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THE TRAINING NEEDS
OF
INDUSTRIAL FOREMEN

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ABSTRACT

This thesis reports the results of three interrelated studies relevant to the work and training of foremen. Training programmes for foremen which are based on traditional leadership research have not resulted in changes to objective performance outcomes. A review of the literature on observation studies of foreman's work suggested a Model of effective foreman behaviour. This model was tested in Study I, using data obtained from a continuous observation record of the work behaviours of nine foremen in one New Zealand plant. Correlations between work behaviours and four measures of performance outcome - productivity, turnover, absenteeism and accident rate - failed to provide support for the model. Two multidimensional scaling solutions were constructed to discover the underlying dimensions of behaviour. These also failed to correlate significantly with any of the performance criteria. It was concluded that no one model of effective behaviour could be prescribed for all foremen as the foremen's behaviour was largely under the control of the production system. It was also concluded that levels of performance outcomes were under the control of the production system, rather than under the control of the foremen's behaviour. However the study did identify one critical aspect of all foremen's jobs, the Pacing Factor, which was simulated with an in-basket exercise in Study II. The simulation and a training exercise were pilot tested with thirty five trainees from supervisory courses. A three-group experimental design failed to indicate significant improvements to performance following a short training session, but post-hoc validity for the simulation was provided by one

group of experienced trainees scoring significantly higher than the other groups. In a third study, five of the foremen from Study I completed the in-basket exercise. These foremen rated it as a realistic simulation of their jobs and their mean score was higher than that for the less experienced supervisory trainees. Ideas for the future development of the in-basket exercise and its use in training are outlined.

In memory of
my father
Herbert Francis Hyde

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PREFACE

The first study reported in this thesis arose from an investigation into the training needs of foremen in an industrial firm. This investigation was carried out over a six week period in May and June 1984. It was hoped that the identified training needs could be addressed in a training programme, and that the success of this programme could itself be evaluated for the thesis, in terms of any real changes made to productivity. However, in a report to the firm's management, it was suggested that training of foremen was not the correct solution to the difficulties faced by the firm. The report was well received and a number of organisation changes were made as a result. These and other changes did take time, and it was not possible to continue research on foremen in the firm during the reorganisation. During this period the opportunity was taken to pilot test an in-basket simulation of critical aspects of the foremen's jobs in a laboratory study. Finally, in January 1985, it was possible to return to the firm and collect further data on critical aspects of the work of the foremen.

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INTRODUCTION

Training is a planned effort by an organisation to improve the job knowledge and skills of its employees, in ways which improve employees' performance of the job (Goldstein, 1980; Landy, 1985; Wexley, 1984). Training may include lectures, movies, simulations of the job such as role plays, case studies and business games, or group sensitivity exercises, on-job coaching or systematic job rotation. There are two potential targets of training programmes: new applicants to a job who lack in knowledge or skills for the position, or existing incumbents who are performing below expectation (Miner, 1966 in Campbell et al, 1970). In a survey of studies from the period 1971-1981, using psychological approaches to improving productivity, Katzell & Guzzo (1983) found that training interventions were the most commonly reported form of intervention.

But there is an unfavourable side to training too. Many activities in the guise of training programmes simply result in a short-lived feeling of goodwill or zeal, or the behaviour change they promote is merely temporary. Hinrichs (1976) was outspoken in his condemnation of the showy side of training interventions: "The good program is attention-getting, dramatic, contemporary or fun. Whether or not it changes behavior becomes secondary." In the extreme case a programme of training may simply be a means of rewarding an experienced employee with a break from his or her job.

Identifying a Need for Training

Training is usually considered appropriate when work performance is below that desired, and when this deficit can be attributed to a lack of skill, knowledge or attitude among staff (Baynes, 1975). Traditionally personnel psychology has taken a three-step process to define a training need. These steps are: organisation analysis, task analysis and person analysis (Goldstein, 1980).

The aim of organisation analysis is to identify where in the organisation training should be targeted. Manpower inventories may be examined to indicate where in the organisation extra skilled and trained staff will be required in the future. Indices of accident rates, turnover, absenteeism or productivity may be collected, to identify organisation units which are performing below expectation (Goldstein, 1980; Wexley, 1984). The organisation analysis identifies a gap between a desired performance level and the present level of performance of a work unit. The work of Thomas Gilbert (1978) is one such systematic approach: the organisation is represented as a hierarchy of goals and missions; individual units are assessed in terms of the ratio of their average performance to their best performance on these goals. Training is only one possible solution to the performance deficits thus identified.

