Time series trends in corporate team development

by Simon Priest and Mary Ann Lesperance

Cohesive and high performing teams aligned with organizational goals will provide the competitive edge for companies well into the next century. As businesses compete within a global economy for a dwindling market share, North American corporations will be forced to adapt their individualistic approach of goal achievement to the synergies of team collaboration and group productivity. Organizations are fast learning that recognition and understanding of the components and behaviors inherent to high performing teams will enable them to achieve greater outputs in an environment of down-sizing, cost constraints, and world-wide competition (Drucker, 1989; Peters, 1989; Naisbitt & Aburdene, 1990). One relatively new training technique, accepted as a means to enable these changes in personnel and human resources, is that of corporate adventure training (CAT). Recent works indicate growing numbers of organizations are currently using these approaches as training tools and development methods (Laabs, 1991; Thompson, 1991).

The approach of CAT attempts to meld the three domains of learning (cognitive, affective, and psychomotoric) through action-oriented activities which represent work-related metaphors (Gass, Goldman & Priest, 1992). Through a metaphoric understanding of the general framework for group development (Tuckman, 1965), and of the problems or issues likely to surface within each stage (Kormanski & Mozenter, 1987), individuals are empowered to contribute toward overall team effectiveness and organizational goal achievement. Through CAT programs, employees show improvements in group processes such as: problem solving, trust, cooperation, communication, and personal leadership (Bank, 1985; Miner, 1991).

The credibility of CAT currently suffers, however, from a distinct lack of empirical evidence to support the training as an effective instructional methodology (Rice, 1979; Hogg, 1988; Crawford, 1988; Darby, 1989). The following research builds on the controlled experiment of Bronson, Gibson, Kichar and Priest (1992), who found improvement in several team-building behaviors related to the stages of team development: awareness, conflict, cooperation, productivity, and completion as identified by Kormanski and Mozenter (1987).

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Although their work suggested positive transfer did occur from the CAT program to the workplace team, they did not make any claim to the extent of transfer, its lasting effect, or the follow-up program elements which contributed to transference. They called for more study, suggesting that future research "ought to examine trends in team development which take place over time during a [CAT] program and should attempt to measure the half-life of transfer effectiveness in relation to various follow-up procedures" (1992, p. 53).

This research examines the longitudinal impact of training sessions that combined CAT experiential activities with classroom lectures on team roles and innovation. The focus of training was team-building (common stages of group development), and learning objectives were tailored toward skills development of team behaviors (such as task and relationship characteristics).

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Purpose

The intent of this research was to trace the development of teamwork within intact work groups engaged in residential CAT programs. More specifically, changes in overall team behaviors were repeatedly measured over time before, during, and after the same training treatments, and through a six-month period during which the groups underwent different follow-up strategies. This research examined the longitudinal impact of CAT programs and the influence that follow-up procedures can have on that longevity.

Methodology

Two separate studies were conducted. The first was concerned with the changes in team behaviors created by the CAT program. The second was concerned with the influence that follow-up had on the retention of those overall changes. Treatment for both studies consisted of an intensive 48-hour residential CAT program (conducted over three days). Classroom lectures on group developmental roles and responsibilities were held in the mornings. Outdoor experiences such as group initiative activities and problem-solving tasks were held in the afternoons and evenings.

Subjects for the first study were 15 members of a computing systems and data analysis group within a financial company. The group was composed of upper management: the vice-president, three directors, and 11 area managers. Subjects for the second study were 60 members of three financial risk analysis groups (20 members per group) from separate regional offices of a well-known bank. The three groups were also composed of upper management: a divisional vice-president, four directors, and 15 managers. One of these three groups served as a control (no training); the other two were experimental groups. After the study was completed, and as ethically mandated, the control group eventually received the treatment.

The instrument for both studies was a modified Team Development Indicator (TDI) developed by Bronson (1991) after the work of Kormanski and Mozenter (1987). Subjects responded to each item on the TDI by marking (with an X on the line) the extent to which each behavior was noted in their group. Responses could range from "Never" (0 = low on the scale) through "Half the time" (5 = middle point) to "Always" (10 = high on the scale). The TDI contained ten such items:

1) *Group Goals* = understanding and being committed to group goals.

2) *Interested* = having friendly and genuine interest in one another.

3) *Conflict* = openly acknowledging and constructively confronting conflict.

4) *Listening* = listening to one another with sensitivity and understanding.

5) *Decisions* = promptly making decisions and executing solutions.

