

## Managing Russian factory workers: The impact of U.S.-based behavioral and participative techniques

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### **Abstract:**

A within-subjects experimental design was used to study the impacts that 3 popular and successful techniques used in US studies had on the performance of workers in the largest textile factory in Russia. The results demonstrate both the potential benefits and problems of transporting US-based human resource management theories and techniques to other cultures. The finding confirmed 2 hypotheses, which predict that extrinsic rewards and behavioral management interventions will have a positive impact on the performance of Russian textile workers. However, 2 other hypotheses, which predict that a participative intervention will not result in improved performance, was also confirmed. The participative intervention seemed to have a counterproductive effect on the Russian workers' performance. The failure of the participative approach, however, does not mean that this approach will not work across cultures. Historical and cultural values and norms should be recognized and overcome for such a technique to work effectively.

### **Article:**

The new internationalization of the field of management has produced growing concern as to whether theories and techniques largely developed in the United States apply to other cultures. A within-subjects experimental design was used to analyze the impacts that three popular and successful techniques used in U.S. studies had on the performance of workers in the largest textile factory in the Russian republic of the former Soviet Union. Two techniques, providing extrinsic rewards and behavioral management, had significant, positive effects, but a participative technique led to a decrease in performance.

A natural consequence of internationalization has been an urgent call for theory building and research to improve the understanding and management of human resources in countries around the globe (cf. Adler, 1983; Arvey, Bhagat, & Salas, 1991; Doktor, Tung, & Von Glinow, 1991a,b; Dowling & Schuler, 1990; Sheth & Eshghi, 1989). Starting with the pioneering work of Fayol (1949), the prevailing assumption through the years in the United States has been that management theories and techniques have universal applicability. Although each country has its own body of management thought, most of the mainstream management literature in the United States reflects only the American experience. As Adler (1991) pointed out, American scholars have typically used samples of American employees in American organizations to develop their theories and test their research questions. However, her own research and that of other cross-cultural researchers like Hofstede (1980) led her to conclude that the universalist assumption that

what was true for American workers in the United States was also true for people from other countries was wrong (Adler, 1991: ix).

This questioning of the universalist assumption has stimulated comparative management theory (Arvey et al., 1991; Black, Mendenhall, & Oddou, 1991; Doktor et al., 1991a, b; Milliman, Von Glinow, & Nathan, 1991) and research (Harris & Moran, 1991; Kedia & Bhagat, 1988; Hegarty & Hoffman, 1990; Hitt, Tyler, & Park, 1990; Kelley, Whatley, & Worthley, 1987). In particular, there has been considerable interest in the comparative analysis of American and Asian human resource management theories and techniques because of the significant growth and economic success of Pacific Rim countries, particularly Japan (Adler, Doktor, & Redding, 1986; Bass & Burger, 1979; Ohmae, 1987; Ouchi, 1981; Pascale & Athos, 1981). From this theory building and research has come the realization that although some similarities do exist across cultures, there are also significant differences. For example, Boyacigiller and Adler (1991:275) noted that most American theories of motivation reflect a decidedly individualistic perspective and may not be applicable in countries such as China that assign people to jobs rather than allowing individuals to exercise free choice. Recognizing these similarities and differences is important for human resource management not only in Asian countries, but in other countries as well.

To date, there has been very little, if any, theory building or research that might help solve the human resource management problems facing organizations in dramatically changing Eastern Europe (Pearce, 1991). Organizations in these countries certainly present challenging and unique opportunities to cross-culturally analyze popular human resource management theories and techniques developed and used in the United States. This is especially true in the newly emerging Russian federation. For example, a recent survey of over 1,000 heads of Russian enterprises found that a majority expressed their inability to provide effective employee motivation (Ivancevich, DeFrank, & Gregory, 1992: 47). Testing whether successful U.S.-based human resource management theories and the accompanying techniques for their implementation will work with Russian employees would benefit not only Russia, as it makes the transition to a market economy, but also U.S. firms that desire to do business or enter joint ventures with existing or new Russian enterprises.

