

# GROUP ADJUSTMENT AT THE SOUTH POLE

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## INTRODUCTION

ANTARCTICA is the southern end of Earth, a continent surrounded by oceans. It is a land of extreme cold and it has been estimated that it contains over 85 per cent. of all the world's ice. It is larger than the United States and Europe combined but contains practically no vegetation or wildlife except along its coasts. The coldest temperature ever recorded anywhere in the world was noted here (minus 109.6 degrees Fahrenheit) and temperatures rarely go above freezing. The wind blows almost constantly, including 200 m.p.h. blizzards. In appearance, it is like a great white desert and it includes a cap of ice that in some places is 100,000 feet thick.

Following World War II the United States increased its Antarctic activities, and in 1954 began its support of the International Geophysical Year, during which scientists would gather data about that part of the world as well as the entire Earth. During Operation Deepfreeze I in 1955-56, the U.S. Navy established two stations on the shores of the Ross Sea, and then left a force of 166 men behind on the continent to winter over and to build new stations for the coming year. One of these stations was established at the geographic South Pole during late 1956, entirely supplied during its construction by aircraft operation. Named the Amundsen-Scott Station in honour of the only men who had previously set foot upon that spot, it was manned during the winter of 1956-57 by a force of 18 civilian scientists and Navy personnel. This group completed the construction of the base and gathered scientific information about natural phenomena at the Pole. This delegation was relieved in October, 1957 by a similarly composed group which carried on the work. They in turn were replaced in October, 1958 by another contingent of civilian scientists and Navy personnel under the leadership of Lieut. Sidney Tolchin, Medical Corps, U.S.N., and Mr. Julian W. Posey. Like the others, these men were completely isolated from the rest of the world for nearly 12 months. Once the Antarctic night set in they could not get to the outside world and help could not reach them even in the event of an extreme emergency. They existed entirely on the basis of their own supplies and resources until the winter was over. However, they lived in heated buildings, had plenty of good food, and were equipped with such gear as tractors, radios, and especially designed clothing. They also had such recreational devices as record players, ping-pong tables, and a small library. Nevertheless, they had to work extremely hard to maintain the station as well as to collect their scientific data. While they lived in relative safety and comfort, they had to be very careful not to make a small mistake that could be fatal. For example, the threat of fire was constant, and had a blaze destroyed their buildings they would surely have risked death from exposure. They had to limit their working time outdoors because of the danger of frostbite, and especially during the long night they had to be careful not to wander far from the station for fear of being lost in the white wilderness. Once the darkness

closed in, they were for all practical purposes confined to the limits of their indoor working spaces.

This paper is primarily an account of the experiences of this group, and how well they effected a psychological adjustment to this extreme environment of potential danger, hard work, and enforced confinement.

#### PROCEDURE

During the 12 months spent at the South Pole Station one of the authors (S.T.) gathered data on these eight civilians and nine military personnel. A personal diary was maintained which included a recounting of everyday events and detailed observations and introspections concerning the interpersonal relationships as they evolved at the station. All personnel were administered several psychological tests during the fourth and fifth months, and several of them took repeat tests during the 11th month of their stay. These tests included an Attitude Study, a List of Common Symptoms, a Group Behaviour Description Form, and a sociometric questionnaire known as a "Buddy Rating"\* A complete medical examination of each man was made, and a record kept of his frequency of sick calls. A series of adjustment ratings of each man was also made by the military leader. Also available were the results of the psychiatric and psychological screenings examination conducted on each man prior to his leaving the United States.

#### RESULTS AND DISCUSSION

The Attitude Study is a list of items which required the person to indicate how much he agrees with a given statement or feels in response to a given question. For example, in response to the item "Are you bored?" he checks one of five answers, "almost always"; "usually"; "sometimes"; "rarely"; or "almost never". As seen by these answers to the questionnaire, most of the men expressed positive attitudes toward their existence at the Pole. The following results were noted:

All of the 16 men (one of the men did not fill out the forms) indicated that their present duties employed their abilities in the best way for accomplishing the mission of the expedition.

Twelve of the men indicated that they did not think the climate was dangerous to their health, while one man was sure that it was, and two others thought that it "probably was"; one man was undecided. It is interesting that those three men who thought the climate might be dangerous also ranked 3rd, 4th and 6th among the group in the frequency of sick calls made during the year.

Nearly all of them liked the food, thought the mission was important, thought the recreational facilities adequate, did not think that the time "passed too slowly", thought that the Navy had adequately provided for their physical wants, expressed acceptance of their leaders, felt that adequate medical care was available, and that they had been given adequate clothing.