6) *Diversity* = recognizing and respecting individual differences and diversity.

7) *High Standards* = holding high standards for own work and group efforts.

8) *Help and Advice* = looking to one another for help and advice during challenges.

9) *Celebrate* = recognizing, rewarding, and celebrating group achievements.

10) *Feedback* = encouraging and accepting feedback on group performance.

The TDI has been shown to have face validity (Kormanski & Mozenter, 1987), an equivalent reliability of 0.95 between two alternate versions (Bronson, Gibson, Kichar & Priest, 1992) and had a criterion related validity of 0.98 with other versions of the TDI used in this study. The TDI was analyzed individually as ten items of teamwork (on scales from 0 to 10) in the first study and in composite as the sum of 10 items representing overall team behavior (on a scale from 0 to 100) in the second study. The TDI was administered over the course of the first study with that group (n=15) at nine strategic points in the delivery of the CAT program, according to the following schedule:

1 = At the immediate **start** of the program prior to any introductions or explanations.

2 = At the end of the **first night** after overview, orientation, and evening activities.

3 = At **breakfast** the next day before any lecture material had been covered.

4 = At **lunch** after the lecture materials, but before the outdoor experiences began.

5 = At **dinner** after all daily activities were completed, except for the last evening.

6 = At the end of the **second** night after the evening of more light group initiatives.

7 = At **breakfast** the final day before any more lecture material had been covered.

8 = At **lunch** after the lecture materials, but before the final outdoor experiences began.

9 = At the **finish** after all activities had ended, including all the outdoor experiences.

The TDI was administered four times for the three groups (n=20) in the second study:

1 = **One month after** the training program (initial treatment) began.

2 = At the **beginning** of the training program (on the first evening of Day 1).

3 = At the **middle** of the training program (on the next afternoon of Day 2).

4 = At the **end** of the training program (on the last morning of Day 3).

Additionally, the TDI was also administered four times after the treatment for these three groups (n=20) and also for the single group (n=15) from the first study:

1 = **Two weeks after** the training program (initial treatment) had ended.

2 = **Four weeks after** the training program had ended.

3 = **Three months after** the training program had ended.

4 = **Six months after** the training program had ended.

The four groups were relatively equivalent in their type of company, organizational functions, hierarchical structure, and scores on the TDI measured prior to the initial treatment of the 48-hour residential CAT program. For the purpose of answering the second research question regarding the influence of follow-up, the four groups were considered together (one control and three experimentals), and each received a different follow-up procedure.

The control group, which received no training, also received no follow-up of any kind. One experimental group from the second study was far removed from the training staff and so also did not receive a follow-up procedure, but by virtue of isolation. The other experimental group was also geographically isolated, but chose to learn the debriefing techniques ("funnelling" as per Priest & Dixon, 1990, p. 104) as used by their trainer to help them reflect on their experiences. They later used these new techniques to discuss and reflect on successes and setbacks at work, thus becoming a "self-facilitating" work team. The single group from the first study chose to conduct their own follow-up in the form of strategic meetings back at the office, additional refresher training, and self initiated projects, such as regular social gatherings, management team meetings, luncheon staff meetings, and the establishment of sub-teams to coach one another in personal developments. So in summary, the four groups were: control, no follow-up, self-facilitating, and follow-up.

Table 1: TDI group means during CAT program by repeated measures ANOVA (n=15).

TDI		DAY ONE		DAY TWO			DAY THREE			
Item	F	Start	Night	B'fast	Lunch	Dinner	Night	B'fast	Lunch	Finish
Interested	**3.529**	6.01[a]	5.98[a]	6.03[a]	5.88[a]	6.43	6.61[b]	6.65[b]	6.64[b]	7.09[b]
Help & Advice	**9.535**	4.52[a]	5.12[a]	4.96[a]	5.09[a]	5.99[b]	6.36[b]	6.16[b]	6.25[b]	6.64[b]
Group Goals	**5.859**	5.26[a]	4.91[a]	5.14[a]	5.21[a]	6.24[b]	6.23[b]	5.92[b]	6.21	6.44[c]
Conflict	**8.348**	4.67[a]	4.77[a]	4.89[a]	5.13[a]	5.88[b]	5.86[b]	5.78[b]	6.11	6.53[c]
Diversity	**6.425**	4.68[a]	5.37[a]	5.19[a]	5.46[a]	5.88	6.43[b]	6.06[b]	6.39[b]	6.51[b]
Listening	**8.656**	4.86[a]	5.11[a]	5.36[a]	5.46[a]	6.35[b]	6.39[b]	6.07[b]	6.61[b]	6.45[b]
High Standards	**3.747**	5.87[a]	5.43[a]	5.64[a]	6.03[a]	6.43	6.59	6.30	6.61	6.96[b]
Decisions	**6.017**	4.48[a]	4.83	5.25[b]	5.30[b]	5.73	6.21[c]	5.96[c]	6.20[c]	6.32[c]
Celebrate	**7.469**	4.80[a]	5.22	5.68[b]	5.79[b]	6.63	6.72[c]	6.47[c]	6.55	7.45[d]
Feedback	**11.211**	3.96[a]	4.96[b]	5.18[b]	5.58	6.29[c]	6.38[c]	6.07[c]	6.60	7.29[d]
SUMMED TDI		49.11				61.85				67.68

