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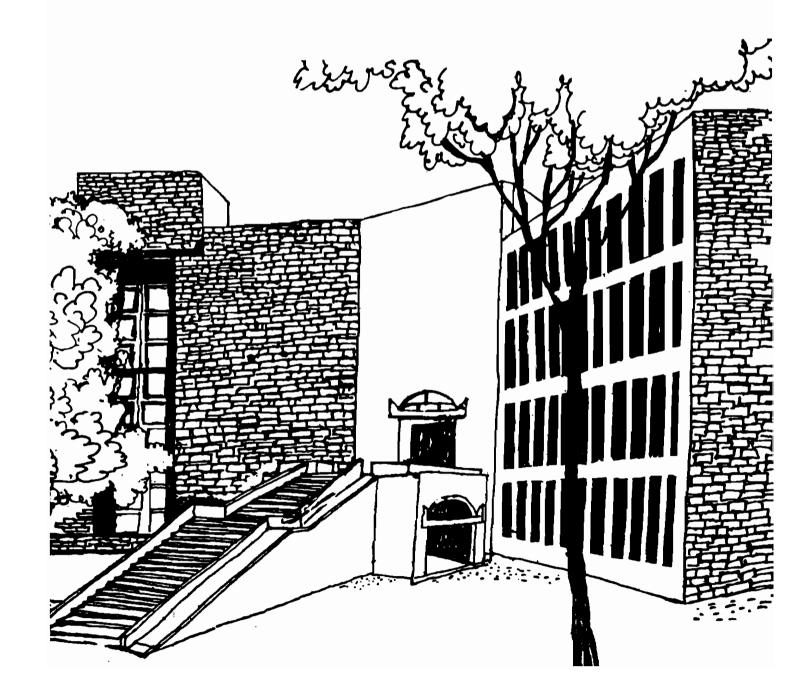
FACTORS INFLUENCING ATTITUDE TOWARD COMPUTUERS: A STUDY OF BANK EMPLOYEES IN INDIA

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Summary

The paper examined exposure, gender, use and organizational level as correlates of Attitudes Toward Computers (ATC) among bank employees in India. The ATC scale and a demographic profile were administered to a sample of 213 bank personnel. Our study found no relationship of exposure and gender to ATC. Use of computers was related with ATC. Organizational level showed a strong relationship with ATC, with bank officers holding a much more positive attitude towards computers than clerks. Implications for research and practice are discussed.

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Factors Influencing Attitudes Toward Computers:
A Study of Bank Employees in India

With the information technology ushering in a revolution the world over, organizations in India, as in other developing countries, are making substantial investments in computers. The objective is to help upgrade the information-processing capability at the organizational level. However, the availability of equipment and knowhow does not necessarily ensure its usage. Studies have shown that for making computers an integral part of workplace operations, it is not sufficient to install computers, inform people about the benefits of computer-mediated operations; and provide them skills through training (Saha, 1986). Whether the use of computers gets integrated with operations at the workplace depends significantly upon the attitude potential users have towards the computers. Research exploring the attitudes toward computers (ATC) has reported positive correlations between ATC and computer use. Several studies (Staw, Bell and Clauson, 1986; Gattiker and Nelligan, 1988) have shown that an individual's attitude towards a particular technology influences the performance of tasks using that particular technology.

Thus, for success of computerization efforts, particularly in a developing country like India, it is important to investigate which factors influence such attitudes. This need arises primarily for two reasons. First, the heavy investments made in developing computer hardware and software as a conscious preference over alternate uses of funds for much-needed developmental and welfare purposes needs to bring adequate returns. Second, developing countries in particular need the efficiencies associated with computerized-operations to step up their pace of growth.

In the present study, it was decided to explore factors which determine bank employees' attitudes toward computers. Nationalized banks in India were selected for our study because a. through improved speed and quality of their service, banks have tremendous potential to help accelerate country's economic progress; b. banking operations are highly amenable to computerization as evident from the experiences of many developed countries, and c. the Indian government has been initiating efforts to computerize banking operations in a phased manner (Computers Today, 1990). Banks, too, have been equipping themselves with suitable hardware and software (Kashyap, 1990). Training programmes are being conducted extensively to impart skills to employees. Yet the progress of computerization in Indian banks has remained much below the expectation (Sharma, 1990).

