

LOCKE'S GOAL SETTING THEORY: DETERMINING THE EFFECTIVENESS  
OF PUBLIC VERSUS PRIVATE FEEDBACK IN INCREASING  
PERFORMANCE IN BOTH LABORATORY AND FIELD SETTINGS

BY

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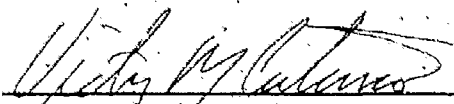
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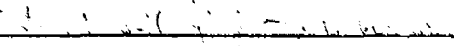
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## Abstract

### LOCKE'S GOAL SETTING THEORY: DETERMINING THE EFFECTIVENESS OF PUBLIC VERSUS PRIVATE FEEDBACK IN INCREASING PERFORMANCE IN BOTH LABORATORY AND FIELD SETTINGS

E. Brenda Davis  
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The primary objective of these studies was to attempt to determine the relative effectiveness of the type of feedback when combined with goal setting. It has been demonstrated in previous research that the combination of goal setting and KR (or feedback) results in increased performance over either goal setting or feedback alone. However, little research has been conducted on the relative effectiveness of type of feedback.

Three studies were conducted. Study 1 consisted of a post-test questionnaire administered to 165 Saint Mary's University students in two feedback conditions: private feedback only and private plus public feedback. It was hypothesized that the two groups would differ in the types of goals set, expectations of goal achievement and perceptions of the feedback received. This was not demonstrated. It did appear that the introduction of public feedback negatively affected the subject's view of the source of the feedback.

Study 2 was a field study conducted in a retail setting in Halifax, N.S. It was hypothesized that either public feedback alone or the combination of public and private feedback would significantly

increase performance on the dependent measures over both baseline and private feedback alone. A modified reversal design was used, and there were two dependent measures: housekeeping tasks and cash discrepancies. Assigned organizational goals and three feedback conditions were used: private feedback alone, public feedback alone, and public plus private feedback. Results were not conclusive, and were attributed primarily to a Hawthorne effect.

Study 3 was a laboratory study, again utilizing a modified reversal design, assigned goals and three feedback conditions. Two dependent measures were used: number of simple clerical tasks completed, and number completed correctly. Twenty-four subjects were used, 12 per condition assigned either an easy or hard goal. There were no differences among types of feedback for the group assigned an easy goal. For the group assigned a hard goal, performance decreased after the presentation of public plus private feedback. As in Study 1, the introduction of public and private feedback appears to be aversive to effective performance.

Future research needs to address the issues raised in these studies. Feedback type appears to affect performance; however, the extent or nature of this effect has not been determined.

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## Introduction

In 1966, Edwin Locke published his first research on goal setting and by 1968 had proposed the basis for a goal-oriented model of motivation. Pinder (1984) has remarked that of the plethora of motivational theories for organizations, goal setting has demonstrated more scientific validity than any other approach. Locke, Shaw, Saari and Latham in 1981, published a review and assessment of the literature on goal setting, from Locke's own initial work in 1968 up to and including 1980.

Simultaneously, a large number of operant conditioning studies utilizing goal setting as antecedent stimuli and feedback as reinforcement have been conducted. The two different theoretical approaches have been developed along parallel but very different lines. Where Locke's goal setting theory deals with statistically significant group or population results, behaviour modification (particularly organizational behaviour modification) focuses on individual performance increases and deficits (Brethower, 1982).

Both theories claim support and results. However, both also have

problems in theoretical issues and methodology. Although both views accept and utilize goal setting and feedback, the degree of emphasis is different. As well, feedback or knowledge of results is accepted as equally effective regardless of type or degree administered. Little has been published contrasting the relative effectiveness of types of feedback used in behaviour change. The purpose of this study is to examine goal setting theory from both a cognitive and behavioural viewpoint, by contrasting types of feedback provided. An overview of Locke's theory is provided, followed by an assessment of current research and problems. The behavioural viewpoint is also discussed and contrasted with Locke's theory.