Means with same superscript letters are considered not significantly different from one another, those means with different superscript letters are considered significantly different (with consecutive letters indicating higher means $p<0.05$), and means without letters are transitional between different means.

Data were analyzed in three portions by repeated measures ANOVA. First, changes in the individual ten TDI items over the 48-hour training program (initial nine administrations of the single group) were sought. Second, summed scores (sum of individual ten TDI item means) representing overall team behavior were compared for the three groups (one control and two experimentals) across four administrations of the TDI (before, beginning, middle, and end). Third, longitudinal changes from the four follow-up administrations (two weeks, four weeks, three months and six months) in overall team behavior (summed TDI) were compared to the finishing levels for all 4 groups (control, no follow-up, self-facilitating, and follow-up). Scheffe Tests served as post hoc analyses for all significant findings from the ANOVA, and line graphs were prepared for significant changes.

prior to practice. To use a metaphor, in order to develop great chefs (high performing teams), one must not only provide the recipes (lectures on teamwork), but also provide time for cooking practice (team-building experience through CAT). The synergy of classroom lectures with outdoor activities was clearly evident to all in attendance.

This first study lacked a control group (similar work unit not receiving CAT program) and baseline data (TDI measures during the time period before the training), therefore its generalizability is extremely limited. The second study contained both a control and baseline, but lacked the repeated measurement by TDI to determine the contribution of program components to changes in team behaviors. Despite this shortcoming, the second study confirmed the outcomes of the first. The two experimental groups increased in

Table 2: TDI sums of item means (before & during CAT program) from repeated measures ANOVA.

TDI Sum	PRIOR One Month Before	DAY ONE Beginning	DAY TWO Middle	DAY THREE End
First Study Group (n=15)	N.A.	49.11[a]	61.85[b]	67.68[c]
Experimental #1 (n=20)	52.03[a]	51.57[a]	63.22[b]	70.07[c]
Experimental #2 (n=20)	49.79[a]	48.64[a]	59.28[b]	68.93[c]
Control (n=20)	52.21[a]	51.16[a]	51.83[a]	52.41[a]

Means with same superscript letters are considered not significantly different from one another, those means with different superscript letters are considered significantly different (with consecutive letters indicating lower means $p<0.05$), and means without letters are transitional between different means.

Results

Previous work with the TDI has found significant increases on eight of the ten items for experimental groups and no changes for control groups within the same company (Bronson, Gibson, Kichar & Priest, 1992). Similar patterns were noted in the first study, but with significant ($p < 0.05$) increases for all ten items during the training program (as shown in Table 1).

Recall that the treatment consisted of morning lectures coupled with afternoon and evening outdoor experiences. Examination of the numbers on Table 1, clearly show that significant ($p < 0.05$) increases frequently occurred between lunch and dinner measurements, and occasionally occurred between dinner and night measurements, as a result of both afternoon and evening sessions: the experiential contributions to the CAT program.

Nevertheless, the experiential component of this training should not be thought of as the sole cause of increase. Research opinion, confirmed by subject comments, is that the CAT aspect of the training was greatly enhanced by the theoretical concepts discussed

line with the group from the first study, while the control group remained unchanged (as shown in Table 2 and Figure 1).

In the second study, the presence of a control group (one that does not change significantly) indicates that the changes in experimental groups are likely due to the treatment of the CAT program and not to other outside factors (like the economy or work environment). Baseline measurements, conducted one month prior to the CAT program, do not differ significantly ($p < 0.05$) from pre-test measures on the first day. This suggests that the groups did not suffer from anxiety prior to the program as is occasionally the case in adventure experiences (Marsh, Richards & Barnes, 1986).