The aim of a task analysis is to specify what the content of training should be. Many of the traditional job analysis approaches are appropriate here including interviews, questionnaires and job

observation (see McCormick, 1976). Firstly the tasks performed by the employee are listed. Next, behaviours critical to the performance of these tasks are specified. Finally, the training required for the worker to acquire those critical behaviours is established (Goldstein, 1980). The employee may not require training in all tasks in which he or she is deficient. It is more appropriate that the employee is trained in those behaviours most related to a deficit in job performance (Campbell et al, 1970). It is the role of the training analyst to show that the selected content of his/her training programme is in fact related to on-job performance.

The final level of analysis, person analysis, seeks to identify who in the organisation requires training. The analyst's job is to pinpoint individual employees with substandard performance.

Criteria for Judging the Effectiveness of Training

Given that an organisation unit or individual has been identified which is performing below expectation, the goal of any training effort must be some improvement in the identified job performance measure or organisational output measure. Hamblin (1974) has defined several levels of criteria for evaluating the success of a training effort: a) trainee reaction, b) trainee knowledge, c) trainee behaviours, and d) results. Any one training effort may evoke a favourable reaction from trainees, improve their knowledge or alter their behaviour, but unless these changes result in some objective change in a valued outcome, the

training effort can hardly be considered successful. The training of an industry's foremen has traditionally been suggested as a means to resolve production or personnel difficulties.

Appropriate "results" criteria for evaluating the effectiveness of training may include an increase in productivity, or a favourable change in some personnel measure (such as turnover, absenteeism, or accident rate). The measurement of such criteria is not without problems of accuracy. Researchers are dependent on the information systems used in firms, unless special recording procedures are instituted by the psychologist, personnel officer or production engineer.

Distinguishing Foremen from other Supervisors

The focus of this thesis is on the training needs of one occupational group, industrial foremen. The psychological literature generally makes no distinction between this role and the more general term of "Supervisors": a lower level management position in charge of directing staff. The assumption is often that because all such positions involve the directing of staff, there is an interpersonal skill requirement common to all these positions. (In the psychological literature this common skill requirement is termed "Leadership" skills).

But there is value in defining the more concise term of "Foreman". The Dictionary of Occupational Titles (1965) devotes 15 pages and some 28,000 words to Foreman positions. There is a distinct industrial or manufacturing component in these jobs. The foreman is one who supervises and coordinates the activities of workers, studies production schedules and estimates man-hour requirements, etc. Table 1.1 provides a list of the general duties of a Foreman.

On the other hand the D.O.T. devotes a further three pages to Supervisor positions. Here there is a distinct clerical or office component to the jobs.

To avoid confusion, the term Foreman will be used throughout this thesis to imply one who works in industry. We will see that in fact the skill requirements for such positions may be considerably different

Table 1.1 The Jobs of Foremen

(Dictionary of Occupational Titles)

supervises and coordinates activities of workers
studies production schedules and estimates man-hour requirements
enforces safety regulations
interprets job orders
adjusts work procedures
recommends measures to improve production methods
resolves work problems
recommends personnel actions (e.g. promotion)
trains new workers
maintains time and production records
requisitions materials
confers with other foremen
confers with workers' representatives
is adept or knowledgeable at the activities of workers

from those for supervisor positions in office settings.

The traditional approaches to management and supervisory training have come in part from the study of leadership. The psychological literature on leadership and on managerial and supervisory training will now be examined.

Psychology and the Supervisor : The Study of Leadership

For more than 60 years psychology's approach to the study of the work of managers and supervisors had been through the study of Leadership. The approach has three implicit assumptions:

1. The most important component of a supervisor's job is the interpersonal skill involved in handling subordinates;
2. The best action for handling subordinates can be prescribed in simple terms based on a knowledge of a few aspects of the work situation; and
3. Adopting a prescribed approach to leadership behaviour will lead to productive outcomes either in terms of productivity levels, or the relief of personnel problems, or both.