#### Definition and Attributes of Goals

Locke et al (1981) described goals as the "object or aim of an action" (p. 126) and stated that goals are ultimately the regulators of all human activity. Yet there is not a direct relationship here between goal and action; rather, goals are described as being mediated by cognitive processes. Goal setting is viewed as an internal process

involving the recognition of two major attributes, content and intensity.

Content refers to the clarity or specificity with which the goal is stated and the difficulty of the goal (or the degree of proficiency, speed or accuracy needed to obtain it). It has been well documented (Locke et al, 1981; Tubbs, 1986; Mento, Steel and Karren, 1987) that hard, specific goals produce better performance than medium, easy, 'do your best', or no goals.

Intensity refers to the cognitive processes required to achieve the goal: strategy development, the importance of the goal (or the individual's commitment to it), and the possible conflict of simultaneous goals. However, in 1981 Locke et al asserted that these theoretical assertions were just that; little or no support in the form of research has been attempted.

#### Motivational Mechanisms

Viewed as a mechanism for increasing motivation, goal setting affects the direction of action, the amount of effort expended toward

that action, and the persistence of the action.

Direction of action was not clarified by Locke; he substantiated his definition through the use of examples only. However, direction appears to imply the specification of a particular goal and the cognitive perception of the tasks required to reach it. Directed action infers that the individual recognizes the goal and the subsequent performance required.

Effort is closely tied to direction; effort is expended according to the perception of the direction of the goal. Or as Locke et al stated, "higher goals produce higher performance than lower or no goals because people simply work harder for the former" (1981, p. 132; italics added). Again, research has shown a positive linear relationship between the amount of effort required and increased performance, assuming goal commitment and the absence of dysfunctional conditions such as high anxiety levels.

Persistence is basically directed effort over time and as such has not been approached in the research. To be substantiated, research would be required to measure persistence in the maintenance of

effort toward a goal, rather than the measurement of the end result of the goal reached or obtained.

Locke et al also included strategy development as an indirect mechanism consisting entirely of cognitive problem solving. Although Locke et al stated that individuals must develop the requisite strategies to obtain goals (for without such strategies, especially in complex tasks, the motivational effects of goals would not produce increased performance), the research cited does not seem to differentiate between strategy development and effort. For example, Terborg (1976) showed that subjects with specific goals wrote notes in the margins of texts to facilitate learning, while subjects with no goals did not engage in such behaviour. Indeed, this does seem to be 'strategy development' to increase performance at a learning task, but it also appears to fit Locke's theory of direction and effort: the first subjects were obviously working harder. Terborg used the term 'direction' to describe the measure Locke chose to call 'strategy use'. Obviously, strategy development has been difficult to measure and assess.



### Mediators for Motivation

The motivational elements of goal setting, or the effectiveness with which one works toward a goal, can be affected (as stated by Locke et al in 1981) by money, participation in the goal setting process, and knowledge of results (KR) or feedback.

Locke et al (1981) offered monetary incentive as a contributing effect to enhance motivation and thus increase performance. Results have been inconsistent with this statement. Locke's initial tenet was that money affected the levels at which goals were set or intentions established. This was not supported by the research. Next, he proposed that money would initiate more spontaneous goal setting than would occur without incentives. This, too, had contradictory results. Finally, he proposed that money affected the individual's degree of goal commitment. Although it has not been shown that 'goal commitment' can be measured as a construct, Locke persists in the belief that it will be proven that incentives have a powerful motivational effect.

It was initially believed that participation in the goal setting process by individuals, rather than simply being assigned goals, would

result in higher motivation and greater goal-directed performance.

This has had only mixed results in both field and laboratory settings.

Locke et al drew several conclusions from these results (1981):

- that participative goal setting could lead to setting higher goals.
- that participation could lead to greater goal acceptance and/or commitment.
- that the potential benefits of participative goal setting (such as a sense of belonging, of having involvement in the process) could outweigh any performance benefits.

Locke et al (1981) concluded that 'supportiveness' offered by those involved in the decision making process (such as managers and supervisors) could be more crucial than participation itself in achieving goal acceptance. He also referred to the power of the supervisor, and the rewards and punishments entailed by goal attainment/nonattainment as possibly important but not yet significantly investigated. Although not stated explicitly by Locke, these factors could be interpreted as potential behavioural reinforcers for performance. That is, elements such as the

supportiveness of a supervisor, receiving a promotion for consistent goal attainment, or being fired for non-goal attainment could all serve to positively or negatively reinforce the behaviour of participation in goal setting.