Some recent general books (Kiezun, 1991) and articles (Forker, 1991; Ivancevich, DeFrank, & Gregory, 1992; McCarthy & Puffer, 1992; Puffer & McCarthy, in press; Shaw, Fisher, & Randolph, 1991; Vance & Zhuplev, 1992) feature some of the long-standing and current problems facing Russian management. However, to date the only known systematic cross-cultural analysis of modern U.S. and Russian management is *Behind the Factory Walls* (Lawrence & Vlachoutsicos, 1990). This book and an article by the same authors (Vlachoutsicos & Lawrence, 1990) are based on data collected by a research team from Harvard University and their Soviet counterparts who, in 1988, studied four factories (truck engine and electrical equipment plants) for two weeks in each country. This study provided insights into managerial decision making; but as the researchers themselves pointed out, the results were limited because the data were only drawn from personal observations and interviews. However, the analysis made of U.S. and Russian cultural characteristics in general, and of the factories studied in particular, provides a useful backdrop and point of departure for a more empirical cross-cultural analysis of specific human resource management theories and techniques.

The present study selected three human resource management theories and accompanying techniques to test in a Russian factory. They involved extrinsic rewards, behavioral management, and participation. We chose those three areas because they are representative of popular U.S. human resource management theories and techniques and because they have historical roots in the Russian approach to human resource management. For example, Xiezun (1991) pointed out that Lenin initially criticized Taylor's scientific management as an example of the exploitation of workers by capitalists. However, after the October Revolution, he advocated Taylor's methods as a way to increase the productivity of workers. In particular, Lenin suggested the use of piece-rate incentive systems, a type of extrinsic rewards approach, and the use of team meetings a participative approach to get workers to provide input for improving performance. Although such techniques were banned during the Stalin years, they resurfaced in the Gorbachev era (Kiezun, 1991).

Another reason we chose to analyze those three approaches cross-culturally was that we could draw from some of our previous U.S. studies, replicating procedures and comparing results (cf. Luthans, Kemmerer, Paul, & Taylor, 1987; Luthans & Kreitner, 1985; Luthans, Paul, & Baker, 1981; Luthans, Paul, & Taylor, 1985). However, it should be noted that the present study was not designed to be a true cross-cultural study in the sense that we had equivalent organizations and work groups in both countries. Rather, our intent was to independently analyze three recognized techniques developed in the United States on samples of Russian factory workers.

The extrinsic rewards behavioral technique used in this study involved providing valued rewards to workers contingent upon their performance improvement. The theoretical basis for this approach is found in operant learning theory (Skinner, 1953, 1969) and applied behavioral analysis in organizations (Andrasik, 1989; Komaki, Waddell, & Pearce, 1977; Merwin, Thompson, & Sanford, 1989; O'Hara, Johnson, & Beehr, 1985). The implementation followed procedures suggested by Luthans and Kreitner (1985) that have had a positive impact on U.S. workers. The extrinsic rewards used in this study were inexpensive but valued American products brought over by the on-site researcher;(1) they included soap, detergent, adult and children's clothes, jeans, t-shirts with logos, paper goods, canned goods, coffee, and music tapes.

The Harvard research team found that Russian factory workers have tended to rely heavily on individual bonuses and piece rates, and these were seen to "shape their actions to increase these rewards" (Lawrence & Vlachoutsicos, 1990:284). American goods rather than money were used in the present study as extrinsic rewards because the scarcity of such goods made them more valuable to these workers than money.

The second intervention, behavioral management, used trained supervisors to contingently administer social rewards (praise and recognition) and feedback when their workers performed identified functional behaviors and to administer reminders and corrections for identified dysfunctional behaviors. This intervention followed the theoretical approach suggested in the behavioral management literature (Luthans & Kreitner, 1985; Scott & Podsakoff, 1985) and replicated as closely as possible the procedures from two previous studies that found significant, positive effects on the performance of U.S. employees (Luthans et al., 1981,1985).

This behavioral management approach is compatible with what is known about Russian human resource management. Kiezun noted that a primary goal of Lenin's was to develop methods of social control that reinforced "in workers a spirit of enterprise, a sense of responsibility for the common interest and for social good" (1991:84). Kiezun also discussed the similarity between the "enthusiasm of the working class" (1991: 85) Lenin sought and Maslow's (1954) hierarchy of needs. Specifically, Kiezun noted that supervisors could gain workers' compliance by appealing to their social need for self-accomplishment (1991: 85). The use of social attention and recognition in behavioral management is compatible with meeting such a need. In this case, linking the Russian workers' social rewards with their contribution to the common interest in the form of production of high-quality textiles is also managing identified functional behaviors that contribute to higher performance. In Lenin's view, piece-rate systems were to be used until supervisors could develop a values-based mentality. Interestingly, Lenin's idea is not unlike Etzioni's (1961) classic notion of working from coercive to remunerative to normative bases of compliance.