As Landy (1985) puts it - "Historically, this has been the goal of many leadership theories - to identify those behaviours, styles, or characteristics of leaders that are associated with increased subordinate satisfaction, motivation, and performance on the one hand and decreased absenteeism, turnover, and accidents on the other" (p. 426).

The first approach to this problem was to identify the characteristics of a good leader. Was the good leader more ambitious? more authoritarian? Did he/she have greater intelligence, or perhaps

greater self-confidence? As early as the 1940's it was becoming apparent that this "trait" approach was fruitless. In a very lengthy review of such studies, Stogdill (1948) demonstrated that there was no relationship between personality factors and leadership effectiveness.

Psychology turned its attention to the behaviours of effective leaders. What do successful leaders do? Generally the approach has been to undertake extensive surveys in which managers, supervisors and their workers describe the actions of the manager. The most quoted of these approaches, conducted by researchers at Ohio State University, concluded that there were two dimensions of behaviour related to leader effectiveness: consideration and initiating structure (Fleishman & Harris, 1962). Consideration implies a positive regard for employees, a desire to be supportive and have rapport with workers. Initiating structure implies that the leader concentrates on the task at hand, organises and defines the activities of the group, and pushes for production (Fleishman & Harris, 1962). Many hundreds of studies have been conducted to attempt to establish the relationship between these dimensions in managers' and supervisors' behaviour, and such criteria as productivity, absenteeism and turnover. At first the "Human Relations" school of thought contended that supervisors should emphasise considerate styles. Other researchers argued that effective supervisors must display both high consideration and high structuring behaviours. An exhaustive review by Kerr et al. (1974) concluded that any number or combination of 18 separate moderator variables may affect the relationship between the Ohio State dimensions and performance criteria. Whether or not 'consideration' was the appropriate way of

handling staff, and thus achieving productive outcomes, could depend on the supervisor's experience, or the complexity of the job at hand, or workers expectations about the supervisor, etc. The situation becomes very complex. In the end to train a supervisor to take on one or other of the leadership "styles" is questionable.

Newer models of supervisor action take the view that the effectiveness of foreman's actions is dependent on some characteristic of the work situation. The most popular of these approaches has been the work of Fred Fiedler (1967). Fiedler suggested there was an enduring property of managers and supervisors called L.P.C. ('Least Preferred Coworker'). High LPC supervisors describe their least preferred coworker in positive terms; they seek esteem through interpersonal relations, and can distinguish between qualities of the worker and qualities of his/her work. Low LPC supervisors describe their least preferred coworker in more negative terms; they seek esteem through succeeding at the task, and link the performance of the worker with his/her personality. (As an example, the low LPC supervisor might blame poor work performance on the worker being an habitually 'lazy' person). Fiedler contended that the supervisor's effectiveness depended on certain properties of the work situation: how much the workers like their supervisor, the complexity of the work task, and the amount of authority in the supervisor's position. Despite a considerable volume of research on these concepts, the accumulated evidence is contradictory (see Saskin et al, 1974; Stinson & Tracy, 1974; Vecchio, 1977). The complex theoretical nature of LPC and its unsubstantiated relationship with productivity outcomes greatly

reduce its value as a guide to supervisor actions.

After 60 years of continued research the literature on leadership has not resulted in any clear relationship between leadership variables and results criteria. The literature is voluminous and poorly defined, and the results contradictory (McCall, 1976). Miner (1978) quips - "I propose that the concept of leadership has outlived its usefulness" (p. 5). The errors in a Leadership approach to supervisor behaviour can be enumerated:

1. The research has relied on a single method of study, namely questionnaire surveying, and failed to actively observe the behaviours of supervisors;
2. The instruments used in such surveys have been of questionable psychometric value (Kerr & Schriesheim, 1974) and construct validity (Korman, 1966);
3. The research has sought to explain the behaviour of many hundreds of subjects through the use of a few simple categories;
4. The research has narrowly focussed on the interpersonal relations of the supervisor and his/her immediate work group;
5. The research has ignored the nature of the foreman's total job, including the many other activities involved.

