proposition. When T1 change-related self-efficacy was in the equation, the observed positive relationship between T1 change-related information and T1

psychological well-being was weaker ($\beta = .08$, $p < .05$) and no longer significant when predicting T1 client engagement ($\beta = .05$, ns) and T1 job satisfaction ($\beta = .03$, ns). This pattern of findings was further supported in follow-up analyses in which T1 change-related self-efficacy was entered into the equation prior to T1 change-related information (see Baron & Kenny, 1986). After the effects of T1 change-related self-efficacy were controlled, T1 change-related information failed to add significantly to the prediction of T1 employee adjustment.

Analyses also were conducted to test the proposal that high levels of T1 change-related self-efficacy would be negatively related to perceptions of T1 work stress, thereby heightening T1 employee adjustment (Hypothesis 5). Support for the mediating role of the T1 work stress variables in the relationship between T1 change-related self-efficacy and T1 employee adjustment was limited. In this respect, the positive relationship between T1 change-related self-efficacy and T1 psychological well-being remained significant ($\beta = .17$, $p < .01$), once the T1 work stress variables were entered into the equation at Step 4. Similarly, the positive relationship between T1 change-related self-efficacy and T1 job satisfaction remained significant ($\beta = .19$, $p < .01$). There was, however, some evidence to suggest that the T1 work stress variables fully mediated the effects of T1 change-related self-efficacy on T1 client engagement. The positive relationship between T1 change-related self-efficacy was no longer significant ($\beta = .05$, ns), once the T1 work stress variables were included at Step 3. This finding was further supported in additional analyses in which the order of entry for T1 change-related self-efficacy and the T1 work stress variables was reversed. After the effects of T1 work stress were accounted for at Step 3, T1 change-related self-efficacy did not add significantly to scores in T1 client engagement.

Direct and Indirect Effects of the T1 Variables on T2 Employee Adjustment

The hierarchical multiple regression analyses examining the direct and indirect effects of the T1 variables were repeated for the delayed measures of employee adjustment. Once the effects of T1 employee adjustment were partialled out at Step 1, there was no evidence for the main effect relationships of T1 change-related information (entered at Step 2) and T1 change-related self-efficacy (entered at Step 3) on T2 employee adjustment. It should be noted, however, that entry of the T1 work stress variables into the fourth step of the hierarchical multiple regression analyses did account for a significant proportion of additional variance in the T2 client engagement scores, $R^2 = .03$, $F(6, 206) = 3.24$, $p < .05$. Role ambiguity, measured at T1, was negatively related to this T2 outcome measure, albeit weakly ($\beta = -.10$, $p < .075$). Similarly, there was evidence to suggest that employees who reported that they were experiencing difficulties associated with the planned structural changes at T1 were more likely to report decreased client engagement at T2 ($\beta = -.14$, $p < .05$; see Table 5).

Moderating Effects of the T1 Variables on T1 and T2 Employee Adjustment

Hypotheses 6 and 7 were tested in an additional set of hierarchical multiple regression analyses performed on each of the T1 and T2 dependent variables. To limit the number of variables and interaction terms included in any one analysis, we considered the effects of the three T1 work stress variables in separate hierarchical multiple regression analyses. To test the stress-buffering effects of T1 change-related information (Hypothesis 6) and T1 change-related self-efficacy (Hypothesis 7), we computed a multiplicative two-way interaction term between these variables and each of the T1 work stress variables. To avoid multicollinearity between the main effects and the interaction terms, we centered each of the T1 predictor variables (i.e., scores taken away from the scale mean; see Aiken & West, 1991; Cronbach, 1987; Jaccard, Wan, & Turrisi, 1990). Entry of the two-way interaction terms at Step 3 failed to provide support for the stress-buffering role of T1 change-related information (Hypothesis 6) and T1 change-related self-efficacy (Hypothesis 7) in the prediction of T1 employee adjustment. The analyses examining the interactive effects of the T1 variables were repeated for T2 employee adjustment. Again, entry of the two-way interaction terms at Step 3 failed to provide support for the stress-buffering role of T1 change-related information in the prediction of T2 employee adjustment (Hypothesis 6).