Finally, Locke et al. (1981) presented KR as having a mediating effect on performance toward a goal; that is, that goal setting alone is not sufficient to improve performance, but given KR and goals, performance will be both affected and improved. Having set a goal, receiving information about one's progress toward it would allow the individual to increase/decrease performance as needed. It should be noted at this point that Locke et al. did not include any behavioural studies as such in the literature review; when they were presented in relevant literature, they were noted as "goals and KR studies" (Locke et al., 1981, p. 134) or as "performance standards with feedback" (Locke, 1977, p. 547) even though the procedures used in such studies had adhered to behavioural principles and analyses. By 1981, there was consistent research illustrating the efficacy of such behavioural procedures in research on goal setting. For example, in 1968 P.S.

Hundel studied the effects of KR on increasing performance among factory workers. He used a control group and a comparison between baseline measure and one experimental intervention.

Komaki, Barwick and Scott (1978) attempted to improve worker safety in a manufacturing plant using goal setting through visual presentations and feedback. Van Houten, Hill and Parsons (1975) used goal setting (timing), feedback, public posting and praise to improve students' story writing performance. Locke had included none of these studies.

#### Other Variables

##### Personality

Although it was shown that demographic factors (such as age, sex, employment status, geographic area) do not affect goal setting, personality variables, although extensively studied, show only inconsistent results. Locke et al (1981) offered several reasons for this lack of conclusive support:

1. The studies reviewed were not designed to assess the influences on

goal setting of individual differences. Further, by using only assigned goals, subjects were limited in their response capabilities, which, in turn, limits performance.

2. Those variables included in the studies to determine individual differences were not based on clear theoretical rationale. Any differences detected, then, were difficult if not impossible to interpret.

3. The measures used to assess personality variables were not consistent across experiments, and often lacked reliability and validity.

4. There could have been a confounding of individual differences within some studies.

5. No tests of significance were used between the correlation coefficients to establish moderating effects. That is, when an individual difference was shown to correlate to performance for subjects who scored high on that variable, a lack of correlation was not demonstrated for subjects who scored low on that variable.

### Goal Commitment, Acceptance and Choice

Also affecting the motivation of an individual toward a goal are goal commitment, acceptance and choice. Goal commitment implies that one will try for a goal (whether assigned or participatively set), while goal acceptance implies that one will agree to work toward an assigned goal.

Choice appears to be represented by participation in the goal setting process. These concepts had also not been supported by research. Locke believed that possible reasons could include the questionable validity of goal acceptance measures, the limited range of scores on such measures (where nearly all subjects show complete or substantial goal commitment), and an inability of naive subjects to effectively discriminate between small increments of their own commitment.

It is also possible that the inconclusiveness of the results and the problems noted by Locke et al (1981) illustrate a major problem with goal setting theory per se: much of the theory is based on intangible, subjective and difficult to quantify constructs.

As well, Locke et al offered, with little expansion or explanation, personal values, previous experience, and individually expected outcomes as all offering potential mediating or direct effects on the goal setting process.

### Summary

In reviewing Locke's own research of 1968 and subsequent research, Locke et al (1981) identified, and offered confirmation of, these major areas of goal setting theory (see also Figure 1):

1. Goal difficulty and clarity directly influence performance.
2. Direction and effort affect the level of performance.
3. Participation in goal setting does not directly affect performance.
4. Demographic variables do not affect goal setting.

All of these have been presented and confirmed by Locke et al and more recent meta-analyses (Tubbs, 1986; Mento, Steel and Karren, 1987).

