Lessons from the best and worst student team experiences: How a teacher can make the difference

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Abstract:

This study empirically identifies which teacher-controlled (contextual) variables have the greatest impact on whether the student will have a great team experience or a miserable one.

Full Text:

For as long as formal management education has existed, students have worked in groups to perform team projects.' And for about the same amount of time, teachers have wondered about the best way to structure and administer student teams. This issue has gained greater importance recently as a growing awareness has emerged about the importance of teams in the workplace (A. R. Cohen, 1993; Hackman, 1990). Formal recommendations have been developed on how to effectively create and administer student teams (e.g., Strong & Anderson, 1990). However, to date there has been limited empirical research on how teacher-controlled factors affect the student team experience.

Drawing on earlier theoretical development, the present study takes an applied approach by focusing on contextual variables that a teacher controls in administering teams: method of team assignment, team longevity, the grade weight given to teamwork, the use of peer evaluations, team size, management education, and the quality of the instructions a teacher provides to a team. To examine these variables, we surveyed 116 MBA students about their best and worst student team experiences in their MBA program. Contrasting these best and worst team experiences, we tested hypotheses related to each of the contextual variables. Overall, our goal was to provide teachers with actionable, empirically supported recommendations for effectively creating and administering student teams.

Background and Hypotheses

Almost all of the contextual variables examined here have been studied previously, although most have not been researched in a student teams context. We draw on the existing literature with some intuitive extensions to develop hypotheses for testing.

METHOD OF ASSIGNMENT TO TEAMS

Three approaches to assigning students to teams have been explored in the literature (Decker, 1995): self-selection, random assignment, and teacher assignment. Self-selection has been recommended by some because it may offer higher initial cohesion (Strong & Anderson, 1990), and cohesion has been linked to student team performance (Gosenpud & Washbush, 1991; Jaffe & Nebenzahl, 1990; Wolfe & Box, 1988). Student teams often have very short longevity, perhaps only a few weeks, and so the initial cohesiveness that self-selected teams often possess may help these teams to become productive more quickly. Others have suggested that self-selection may encourage students to take more ownership of group problems (Mello,1993), motivating students to manage interpersonal conflict more successfully. In addition to these benefits of self-selection, we note from our experience that students often ask to work with those they have worked with before in previous classes. It is quite possible that some team-related norms have already been established among these students, which facilitates productivity.

Self-selection is not without problems, however, including the tendency for self-selected teams to be overly homogeneous (Jalajas & Sutton, 1984-1985), and thus not offer the advantages that some diversity may provide (Bacon, Stewart, & Stewart-Belle, 1998). Self-selected teams may also possess an inadequate skill set, unless measures are taken to constrain selfselection (Mello, 1993). Thus, self-selection trades a possible lack of diversity and critical skills for initial cohesiveness and established norms. The trade-off may be wise with teams of brief longevity, especially if the influence of unique skills is minimal.

A second and widely used approach is random assignment (e.g., Cook, 1981; Quirk, 1989; Vora & Akula, 1978). Though some recommend random assignment because it seems fair, others have questioned this conclusion, suggesting instead that randomly assigning teams is "just as unfair as randomly assigning grades-each student would have the same probability of getting an A or an F, regardless of their abilities or efforts" (Bacon et al., 1998, p. 69). Each student begins the class with the same chance of working with

every other student, but due to the random nature of this approach the final team assignments can be quite unbalanced in terms of skills, diversity, and general ability. Random assignment is also not likely to generate teams with a useful combination of skills, or create groups of students who want to work together. We suspect that whereas some randomly assigned teams would, by chance, end up with a desirable combination of students, others would certainly not, and therefore random assignment would not generally be associated with good team experiences and may be associated with bad experiences.

A third approach to making team assignments is the teacher-assigned approach. However, this approach is diffuse (teacher-assignment methods widely differ in the criteria used for making assignments), can be difficult to implement, and is thus seldom used (15% of teams at our school and 18% in a study by Decker, 1995). As the self-selection and random assignment approaches currently predominate in business schools and in our sample, we focus our hypothesis about team assignment on these approaches:

Hypothesis Ia: Best teams will include more self-selected teams than will worst teams.