However, inclusion of the two-way interaction terms revealed that T1 change-related self-efficacy interacted with each of the T1 work stress variables (Hypothesis 7) in the prediction of T2 job satisfaction. In this respect, there was a significant T1 Role Ambiguity \times T1 Change-Related Self-Efficacy interaction ($\beta = .14$, $p < .05$) on T2 job satisfaction. This step accounted for a significant increment of additional variance, $\Delta R^2 = .03$, $F(7, 205) = 2.85$, $p < .05$. Graphical representation of the significant two-way interaction was derived using the unstandardized

regression coefficients (B values) of the regression line for employees high (1 SD above the mean) and low (1 SD below the mean) on the moderator variable (see Aiken & West, 1991). Inspection of Figure 1 reveals that high levels of role ambiguity at T1 was actually related to T2 job satisfaction in a positive direction for employees who perceived high change-related self-efficacy at T1. There was no relationship between T1 role ambiguity and this outcome variable at low levels of T1 change-related self-efficacy.

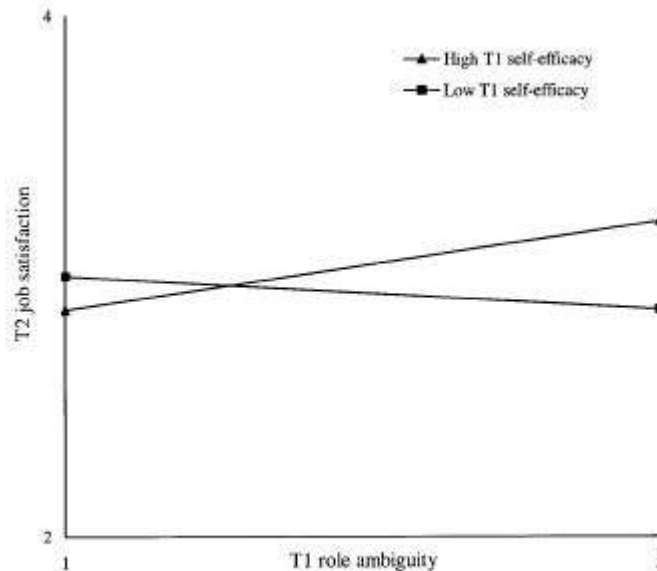


Figure 1. Interaction of Time 1 (T1) role ambiguity and T1 change-related self-efficacy on Time 2 (T2) job satisfaction.

As noted, there also was a T1 Quantitative Workload \times T1 Change-Related Self-Efficacy interaction ($\beta = .16$, $p < .01$) on the delayed measure of job satisfaction. The inclusion of the two-way interaction terms accounted for a significant proportion of additional variance in this outcome variable, $\Delta R^2 = .03$, $F(7, 205) = 3.06$, $p < .05$. As shown in Figure 2, the negative effects of T1 quantitative workload on this outcome variable were more marked for employees with low T1 change-related self-efficacy. Consistent with the general stress-buffering hypothesis, employees with high T1 change-related self-efficacy appeared to be protected against the negative effects of T1 quantitative workload on T2 job satisfaction. Lastly, there was a T1 Change-Related Difficulties \times T1 Change-Related Self-Efficacy interaction on T2 job satisfaction that was approaching statistical significance ($\beta = .12$, $p = .089$). Although the increment of additional variance in the T2 job satisfaction scores was nonsignificant, $\Delta R^2 = .02$, $F(7, 205) = 1.82$, ns, it was interpreted because of its consistent pattern of results with the other interactions. Specifically, there was a trend to suggest that T1 change-related difficulties had a negative relationship with T2 job satisfaction when employees perceived low T1 change-related self-efficacy, whereas high T1 change-related self-efficacy buffered the negative effects of T1 change-related difficulties on T2 job satisfaction (see Figure 3).

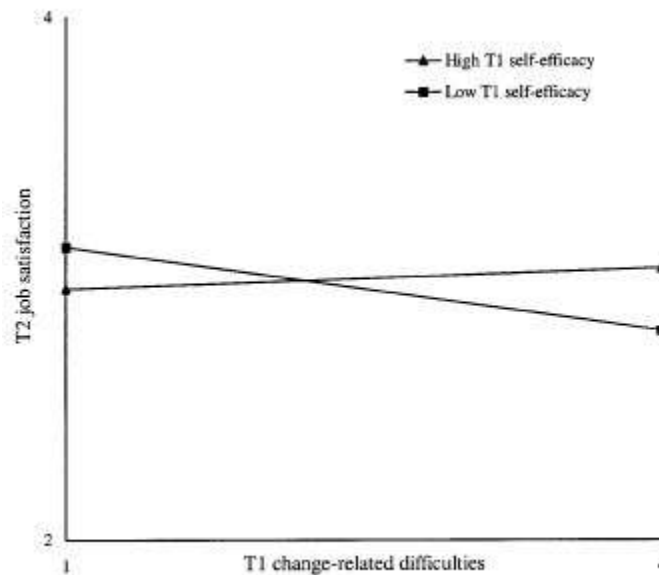


Figure 3. Interaction of Time 1 (T1) change-related difficulties and T1 change-related self-efficacy on Time 2 (T2) job satisfaction.