Areas still to be clarified and/or substantiated include:

1. The role of strategy development, goal importance and goal

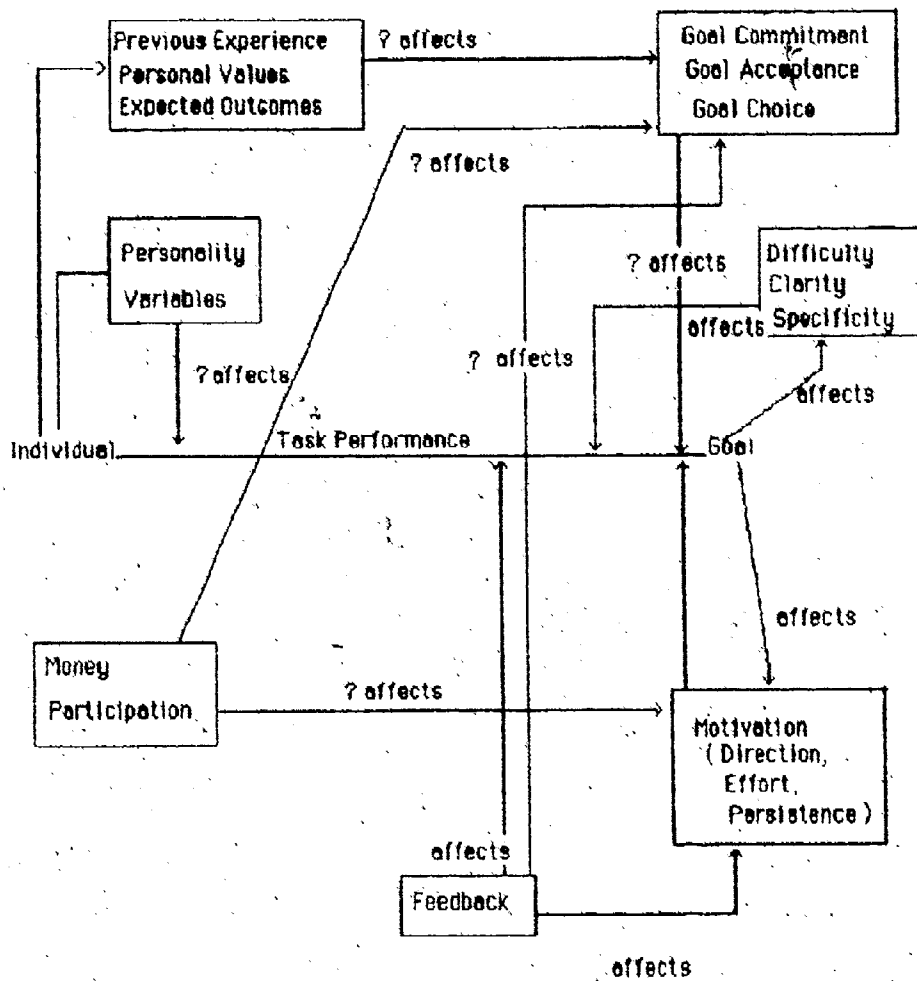


FIGURE 1: A diagram representing proven and suggested variables of influence of Locke's goal setting theory.



commitment in goal setting.

2. How persistence may change over time in goal setting.

3. The specific role of monetary incentives as motivational tools in goal setting.

4. The other benefits (besides improving performance directly) that may be obtained by participative goal setting.

5. Whether personality factors mediate at all in goal setting.

6. The specific and direct role of feedback (KR) in increasing motivation in goal setting.

#### Current Research

##### Participative versus assigned goal setting

Since 1980, considerable research has been directed toward resolving many of these issues and solidifying the research previously presented as supportive of Locke's theory. Goal difficulty and feedback are generally included as constants in much of the research.

Latham, Steele and Saari (1982) had subjects arithmetically

average scores on fictional performance criteria in an attempt to determine: (a) if individuals with hard assigned goals would have higher performance than those with lower goals set in a participatory manner; and (b) if, when goal difficulty is held constant, participatively set goals would lead to higher performance than would assigned goals. Neither hypothesis was supported. Final results showed that participation in goal setting was important only to the extent that it leads to setting higher goals than otherwise. Participation does appear to have impact in areas other than performance levels, as suggested by Locke.