Nearly all of them expressed the thought that they had close friends among the group, but showed a lesser acceptance of the idea that these same people would be as good friends under statewide conditions. There was also some hesitation in accepting the idea that everyone in the group respected everyone else, as noted by the fact that 14 of them either disagreed with or were not sure in response to the statement, "Everyone has a lot of respect for everyone else in my group."

\* These tests were designed for Antarctic use by Dr. Herbert Zimmer of the University of Georgetown Medical School.

Five of the men indicated that they thought that their families were unhappy about the expedition, but all of them thought that as a result of it they would end up "ahead". They were all confident that they would return in good physical condition, but most of them showed concern that the amount of survival training given them might have been inadequate. Five of them indicated that more often than not they wished to be back in the States, and only one person indicated a wish for a longer stay in the Antarctic; but on the other hand, twelve of them noted a wish to go on another such expedition.

On the basis of these attitude-type test items it would thus appear that the group reflected generally high acceptance of their situation and of each other, even though there was also some realistic appreciation of the fact that they might have felt different toward each other under other conditions.

The Group Behaviour Description Form was constructed similarly to the Attitude Study except that the items reflected one's attitudes and beliefs about the group as a whole. In general, these responses indicated that they did a lot of "gripping", had frequent bull sessions, that everyone did his share of work, that in the group there was generally good feeling, that rarely did anyone "rub anyone the wrong way" or that much bickering went on, that they could usually "have their own way", and that no one would eliminate anyone else from the group if given the opportunity. They felt that they helped each other when needed, that rank did not determine the privileges of the group, and that as a group they were accomplishing a great deal.

Upon closer analysis it is possible to see that this rather rosy picture of pleasant interpersonal relationships was less than perfect, however. For example, seven of the men felt that at least some of the men shirked their duties "sometimes", and four of these men felt that such shirking went on more often than not. While ten of the men responded that they felt that every man's opinion was valued as much as anyone else's, six of them were undecided and four of these latter men felt that seldom was each man's opinion as valued as the next person's.

But, on the basis of other criteria (sociometric test) it was found that of the four who indicated that job shirking was "usually" in evidence, three of them were among the six least liked people in the camp and the fourth one became a psychiatric casualty later in the year.

Of the six men who either were not sure or did not feel that each man's opinion was equally important, four were placed among the five least liked men in the camp (on the sociometric test), and a fifth one was rated by the military leader as consistently showing extremely poor adjustment to the group.

It would thus appear that those men who had the least acceptance among the group were perceptive of this fact and tended to reciprocate in kind.

The "Buddy Rating" was a standard type of sociometric test in which the men were asked to name the three men they "liked best", "liked least", who were "doing the best job", the "worst job", etc. Results tended to give further evidence that the group was not as cohesive and well integrated as the more direct questions of the Attitude Study and Behaviour Description Form would indicate. For example, there were five men who not only received one or no votes for being "Best Liked" but also received five or more votes for "Least Liked". While this did not especially mean that the group was openly opposed to these men, it did suggest that the group tended to have very few positive feelings for them. It is also striking that none of these five men were given any votes as "Doing the Best Job", while all of them received

at least one vote as "Doing the Worst Job" with four of them being near the top of the "Worst Job" list. Being well liked is apparently correlated highly with doing a good job.

At least three of the men could be described as "social isolates", receiving practically no "Like" votes, receiving more than five "Liked Least" votes, and at the same time showing either no preference for other members of the group (either refusing to completely fill out their forms or choosing "Like Most" persons as those who were extremely well liked by the entire camp and who did not return the subject's positive vote). In addition, these three men were described by the military leader as being among the poorer contributors to group morale and efficiency.

Three months after his return to the United States, the military leader was asked to rank each of the other 16 men according to how well they "adjusted to the group", placing the best-adjusted men at the top, the worse-adjusted at the bottom, the average man in the middle, and then ranking the others accordingly. Then, on the basis of the sociometric test the men were also ranked, being given three points each time they were chosen first as "Fitting in Best" with the group, two points for each time chosen second, and one point for each time chosen third. From this sum score was subtracted any points the man may have similarly acquired by being chosen as "Fitting in Worst" with the group. Any resulting ties were resolved in favour of the man who had more votes as being "Best Liked". This allowed for the 16 men to be ranked according to how their peers thought they fit in with the group. A Spearman rank-order correlation was computed for the two rankings and resulted in an  $\rho$  of .83 ( $P < .01$ ).

