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PERSONALITY VARIABLES ON GROUP COHESION, TEAM PARTICIPATION AND TOTAL LEARNING

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ABSTRACT

This paper looks at performance in the simulation as a dependent variable. It explores the influence of two independent variables on performance, the cohesiveness of the team and the personality of the individual.

Cohesion and Performance

One expectation about the relationship between performance in the simulation and the cohesion of the teams playing it is that cohesive teams perform better than non-cohesive ones. This hypothesis has been proposed by many theorists, especially by social psychologists. For example, according to Penrod [24], a high degree of cohesiveness has several effects that should be conducive to high productivity. One of these is greater participation in the group's endeavors by each group member. A number of studies have been undertaken confirming that cohesion elicits greater participation. The rate of absenteeism is lower, and the work effort is greater in a cohesive group [51. In addition, communication between group members is more frequent in cohesive groups [18] and according to Penrod [24]. cooperation is greater. Finally, Exline [24] and Lott and Lott [18] have found that satisfaction is greater in cohesive groups.

It might be expected that these positive results associated with cohesiveness would lead to higher productivity. However, the evidence from the industrial and educational psychology disciplines is not uniformly supportive of this expectation. On one hand Van Zelst [34;35J conducted two experiments testing the relationship between cohesion and productivity. In both studies carpenters and brick layers in cohesive groups had lower turnover and lower production costs than workers in less cohesive groups. In the classroom, Shaw and Shaw [311 found that cohesive groups of second graders improved their spelling scores to a greater degree than did non-cohesive groups.

On the other hand, there is research evidence which contradicts the expectation that cohesion and productivity covary. R. L. French [11], in a study of a military camp, attempted to relate a sociometric index of company cohesiveness to a variety of measures of performance in drill and athletic competition, academic work, participation in community activities, etc., and found no relationship between cohesion and performance. Darley, Gross and Martin [9] investigated the relationship of sociometric indices of cohesiveness to judges' ratings of the excellence of group written essays and found that the two variables did not covary. Accordingly, Collins and Gueskow [7] have concluded that the research investigating the relationship between cohesion and performance is non- conclusive.

Thus the evidence suggests that cohesive groups do not always influence their members towards high productivity. An explanation that accounts for this suggests that the relationship between productivity and cohesion is mediated by the attitude of its members. If these attitudes towards productivity are positive, the cohesive group will be productive. If they are negative the group will not be productive. For example, Back [1] suggests a central principle that the stronger the cohesion, the stronger the influence toward uniformity in general, and in particular, towards issues that are important to the existence of the group. A church group may allow differences to exist regarding their in support of various baseball teams but not in the area of religious beliefs, and for our purposes here, a cohesive work group may allow the existence of differences in religious beliefs but not allow differences in beliefs about productivity.

Zaleznik, Christiansen and Roethlisberger [38] state that the greater the group's cohesion, the greater the productivity of the group if group attitudes are supportive of the organization's goals. Conversely, productivity is lower if the group resists the organization's goals. Cattel [6] suggests that goal effectiveness results from a combination of positive group attitudes, similarity of group attitudes, and a lack of need to expend energy to maintain group harmony.

This suggest' on by Cattel is really two hypotheses. The first is that cohesive groups influence their members towards uniform attitudes--and there is laboratory evidence supporting this notion. In two separate experiments (Lott and Lott [18] and Sakuri [27]) certain group members were led to feel more attracted to their groups while others were not. In both experiments those who were more attracted to their groups were more influenced by them.

The second hypothesis is that there is a relationship between attitudes towards productivity and productivity and that this relationship is strengthened by the existence of group cohesion. Put another way given the existence of groups, the stronger the group cohesion, the stronger the relationship between productivity and attitudes toward productivity. The evidence for this hypothesis is not clear. In laboratory experiments Berkowitz [3] and Shacter, et al. [30] found that highly cohesive groups tended to be less productive when there were negative attitudes towards productivity. For members with positive attitudes, however, cohesive groups were no more productive than non-cohesive groups. Shacter, et al. [30] explained their results by suggesting that the participants entered their experiment with initially positive attitudes towards productivity. To get their subjects to be less productive, cohesive groups were necessary, but to influence subjects with already positive attitudes, cohesion was unnecessary.

Cohesion and Performance in Simulations

Only one study has proposed and tested the Cohesion-Influence toward attitude uniformity-Productivity (CIP) hypothesis in a simulation. Wolfe and Box [36] hypothesized that high cohesion leads to high performance when moderated by heterogeneous skills and positive attitudes as exhibited by high academic achievement. This CIP hypothesis was not confirmed in this study although a significant positive relationships were found between certain attributes (average team CPA, average team SAT score, and the economic orientation of the team's leader) and simulation performance. All other previous research focusing on cohesion and game performance has tested whether the two variables move together.