Hypothesis Ib: Best teams will include fewer randomly assigned teams than will worst teams.

TEAM LONGEVITY

Researchers have suggested that a team moves through distinct phases of development as its members work together (Tuckman, 1965; for a review of team development stages, see Bettenhausen, 1991). For example, Tuckman (1965) proposes that teams proceed through five stages of development:

(a) forming, where members become acquainted with each other and orient themselves to the team task and the team's expectations of them; (b) storming, where individual roles and personalities emerge and conflict occurs about the team's mission, objectives, and task; © norming, where team conflict is resolved, members come to agree on team leadership, roles, and behavioral norms, and team cohesiveness is established; (d) performing, where the team focuses on productive interaction and problem solving to complete its task; and (e) adjourning, where members feel a myriad of emotions as they experience the dissolution of the team once its mission is completed.

Although others have suggested that the progress of team development may not be linear (Gersick, 1989), most agree that teams generally progress with time. Krayer (1988) has noted that having an established team history is one contributor to team maturity. It is possible, however, that when a team stays together too long, a loss in effectiveness occurs. Katz (1982) observed this phenomenon in Research and Development (R&D) teams, and found that project performance peaked in the second to fourth year of a team and dropped thereafter. This estimate of optimal team longevity far exceeds the longevity of a typical student team. Within the limited range of longevity of student teams, more longevity is probably better. Therefore, Hypothesis 2: Best teams will have worked together longer on average than will worst teams.

WEIGHT OF GRADE GIVEN TO TEAMWORK

Given that performance is influenced by rewards (Steers & Porter, 1991) and rewards for students come primarily in the form of grades, we expect that students will perform better on those elements of the course that have greater impact on the final course grade. If the percentage of the course grade associated with teamwork is quite low, students may neglect their teamwork altogether (e.g., LeRosen, 1976). We hypothesize that Hypothesis 3: Best teams will have a higher percentage of the course grade associated with teamwork than will worst teams.

PEER EVALUATIONS

In laboratory settings, researchers have often observed that individuals tend to reduce their effort when working in a team, a phenomenon referred to as social loafing (Ingham, Levinger, Graves, & Peckham, 1974; Latane, Williams, & Harkins, 1979). Many instructors recommend peer evaluations as a way to reduce social loafing in student teams (Mello, 1993; Strong & Anderson, 1990; Williams, Beard, & Rymer, 1991). Team members are thought to social loaf, or free ride, when they perceive that the net benefits (rewards less costs) of free riding exceed the net benefits of contributing their fair share (Albanese & Van Fleet, 1985). Therefore, one way to reduce free riding is to reduce the behavior's net benefits. Peer evaluations are often used to do so by identifying free riders and then reducing their grades for teamwork (rewards). Peer evaluations can sensitize students to the potential for reduced benefits and therefore encourage them to contribute fully to the group effort. Some empirical support for this approach is provided by Harkins and Jackson (1985). In a brainstorming task experiment, individual performance was found to improve when the subjects believed that their own contribution would be identifiable.

There is some evidence that peer evaluation may negatively affect a team. The integration of peer evaluations into team project or course grades creates a hybrid reward system, wherein the individual receives rewards based on both individual and team performance (Wageman, 1995). Rosenbaum et al. (1980) found that such mixed reward systems were associated with poor team performance when the team was given a highly interdependent task. Wageman's (1995) findings concur, but highlight how reward systems may affect motivation more than cooperation. Wageman recommends that the reward system be tailored to the task structure: independent tasks should be associated with individual rewards and team/interdependent tasks with team rewards.