In our study, the overall issue was to identify the factors associated with ATC so that the use of computers in banks could be encouraged. Research on attitude formation and change as well as recent studies on ATC were reviewed to identify relevant variables.

Exposure and Attitude Change: An important stream in literature on attitude change is centered around the exposure hypothesis. According to this approach, attitudes get influenced by exposure and contact. A number of studies which examined the exposure-attitude relationship reported a positive relationship between the two variables (Johnson, Thomson and Frinck, 1960; Zajonc, 1968). Zajonc (1968), for example, varied the frequency of visual exposure of respondents to unfamiliar stimuli such as nonsense words, Chinese characters and photographs. His finding was that greater visual exposure was associated with a more positive attitude towards the stimuli. He hypothesized that with more exposure, the respondents' initial anxiety towards or fear of the stimulus would gradually decrease. Greater exposure would lead to a greater acceptance of the stimulus which is likely to translate into more positive attitudes. Spangenberg and Nel (1983) examined the effect of equal status contact on ethnic attitudes and found a positive relationship. Likewise, Muir and McGlamery (1984) explored racial attitudes in a deep south campus during the first decades of desegregation and found a positive association between contact and attitudes: more contact seemed to have led to more integrative attitudes among black and white students towards each other.

We wanted to examine the exposure theory with regard to attitudes toward computers. Applying the theory to computers, it can be speculated that those people who have no familiarity with computers may harbour strong fears about the new technology and may have negative attitudes. Conversely, people who are exposed to and conversant with computers may have no such anxieties and fears, and may hold favourable attitudes toward computers. If the relation between exposure and attitudes holds true in case of computers, organizational interventions can focus on creating opportunities for greater exposure to computers, hoping that familiarity would automatically lower resistance to computers and soften biases.

Therefore our first research question was: Do people who are exposed to computers have a more favourable attitude towards computers than those who do not have such exposure?

Gender and Attitudes: A number of studies have tried to probe the relationship between gender and response to information technology (Gutek and Bikson, 1985; Gattiker, 1990; Shashaani, 1993; Todman and Dick, 1993). These studies derive their lineage from a variety of perspectives. Some

2

researchers view such attitudes as having their genesis in early socialization practices in schools which give different messages to the male and female child about the "gender-appropriate" attitudes, attributes and behaviours. For example, Shashaani (1993) investigated sex-related differences in attitudes toward computers among secondary school children in the context of differential experiences in the process of socialization. She found that boys were more interested in computers than girls, had high self confidence in their ability to use computers, and tended to see computer more as a masculine technology. Interestingly, a positive correlation was observed between lack of interest and confidence of female students to use computers, and their socializers' belief in the inappropriateness of computers for girls, demonstrating the influence of gender socialization process on attitudes. In a study of students' and teachers' attitude to computers. Todman and Dick (1993) reported gender differences among students: boys had more favourable attitudes than girls. Also, as a confirmation of teachers' role in the socialization process of students , pupil-teacher attitudes were found to be positively related.

In the work context, research concern has essentially been about the different experiences of men and women in computerized offices (Gutek and Bikson, 1985),and the role of gender relations in new technology (Probert, 1992). Studies have indicated that information technology is associated with more advantages for men than women: "Women occupy less important positions than men; and their computer use is strikingly consistent with their subordinate role". However, Gutek and Bikson (1985) reported womens' computer attitudes to be more favourable than their office position would suggest. Some researchers (Applebaum, 1992; Probert, 1992) have expressed concern about the likelihood of women being discriminated against in the implementation of new information technologies which offer new opportunities to people. Often, job segregation by sex excludes women from new workplace technologies like computers. Sometimes women are reported to be themselves contributing to such segregation by choosing to stay away from opportunities like computer appreciation courses and computer-proficiency opportunities.

In the case of Indian banks as modern rational organizations, the possibility of apparent discrimination against women employees by denying them computer-related growth opportunities does not exist. In computerization plans recommended for the Indian banking industry (RBI Report, 1984), eligibility criteria for computer-related exposure are gender-neutral. However, studies of general attitudes toward women in banks (Bhatnagar, 1987) show the preponderance of conservatism implying the possibility of subtle disadvantages for women in terms of training and placement segregation leading to women retaining their apprehensions about computers. Also, in a tradition-bound society like India, where child-rearing practices uphold sex-role stereotypes about gender-appropriate attitudes and

behaviour, and where family expectations continue to have strong influence over the individual (Kanungo, 1990), it is possible that interest in, and urge to exercise command over new technology is considered more appropriate for the 'agentic' male than for the 'communal' female (Eagly and Steffen, 1984).