In three of these studies, cohesiveness was assumed based on the method by which groups were formed. Deep, Bass and Vaughn [10] studied teams which were intact from a previous T-group experience vs. randomly assigned teams, and Norris and Niebuhr [23] and Hsu [17] studied self-selected teams vs. instructor assigned teams. In all three of these studies it was presumed that the self-selected or historically intact teams would be more cohesive and therefore more productive than randomly assigned teams. All self-selected teams exhibited cohesive behavior (such as in better communication and mutual admiration) but they did not outperform randomly or instructor-assigned teams when measured by return on equity or stock price. Cohesion-related behavior was influenced by how a group was formed although performance was uninfluenced by the selection method.

Studies which measured cohesion by different methods have produced different results. Norris and Niebuhr [23] measured cohesion with an end-game group cohesion scale and found a significant and positive correlation ($r = .52$, $p. < .05$) with performance measured by ROE. Meising [21] used graduate student observers to rate a team's cohesiveness throughout their game and found that of five teams, the most cohesive one was the best performer and the least cohesive the worst when again measured by ROE. Meising and Preble [22] found that a cohesion factor emerging from a mid-game questionnaire differentiated the performance of the six teams studied. In another study by Gosenpud and Meising [12] positive correlations were found between performance and midpoint measurements of attraction ($r= .31$, $p = .067$) and the degree to which teammates worked together ($r = .25$, $p. = .024$). Yantis and Nixon [37] compared the performance of high ability/uncohesive teams with that of low ability/cohesive teams and found no difference in their performance. And finally, Gosenpud, Milton and Larson [14] tested Sherif and Sherif's [32] hypothesis that cohesion results from success as well as success resulting from cohesion. Cohesion and performance were measured at four week intervals during a twelve-week run, and cohesion was measured through questionnaire items and by attendance at group meetings. Their results confirmed the hypothesis. They found that performance scores at the fourth week predicted cohesion questionnaire ratings for the eighth week ($r = .24$) better than the fourth week cohesion ratings predicted performance in the eighth week ($r = .11$). Gosenpud, et al. also found that eighth week performance predicted group attendance at week twelve ($r = .32$) better than week eight attendance predicted week twelve performance ($r = .25$).

In contrast to the first studies reviewed here where cohesion was assumed from the member selection process, these latter studies found that cohesion appears to evolve with game participation. Cohesion appears to be built on game-related effort and interaction and not on prior association. The results from these studies show cohesion and performance to be associated where in the earlier studies it was not. It may be tentatively concluded that performance is correlated with cohesion when team cohesion evolves through game participation while performance and member control over teammate selection has no relationship.

This conclusion should be tempered, however, as the evidence is not overwhelming. Firstly, all the above studies report correlational or observational results and only the correlations of Norris and Niebuhr [23] were over $r = .35$. Secondly, there are studies [4; 13] which show no relationship between cohesion and performance. Thirdly, there is a tendency for authors to submit (and reviewers to accept) only those studies which demonstrate positive results.

Personality and Performance

In contrast to the relationship between cohesion and performance, very few studies have explored the relationship between personality and performance in a simulation. The personality trait most often studied was that of self esteem or confidence. Vance and Gray [33] studied the relationship between performance and a number of personality traits including the trait self- assurance. They found a positive relationship for both their student and businessman samples. Gosenpud and Miesing [12] explored the relationship between pre-game confidence and end-game performance and found no relationship. Hall and Foster [15] explored the relationship between self-esteem and performance although they looked at the effect of performance on esteem. They found that an individual's self-esteem increased after performing well in the simulation.

Given so little direct empirical evidence, it is unclear whether or not personality affects simulation performance. This relationship is a wide open area for interested researchers. According to personality theorist Sarison [28] and to such management theorists as Hellriegel, Slocum and Woodman [16] and Schermerhorn, Hunt and Osborn [29], efforts investigating this relationship should yield positive results. Evidence from social psychological studies provides hints as to which specific personality traits might affect simulation performance. Sarison's [28] studies indicate that individuals with low test anxiety perform better than those with high test anxiety, and the need for achievement, as measured by projective tests, positively correlates with performance speed [19], entrepreneurial tendencies [20], and occupational mobility [8]. Rosenberg [25] found that high school juniors and seniors with high self-esteem were more likely to choose occupations that required competitiveness and leadership. Finally, individuals with a sense of efficacy 2 1 and an internal locus of control [26] have been shown to be more likely to delay gratification to reach long range goals. These studies suggest that simulation performance may be higher for students who are low in test anxiety, have high needs for achievement, possess an internal locus of control, and have high self-esteem and efficacy.