Schnake, Bushardt and Spottswood (1984) found in their research on internal work motivation and intrinsic work satisfaction among utility employees, using a self-report questionnaire, that goal difficulty and clarity did not have a positive effect on motivation or job satisfaction. Goal clarity and participation increased motivation for subjects performing simple tasks, while hard goals and participation led to increased job satisfaction for the same employees. As well, subjects who reported challenging, hard goals

were not more highly satisfied and motivated when allowed to participate in goal setting; however, subjects performing simple tasks were more highly motivated and satisfied when allowed to participate. This concurs with Locke's research, while attempting to expand the paradigm to confirm the tentative existence of other important effects of participative goal setting.

Campbell and Gingrich (1986) conducted a field study using computer programmers. These researchers hypothesized that participation in goal setting would have no effect on task performance for simple tasks. As expected, it was found that such participation did not affect simple task performance. Buller and Bell (1986) in their work on team building and goal setting with miners, attempted to show how Locke's theory could be extended from simple, laboratory-controlled tasks to a complex field environment. However, their results were not statistically significant. This illustrated, perhaps, the difficulty of separating interdependent tasks in real environments.

Erez and Arod (1986) attempted to determine why participation

in goal setting may lead to increased performance in a simulated task (evaluating job applicants) in a laboratory setting. Results showed that motivational and cognitive factors (such as social interaction and the high information provided about the task ) significantly contributed to performance quality but that the cognitive factors did not significantly affect performance quantity.

Latham and Marshall (1982) attempted to determine if there were any significant differences among government employees for assigned, participatively set and self-set goals. Their results showed that all subjects accepted the goals, and that there were no differences in perceptions of goals, goal attainment or productivity. They concluded that the style of goal setting was not as important as whether goals were set at all. In 1983, Latham and Steele confirmed this using a toy assembly task in a laboratory setting. They stated that their results showed only that specific goals lead to higher performance than 'do your best' goals or no goals, and that the motivational effects of participation on performance appeared to be minimal.

However, Garland (1983) did discover an interesting effect when introducing a very hard creativity task to subjects who were required to list as many objects (described by an adjective) as possible in one minute. Personal goals were influenced by assigned goals, but ability was completely unrelated to the personal goals that subjects set. They would consistently overestimate the probability of attaining very difficult goals, and persisted in their efforts to reach these goals. This is in direct contrast to Locke, who stated that goals must be hard but attainable. This may have been an effect of the experimenter and/or setting influencing behaviour; further research could determine if effects were confounded in this case.

While much of the research focuses on individual goals, in many organizations group or team goals are the norm. Gowen (1985-86), used groups of subjects to construct grammatically correct three word sentences. His research demonstrated that assigned group goals combined with compatible personal goals led to a 31% increase in group performance over no goals, that individual goals led to a 19% increase, while group goals alone led to a 19% increase. It appears

that a maximization of performance could occur with a combination of goals.

### Goal acceptance and commitment

Although research has been directed toward resolving the relationship of goal acceptance and commitment to increasing performance, the amount of research conducted is still rather limited in scope. Earley (1985), using both laboratory experiments in devising class schedules and field experiments with animal care givers, and Earley and Kanfer (1985), again using the construction of class schedules, demonstrated that allowing choice in goal setting and providing strategy development for goal attainment resulted in goal acceptance and satisfaction. In another study, Erez and Zidon (1984) showed that high goal acceptance resulted in high performance levels even when goals were extremely difficult. Erez and Kanfer (1983) hypothesized that the evaluation of performance serves to enhance both goal acceptance and subsequent performance, whether that evaluation is internal (self) or external. Although such research is

limited in its applications at this point, it may also be unreplicable.

Hollenbeck and Klein (1987) suggested that research has almost totally ignored goal commitment as a moderator variable, and that when it is included in studies results are often uninterpretable, due to poor controls and/or constructs. If research is to resolve this issue, then the immediate step may be to construct valid scales and measures to determine goal acceptance and commitment in a consistent manner.

Outcome expectancy, strategy development  
and personality variables

Recent research has also focused on other cognitive aspects of motivation and goal setting. Huber and Neale (1986), using a competitive market simulation, examined the effects of externally set goals and related cognitive variables, such as outcome expectancy and perceived self-competency on goal setting and performance. Perceived self-competency strongly affected self-set goals; however,

there was only a low correlation between expectancy and performance.