The tasks our MBA teams worked on included some mixed tasks and some highly interdependent tasks. Thus, peer evaluations might negatively affect some teams. However, the peer evaluation processes commonly used at our school are not a zero-sum game-that is, all team members could receive the maximum reward. This may neutralize the potential negative effect of the hybrid reward system. To date, there is only limited empirical evidence supporting the effectiveness of peer evaluations in student teams, and calls have been made for more research in this area (Michaelsen, 1991). Cook (1981) found the performance of his graduate sample was substantially higher among the peer evaluation teams, but the performance differences were negligible among the undergraduate teams. It should be noted, however, that Cook's samples were very small (4 graduate teams and 14 undergraduate teams in total), and no statistical tests were performed. In Strong and Anderson's (1990) study of student opinions about free riding, students indicated that they believed that peer evaluations do reduce free riding, but they rated other factors-including group cohesiveness, small team size, the option to divorce a team member, or the option to leave a team-as having a stronger effect on reducing free riding.

Obviously, peer evaluation could be conducted in a variety of ways, but our test of the effects of peer evaluation on team experiences is limited to the evaluation process used at our school. Through many discussions with other faculty, it appears that the modal process involves confidential, end-of-theterm-only peer evaluation, and that the evaluation may involve rating scales and/or open-ended questions. This general approach is common in the literature (e.g., Clark, 1989; Cook, 1981; LeRosen, 1976, Mello, 1993; Quirk, 1989; Williams et al., 1991), although some suggest a midterm evaluation be used as well. In this article, we will refer to confidential, end-of-the-term-only peer evaluations as the traditional approach to peer evaluation. In light of the positive, though limited, support for traditional peer evaluation in the literature, we hypothesize that Hypothesis 4: A larger percentage of best teams will report using traditional (confidential, end-of-the-term-only) peer evaluations than will worst teams.

TEAM SIZE

There is clear consensus in the literature about team size-keep teams as small as possible (Comer,1995; Strong & Anderson,1990). The rationale for this rule follows from social loafing theory. Latane et al. (1979) describe a number of problems that teams face as size increases, all of which come under the general heading of social loafing. Team performance may decline simply because of the difficulty in coordinating the efforts of a larger number of people (coordination losses). Individual effort may decline because individuals feel that their contributions are not identifiable, and therefore they will not get caught if they reduce their effort (see also Kerr,1983). Individuals may also feel that others on the team will do the work better than they will and so, feeling dispensable to the team, they reduce their effort (see also Kerr & Bruun, 1983). Gentry (1980) noted that dissension among team members increased with team size, especially among sizes of four or more. Bacon et al. (1998) and Gentry (1980) both noted that team performance did not decrease with increases in team size, but we suspect that the student's perception of the quality of the team experience did. Thus, for these reasons, we hypothesize that Hypothesis 5: The average team size on best teams will be smaller than the average team size on worst teams.

MANAGEMENT EDUCATION

The assumption that team training improves team performance is fundamental in the team literature. When teams do not work well, insufficient team training is often the first suspect (Zemke, 1993). Researchers generally no longer concern themselves with the question of whether team training is effective, but instead have moved on to develop a wide variety of team training methods, including methods for managing conflict (e.g., Schultz & Anderson, 1984) and case methods and exercises for training student teams (Fisher, Shaw, & Ryder, 1994; Lerner, 1995; Mesch, 1991). We know of only one study (Eden, 1985) that found that team training was unrelated to team performance.

In our MBA program (like many others), team training is not part of every class where teams are used. Instead, early in their program, the students take two management classes (4 credit hours each) where team concepts are taught, along with leadership and other management concepts. As team concepts are covered in the class, we would expect that the team experiences students have after completing both these

courses might be improved because of the team knowledge gained. Although these courses do not constitute an intensive form of team training, we suspect that this approach to teaching MBAs about teams is common practice, and therefore leads to a very relevant hypothesis:

Hypothesis 6: Among the best teams, the percentage of those who have completed their basic management courses will be higher than among the worst teams.

TEAM INSTRUCTIONS

Several researchers have suggested that having a clear team vision (e.g., Burningham & West, 1995) or at least a clear understanding of team objectives (e.g., Fowler, 1995) is important to team success. When team objectives are unclear, team members may argue over what the team should be doing. If an educational objective for the team is for students to experience and resolve task conflict, this conflict may be constructive (Witteman, 1991). If, however, the instructor has very clear ideas about what the team should produce and how the team should go about the necessary tasks, but these instructions are not communicated to the students, task conflict may be dysfunctional in that it wastes group time in an unnecessary process.