In the participative technique used in the present study, the on-site researcher met with the workers studied without their supervisors present and asked them for participative input relevant to enriching their jobs around the characteristics of identity, significance, variety, autonomy, and feedback. Supervisors typically are not included in this technique so that workers will feel freer to contribute their ideas for performance improvements. The theoretical foundation comes from the literature on worker participation (Macy, Peterson, & Norton, 1989) and job design and enrichment (Hackman & Oldham, 1976, 1980). Studies have generally found that such an approach leads to motivational effort and performance improvement among American workers (Fried & Ferris, 1987; Griffin, 1989; Levine, 1990; Roberts & O'Reilly, 1979). The specific participative technique used in the present study replicated as closely as possible a previous study that had a positive impact on the performance of U.S. employees (Luthans et al., 1987).

There is considerable research in the North American cultural context concerning the three approaches studied, but there is very little such information for Russia. In fact, knowledge about today's Russian culture is just starting to emerge, and of course that country is currently undergoing transformation and considerable adversity and uncertainty. Nevertheless, starting with some generalizations about the similarities and differences of American and Russian cultural values can provide a theoretical framework for development of hypotheses concerning the effects that the three U.S.-based techniques might have on Russian workers.

Again, Lawrence and Vlachoutsicos (1990) made one of the few cultural comparisons between the United States and the Soviet Union. They noted that, in general, Russian workers learned to be cautious and to respond to unpredictable and uncontrollable events by alternating intense work and rest; in addition, they developed a special capacity for communal work. In contrast, American employees, conditioned by a more plentiful environment, have learned to expect that they will be able to influence their environment and achieve their goals (Lawrence & Vlachoutsicos, 1990:20).

Given what was known about human resource management and cultural values in Soviet Russia, we hypothesized that both giving extrinsic rewards and behavioral management, which have been found to be successful in U.S. studies (Luthans & Kreitner, 1985; Luthans et al.,

1981,1985), would also be successful in Russia. These two behavioral interventions are compatible with American employees' cultural values because they allow employees to influence their environment to obtain desired rewards. By the same token, under these behavioral interventions Russian workers would be allowed to exhibit the Russian cultural value of intense, very hard work, even during turbulent times. This cultural value would support the Russian workers' effort to improve performance when improvement becomes materially worthwhile, as when extrinsic rewards are available, or worthwhile in terms of the common good, as when social and feedback rewards are available (Kiezun, 1991:84). As discussed earlier, these behavioral techniques are also compatible with what is known about existing approaches to human resource management in Russian factories (Kiezun, 1991; Lawrence & Vlachoutsicos, 1990).

**HYPOTHESIS 1:** Extrinsic rewards intervention will have a positive effect on the performance of Russian factory workers.

**HYPOTHESIS 2:** Behavioral management intervention will have a positive effect on the performance of Russian factory workers.

The same type of theoretical analysis was used to develop a hypothesis concerning the participative technique. This intervention is more complex than the other two and may be more compatible with U.S. employees' cultural values than with the Russian workers' cultural values. Group meetings encouraging participation and job redesign efforts, such as increased autonomy, are compatible with the American cultural values of being able to influence the environment and accomplish goals. In contrast, such participative efforts may disrupt or threaten the Russian cultural value of communal work.

Vlachoutsicos and Lawrence (1990) noted that Russian work groups have established cohesion, solidarity, and camaraderie over the years. Russian factory workers tend to be fiercely loyal to one another and, importantly for the present study, to their leaders. Vlachoutsicos and Lawrence stated that, "In fact, divulging information to outsiders, even on trivial matters, needs the leader's clear approval" (1990:5). Also, they found that although the Russians commonly used work groups to help manage factories, they were still in the process of "learning to use participative methods effectively" and were "more reserved about sharing enterprise information with outsiders than are U.S. managers" (1990: 282). The present study's definition and implementation of the participative intervention, designed to replicate a previous U.S. study (Luthans et al., 1987), could have violated the Russian cultural values described by Vlachoutsicos and Lawrence (1990). Group meetings, led by an outside American researcher and translators-assistants from the local university, and individual follow-ups, both without the workers' supervisors present, could have been perceived as a threat to the established communal cultural values and human resource management approach common in the Russian republic. Trying to balance replication of the previous U.S. study against not violating Russian work-team values, we obtained explicit approval for the process used from the supervisors and communicated that approval to the workers. Although others have suggested a potential for U.S.-based techniques to overwhelm dominant cultural values (Cox, Lobel, & McLeod, 1991), we were not confident that this would occur. Therefore, this intervention posed an interesting empirical question.