Summary and Conclusions

Studies have been undertaken exploring the relationship between cohesion and productivity, and although not always methodologically sophisticated, there have been a number of studies exploring these variables in the simulation milieu. Enough of these studies have shown a positive relationship between cohesion and performance to suspect, that other things being equal, groups that attain their cohesion by working together outperform noncohesive groups.

Researchers may have difficulty testing the CIP hypothesis in a simulation setting. Only one study has tested this hypothesis and most studies confirming CIP have been performed in the laboratory where attitudes (including those towards productivity) have been experimentally controlled. In a simulation, where motivation and interest can vary over time [14], these attitudes are very difficult to measure and control. However, if we can measure these attitudes, I think the CIP hypothesis can be confirmed--when team members are motivated cohesion will boost performance; when members are not motivated cohesion will distract them and will lower performance. This is an extremely important avenue for further research.

Another fruitful direction for future research involves treating cohesion as an outcome of good performance

instead of the opposite causal direction. Virtually every study reviewed here has treated performance as the dependent variable. Yet in Gosenpud, Milton and Larson [14] performance predicted cohesion at least as well as cohesion predicted performance. In order to fully understand the relationship between performance and cohesion, the causal direction of cohesion/performance should be investigated.

Very few studies have been performed in the simulation exploring the relationship between performance and personality variables. The personality variable most often studied has been self esteem and the evidence is inconclusive as to the relationship between esteem and performance. Social psychological studies have explored the influence of personality on performance, and these studies show performance to be higher for people low in test anxiety, with internal locus of control and high in needs for achievement, self esteem and efficacy.

Based on the literature reviewed, the following hypotheses are offered to the consortium.

(1) In general cohesive groups will perform better in the simulation than non cohesive groups.
(2) Cohesiveness strengthens the relationship between attitudes towards performance and performance itself. The stronger the cohesion, the stronger the relationship between performance and attitudes towards performance. Cohesion helps to lower performance when there are negative attitudes towards performance as well as raise performance when there are positive attitudes.
(3) Given positive attitudes towards performance, good performance strengthens cohesion. Given negative attitudes towards performance, poor performance strengthens cohesion.
(4) Simulation performance varies with the personality of the players. High performance results when players are high in self-esteem, efficacy, need for achievement and internal locus of control.
(5) The self-esteem of the simulation participant increases as performance increases.

REFERENCES

[1] Back, K.W., "Influence Through Social Communication," Journal of Abnormal and Social Psychology, Vol. 46, 1951, pp. 9-23.

[2] Bandura, A., "Self-Efficacy Mechanism in the Human Agency," American Psychologist, Vol. 37, 1982, pp. 122-147.

[3] Berkowitz, L., "Group Standards, Cohesiveness and Productivity," Human Relations, Vol. 7, 1954, pp. 509-519.

[4] Brand, C.F., "Learning from Simulation Games: Effects of Sociometric Groupings," Simulation & Games, Vol. 11, No. 2, 1980, pp. 163-176.

[5] Cartwright, D. and A. Zander, Group Dynamics, 3rd ed. (New York: Harper & Row, 1968).

[6] Cattell, R.B., "Concepts and Methods in the Measurement of Group Syntality," Psychological Review, Vol. 55, No. 1, 1948, pp. 48-63.

[7] Collins, J. and B. Gueskow, A Social Psychology of Group Process for Decision-Making (New York: Wiley, 1964).

[8] Crocket, H.J., "The Achievement Motive and Differential Occupational Mobility in the U.S.," American Sociological Review, Vol. 27, 1962, pp. 191-204.

[9] Darley, J.G., N. Gross, W.C. Martin, "Studies of Group Behavior Factors Associated with the Productivity of Groups," Journal of Applied Psychology, Vol. 36, 1952, pp. 396-403.

[10] Deep, S.D., B.M. Bass, and J.A. Vaughan, "Some Effects on Business Gaming of Previous Quasi-T Group Affiliations," Journal of Applied Psychology, Vol. 51, No. 5, 1967, pp. 426-431.

[11] French, R.L., "Sociometric Status and Individual Adjustment Among Naval Recruits," Journal of Abnormal Social Psychology, Vol. 46, 1951, pp. 64-72.

[12] Gosenpud, J. and P. Miesing, "Determinants of Performance in the Simulation," Developments in Business Simulation and Experiential Learning, Vol. 10, 1983, pp. 53-56.