Luthans & Davis (1982) in a paper on organisational behaviour research call for a reinstatement of the 'idiographic' approach to research. They note that the group-centred research approach, in which validity of results is assured through collapsing data from as many subjects as possible, has not added greatly to our understanding of organisational behaviour. The writers contend that quality of information will result from intensive single subject studies of observed behaviour, or from smaller case studies. The present author concurs with this opinion; direct observation of the work of industrial foremen should provide valuable insight into the effective work actions of foremen, those actions leading to productive outcomes.

Similarly there is little of this form of intensive research conducted in New Zealand industry. Because the research which is reported describes the work of foremen in the United States or United Kingdom, it is valuable to ask in what ways the work of New Zealand foremen may differ. Given that New Zealand's industries are much smaller than their American or British counterparts, it is not unreasonable to assume that the work of foremen will be different.

Management and Supervisory Training

Research into leadership, and other organisational behaviour topics, has profoundly influenced approaches to the training of managers and supervisors.

In New Zealand alone, literally thousands of supervisors and managers participate in training and development programmes each year. The most popular programmes are run by the Institute of Management, the Vocational Training Council and the Industrial Training Service (of the Department of Labour). The former two courses are largely run by staff of technical institutes. There are also, of course, numerous programmes run by management and training consultants, and those run in-company. In the majority of these courses the audience is made up of trainees from a great variety of backgrounds, from clerical and service industries, government and professional bodies and a variety of industries. It is assumed that all these supervisors have a common training need. Yet a training needs analysis is seldom undertaken prior to sending staff on these courses, and very few courses are evaluated in terms of their effect on productive outcomes.

The courses run by the Vocational Training Council have a substantial theoretical content. Topic areas covered by lectures and written exercise include leadership, motivation, communication, discipline, delegation, problem-solving and decision-making. The courses run by the Industrial Training Service are the traditional "Training Within Industry" modules first used in Britain in the 1940's. The four modules cover job instruction skills, human relations, improving job methods, and on-job safety.

Many of these programmes attempt to alter behaviour by imparting knowledge about particular theories, be they McGregor's Theory X - Theory Y (McGregor, 1960), McClelland's need achievement (McClelland,

1951) or on the Ohio State variables of consideration and initiating structure. The exceedingly popular work of trainer-psychologist teams Hersey & Blanchard (1969) and Blake & Moulton (1978), in the United States, comes directly from the assumption that a good manager has both a high considerate style and a high concern for production. Whether such newfound knowledge motivates the foreman or manager to change their work behaviour is an empirical question.

Research literature has attempted to evaluate the success of such approaches to training. The fullest review of management training up to 1970 was the work of Campbell et al. (1970). From a review of 84 published studies several conclusions were drawn, including:

1. Seventy percent of studies were evaluated in terms of changes to 'internal' criteria, chiefly changes in such attitudes as "employee mindedness", "human relations" or "consideration". Often these measures were taken within the training session itself (hence the term 'internal' criteria). Frequently no control group was included.
2. There was no demonstrated transfer of training effects to the workplace. There were no demonstrated changes in "results" criteria such as productivity, staff turnover or absenteeism.

Though leadership research sought to prescribe those behaviours of leaders which would lead to productive outcomes, interventions based on changing the behaviour of supervisors (i.e. through their training)

have seldom taken productive outcomes as the criteria for evaluating their success. Instead, psychologists have most often substituted their own instruments - such as behavioural or performance rating scales - as criteria of training success. Campbell (1971) concluded, "one cannot come away from this literature without feeling disheartened" and "by and large, the training and development literature is voluminous, nonempirical, nontheoretical, poorly written, and dull... it is fadish to an extreme" (p. 565).

Subsequent reviewers have not seen any reduction to the onslaught of poorly grounded, untested training techniques (Goldstein, 1980; Wexley, 1984).

The reason for this state of affairs is only too apparent to these authors (Campbell, 1971; Campbell et al., 1970; Goldstein, 1980). Where the training of manual, clerical or any number of non-supervisory, non-management positions is concerned, training programme content is firmly based on a thorough analysis of the job at hand: what tasks are performed, and what behaviours are essential for the successful performance of those tasks. Management and supervisory training suffers from being out of touch with any knowledge of the critical requirements of managerial/supervisory jobs. There is a need to observe and systematically record the work activities of managers and supervisors, and to correlate these activities with effective performance of the job (Campbell, 1971; Campbell et al., 1970; Goldstein, 1980).