Our next research question was: Do male and female employees differ in their attitudes toward computers?

Use and Attitudes: Studies exploring ATC have often reported significant relationship between ATC and computer use (Dombrot et. al., 1985; Hudiberg, 1989). In fact, researchers like Rafaeli (1986) have proposed a model in which employee attitudes toward working with computers are shown to be determined by the use of computers moderated by job involvement and organizational commitment. The second part of the theoretical model proposed by Brock and Sulsky (1994) also suggests that computer use is predictive of the "positive, beneficial tool" attitudes toward computers. This relationship, if proved true in the context of Indian banks, can have significant managerial implications for designing implementational strategies for computerization. We, therefore, decided to examine the relationship between the use of computers and attitudes toward computers in the context of Indian banks.

Our third research question was: Do users of computers have a more favourable attitude towards computers than the nonusers?

Organizational Level and Attitudes: Studies of organizational cultures in Indian organizations have often reported significant authority patterns influencing subordinate behaviour (Kakar, 1971), and high power distance (Hofstede, 1980) between different employee levels. In Indian banks at the branch level, officers and clerks constitute two distinct categories. As per the promotion policy of nationalised banks, 80% officers are promoted from the clerical cadre; the rest are direct recruits many of whom had served as clerks at other banks and joined their present bank as officers after qualifying in a competitive entrance examination. Thus the present profile of individuals in the officer and clerk categories may not be significantly different in terms of their academic and socio-economic background; yet the nature of their present work roles and responsibilities differs considerably. In bank branches, clerks are responsible for the 'doing' part of branch banking such as making entries in passbooks, calculating interest, totalling balances, etc. The officers' role is verification of the work

4

done by clerks, crosschecking and monitoring in addition to the planning, organizing and supervisory roles.

At present, most bank branches with computers in India have either PC\XTs or PC-386. In branches having computers, the task of the clerk is essentially data entry and calculation of products by invoking suitable options. Officers check the output to ensure errorfree entries in different ledgers and efficient housekeeping. For the success of computerization efforts, it would be important to know whether any attitudinal differences exist between officers and clerks. Against the backdrop of reported power distance in Indian organizations, we wanted to examine if the employees at the two organizational levels indeed held different attitudes toward computers.

Our last research question, therefore, was: Do bank officers and clerks differ in their attitudes toward computers?

Method

The Sample

A sample consisting of 400 bank personnel employed in four leading nationalized banks in Ahmedabad city were contacted for the study. After explaining the objective of the study, they were given a questionnaire and were requested to fill it up and return to the researcher. The sample was drawn from five organizational levels, which ranged from clerical cadre through top management. Two hundred and twenty seven questionnaires out of the four hundred distributed, were returned yielding a response rate of 56.7 per cent. Fourteen of these 227 questionnaires were incomplete and were therefore excluded from the analyses.

The sample consisting of 213 individuals contained 111 men and 102 women. The mean age was 37.5 years and the standard deviation 7.3 years (range 25-57 years). The bulk of the sample (62.9%) comprised of clerks. About one-fifth (21.1%) of the respondents belonged to junior levels of management and about one-tenth (11.7%) were middle level managers. Senior and top managers were around 4.2 per cent. The majority of them (69.5%) were graduates, i.e. had 15 years of schooling. Post-graduates comprised 22.5% of the sample and 3.7% possessed professional qualifications. The respondents had been in service from 2 to 37 years with a mean of 14.8 years. About three-fourths (73.7%) of the respondents did not use computers and the remaining were computer users. Computers were available to slightly more than half (53%) of the respondents. The other respondents reported non-availability of computers in their respective departments.

Thus the typical subject from this sample of bank personnel was a graduate, aged about 37 years, who had been employed for about 15 years, who did not use computers and was currently working as a clerk in a nationalized bank branch where computers were available.

The Questionnaire

The Attitude Toward Computers Scale (ATCS) developed by Chhokar and Bhatnagar (1989), in addition to a demographic profile was employed for data collection. Besides the usual items, the demographic profile sought information on respondent's sex, level in the organization, whether or not the respondent had exposure to computers through training, and whether or not the respondent had been using computer at work.