**HYPOTHESIS 3:** Participative intervention will not have a positive effect on the performance of the Russian factory workers.

## **METHODS**

A within-subjects experimental design was used to test the three hypotheses. Various called A-B-A, reversal, or withdrawal (Hersen & Barlow, 1976), this design has been widely recognized as meeting criteria for scientific methodology and minimizing threats to validity (Crowell & Anderson, 1982; Hersen & Barlow, 1976; Kazdin, 1973,1980; Komaki, 1977; Luthans & Davis, 1982; Sidman, 1960), In this experimental design, the dependent variable is measured under existing or baseline conditions, then the independent variable or intervention is introduced, and in the final phase the intervention is withdrawn or there is a reversal to baseline conditions. Hersen and Barlow note that if after baseline measurement (A) the application of an intervention (B) leads to improvement and conversely results in deterioration after it is withdrawn (A), one can conclude with a high degree of certainty that the intervention is responsible for the changes in the dependent variable (1976: 176). Study Site

The study took place in the late spring of 1990 at the Kalinin Cotton Mill in the city of Kalinin (now called Tver), located 90 miles northwest of Moscow. With about 8,000 employees, the Kalinin Cotton Mill was recognized as the largest textile factory in the Russian republic. The factory was celebrating its 100th year of operation. Its staff had experienced perestroika--economic and political restructuring under Gorbachev--but had not, of course, yet experienced the break-up of the Soviet Union and the aftermath of that process.

The spinning operation at this factory was housed in two buildings and had 1,200 workers. The weaving mills were housed in two buildings with 1,900 and 500 workers, respectively. Another building, for fabric drying, employed 1,400 workers. In addition to those 5,000 production workers, the plant employed 3,000 auxiliary and service workers, who were involved in secretarial work, computer support (one entire building), and maintenance.

This study took place in the larger weaving mill. In terms of organization structure, this mill of 1,900 workers was divided into four shops with 500 looms per shop. Each shop had one director and three supervisors per shift. A building director oversaw the shop directors and reported to the general director of the factory.

The factory operated three shifts: 6 A.M.-2:20 P.M., 2:20 P.M.-10:40 P.M., and 10:40 P.M.-6 A.M. Three work groups rotated shift assignments every week, On Saturdays there was only a 6:00 A.M. to 2:00 P.M. shift, staffed by the work group that had worked the day shift that week. Once the fabrication process was complete, the rolls of 100 percent cotton fabric that had been produced were inspected and their quality carefully and quantitatively recorded. The rolls were then shipped; some of the material from this textile mill went to Russian clothing factories, but most of it was exported to trading partners in Eastern Europe and to such countries as Denmark and Sweden.

## **SUBJECTS**

For this study, we randomly selected 33 workers from each work shift of the weaving operation, obtaining a total of 99 subjects. All but three of these workers were ethnic Russians. Their average age was 36 years, and their average number of years of education, including time at trade schools, was 11.5. We then randomly assigned each group to one of the three treatments used in the study--extrinsic rewards, behavioral management, or participation technique. The three samples were deemed to be equivalent. For example, all had completed the factory's standard orientation and job training programs, which included serving an apprenticeship under an experienced worker. The subjects had been repeatedly told what was expected of them in terms of performance standards. All had been employed in the factory for at least 1 year; the average tenure was 14.3 years on the job. Given the subjects' common background, changes in their performance and behavior could not be attributed to orientation and training, performance expectations, or the steep learning curve that new employees exhibit.

In Russian, the subjects' work role was described as "workers over the weavers." All men, these subjects performed a variety of tasks related to the production of bulk cotton fabric and the quality of that fabric. Part of each subject's responsibilities involved assisting and instructing, but not really supervising, two weavers who actually operated the weaving equipment. All the weavers were Women. The subjects had supervisors who also supervised the weavers. Specific aspects of the subjects' job included setting up the machines, making the transition during shift changes, monitoring the machines, performing maintenance and repairs, assisting the weavers as needed, changing rolls of cloth, and communicating with supervisors and management.

These subjects were chosen for the study rather than the weavers because the latter were closely supervised and had very mechanized and structured jobs. The weavers had virtually no flexibility or latitude in their jobs and were less accountable for performance than were the subjects. The managers reported and the on-site researcher verified that the weavers spent almost all their time doing highly repetitive work. In more automated, computerized production processes, these weavers' jobs would not exist.