Behavioural Modeling : The Newest Approach in Supervisory Training

Since the mid 1970's a great deal of interest has been generated in a new technique of supervisory training, behavioural modeling. In the majority of cases industry has adopted, without substantial variation, the programme modules and learning points of psychologists Goldstein & Sorcher (1974). Table 1.2 and Table 1.3 list typical modules and learning points from a Goldstein/Sorcher programme.

These psychologists insisted that the aim in training supervisors is not a change in 'attitude' but a change in on-the-job behaviour. The approach attempts to systematically apply the principles of behavioural and social learning theories to the training of supervisors. There are four steps to the behavioural modeling process :

1. an effective job incumbent is portrayed resolving an employee-related problem on a video film. The actions of this model supervisor follow closely a set procedure for handling the situation. This set procedure forms the set of 'learning points' for the session;
2. the trainee role-plays a similar work situation, usually taken from a case study, to practise the learning points;

Table 1.2 Training Modules

(Goldstein & Sorcher, 1974)

orienting a new employee
giving recognition
motivating a poor performer
correcting poor work habits
disciplinary action
reducing absenteeism among disadvantaged workers
reducing turnover amongst disadvantaged workers
handling the racial discrimination complaint
handling the reverse discrimination complaint
reducing resentment of the female supervisor
overcoming resistance to change
correcting inadequate work quality
correcting inadequate work quantity
discussing personal work habits with an employee
reducing evaluation resistance
delegating responsibility
conducting a performance review

Table 1.3 Typical Learning Points from Training Modules
(Goldstein & Sorcher, 1974)

HANDLING A COMPLAINT:

avoid responding with hostility or defensiveness
ask for and listen openly to the employee's complaint
restate the complaint for thorough understanding
recognise and acknowledge his or her point of view
if necessary, state your position nondefensively
set a specific date for a follow-up meeting

IMPROVING EMPLOYEE PERFORMANCE:

describe the problem in a friendly manner
ask for the employee's help in solving the problem
discuss and write down each appropriate idea
decide on specific action to be taken by both of you
agree on a specific follow-up date

DISCIPLINARY ACTION:

describe the situation and review previous discussions
ask for reasons for the situation
listen and respond with empathy
indicate what action you must take and why
agree on specific action and follow-up date
indicate your confidence in the employee

DELEGATING RESPONSIBILITY:

indicate what new responsibility you would like the employee to handle and why
describe the new responsibility in detail, outlining tasks and performance standards
ask for questions and suggestions
listen to the employees comments and respond empathetically
ask the employee for a commitment and offer your help
express your confidence in the employees ability

MOTIVATING THE AVERAGE PERFORMER:

describe specifically what the employee is being recognised for
indicate why this is important to the work group
indicate the form the recognition will take
express confidence in the employee's ability in this area
thank the employee again

HANDLING EMOTIONAL SITUATIONS:

remain calm and make the discussion private
listen openly to the employee's comments and respond empathetically
encourage the employee to give you more information about the problem
discuss possible solutions with the employee
indicate further discussions are needed and set a specific date

3. the trainee receives feedback and "social reinforcement" from the other participants; and

4. ideally, transfer of this training to the workplace is achieved through continued encouragement, feedback and social reinforcement from superiors.

The original Goldstein & Sorcher (1974) research addressed the particular problems of one workplace. It did so by seeking to improve the interpersonal skills of foremen. The content of training modules was formulated from interviewing employees and asking them to identify what behaviours distinguish a good foreman from a poor one. Training modules included: avoiding racial discrimination, assisting the "disadvantaged [minority group] worker", motivating the poor performer, handling grievances, etc.

A special issue of Personnel Psychology was devoted in 1976 to evaluation studies of behavioural modeling training. Burnaska (1976) and Moses & Ritchie (1976) evaluated the interpersonal skills of trainees in role-playing situations conducted after the training period; Byham et al. (1976) asked employees if they had observed changes in their supervisor's behaviour following training. The results of these studies were inconclusive and have been severely criticised for lack of internal validity (McGee & Tullar, 1978). A more rigorous evaluative study was conducted by Latham & Saari (1979) which has received considerable applause in the psychological literature (Goldstein, 1980; Wexley, 1984).