We therefore hypothesize that

Hypothesis 7a: Best teams will be more likely to say the instructor gave them sufficient instructions on outcomes (what the team was to submit or present) than will worst teams.

Hypothesis 7b: Best teams will be more likely to say the instructor gave them sufficient instructions on process (how the team should perform its tasks) than will worst teams.

Method

The present research focuses on contextual variables, and how these variables are associated with good and bad team experiences. We used an in-class survey methodology to test our hypotheses. The final survey was developed based on our review of the literature and a pretest survey.

INSTRUMENT

The survey instrument used for hypothesis testing comprised four sections. The first section contained questions used to obtain descriptive statistics such as the percentage of teams using peer evaluations or the percentage of teams that were self-selected among all teams. The second section contained questions concerning team context, team composition, team process, and team outcomes. Students were asked to respond to each of these questions in each of two contexts: their best team experience and their worst team experience. Students provided responses to each question in a best experience and a worst experience column. To clearly identify these teams in the minds of the students, students were asked to write in the course name corresponding to their best team experience and their worst team experience at the top of the respective column. The third section of the questionnaire, which was not used for the research presented here, asked the student to rate his or her skills in each of seven areas. The final section of the questionnaire contained demographic questions.

A pretest survey was conducted to determine which process variables would be most relevant to our MBA student population. Although the focus of this study is on contextual variables, a small set of process measures was taken to gain insight into the effect of contextual variables on outcomes. In our pretest, a large set of potential process variable items was compiled using published sources on group process and on social loafing. The pretest instrument consisted of 58 items. Students were asked to rate the importance of each item to have a good team. Data were collected from 52 MBA students in two classes. The 6 items that were rated most highly were included in the final instrument.

SAMPLE

The survey was administered in class. Roughly half of the classes surveyed were sections of a first-year MBA course, and the other half were sections of a class taken by students in their second year. Among the 116 respondents, the median age was 27, and the median years of full-time work experience was 4. Of our sample, 44% were women and 18% were international students.

Results

We first conducted some preliminary analyses to better understand which factors were associated with the students' best and worst team experiences, in other words, how they defined these experiences for themselves. We then proceeded to test our hypotheses and perform additional analyses to gain a deeper understanding of our findings.

PRELIMINARY RESULTS

Students were asked to indicate which team was their best experience, and which was their worst (more specifically, which class was associated with their best and worst). We deliberately left "best team" undefined so that we might later gain insight into what outcomes students associated with their best and worst teams. A summary of these outcomes is shown in Table 1. We display the effect size in the table so that the reader can more clearly discern which measures differed the greatest across best and worst teams. The effect size essentially controls for differences in the scale and variance of the items (note that letter grade does not use the same scale as the other items), providing an indicator of the difference between best and worst teams scaled in standard deviation units.2 All effects are fairly substantial, and some are huge. Kirk (1982) has suggested that for a comparison of means, an effect size of .2 should be considered on the small side, whereas an effect size of .8 should be considered large (see also J. Cohen, 1992). The effect sizes may have been inflated slightly by our data collection methodology. Respondents may have experienced a contrast effect in rating their best and worst teams, or perhaps some post hoc rationalization, exaggerating any differences between them. Still, by reporting effect size, we can accurately see the relative effects of these variables.

As can be seen in the table, the students' enjoyment of the team experience and their subjective perception of the team's performance were the most striking differences across best and worst teams. The students' letter grades differed significantly across these experiences, but not as much as their own perception of their performance. Contrary to the adage about learning a lot from bad team experiences, our students indicated that they learned more about the course material and about teamwork from their best team experiences than from their worst.