This is in contrast to Garland (1984), who again using an object naming task, found that goal levels and expectancy for success effected performance levels directly and independently. Chacko and McElroy (1983) using reading tasks with subjects, linked attribution theory directly to goal levels achieved. Individuals who viewed performance as the direct result of their abilities were more likely to maintain high goal aspirations in light of success, but to lower their aspirations in face of poor performance.

Goals and information were discovered to have a direct influence on the planning, organization and the energy expended on a task. Earley et al (1987), devised a study using a business simulation and the results from a survey of workers in a service organization. Their results showed that a specific goal and task training influenced performance through improved effort and persistence, and an increased ability to plan and organize movement toward the goal.

Huber (1985), using a computerized maze task, discovered that



subjects assigned extremely difficult goals adopted different and potentially dysfunctional task performance strategies, in comparison to those subjects assigned easier goals. This supported Locke's initial theory; but in contradiction lower performance occurred with hard goals when the task was easy.

### Feedback

Locke et al (1981) stated that feedback or KR was not sufficient to increase performance; it had to be combined with goal setting to be effective. In any study, goal setting could be assumed to occur or to be assigned, either implicitly or explicitly. Without such an explicit or implicit standard or level of required performance, feedback would have little or no value. To test the effect of feedback on goal setting, Ivancevich (1982) studied how subjects reacted to performance appraisal interviews under varying conditions: where feedback only was supplied, where feedback and assigned goals were given, where assigned goals only were given, and a control group, who received neither goals nor feedback. All three interventions were judged

equitable by subjects. The feedback and assigned goal conditions were considered to provide the clearest and most accurate goal setting, but there were no significant differences across groups in terms of motivational impact. That is, performance was not significantly greater for any condition.

Frederiksen, Richter, Johnson and Solomon (1981-82) examined whether giving feedback to clinical therapists would reduce their charting errors. They found that such specific feedback would not generalize to other areas where errors occurred, confirming the specificity view of feedback.

Janz (1982) manipulated subjective expectancy of success by providing bogus feedback to undergraduates in a laboratory. For subjects who believed the feedback, the low performance feedback group outperformed the high performance feedback group; however, the intermediate feedback group outperformed both other groups. He suggested that these results confirmed the notion that feedback allows whatever adjustments as are necessary to bring actual performance up to expected levels. However, Janz did caution that

such laboratory studies may not be indicative of prolonged periods of work and performance in an organization.

Although feedback is accepted as a necessary component to goal setting, it is still unclear how it functions. Many studies, both cognitive and behavioural have used the term 'feedback' with conflicting definitions. There have been several attempts to clarify the construct. Ilgen, Fisher and Taylor (1979) have presented one of the most coherent. Their research attempted to define feedback as a special form of communication (or a message) from a source to a recipient comprised of information about the recipient's performance. The source is often difficult to separate from the feedback information, resulting in confounding. The source may be a person who has observed the recipient's behaviour (such as a manager or supervisor), it may be inherent in the task itself (such as visual representation of cumulative number of objects produced) or it may be provided by the recipients themselves (comparison of one day's production with previous day's production).

The message provided by feedback must be comprehensible to the

recipient. It is most effective when it increases the recipient's knowledge and reduces uncertainty. Both the source and the message affect the acceptance of the feedback, the perceived accuracy of the feedback and the recipient's desire to respond. Recipients are more likely to accept feedback if the source is viewed as possessing the expertise to accurately gauge performance and as being trustworthy. Acceptance is also affected by whether the message is consistent; that is, if the feedback is consistently negative or positive (Duncan and Bruewelheide, 1985-86; Prue and Fairbank, 1981; Ilgen, Fisher and Taylor, 1979).

The more credible the source has been viewed in the past, the more likely that future feedback from that source will be perceived accurately. As well, perception is influenced by the timing of the message (feedback must be paired with an appropriate response for it to be meaningful), the sign of the message (positive feedback is perceived and recalled more accurately than negative), and the frequency of the feedback.

The recipient's desire to respond is affected by several factors.

The source must have power; the recipient must believe that the source can influence the contingency between the recipient's behaviour and his/her receipt of valued outcomes (or goals). The message must be specific, to allow the recipient to adjust behaviour accurately. The nature of the feedback must be considered; positive feedback is superior to negative, especially when paired with goal setting. The recipient must also believe in his/her own response capacity: that effort will result in improved performance.