## PROCEDURES

For each experimental group, data were gathered for the baseline for two weeks; each group was then submitted to a two-week intervention period; and finally there was a return to the baseline in which the intervention was withdrawn for the fifth and sixth weeks of the study.

All three within-subjects experimental designs used the amount of top-grade fabric produced as the dependent measure of group performance. The amount of top-grade fabric, which had to meet existing quality control standards, was calculated by members of the plant's engineering personnel. Forker (1991) gives a detailed account of the Soviet Union approach to quality control used in this and other factories across the country.

**EXTRINSIC REWARDS INTERVENTION.** Following Luthans and Kreitner (1985), we defined the extrinsic rewards intervention as the providing of valued rewards, in this case American goods. The on-site researcher and assistants administered these extrinsic rewards to the group of 33 subjects chosen for this intervention. They received the rewards contingent upon their increasing the amount of top-grade fabric they produced. Importantly, however, no specific goals were set. We did not use specific goals deliberately to avoid a contaminating goal-setting effect, although Lawrence and Vlachoutsicos found a lack of concern with goals among the

Russian workers in their study (1990: 284). At the end of two weeks, the contingent extrinsic rewards intervention ceased.

**BEHAVIORAL MANAGEMENT INTERVENTION.** The behavioral management intervention also followed the approach suggested by Luthans and Kreitner (1985) and in general followed the procedures used in two previous U.S. studies (Luthans et al., 1981, 1985). With the help of the translators-assistants, the on-site researcher trained the subjects' supervisors in behavioral management, informing and instructing them about behaviors identified as functional and dysfunctional for performance on the basis of written job rules or descriptions and managers' and workers' accounts. The functional behaviors involved checking looms, doing repairs, monitoring fabric quality, changing rolls of cloth, threading, helping weavers and co-workers get material and equipment, and changing shifts. The dysfunctional behaviors involved absence from the work site, idle time, and dirty hands.

The supervisors were instructed on examples of specific functional and dysfunctional performance behaviors and were encouraged to ask clarifying questions. The researcher then instructed the supervisors to administer recognition and praise when workers performed the functional behaviors and to provide specific feedback to them about these behaviors. The supervisors were also instructed to give reminders and make corrections when they observed the dysfunctional behaviors but were specifically told not to give negative reprimands or punishment.

Unlike the other two interventions, this behavioral management intervention called for the subjects to play a passive rather than an active role. The researcher simply told the subjects that they would be part of a management study; the functional and dysfunctional behaviors were identified for them and the relationship that these behaviors had to performance was carefully explained. Importantly, however, as in the extrinsic rewards intervention, no goals or standards for performing these behaviors were set for the workers, nor were they told that their supervisors would be using behavioral management techniques.

Like the other two interventions, this behavioral management approach was terminated at the end of the two-week intervention period. Even though the supervisors were instructed to cease providing social rewards and feedback for the functional behaviors, the workers would obviously not have been able to perceive this return to the baseline condition as clearly and abruptly as the end of the other two interventions.

**PARTICIPATIVE INTERVENTION.** Following the procedures used in the Luthans and colleagues (1987) study, this participative intervention asked for the workers' input and involved job enrichment characteristics. As noted earlier, the on-site researcher, with help from translators-assistants, conducted a number of meetings without the subjects' supervisors present. These meetings were relaxed, open-ended discussions asking the workers for their input on how to improve performance in their area of responsibility. To avoid the meetings' being just gripe sessions and to replicate the earlier U.S. study's procedures, the researcher guided these participative sessions into a framework utilizing Hackman and Oldham's (1976, 1980) core job characteristics of identity, variety, significance, autonomy, and feedback.



The actual suggestions subjects made during this intervention ranged from accident reduction strategies to developing a tool crib and check-out system to improve the quantity and quality of fabric produced. Since the subjects came up with the suggestions themselves through the participative, job design-enrichment format and had the authority to carry them out in their role as "workers over the weavers," the idea was that they would be motivated to try out the suggestions on the job and thus improve their performance. The on-site researcher and the local university translators-assistants also employed the same participative approach used in the formal meetings in one-on-one random, informal meetings with the subjects throughout the intervention period. At the end of two weeks, meetings and informal one-on-one interactions ceased.

## RESULTS

Using the within-subjects experimental design, we analyzed the data for each of the three treatment groups separately. Figures 1, 2, and 3 show graphic data on the production of top-grade fabric following each intervention. (Figures 1, 2, and 3 omitted) We initially analyzed these performance data using the Auto-Regressive Integrated Moving Average (ARIMA) procedure (Cook & Campbell, 1979).