Table 2 offers some insight into how group composition and process differs across best and worst teams. As can be seen in the table, items associated with social loafing differed dramatically across best and worst teams. Among the team composition items, teams where all members were considered indispensable and all brought valuable skills to the team had the strongest effect on best/worst categorization. Among the process items, teams where all members cooperated and felt accountability for group success and where no members slacked off had the strongest effect on best/worst categorization.

Interestingly, having an effective team leader did not seem to have as strong an effect as many of the other variables shown in the table, although the effect was still statistically significant and moderate in size by Kirk's (1982) standards.

TESTS OF HYPOTHESES

We next examine how contextual variables differ across the best and worst teams. We tested our hypotheses using paired t tests. The results are shown in Table 3. As can be seen in the table, of our nine hypotheses, four are supported, four are not, and one hypothesis is contradicted. Self-selected teams are positively linked to best team experiences (Hypothesis 1 a). Although random assignment (Hypothesis lb) was negatively associated with best teams, this relationship was not significant. Team longevity was also significantly associated with best teams (Hypothesis 2), indicating that teams that are together longer have a better chance of success. Hypotheses 7a and 7b were both supported. Improved descriptions of exactly what the students were required to submit or present (description of outcome, Hypothesis 7a) had a stronger effect at .46 than did improved descriptions of how the group should perform team tasks (description of process, Hypothesis 7b) at .33. The weight given the team grade (Hypothesis 3), the team size (Hypothesis 5), and the presence of management training (Hypothesis 6) all had no relationship with best/worst team experiences. Interestingly, the use of peer evaluations was negatively associated with best teams, reversing Hypothesis 4.

Multivariate analyses were then performed to test our hypotheses more rigorously. Because our study was not a true experimental design, some of our independent variables were correlated. For example, ratings of the quality of the instructor's descriptions of outcomes and descriptions of processes were correlated at .53 ($n = 229$, $p < .01$), and self-selection was negatively associated with peer evaluation ($r = -.34$, $n = 213$, $p < .01$). To control for these covariances, we performed a multivariate analysis, using all hypothesized correlates of best/worst teams simultaneously to predict whether a team was more likely to be a best team

or a worst team. The use of a dichotomous dependent variable (best/worst) in this analysis necessitated the use of logistic regression. The overall model was significant, x^sup 2^(4) = 32.56, p = .000, and the significance of individual coefficients closely paralleled the t tests reported earlier. Once insignificant variables were dropped from the model (p >= .10), Hypothesis la (p = .075), Hypothesis 2 (p =.001), and Hypothesis 7a (p = .000) were again supported, whereas Hypothesis 4 (p = .044) was again reversed. Hypothesis 7b was not supported in this analysis. However, as we noted, student ratings of the descriptions they received about outcomes (Hypothesis 7a) were highly correlated with their ratings of the descriptions about processes (Hypothesis 7b). Thus, in a multivariate model, perhaps only one of these two hypotheses would be statistically significant, but we suspect that both are important for team success. Of the two, the t tests and logit analysis suggest that the description of outcomes has a greater impact on team experiences than does the description of processes.

In the multivariate model, the findings regarding Hypothesis la (selfselection) were not as strongly supported as they were in the t tests. We examined the effect of the method of assignment more carefully in exploratory analyses.

We might expect that during the first quarter of the MBA program, self-selection and random assignment would lead to similar outcomes because the students do not know each other well and have no history together. We therefore reran t tests and the logit analysis excluding all team experiences from the first quarter of the MBA program. Even with the 34% reduction in effective sample size, the best teams were found to be much more likely to be self-selected (75%) than the worst teams (51%), t(150.5) = 3.18, p = .001, and the best teams were much less likely to be randomly assigned (14%) than the worst teams (29%), t(146.3) = 2.31, p = .011. In the logit analysis, the significance of the effect of self-selection increased from p = .075 top = .011, whereas the effect of random assignment remained insignificant (p = .33) when first quarter teams were dropped from the analysis. Although self-selection and random assignment were correlated at r = -.68, the data suggest that self-selection helps more than random assignment hurts.