Latham & Saari evaluated the success of a programme of Goldstein & Sorcher's training modules. They based this evaluation on four criteria: trainees were compared with a control group, over an extended period of time, on (1) their reactions to the training, (2) a test of their knowledge, (3) role-playing simulations, and (4) supervisor ratings. On all measures, the experimental group performed significantly better than the control group.

The difficulty with all these studies is that no measure of "results" criteria was ever taken. No attempt has been made to study if the behaviours prescribed to foremen do correlate with increased productivity or improvements to staff turnover, absenteeism and accident rates. The original job analysis by Goldstein & Sorcher was based on employees' impressions of the good foreman, and it is likely that changing the foreman's behaviour in this way may well improve employee satisfaction. However, whether or not this behaviour change assists productive ends depends on the problems faced by the individual industry.

The only published study in which productivity improvements were shown to result from behavioural modeling training, involved a very careful consideration of the causes of increased costs and lowered productivity in a forestry industry company (Porrás & Anderson, 1981). The company identified its problems as rooted in the foreman-worker interaction. Foreman felt powerless to improve substandard worker performance in the face of increasing union power. A training programme was constructed based on ten specific problem situations

identified by foremen as the most difficult problems they faced in managing subordinates. Administration of this carefully conceived programme led to positive changes in productivity, turnover and absenteeism.

It has been the normal practice to take Goldstein & Sorcher's job analysis and training modules as a generic description of the actions of the good foreman, and apply them in any industry. There is some doubt about the effectiveness of prescribing such a generic description of effective foreman behaviour, as the variation in work performed by foremen in different industries may be too great to allow this. The success of the Porras & Anderson (1981) study in large part relied on modifying the training programme to suit the particular needs of the situation. A replication of Latham & Saari's research method to test a Goldstein/Sorcher programme was recently conducted in an automotive industry firm, and failed to show changes to foreman behaviour or performance ratings (Russell et al, 1984).

In summary, although behavioural modeling has used well-founded psychological knowledge to develop a method of training, the content of such training programmes requires further analysis. Only a thorough understanding of the specific work tasks and work problems faced by foremen in a company is likely to lead to productivity improvements. It is with this view in mind that this discussion now turns to look at what is known about the work of managers, and more particularly, of industrial foremen.

Studies Describing the Content of Managerial Work

To this point I have suggested that the traditional approaches to the training of foremen have only been marginally successful in bringing about productivity improvements. I have suggested that this lack of success is due to trainers failing to adequately analyse the content of foremen's work, and failing to address the production problems faced by foremen in individual industries. In this final section of the Introduction I will review the published studies of managerial and foreman's work to ask if it is possible to learn what the effective foreman does.

One classification which has remained the model of managerial work in management science is that presented by Fayol (1916, in Mintzberg, 1973). Fayol distinguished 5 classes of managerial tasks: planning, controlling, organising, staffing, and leading. This model has been used ennumerable times to guide the actions of students of management, and it may be valuable to examine how far these categories apply to industrial foremen.

A more research-based model, however, has been presented by the work of Henry Mintzberg (1973, 1975). Mintzberg undertook intensive study of the work activities of five chief executives. Each executive was observed on the job for one full working week. Observation categories were formulated on an ad hoc basis as the study proceeded (what Mintzberg in his 1970 paper titles "unstructured observation"). This had the advantage of not preempting results before the study commenced,

and helped retain maximum detail from the observation record. Mintzberg's major findings are given below -

- The work of a manager was rapidly paced. Activities were characterised by brevity, variety and discontinuity. Many activities were unplanned. Of the executives' verbal contacts, 93 percent were arranged on an ad hoc basis.

- Managers strongly favoured verbal media - conversations, telephone calls, meetings - for exchanging information. Such information is immediate.

- Many tasks were done superficially.

Another noteworthy study of the work of managers was conducted by John Kotter (1982). Kotter observed nine general managers on the job for some 35 hours each. Extensive interviews were also conducted with the managers and with their work colleagues. Kotter provided a general description of the managers' work -

- They spent most of their worktime with other people. This included many other people besides their immediate work group.

- An enormous breadth of topics were discussed by managers at work. The manager asked many questions, and there was considerable social talk and joking.