### PRELIMINARY ANALYSIS OF THE DATA

The ARIMA procedure allows investigation of potential autocorrelations within data to determine if observed events are a function of past behavior. Specifically, we used ARIMA to determine if the subjects' performance was a function of time or of the experimental interventions. Typically a time series technique used in economics, ARIMA is also beginning to be used in human resource management studies (Dalton & Mesch, 1990).

Q-statistics were derived from the ARIMA analyses of each set of three treatment periods. This statistic reports the probability that observed variations in the data are due to "white noise" (random variation), or to a time series autocorrelation. The lower the chi-square for this analysis, the more probable that there is random fluctuation around a "grand mean."<sup>(2)</sup> The results indicated no reason for us to reject the white noise hypothesis for the baseline, intervention, and reversal periods for each of the interventions. Therefore, we compared means using analysis of variance (ANOVA).<sup>(3)</sup>

Although autocorrelation was not present, one fairly consistent, nonsignificant trend in the data should be noted. As stated earlier, the subjects changed shift assignments each week, and the group working the day shift (6:00 A.M. to 2:20 P.M.) during a given week also worked the full shift on Saturday. Visual inspection of the data presented in Figures 1, 2, and 3 indicates that this Saturday shift (days 4, 10, 16, 22, 26, and 31) appeared to have a temporary negative impact on the production of top-grade fabric, depressing the performance of subjects during the following week. Though statistically nonsignificant here, this effect might show a significant cyclical fluctuation with a larger number of observations.

A possible explanation of this "Saturday effect" is that the workers were fatigued from the longer work week and thus, their production declined. This fatigue is probably a reason for the sharply falling curves seen in Figures 1, 2, and 3. However, the rapid recovery rate of the extrinsic

rewards group during the intervention period shown in Figure 1 suggests that the intervention could also have influenced this effect.

This preliminary analysis of the statistical and visual data was conducted because this field setting was especially complex and the population unfamiliar. We tried as much as possible to ensure that the data would not be misleading or be dismissed as autocorrelated.

#### RESULTS OF THE EXTRINSIC REWARDS INTERVENTION

Figure 1 shows daily top-grade fabric production for the group involved in the extrinsic rewards intervention. As can be seen, the intervention greatly increased the group's production. Of special note are the huge declines that occurred after Saturday shifts. However, we might infer that the extrinsic technique helped the workers diminish or overcome the Saturday effect--that is, the rewards for improved performance may have been enough to overcome their fatigue. Finally, the graph shows that performance returned to a lower level after removal of the extrinsic rewards intervention during the reversal period.

To supplement and extend the visual data, we conducted statistical analyses. An ANOVA with Scheffe tests showed that the quantity of top-grade fabric produced by the subjects during the extrinsic rewards intervention was significantly higher than that produced during the preceding baseline period ( $F = 18.31, p < .001$ ), and there was a nonsignificant lower performance level in the reversal period. Mean production levels (meters per person per day) for the three periods were: baseline, 18,954; intervention, 22,248; and reversal, 21,401.

#### RESULTS OF THE BEHAVIORAL MANAGEMENT INTERVENTION

As Figure 2 shows, the amount of top-grade fabric produced by the workers increased during the behavioral management intervention period. When the intervention was withdrawn, the production level declined.

The ANOVA done on the performance data for the behavioral management intervention revealed no significant differences across the three periods. However, when the possibility of a lag between behavioral change and performance change is taken into consideration, significant differences emerge. Likert's (1967) classic leadership theory was based on the premise that there is a temporal lag between behavioral change and performance change, and behavioral management theorists (Luthans & )Kreitner, 1985; Scott & Podsakoff, 1985) have maintained that position. Visual inspection of the slope and function of the line in Figure 2 suggests the existence of a three-day lag between behavioral change and performance change.

An ANOVA conducted on the fabric production data shown in Figure 2 under the assumption that there was a three-day lag indicated the behavioral management intervention had a significant and positive effect ( $F = 18.02, p < .001$ ). Scheffe multiple cell comparisons showed that productivity significantly increased from the baseline period (Equation omitted) to the intervention period (Equation omitted) and declined significantly from the intervention to the reversal period (Equation omitted). As an aside, we also conducted the lagged tests on the other two interventions with no changes in the results. Although the descriptive statistics change under the lag (because we redefined the periods for the other two interventions), the interpretations do not change.