ADDITIONAL ANALYSES

Although the goal of the present research has been to identify which contextual variables are associated with good team experiences, we asked a few team composition and team process questions to gain some insight into how these contextual variables affect student teams. To explore the effects of contextual variables on team composition and process, we first combined the observations of approximately 116 best and 116 worst team experiences to form a data set of approximately 232 teams. Then, in 11 separate regressions, we regressed each of the five team composition variables and six team process variables on the nine variables associated with our nine hypotheses. The standardized beta coefficients resulting from this analysis, shown in Table 4, indicate which contextual variables affected which composition and process variables. All coefficients shown were significant at the .05 level or less. The columns for random assignment, team size, and percentage of course grade on project were dropped because none of the coefficients corresponding to these variables was significant.

[IMAGE TABLE] Captioned as: TABLE 1

[IMAGE TABLE] Captioned as: TABLE 2

[IMAGE TABLE] Captioned as: TABLE 3

As can be seen in Table 4, many of the regression coefficients achieve statistical significance even though the contrast effect mentioned earlier may have led to the somewhat low adjusted r squares. When best and worst teams are compared statistically, the contrast effect increases the effect size; but when best and worst teams are combined, the contrast effect creates additional error variance, decreasing the effect size, or in regression, leading to lower r squares and lower standardized betas (standardized betas are analogous to the effect sizes studied earlier).

As we would expect, the description of team process was substantially related to all of the process variables, when the process variables were treated as dependent variables. Thus, the teacher's guidance with process helped with process while guidance on outcomes helped with outcomes (Hypothesis 7a).

Discussion and Recommendations

We offer six recommendations that follow from our findings.

1. Provide teams with adequate descriptions of outcomes and processes.
   One of the strongest findings from this research is perhaps the easiest to implement: Give students a good description of what you want. An adequate description of outcomes (exactly what the student is required to submit or present) is strongly associated with best team experiences, whereas an adequate description of process is strongly associated with improved team processes. Give students not only a clear description of the assignment but also a clear indication of how the assignment will be evaluated

(e.g., a detailed grading sheet). These descriptions should be made available to students in writing, so that they may have them to refer to as they discuss the assignment in their teams. In some cases, we have allowed students access to reports from previous quarters, so that they can see what other teams have done. This approach may be effective when assigning projects that are fairly unique, such as industry analyses or marketing research reports. Unfortunately, we feel that we cannot show the instructors' comments or grades on projects, as this may violate confidentiality, so the "clean copies" of reports have limited demonstration value. For projects that may lead to very similar write-ups (such as cases), we have experimented with providing a mock write-up (created by the faculty) with comments for the first case. The first case was assigned to the class as "discussion only," so there is little concern about plagiarism.

[IMAGE TABLE] Captioned as: TABLE 4

It is important to note that part of the educational experience may entail learning to set one's goals and objectives, and that when teachers specify outcomes too narrowly, creativity may be constrained. However, there is an important distinction to be drawn between narrow assignment parameters and vague directions and/or desired outcomes. An instructor can clearly specify the criteria on which students will be evaluated as well as the range of possible forms the assignment may take without compromising creativity (this may even be facilitated by allowing students to determine the weights given to various assignment criteria). The mistake is to be unclear when explaining the project and then to be very rigid in evaluating the outcome. Unclear directions may cause students to spend much of their time trying to determine what it is the instructor expects rather than focusing on doing the work.