In combination, both studies supported the premise that these CAT programs did bring about significant ($p < 0.05$) changes in the team behaviors of the three experimental groups. Apparently the CAT program improved the teamwork of these groups, but did these improvements transfer back to the workplace and how long did they last? To answer this question, con-

Table 3: TDI sums of item means (after CAT program) from repeated measures ANOVA.

TDI Sum	End	POST 2 wks	4 wks	3 mths	6 mths
Follow-up (n=15)	67.68[c]	63.37[b]	62.65[b]	59.45[b]	61.31[b]
No follow-up (n=20)	70.07[c]	65.53[b]	58.72[b]	52.79[a]	50.83[a]
Self-facilitating (n=20)	68.93[c]	63.91[b]	70.94[c]	73.46	79.02[d]
Control (n=20)	52.41[a]	49.11[a]	51.40[a]	48.85[a]	50.66[a]

Means with same superscript letters are considered not significantly different from one another, those means with different superscript letters are considered significantly different (with consecutive letters indicating lower means $p<0.05$), and means without letters are transitional between different means.

tinuation of the two studies measured longitudinal changes in the groups' team behaviors over a six month follow-up period (as shown in Table 3 and Figure 2).

At the end of the CAT programs, all three experimental groups did not differ significantly ($p < 0.05$) from one another: all increased by similar amounts. Recall, that at this point, each of the groups received a different follow-up treatment ranging from none through a variety of chosen procedures to a self-facilitating strategy. Also note that all three groups experienced an immediate drop in TDI scores two weeks after the CAT program. This decrease was attributed to the well-known feelings of a "euphoric high" which often accompany CAT programs. Marsh, Richards, and Barnes (1986) have suggested that instrument administration close to the termination of adventure programs measured artificially elevated levels of most self-reported constructs. Hence, with such good feelings present at the time, one would expect to have extra high readings at end of program and measurement of these levels would be more realistic back at the office a few days later.

In relation to the three different follow-ups, the group not receiving any supportive procedures reverted to baseline measures by the end of the six months. After the same time period, the group involved with strategies such as team meetings, refresher training, social gatherings, staff luncheons, and coaching subteams maintained the levels of their team behaviors without significant change. Lastly, the self-facilitating group was able to increase the levels of their team behaviors, building on successes and learning from setbacks at work, by the techniques of funnelling and guided reflection.

More research is needed to discern the influence of follow-up on the longevity of CAT programs.

Conclusions

If one considers that the frequency of occurrence for each of the ten TDI items was measured on a ten point scale and if one accepts the premise (according to Kormanski & Mozenter, 1987) that these ten items equitably contributed to teamwork, then the summed TDI scores (combined from all ten items) represented the level of teamwork on a scale from 0% to 100% of the time. As such, the three groups in these research studies improved from 50% to 70% occurrence for the ten team behaviors as a result of participating in a 48-hour CAT program spread over three days. Furthermore, and after an initial post program drop to realistic levels of about 65% for all three groups, one group without follow-up support dropped back to 50% over six months, while a second group with support remained steady at 60% to 65% in the same time and a third group increased to almost 80% occurrence through self-facilitated support over the same six-month period. While overall increases of 10% to 30% may not seem like a great deal, they represent considerable potential for enhanced performance, productivity, and profit to most corporations.

The points of interest in the first study related directly to the increases which occurred immediately after the experiential sessions during the program, when theory and concept were put into practise by participants. The second study speaks to the direct impact of CAT programs as team-building tools. The point about transfer and longevity of learning is driven home by the longitudinal research which, in this instance, suggests that after six months any improvements may be lost without support in the form of follow-up. If follow-up procedures are employed, then improvements may be maintained for up to six months, and if alternative strategies (in this case self-facilitation) are employed, then the group can continue

to improve beyond post course levels. The obvious message to practitioners and providers of CAT programming is the importance of providing follow-up support to aid in the transfer of new learning and to keep the newly gained team spirit intact beyond the end of the CAT program.

In closing, these findings ought not to be generalized beyond the treatment, subject groups, or construct of team-building. More research is needed to discern the influence of follow-up on the longevity of CAT programs. To this end, a pair of approaches are strongly recommended: first, replication and extension studies quantitatively examining specific types of follow-up with longer periods of time; and second, follow-up qualitative interviews on what new learning is being applied on the job, how it is being used, and what forces hinder or help that application. Both are sorely needed if the credibility issue of CAT programming is to be reconciled.

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