It is, therefore, indicated that the two techniques of rating adjustment at the South Pole Station have a great deal in common and very likely measure similar things. However, since this correlation is considerably less than perfect it is also apparent that the two methods also measure different things.

Analysis of the sick-call records of the men revealed that the average number of calls made during the year for the Navy men was 20.0 while the average for the civilians was 8.25. The probable explanation for this difference is the fact that the physician was a Naval Officer and able to more easily persuade the military men to come to him for minor symptoms, while the civilians were much less indoctrinated to the use of "sick call" and at times had to be actively persuaded to allow the Medical Officer to attend them.

Age is apparently an important variable in such groups as the one under study. The average age of the group was 30.2 years, but it was found that those individuals who received low adjustment and performance ratings on both the sociometric test and the military leader's rating list were the youngest in the group, having an average age of about 22 years. In fact, when the sociometric scores are arranged into three groupings of "high", "middle" and "low", each member of the "low" group was under the age of 25 and each of the other members of the camp were above this age.

The factor of age was also noted in data gathered on a group of 38 men who wintered over at another station two years previously\*. In this group it was found that those men who received low ratings from their supervisors included a higher number of men the age of 25 or below. Thirty-nine per cent. of the younger group received a low rating (3 or 4 on a four-point scale) while only 25 per cent. of the "older" men received such a rating. While these figures do not approach statistical significance, there is a distinct trend in evidence.

\* Appreciation is expressed to Lieut. Michael Connery, M.S.C., U.S.N., for making these data available for analysis.

Because the personnel of the station were under two leaders there was some concern that this would be a source of friction between the military and civilian members. When a sociometric diagram is made from the number of "Best Liked" choices made by the men, there is seen to have been considerable "crossing over" of this hypothetical boundary. For example, on the "Best Liked" item military men were chosen by civilians a total of 9 times, while civilians were chosen by their military colleagues a total of 7 times. On the "Liked Least" item the military received 14 civilian votes while the civilians received 10 such votes from the Naval personnel.

However, on the "Doing the Best Job" item the military received 12 votes while the civilians were accorded no such votes, and on the item "if you had to be alone in the Antarctic with one other person who in your group would you choose?" the military were chosen 9 times but the civilians were picked only 3 times by the Navy men.

Part of the reason for the Navy men tending to choose themselves as doing the "Best Job" may be the fact that these choices were made at about the 4th month. To that date most of the work had been of the construction and maintenance type in which the Seabees excelled, and there had been less chance for the civilians to fully develop their scientific programme and thus demonstrate their own specialties.

It has been suggested by some Antarctic veterans that the Military-Civilian "split" is one that is really a split between the "intellectuals" or intellectually-oriented members of the group and the "non-intellectuals", or those who placed less weight on intellectual values, thus explaining why some of the men so easily crossed the Navy-Civilian "line".

In spite of the differences between the men which could be noted by careful analysis, the overall morale of this group may be said to have been excellent. While no objective data are available, considerable anecdotal evidence exists which suggests that this station had morale superior to that of most of the other small stations which have been maintained during Operation Deepfreeze.

Nevertheless, there were several things which seemed to contribute to episodes of poor morale among the men during the winter. Among these was the fact that some of the military men felt that they had been misled and given false information about what rewards might be given in return for their volunteering. For example, contrary to expectations, the men were not given their choice of duty following the Antarctic tour. The men were also under the impression that as each of them was considered for normal promotion in rate, they would not be subject to the usual "quota" restrictions, but as the promotion lists were released and received by radio during the winter it became apparent that such was not the case. Several of the men also related that they had been told by the recruiters that Deepfreeze volunteers would be given hazardous duty pay and other specified benefits. Not only did such rewards fail to materialize, but these men felt that the Navy did nothing to dispel such impressions even though there was ample opportunity to do so.

The question of extra pay was intensified when it was discovered that those military men who summered over for about three months at the main base at McMurdo Sound received an additional \$5.60 per day, while those who wintered over at the isolated stations for 12 months received nothing extra. The fact that a civilian technician with no more than a High School education might receive a ten to twelve thousand dollar salary for his year at the Pole was also a prime source of irritation to the Navy men.

The men were able to use the "Ham" radio in order to establish radio-

telephone contact with their families at home. However, because some individuals tended to monopolize the radio for this use there was some bitter feeling generated, and its regulation and use became a major item of concern for the leadership of the camp. The fact that the use of the radio for home contact was not an unmixed blessing was noted when several of the married men would become quite depressed after having spoken with their wives and children. One man was involved in trying to use the radio to forestall an impending divorce action by his wife, and more than once it was known that a wife in the States complained bitterly about the absence of the husband when he was needed at home in order to help handle some family crisis.