Discussion

In summary, the present research examined the main, mediating, and moderating effects of change-related information, change-related self-efficacy, and three change-related stressors in predicting levels of adjustment for employees undergoing a large-scale organizational change process. Consistent with Hypotheses 1 and 2, employees who perceived higher levels of change-related information and change-related self-efficacy at T1 reported higher levels of psychological well-being, client engagement, and job satisfaction in the early phases of the change process, but these results were not evident on the delayed measures of employee adjustment (2 years later). There also was some support for the proposed main effect relationships between the T1 work stressors and each of the T1 indicators of employee adjustment (Hypothesis 3). In addition, there was some evidence to suggest that role ambiguity and change-related difficulties (both measured at T1) were related to reduced feelings of client engagement at T2, 2 years after the collection of the T1 data. Overall, stronger main effect relationships were found at T1, which is not surprising, given the 2-year time period between the two waves of data collection. It also should be noted that the variables assessed at T1 were very change-specific in nature and are likely to be more immediate influencers of employee adjustment during the earlier stages of the change implementation process.

In accord with Hypothesis 4, the positive relationship between T1 change-related information and T1 psychological well-being was partially mediated through its positive relationship with T1 change-related self-efficacy. Furthermore, T1 change-related self-efficacy fully mediated the positive relationship between information provision and both client engagement and job satisfaction at T1. This pattern of findings points to the importance of providing employees with access to adequate information during times of organizational change. When employees have a sense of prediction and understanding about impending organizational change, they are likely to appraise the situation as one in which they feel efficacious in their ability to cope with subsequent demands. In this respect, the present study contributes to theoretical propositions concerning the relationship between event characteristics and situational appraisals in the context of stressful life events (Lazarus & Folkman, 1984; Shaw et al., 1993). In the case of T1 client engagement, there also was evidence to suggest that T1 change-related self-efficacy was related to reduced stress appraisals, thereby increasing client engagement at T1 (Hypothesis 5). Given that perceptions of opportunity and threat derive significantly from personal perceptions of situational competence, this latter finding suggests that self-efficacy is likely to be influential in helping employees to view organizational change as an opportunity rather than as a threat (Krueger & Dickson, 1993).

In the longitudinal analyses, T1 change-related self-efficacy buffered the negative effects of T1 role ambiguity on levels job satisfaction at T2 (Hypothesis 7). In this respect, high levels of T1 role ambiguity were positively related to this delayed measure of employee adjustment when employees perceived high levels of change-related self-efficacy in the early phase of the change implementation process. This pattern of findings is consistent with Karasek's (1979) description of an active job in which high work stress may lead to positive job outcomes when accompanied by other coping resources in the workplace. There also was support for the stress-buffering role of T1 change-related self-efficacy in the relationship between T1 quantitative workload and T1 change-related difficulties in the prediction of T2 job satisfaction. In these instances, employees who perceived high work stress and low change-related self-efficacy at T1 reported lower levels of T2 job satisfaction, whereas employees who perceived high T1 change-related self-efficacy were protected from such stressors. This pattern of interactive effects lends support to findings reported by Jex and Bliese (1999), who also found that job-related self-efficacy buffered the negative effects of workload on levels of employee adjustment. The present study extends this line of research by documenting the stress-buffering role of self-efficacy during times of organizational change.

More recently, Jex, Bliese, Buzzell, and Primeau (2001) speculated that the stress-buffering effects of job-related self-efficacy are likely to be more pronounced for employees who frequently use active coping strategies and tend not to use avoidant coping strategies. This is because the most adaptational response to occupational stress is to have a belief in one's ability to deal with the demanding aspects of the job, while at the same time engaging in effective forms of coping to manage those stressors. They found some evidence to support this proposition for a sample of infantry in the U.S. Army when investigating the relationship between two chronic job stressors and psychological strain. Specifically, job-related self-efficacy buffered the negative effects of role ambiguity only for employees who used active coping methods. In addition, high efficacy levels protected employees from the negative effects of work overload when the use of avoidant coping was low. The extent to which coping acts as a second moderating variable in the relationship among stress, efficacy, and strain in the context of a specific organizational change event (rather than more chronic stressors) provides an avenue for further research. The use of coping measures that ask employees to specify the extent to which they use various problem- and emotion-focused strategies to deal with change-related stressors would help to clarify the role of coping in the organizational change process.