### *Results of the Participative Intervention*

Figure 3 shows the performance pattern of the textile workers who were involved in the participative intervention. This group's production of top-grade fabric fluctuated in a nonsignificant, upward direction during the baseline period. However, production then significantly fell during the intervention period. During the reversal period, mean fabric production was slightly, but nonsignificantly, higher.

Visually inspecting the curve in the intervention period shows that there was an initial immediate boost in performance that might have been due to the intervention; then, something occurred to greatly decrease output during the intervention period. An alternative explanation would be that the performance levels recorded in the initial days of the intervention period were a continuation of the baseline trend, but once the intervention took hold it may have caused production to decrease.

An ANOVA of the grand means showed significant differences in the group's fabric production across the three periods ( $F = 25.85, p < .001$ ). Scheff tests for multiple cell comparisons showed these workers actually displayed higher performance in the baseline period (Equation omitted) than in the intervention (Equation omitted) and reversal (Equation omitted) periods, and there was a nonsignificant trend toward higher performance between the intervention and reversal periods. These ANOVA results suggest that the participative intervention did not work in this cultural context and may have even diminished the performance of the subjects.

### DISCUSSION

This study analyzed the impact that behavioral and participative techniques, largely developed and researched in the United States, had on the performance of workers in a Russian factory. The study was not a true cross-cultural effort because studies by Luthans and colleagues to which we compared the Russian results used different types of employees and organizations and were conducted at an earlier time. However, we followed the procedures of those studies as closely as possible in the Russian study and use them as a general point of comparison for discussion purposes.

The results of the present study demonstrate both the potential benefits and problems of transporting U.S.-based human resource management theories and techniques to other cultures. On the one hand, findings confirmed Hypotheses 1 and 2, which predict that extrinsic rewards and behavioral management interventions will have a positive impact on the performance of Russian textile workers. On the other hand, Hypothesis 3, which predicts that a participative intervention will not result in improved performance, was also confirmed. In fact, the participative intervention seemed to have a counterproductive effect on the Russian workers' performance.

The simultaneous existence of similarities and differences between U.S. and Russian approaches to human resource management and cultural values may explain why the two behavioral interventions worked and the participative intervention did not work. This article's introduction outlined the cultural similarities and differences described by Kiezun (1991) and Lawrence and

Vlachoutsicos (1990). However, another interpretation of why the participative intervention did not work may be found in the unique history and culture of the study site.

The system used by this particular factory over recent years would on the surface have seemed to promote and encourage worker participation and job design and enrichment efforts (Kiezun, 1991). But such participation and job design and enrichment were not occurring at this time in this factory. Conversations and interviews with workers and managers conducted by the on-site researcher and anecdotes indicated that the cultural situation was such that even though the workers had been afforded opportunities to express themselves in the past, and even though they had done so rather vocally, these instances rarely resulted in any action by their superiors. As a result, these workers may have been frustrated by what they perceived as a facade of participation, and they reacted negatively when again submitted to an intervention that asked for participative input and job redesign and enrichment efforts. In addition, the rare times superiors had taken action in the past appeared to have been when they received complaints from someone about a co-worker or, in the pre-glasnost days--before Gorbachev's policy of openness--when someone was reported for a political infraction.

During the participative intervention in this factory, it is possible that the workers intentionally limited their production to avoid these real or imagined threats from their past. Their opportunity for involvement through participation and job redesign and enrichment was tied to their performance. By not improving or by deliberately holding back, they could avoid the frustration of being rejected or ignored. In addition, by not truly participating or giving meaningful suggestions in front of outsiders, the workers would not put themselves in the position of expressing problems inhibiting performance, comments they may have feared would be received as complaints regarding co-workers.

When viewed from this perspective, the decreased production may have been a natural reaction to a potentially threatening situation posed by this particular participative intervention. This interpretation is also supported by the Harvard study (Lawrence & Vlachoutsicos, 1990) that found Russian factory workers tended to be very protective of their fellow workers, because of their strong communal values, and very cautious and unpredictable. Whatever interpretation is made, differences between the U.S. approach to human resource management and cultural values and the complex situation in Russia in general, and in this factory in particular, may explain the results.

Whereas the participative intervention did not have the same effect across cultures, both behavioral interventions did. However, before drawing general conclusions, we need to provide a more detailed discussion and interpretation of some of our results on behavioral techniques as well.