2. Maximize team longevity. Team longevity was found to be linked with best team experiences and with better team processes. We recommend that teams be assigned as early as possible and that they be given team tasks as soon as possible, perhaps with early assignments to be submitted. It then becomes imperative to provide timely feedback about the quality of the work and recommendations for how the team can improve. To gain the most from the team experience, team tasks should be designed so that the team continues to work together until the end of the term.
3. Once students know each other, let them have a say in team assignments.
   Self-selection was associated with best team experiences and with improved team processes. The positive effects of self-selection were more noticeable after the students' first term in the program. We note in particular that self-selected teams rate their cooperativeness and the indispensability of their members highly, and self-selected members were more likely to complete their work on time. All these factors seem to suggest that among selfselected teams, there are preestablished behavioral norms and commitment to the group. We suspect that these findings reflect the existence of what we call "meta-teams," social networks of students who choose to work together in several classes throughout their MBA studies. Members of these metateams interact more frequently and thus have more time to establish group norms. Often, poor team players are not reselected by other members of the meta-team. Thus, the meta-team effectively punishes undesirable behaviors, enforcing established group norms. The existence of meta-teams, their codes of conduct, and social structure provide an interesting area for future research. Baldwin, Bedell, and Johnson (1997) provide an important first step in this area by developing a methodology for mapping the social network within an MBA program. They note that students who are better connected in the network tend to perform better in the program. We suspect that efforts to enhance the formation of meta-teams, which may include increased social interaction among MBA students (e.g., through social events), or increased face/name identification (e.g., through the publication of an MBA yearbook), may lead to better team experiences for all students.

   However, it should be noted that ongoing self-selected teams run a greater risk of experiencing groupthink (Janus, 1982), a team process phenomenon that can afflict highly cohesive teams. Teams are caught in the quagmire of groupthink when the team's desire to maintain unanimity and team solidarity is so great that it impairs effective decision-making processes. Specifically, team members quickly embrace a decision alternative that is viewed as the team's position and disregard other alternatives and ignore any information that is contrary to the team's position. Inadequate information search and evaluation and inefficient alternative development and assessment prevail. The frequency of groupthink among highly cohesive teams is unknown as the phenomenon has been inadequately researched. However, the theory's standing in the group literature merits training team members in decision-making procedures (e.g., mechanisms for information search and alternative generation and evaluation such as devil's advocacy) to impede the possible emergence of groupthink.

With this problem in mind, and to offer the greatest chance for success for each team, we combine our findings with the findings from previous studies to suggest that some form of constrained self-selection be employed (Mello, 1993). For example, in keeping with Bacon et al.'s (1998) recommendations about nationality diversity, students may be allowed to select their own teams as long as each team has at least one international student and one domestic student. Additional team composition goals may be

accomplished simultaneously using a software program developed by the authors that assigns students to teams. This "Team Maker" program involves the instructor administering a short questionnaire to all students to determine student demographics, their preferences for teammates, and the roles students would like to play in their teams. The program then makes team assignments that attempt to simultaneously satisfy the instructor's desire for a balance of roles and demographics on each team with student preferences concerning who they want to work with. Further information on this program is available from the authors.

4. Be wary of the use of traditional peer evaluations. Contrary to common wisdom and previous research, the use of traditional peer evaluations was found to be negatively associated with good team experiences. From Table 4, it appears that these peer evaluations have a negative effect on the tendency for team members to have equal influence, the team's ability to agree on goals, and each member's felt accountability. In the presence of peer evaluations, team members may also be more likely to view others as having different abilities than their own. It thus appears that the use of end-of-the-quarter, private peer evaluation may actually encourage undesirable behaviors. When poor team dynamics occur during the quarter, rather than confront each other and seek to resolve unproductive conflict, students may tolerate this conflict thinking that they can "burn" those they are in conflict with at the end of the quarter on the peer evaluations.

Thus, although students may feel that justice is done, team process and performance is actually undermined. This finding is consistent with earlier research (Strong & Anderson, 1990), which found peer evaluations to be the least effective tool for improving team performance. At this point, we recommend that instructors not follow the traditional peer evaluation process alone, although we are uncertain of which evaluation method is clearly superior, given the paucity of research. Methods that involve frequent, open feedback among members may be helpful. As a feedback mechanism, traditional peer evaluation is inconsistent with Harrison and Cooper's (1976) observation that "individuals do not learn from random experience. They learn by bringing out essential patterns of thought and behavior in a situation where they can receive clear and accurate information about the relevancy and effectiveness of their work" (p. 266). However, the instructor must be aware that too much emphasis on individual performance may undermine team performance. Another approach would be to eliminate peer evaluation altogether, but offer teams the option to fire uncooperative or unproductive members. In Strong and Anderson's (1990) study, students rated the firing option as more effective in motivating team members than peer evaluations.