The dependent variable was measured using ATCS. Though a variety of scales are available to measure attitudes toward computers, their use in India has not been reported. It is possible that cultural differences may confound results. It was decided to use ATCS because of its validation in the Indian organizational setting. The ATCS is a 23-item self-report questionnaire consisting of seven subscales. The first subscale - Work Facilitation (WF) - consists of seven items mostly referring to how, as a result of use of computers, working would become easier, and more enjoyable. The second subscale termed "Effect on People" (EOP) consists of three items and refers to possible retrenchment and reduced interaction as a result of computerization. The subscale "Preparatory Action" (PA) refers to preparation required before computers can actually be used. The next subscale labeled "Effect on Autonomy" (EOA) contains items referring to control of peoples' behaviour at work and loss of freedom. The fifth subscale "Quality of Output" (QOO) contains three statements concerning the quality of data provided by computers and the effect of computerization on the speed and thoroughness of work. The next subscale termed "General Effectiveness" (GE) contains three items about the overall effect of computerization. The last subscale "Nature of Work" (NOW) refers to the variety and challenge offered in jobs as a result of use of computers. The estimated reliability of these seven subscales ranged between 0.441 and 0.825. Internal consistency reliability for the complete instrument with all the 23 items was 0.86.

In our study, respondents were asked to mark their personal opinion concerning the 23 statements on a seven-point scale ranging from 1 ("Strongly Disagree") to 7 ("Strongly Agree") with the midpoint 4 representing "Neither Disagree nor Agree". Eleven statements were negatively worded to reflect an unfavourable attitude toward computers, which were reverse scored. Thus a high score indicated a favourable attitude and a low score signified an unfavourable attitude toward computers.

Results

Data were analyzed to study the relationship between exposure to computers, gender, use of computers and organizational level on one hand, and attitudes toward computers on the other.

Results showed no significant difference between exposure and attitudes. Also there was no gender difference in attitudes toward computers. Thus our first two research questions were answered in the negative by our study. Regarding the use of computers and attitudes, our results showed a significant difference (p < .05) in the cumulative attitude score between the users and non-users; other differences were not significant (Table 1). Computer users thus appeared to possess a more favourable attitude toward computers than the nonusers.

Table 1 here

In order to test whether organizational level was related to attitude toward computers, t-tests of the mean scores of the ATC subscales of managers and clerks were performed. Table 2 shows the results of the t-tests. The t-values showed distinctly significant differences between officers and clerks in their attitudes toward Work Facilitation, Effect on People, Effect on Autonomy subscales and in their Cumulative Attitude Toward Computer score. Notably, all the above differences were significant at .01 level and in the same direction: officers had a more favourable attitude toward computers than clerks.

Table 2 here

Discussion and Implications for Research and Action

Although it is customary to discuss only significant differences, we believe finding no significant differences is often a useful result which merits exploration.

The fact that exposure and attitude towards computers were not related in our study indicates that the mere exposure hypothesis (Zajonc, 1968) postulating that heightened exposure leads to formation of more favourable attitudes need not always operate in a simplistic fashion. Indeed in another setting, where researchers examined the relationship between exposure to women managers and attitudes toward women as managers, it was found that it was not exposure and interaction with women managers, but the satisfaction with interaction, which was positively related with attitudes toward women as managers (Bhatnagar and Swami, forthcoming). Likewise in case of exposure to computers and attitudes toward computers, though we found no significant relationship, it is possible that mere exposure to computers and attitudes may not be related; but the 'quality of exposure'--a refinement of the exposure variable not included in our study -may be related to attitude towards computers. It may be argued that if employees' exposure to computers impressed them with the usefulness,

enjoyability, or both, of using computers, then their attitudes might become more favourable, and the other way round. As agenda for future research, we suggest greater exploration of the construct 'exposure', which may enrich our understanding of factors leading to favourable and unfavourable attitudes toward computers.