Other factors which seemed to affect morale included a felt lack of proper communication between the station, statewide activities, and other polar stations. When the main station at McMurdo Sound required that most messages should be routed through them, there was a lessening of outside radio contact. This was especially felt by the men when they did not feel free to "talk shop" with other small stations, and particularly by the civilians who felt that any interference with their communication with other scientists in the Antarctic and around the world was an unnecessary hardship.

Another morale factor was the seeming lack of co-ordination between the civilian and military indoctrination programmes. In this instance, as in others, the military leader and civilian scientific leaders met for the first time after they had arrived on the Ice just prior to their final embarkation for their own particular station. It was also found that the civilians had been given no exposure to their military "station-mates" prior to departure to the Antarctic and were given no indoctrination as to their exact roles in the "two-group" situation. It was felt by some members of the station that the civilians were under the assumption that the Navy personnel would do all of the housekeeping chores during the winter and that the civilians would have no responsibility for other than their own scientific projects.

However, since this was not compatible with the realities of polar living, considerable effort had to be expended in order to alleviate the morale-destroying attitudes which arose out of this misunderstanding.

It is desirable, of course, to be able to select beforehand those men who will be compatible with their wintering-over colleagues. When the men were screened for this duty they were given psychiatric interviews and some psychological testing in order to weed out the obvious psychiatric risk. They were interviewed by a psychiatrist (in some cases two), interviewed and given a Rorschach Test by a psychologist, and given a final rating established by collaboration of the psychiatrist and psychologist. The screeners were required to label those men who were psychiatrically unfit for stressful duty, a task in the traditional vein of placing a man somewhere on the normal-abnormal continuum of mental health. They were also required to evaluate each man's ability to "adjust" to this kind of duty, or to be "successful" or "unsuccessful" in performing with the group with which he was to be confined. This latter task is obviously much more difficult and constitutes having to pick from among "normals" those who possess special interpersonal skills which are peculiarly relevant to this particular kind of duty. Under this system about 10 per cent. of the volunteers have been rejected in recent years.

An attempt was made to see if the psychiatric and psychological ratings made prior to each man's selection had any significance for predicting his "success" in a group such as was confined at the South Pole.

While each psychiatrist and psychologist was asked to place the man on

a five-point scale none of the 16 men studied in this group (screening data was not available for one man) were rated as either "not acceptable" (point one) or "outstanding" (point five); nor were any of them given a unanimous "2" or "4".

Because the rating scores of these 16 men were so restricted in range, it was necessary to analyse these data differently in order to discover if the screening procedures had any positive relationship to the criterion of group adjustment.

The verbatim reports of the screening clinicians, that is, their description of the dynamics and traits evidenced by each man, were given to five judges who were not associated with the screenings. These judges, all experienced clinicians, were asked to evaluate each personality description and decide if it contained positive, negative, or neutral implications for prediction of Antarctic adjustment.

A scoring system was developed whereby each time a man received a "positive" rating from one of the five judges he was given a score of 3; each time he received a "neutral" rating he was given a score of 2; and each time he received a "negative" rating he was given a score of 1. Thus, if a man received five "positive" ratings his score was 15; if he received five "negative" ratings his score was 5. A Spearman rank-order correlation was computed between these 16 scores and the overall score on the Buddy Rating, producing an  $\rho$  of .48 ( $P < .05$ ).

This latter finding is consistent with another study by Weybrew\* in which it was found that the correlation between a self-report of adjustment for 100 men at the larger station (McMurdo Sound, with about 130 men) and the screening ratings (using the previously mentioned 1-5 scale) was .38.

It would therefore appear that the psychiatric-psychological screenings to which the Operation Deepfreeze personnel are now subjected not only serve to identify those men who are grossly disturbed but also have some ability for predicting compatibility and group efficiency while in Antarctic isolation. It seems reasonable that additional effort would be justified in conducting a careful investigation of just which variables in the Deepfreeze screening procedures are thus predictive of group adjustment.

#### SUMMARY

Psychological test data and personal observations were gathered concerning 17 men who wintered over at the geographical South Pole. From these data it became possible to sketch the general attitudes of the men toward the Antarctic and each other; to describe some of the source of group tension and morale; and to discriminate between the most successful and least successful members of the group.

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