[13] Gosenpud, J., P. Miessing and C. Milton, "A Research Study on Strategic Decisions in a Management Simulation," Developments in Business Simulation and Experiential Learning, Vol. 11, 1985, pp. 161-165.

[14] Gosenpud, J., C. Milton and A. Larson, "Predicting Performance Over the Course of the Simulation," Developments in Business Simulation and Experiential Learning, Vol. 12, 1985, pp. 5-10.

[15] Hall, D.T. and L.W. Foster, "A Psychological Success Cycle and Goal Setting: Goals, Performance, and Attitudes," Academy of Management Journal, Vol. 20, 1977, pp. 282-290.

[16] Hellriegel, D, J.W. Slocum and R.N. Woodman, Organizational Behavior (St. Paul, Minn.: West Publishing Co., 1983).

[17] Hsu, T., "A Further Test of the Group Formation and Its Impacts in a Simulated Business Environ- ment," Developments in Business Simulation and Experiential Exercises, 1984, pp. 6-9.

[18] Lott, A.J. and B.E. Lott, "Group Cohesiveness, Communication and Conformity," Journal of Abnormal and Social Psychology, Vol. 62, 1961, pp. 408-412.

[19] Lowell, E.L., "The Effect of Need for Achievement on Learning and Speed of Performance," Journal of Psychology," Vol. 33, 1952, pp. 31-40.

[20] McClelland, D., "Achievement and Entrepreneurship: A Longitudinal Study," Journal of Personality and Social Psychology, Vol. 1, 1965, pp. 389-392.

[21] Miesing, P., "Qualitative Determinants of Team Performance in a Simulation Game," Developments in Business Simulation and Experiential Exercises, Vol. 9, 1982, pp. 403-421.

[22] Miesing, P. and J.F. Preble, "Group Processes and Performance in a Complex Business Simulation," Small Group Behavior, Vol. 16, No. 3, 1985, pp. 325-338.

[23] Norris, D.R. and R.E. Niebuhr, "Group Variables and Gaming Success," Simulation & Games, Vol. 11, No. 3, 1980, pp. 301-312.

[24] Penrod, S., Social Psychology (New York: Prentice- Hall, 1983).

[25] Rosenberg, J.M., Automation, Manpower and Education (New York: Random House, 1966).

[26] Rotter, J.B., "General Expectancies for Internal vs. External Locus of Control of Reinforcement," Psychological Monographs, Vol. 80, 1966, I.

[27] Sakuri, M.M., "Small Group Cohesiveness and Detrimental Conformity," Sociometry, Vol. 38, 1975, pp. 340-357.

[28] Sarison, S.B., Psychology in Community Settings: Clinical, Educational, Vocational, Social As- (New York: John Wiley & Sons, 1966).

[29] Schermerhorn, J.R., J.G. Hunt and R.N. Osborn, Managing Organizational Behavior (New York: Wiley & Sons, 1984).

[30] Shacter, S., N. Ellerston, D. McBride and D. Gregory, "An Experimental Study of Cohesiveness and Productivity," Human Relations, Vol. 4, 1951, pp. 229-238.

[31] Shaw, N.E. and M. Shaw, "Some Effects of Socio- metric Grouping Upon Learning in a Second Grade Classroom," Journal of Social Psychology, Vol. 57, No. 2, second half, 1962, pp. 453-458.

[32] Sherif, M. and C. Sherif, Groups in Harmony and Tension: An Integration of Studies in Intergroup Relation (New York: Harper & Bros., 1953).

[33] Vance, S. and C.F. Gray, "Use of a Performance Evaluation Model for Research in Business Gaming," Academy of Management Journal, Vol. 10, No. 1, 1967, pp. 27-37.

[34] Van Zelst, R.H., "Validation of Sociometric Regrouping Procedures" Journal of Abnormal and Social Psychology, Vol. 47, 1952, pp. 299-301.

[35] Van Zelst, R.H., "Sociometrically Selected Work Teams Increase Production," Personnel Psychology, Vol. 5, 1952, pp. 175-185.

[36] Wolfe, J. and T.M. Box, "Relationships Between Team Cohesion Dimensions and Business Game Performance," Developments in Business Simulation and Experiential Exercises, (in press).

[37] Yantis, B. and J.E. Nixon, "Interpersonal Compatibility: Effect on Simulation Game Outcomes," Simulation & Games, Vol. 13, 1982, pp. 337-349.

[38] Zalesznik, A., C.R. Christiansen and F.J. Roethlisberger, The Motivation Productivity and Satisfaction of Workers (Boston: Harvard Business School, 1958).