The efficacy of the extrinsic rewards technique in improving the workers' performance confirms not only the previous U.S. studies (e.g., Luthans & Kreitner, 1985), but also what is known about reinforcement theory and the use of contingent extrinsic reward systems in the United States (Lawler, 1981, 1990). These Russian factory workers, when rewarded with desired goods, immediately displayed higher levels of performance. However, once these valued rewards were

removed, performance declined, but not to a level significantly lower than the intervention period level.

The failure to reach a significant decline during a post-intervention period has also occurred in behavioral studies of U.S. employees (cf. Luthans, et al., 1981). As Miller explained, "If the original environment had a consequence that was too weak to initiate a behavioral change but that is strong enough to maintain such a response once initiated, the behavior should not be expected to revert" (1973: 535). Reinforcers that may have maintained the behavior once the intervention was withdrawn might have included support from co-workers. As mentioned before, norms in this factory, as well as the Russian communal cultural values identified by Lawrence and Vlachoutsicos (1990), include strong feelings of respect and camaraderie among co-workers. Once performance-enhancing behaviors were occurring, reinforcers from group processes, such as social support and praise, may have taken over to maintain the behaviors. Also, self-reinforcers, such as pride and the feeling of a job well done, could have maintained high performance after the withdrawal of the extrinsic rewards.

Some analytical issues and limitations of the study also need to be mentioned. Although graphic presentation and visual interpretation of data are commonly used in behavioral studies (Crowell & Anderson, 1982), most researchers would agree that statistical analysis is still needed. We supplemented visual analysis with statistical analysis. First, use of the ARIMA procedure verified that the data were not autocorrelated. Then, an ANOVA revealed differences in average performance levels across periods. Interestingly, these statistical findings can be ascertained collectively by visually inspecting the graphs of each group's performance across the periods of this within-subjects design. Although the multiple methods provided by the statistical tests helped uncover different aspects of the data, as in the case of the lag effect in the behavioral management results, in this study the simple visual inspection was quite informative. In fact, although the ARIMA showed no cyclical effect, and the regression coefficients were typically linear, the clearly observed Saturday effect evident in the graphic data indicated a potential cyclical impact that needed to be noted. Although the extrinsic rewards intervention may have helped to attenuate fatigue, results on the other two interventions showed a systematic Saturday effect on the performance of the subjects.

An obvious limitation of the design of this study was its relatively short duration. A longer period of time for each phase of the study would have been desirable, but was not practically possible at this field site; similar limitations affected the previous U.S.-based studies by Luthans and colleagues. A longer study would probably have elicited more significant seasonal and intervention effects. Although the short duration of this study was not optimal for fully observing intervention effects, this window of time in a very complex and dramatically changing field setting did produce significant results, and the within-subjects design did permit ruling out generally recognized threats to internal validity.

In conclusion, this study provides at least beginning evidence that U.S.-based behavioral theories and techniques may be helpful in meeting the performance challenges facing human resource management in rapidly changing and different cultural environments. We found that two behavioral techniques--administering desirable extrinsic rewards to employees contingent upon their improved performance, and providing social reinforcement and feedback for functional

behaviors and corrective feedback for dysfunctional behaviors--significantly improved Russian factory workers' performance. By the same token, the study also points out the danger of making universalist assumptions about U.S.-based theories and techniques. In particular, the failure of the participative intervention does not indicate so much that this approach just won't work across cultures as that historical and cultural values and norms need to be recognized and overcome for such a relatively sophisticated theory and technique to work effectively.

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#### FOOTNOTES

(1) The on-site researcher was the first author, who was present at the factory throughout the study. She was assisted by faculty members and students from the departments of economics and foreign languages at Kalinin (now Tver) State University. They served as translators and helped her as needed in implementing the three interventions.

(2) The "grand mean" in this case is the mean performance for all the subjects for the entire measurement period, whereas the mean performance would refer to a single subject's performance in the entire period or all subjects' performance for a specific day within the period.

(3) In addition to the ANOVA, we used "spline regression" (Montgomery & Peck, 1982) to verify that the introduction of each intervention did indeed result in the change in the function describing the grand means. Spline regression techniques are used to identify "knots" in polynomial regression functions, which are unique in that they behave differently within different ranges of independent variables. The usual approach is to divide the range of a variable into segments and fit an appropriate curve in each segment (Montgomery & Peck, 1982:189). A knot is the transition point at which one segment ends and a new segment begins. In this study, spline regression was used to verify that the knots occurred where they would be expected to arise as a result of the introduction and withdrawal of the interventions. In all three experiments, results of the spline regression analyses supported the ANOVA findings.

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