Our second finding was that there was no significant gender difference in attitudes toward computers. This result provides one more instance of empirical support to the thesis of Donnell and Hall(1980) that the issue of gender differences for a variety of attributes is a 'significant case of no significant differences.' This absence of gender differences becomes significant if we remember that in our study, we examined employees' attitudes in a traditional society like India in which (a) work and family socialization processes often exercise strong influences over individual modes of thinking and action choices (Kanungo, 1990); and, (b) sex-role stereotypes at workplace have created a variety of disadvantages for working women (Bhatnagar, 1987, 1988). Against this backdrop, it is a positive sign of the changing times that in Indian banks, male and female employees do not differ in terms of their attitudes toward computers. The absence of gender difference in attitudes becomes all the more striking in the context of the specific work technology of technical work which as compared to managerial work, is perceived in a more "masculine" way (Bailyn, 1987). Our results show that even for newer technologies like computers, gender appears a non-issue so far as our respondents' attitudes towards the technology are concerned.

The western research cited by us earlier showed the prevalence of gender differences in ATC, which is contradicted by our findings. Is it possible that though embedded in a traditional society, people in Indian organizations hold a more gender-neutral disposition to technology than their counterparts in the west? Future research can throw light on this possibility.

Our third finding was that though the use of computers and subscales of ATCS were not related, there was a significant positive correlation between the use of computers and the overall attitudes toward computers. This finding is consistent with studies by Rafaeli (1986) and Hudiberg (1989) who found significant correlations between the use of computers and ATC. Brock and Sulsky (1994) used Bem's (1972) self-perception theory to explain the causal link between computer use and 'beneficial tool' beliefs about computers. According to Bem's theory, people maintain consistency between attitude and behaviour by inferring their attitudes from self-perceptions of their own behaviour. "Because I use computer, it must be a useful tool," runs the logic according to this theory. Our results showing positive correlation between use of computers and ATC supported Bem's theory. Such a relationship has significant implications for practitioners. If conditions can be created wherein people start using

computers (even in an experimental mode) irrespective of their initial attitudes, it is likely that the fact of use may shift the neutral or negative ATCs towards more favourable ones. However, the self-perception theory can work if the use is perceived as being voluntary and not forced. And there lies a major challenge for people who want to facilitate the integration of computer at the workplace:How does one create conditions in which the change targets voluntarily try out the new behaviour irrespective of their prior predispositions? Our study suggests this to be an important issue for future research.

The last research question received an overly affirmative answer from our study. Officers and clerks differed in their attitudes in a variety of ways. Officers had a significantly more positive attitude towards Work Facilitation, Effect on People, and Effect on Autonomy subscales, as well as the overall ATC than the clerks, and differences between officers and clerks were significant at .01 level. This was an intriguing result because as mentioned earlier, most of the officers in banks are either promoted from clerical positions in the same bank, or were clerks in another bank and have entered the officer cadre in the current bank through a competitive examination. In other words, our officer and clerk respondents shared similar intellectual, academic and socio-economic backgrounds. The only difference between these two groups was their different organizational levels, resulting in different roles and responsibilities. Could this difference between officers and clerks be so strong as to neutralize the effect of many similarities among them?

In order to understand this result, we interviewed a few bank officers, clerks and a faculty member who teaches computer courses at the apex training college of a bank. When our findings were shared with these bankers, they were not surprised. Discussions with them indicated that the attitudinal differences between managers and clerks could be due to the different work-related implications of computerization for officers and clerks. Regarding Work Facilitation, the use of computers facilitated the work of an officer considerably, who now needed to look at computer printouts to detect mistakes instead of the manual verification of work in ledgers. Also, due to efficiencies associated with computer, the housekeeping (daily balancing of books), which is a responsibility of the manager but not a clerical concern, improved considerably. The nature of work of clerks changed to data entry, not necessarily reducing the workload. This may explain more positive attitudes of officers compared to clerks.

Regarding Effect on People, the items in the ATCs were negatively worded and were reverse scored. They included possibility of retrenchment, creating a special class of professionals making the rest of the people unimportant, etc. When computers were introduced in Indian banks, there was a

widespread fear that computerization might lead to extensive loss of jobs for clerks. In fact, the managements had to sign agreements with workers' unions promising no retrenchment. As the banking business per employee increased, the possibility of decline in future recruitments in clerical cadres as a result of computerization remained. The less positive scores of clerks compared to officers on the Effect on People dimension appear to be an acknowledgement of this reality that computerisation has not resulted in retrenchment but the growth of future jobs has been adversely affected.