Support for the stress-buffering role of T1 change-related self-efficacy in the prediction of T2 job satisfaction observed in the present study also is consistent with research examining the moderating role of other types of self-beliefs in the stress-strain process. For example, there is evidence that people with high levels of self-esteem are less likely to experience difficulties adjusting to both general (e.g., Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986) and work-related stress (e.g., Ashford, 1988; Israel, House, Schurman, Heaney, & Mero, 1989) than people with low levels of self-esteem. Such results presumably reflect the fact that individuals with high self-esteem have a past history of coping successfully with stressful situations (Chan, 1977) and, thus, may be impervious to the ego-threatening nature of such encounters. Researchers also have considered the stress-buffering potential of organization-based self-esteem (OBSE), first defined by Pierce, Gardner, Dunham, and Cummings (1989) as the extent to which employees believe they are valuable to the organization. In the context of organizational change, Hui and Lee (2000) found that employees with high levels of OBSE were protected from the negative effects of change-related uncertainty when predicting commitment and absenteeism. In addition, OBSE buffered the negative effects of job insecurity on levels of absenteeism. Taken together, research of this nature highlights the importance of helping employees to develop a strong sense of self during times of organizational change, if positive change outcomes are to be achieved.

Overall, the present results indicate a complex pattern of findings in which change-related self-efficacy appears to play a mediating role in the short term but an interactive role in the long term. Before reaching any firm conclusions on the basis of these results, they need to be replicated. Nevertheless, it can be suggested that change-related self-efficacy is most likely to mediate the positive relationship between change-related information and levels of employee adjustment in the short-term because information should, by its very nature, be current and specific to the implementation of the proposed organizational changes. For this reason, the beneficial effects of change-related information, through efficacy beliefs, are unlikely to be related to levels of employee adjustment 2 years later. In contrast, perceptions of change-related self-efficacy might be expected to have long-term effects on levels of employee adjustment when considered as a moderating variable in the context of the stress-strain relationship. In this respect, major change activity in an organization creates a range of change-related stressors that

might have relatively ongoing consequences for the well-being of employees. It is important, therefore, to identify potential stress-buffering variables that can help employees cope with such stressors over the long term. Indeed, the present study demonstrated that change-related self-efficacy was an important buffer of three change-related stressors in the prediction of employee adjustment, 2 years after the organizational change process was initiated.

Several methodological limitations of the present study should be considered when interpreting these results. In particular, failure to replicate the main and mediating effects observed at T1 on the delayed measures of employee adjustment highlights the possibility that the confounding effects of common method variance are present in the cross-sectional data but reduced when the T2 measures of employee adjustment are considered. Reliance on self-report measures from a single source at a single point in time is problematic because such measures are prone to response artifacts such as social desirability bias, priming, and consistency effects that create spuriously high intercorrelations (Bagozzi & Yi, 1990; Glick et al., 1986; Williams et al., 1989). Common method variance also may obscure the presence of interactions because correlated errors serve to reduce the magnitude of true interaction effects (Evans, 1985; Wall, Jackson, Mullarkey, & Parker, 1996), hence making it difficult to find evidence in support of Hypotheses 5 and 6 at T1. The stress-buffering effects of change-related self-efficacy found at T2 should also be interpreted with some caution. A large number of interaction terms were examined in multiple independent tests and this may have increased the risk of Type I error (see Cohen & Cohen, 1983). In this respect, there is a higher risk that these significant findings were a consequence of chance.

In conclusion, a strength of the present study was the use of a longitudinal research design that was able to take into account baseline levels of psychological well-being, client engagement, and job satisfaction in the prediction of T2 employee adjustment. Limitations relate to the restricted number of event characteristics assessed in this research. Thus, future research should examine a broader range of organizational supports, such as employee participation in decision making, as precursors to perceptions of change-related self-efficacy. Indeed, theories of self-efficacy would suggest that more active ways of involving employees in the organizational change process are likely to have a stronger impact on self-efficacy perceptions (see Bell & Staw, 1989). However, practical implications point toward the importance of ensuring that employees have access to timely and accurate change-related information if positive self-efficacy expectations during times of organizational change are to be achieved. Such an approach enables managers to provide support to their employees by assisting them to confront potentially threatening events in an active manner, at the same time as reducing the emotional distress that is associated with the situation.

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