5. Set team size by pedagogical objectives. We found no relationship between team size and best or worst team experiences or team processes. This may be because we did not control for project size in this study. We suspect that for some projects a group size of five is too small, whereas for others a size of three is too many. Bacon et al. (1998) report on a student team project where team sizes in excess of two offered no improvements in team perfor- mance; Wolfe and Chacko (1983) found that performance peaked in their business simulation with a team size of three; and Rollier (1992) recommended four for his business simulation teams. We recommend that the instructor carefully examine the pedagogical goals for each team project. The instructor should ask himself or herself, "Do I want all students to master all skills, or will I be content if only some students master some skills?" The size of the team may then be determined by the number of unique skills that will not be required of all team members. For example, simulations involve roles such as finance vice president, marketing vice president, or operations vice president. Teams may be assigned with enough players to fill the roles but no extra. The instructor should also ask, "Is one goal of the team project to develop team skills, and if so, which team skills?" We have heard of teams involving as many as 12 students, and these students are asked to produce a business plan in 48 hours. Clearly, one goal of this experience is to develop skills in coordinating a large group of people. Once the pedagogical objectives of the team are identified, the team size should be set at the smallest number reasonable for accomplishing these objectives. Larger sizes simply allow students to become less active in the learning process. As discussed earlier, the pedagogical objectives should also shed some light on the degree of interdependence that a group task requires, and as Wageman (1995) has suggested, the nature of the group task should be matched to the reward system (e.g., group vs. individual).

6. Look for ways to improve team training. It was not surprising to see that the management education our students received was not associated with either best or worst team experiences. A number of issues are relevant here. First, the management education our MBAs receive includes a broad range of topics, such as organizational effectiveness, motivation and performance, leadership, politics, culture, and so forth. Because successful performance on class assignments requires students to demonstrate understanding of each of these topics, the emphasis placed on learning about teams may be diluted. Second, even when the specific topic has to do with teams, the focus is on the understanding of team dynamics and factors that contribute to team effectiveness, rather than on developing team skills and building effective team processes. Third, our students receive team training only in the first course in the MBA curriculum, and little effort is made to building on this training in subsequent courses.

A couple of recommendations may help the management training we give our students improve their team experiences. First, enhance team training with team-building activities. French & Bell (1994) suggest that teambuilding activities can be focused on a number of critical areas including problem solving, decision making, goal setting, role clarification, and interpersonal relationships. A second recommendation is to reinforce this training through the entire MBA program. Many experts suggest that effective team building can take up to 5 years (French & Bell, 1994).

A third set of recommendations has specifically to do with improving team training in a classroom setting. Rentsch, Heffner, & Duffy (1994) suggest that people's experience with teams is a critical factor in structuring team training. Team members with less experience will first need to acquire essential facts about teamwork, whereas more experienced team members may learn best from experiential training in which they apply their teamwork knowledge to different team situations. Jones (1996) suggests that instructors can improve the likelihood of a successful team-based learning approach by training students in group dynamics, developing a system of accountability and responsibility, and encouraging team interaction through required team meetings.

Conclusion

One of the most important findings of this research warrants reiteration here: Students learn more about teams from good team experiences than they do from bad ones (see Table 1). This finding admonishes us as teachers to place students in team situations that have the greatest chance for success. Although we cannot ensure the success of every team, by offering written instructions for the teams, maximizing team longevity, giving students a say in team assignments, avoiding the traditional peer evaluation process, matching the team size to the pedagogical objectives, and finding ways to improve team training, we can establish an environment that is most likely to lead to good team experiences.

Notes

1. We recognize that many student groups are not truly teams, but instead can be more aptly described as work groups (Katzenbach & Smith, 1993). For simplicity, we use the word team throughout to refer to teams and work groups.
2. Different statistical tests are associated with different measures of effect size (J. Cohen, 1992). We use paired t tests extensively in this article, and so compute effect size as the mean within-subject difference divided by the standard deviation of the difference.

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