The next significant difference between officers and clerks was concerning computer's Effect on Autonomy. Like the previous results, officers held a more positive attitude than clerks. In the bank branches, computers are predominantly used by clerks, and essentially for interest calculation, balancing of books, etc. Most officers fight shy of using the machine themselves. Clerks enter data, select appropriate options and the predesigned software provides the product. However, for reasons of security, clerks have to obtain backups before the closing of the branch in the evening and recheck next morning to ensure that the is intact. This increased work discipline is in contrast to the earlier practices of writing supplementaries and often leaving the balancing of books to the officers. This loss of earlier freedom for clerks may have contributed to their less positive attitudes than officers.

The aggregation of the above major differences resulted in the significant difference between officers and clerks in their cumulative ATC. Our results lend strong support to the thesis of Breer and Locke (1965) that task experiences often are major determinants of attitudes. Our study shows that since computers impacted the task experiences of officers and clerks differently who otherwise shared many similarities, there were noticeable differences in their attitudes toward computers. We agree with the observation (Breer and Locke, 1965) that task experience is capable of exerting a powerful influence on beliefs and attitudes--in our case attitudes toward computers. This finding has significant implications for academics as well as practitioners. For understanding determinants of ATC at workplace, research studies need to include real employees and real issues at the workplace. A number of studies dealing with ATC use college undergraduates as subjects which not only raises the issue of restriction of age range because of the limited age distribution of the sample (Brock and Sulsky, 1994), it also distances the study from important realities and work-related variables such as task experience. However, the explanations for differences provided above should be viewed as informed speculations to be probed systematically by future research. Also cross-cultural studies can be designed to examine if differences in ATC between officers and clerks can be attributed to task experiences alone or to the strong hierarchy orientation often reported in Indian organizations. For practitioners, the implication is that for understanding the attitudes of people toward computers, the

clues have to come from the personal meaning and implications of the new technology for them. If ATCs have to be influenced positively, our study suggests that the personal experiences of people with computers as well as subjective implications of computers for people need to be understood and managed.

Conclusion

Our study of ATC among employees of Indian banks explored some variables conventionally associated with ATC such as exposure and gender, and found no relationship. We found positive relation between usage and ATC which though statistically significant, was not very strong. However, when we tried to probe the relation between organizational level and ATC, we found a strong positive correlation. Exploring the meaning of this relationship led us to the conclusion that ATC is impacted by the actual task experience with computers which differed significantly in the case of two organizational levels namely officers and clerks. Our study had some obvious limitations. Although we carried out a correlational study, we assumed causality about our results. These assumptions of causality are based on directions provided by earlier studies. However, because we did not establish any cause-and-effect relationship. caution should be exercised in drawing implications of our findings. Also, while trying to interpret our results we interviewed a few practitioners. Our interpretations are based on the insights derived from these interviews. These assumptions and inferential leaps can be tested by future research.

Table 1					
Computer Usage and Attitude Toward Computers					
Variables	Respondents using computers		Respondents not using computers		t Statistic
	Mean	SD	Mean	SD	
Work Facilitation	42.41.6	6.4	40.0	7.2	1.450
Effect on People	12.5	4.5	11.6	4.5	1.323
Preparatory Action	11.9	2.7	10.9	3.2	1.946
Effect on Autonomy	14.1	4.2	13.2	3.7	1.412
Quality of Output	16.6	3.5	16.5	3.6	0.118
General Effectiveness	21.3	3.0	21.2	2.5	0.214
Nature of Work	11.3	3.1	10.6	2.6	1.498
Cumulative Attitude Score	129.2	15.9	124.1	15.6	2.089*
* p < .05					

Table 2					
Organizational Level and Attitude Toward Computers					
Variables	Officers N=79		Clerks N=134		t Statistic
	Mean	SD	Mean	SD	
Work Facilitation	42.1	5.5	39.4	7.7	2.767**
Effect on People	12.9	4.7	11.2	4.3	2.818**
Preparatory Action	11.6	2.8	10.9	3.3	1.497
Effect on Autonomy	14.5	3.6	12.8	3.9	3.133**
Quality of Output	16.9	3.1	16.3	3.8	1.109
General Effectiveness	21.2	2.5	21.2	2.7	0.084
Nature of Work	10.8	2.8	10.8	2.7	0.054
Cumulative Attitude Score	130.1	14.5	122.7	15.9	3.394**
** p <.01 * p < .05					

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