Feedback content refers to the type of feedback information provided and may involve comparisons of:

- an individual's performance with his/her previous performance.
- an individual's performance with a standard or goal of individual performance.
- an individual's performance with group performance.
- an individual's performance with a standard of group performance.
- a group's performance with its previous performance.
- a group's performance with a standard of group performance.
- a group's performance with a standard of individual performance.

(Belcazar, Hopkins and Suarez, 1985-86).

Along similar lines, Duncan and Bruwelheide (1986) have defined feedback within three different methodologies. Systems theory states that feedback allows for error corrections in that information about present state/functioning of a system is used to control future states/functioning of a system. Within a goal setting context feedback is viewed as an incentive or promise of a reward based on correct or appropriate performance, while operant conditioning on the other hand, defines feedback as either a discriminative stimulus (based on previous feedback reinforcement histories) or as a reinforcer in itself.

#### Behavioural Viewpoint

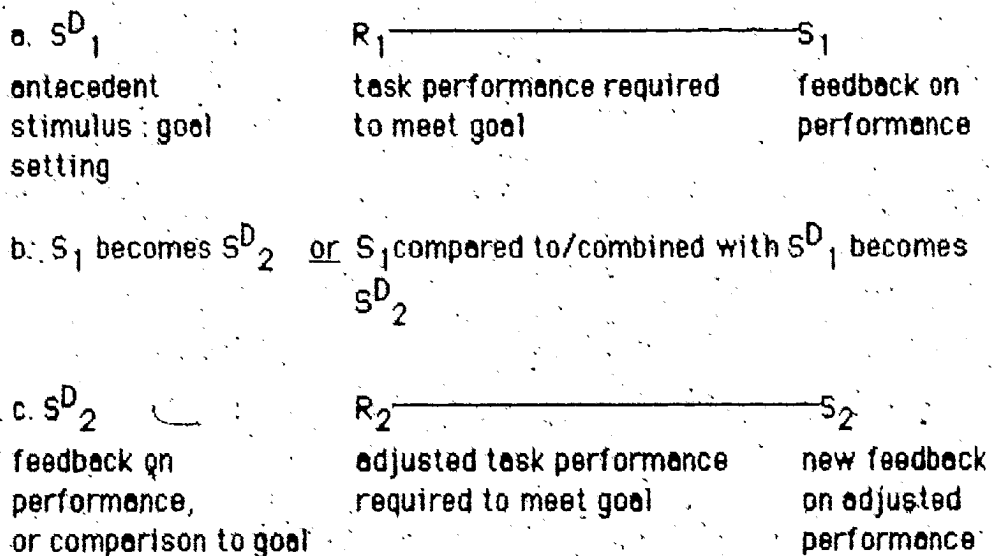
A parallel but very different line of research from Locke's has utilized goal setting theory as well. Whereas Locke conceptualized goal setting as a relation between conscious intention and task performance, behavioural analysis does not require that cognitive states be involved to explain the results obtained. Cognitive events

are not excluded as mediators or precursors of performance; rather, because such cognitions are unobservable, difficult to measure and covert, they are not viewed as acceptable or quantifiable data that can be validly and reliably measured. (Fellner and Sulzer-Azaroff, 1984; Kreitner, 1982).

Goals are viewed as stimuli that precede behaviour. As an antecedent stimulus, a goal, followed by a reinforced response, gains discriminate control, increasing the probability that the behaviour will be repeated. (Komaki, Collins and Penn, 1982). Feedback is often used as the reinforcement of the response and, as such, may also function as an antecedent stimulus for future behaviour (see Figure 2). Locke et al (1981) stated that feedback cannot be viewed as a reinforcer, first, because it does not always result in an increase in behaviour, and second, because behaviour often increases immediately after the initiation of feedback rather than gradually. Fellner and Sulzer-Azaroff (1984) argued that feedback may not always be viewed as a reinforcer by subjects.

Reinforcers vary in their effectiveness because of the learning

history (See also Quagliere and Carnazza, 1985). Secondly, by definition alone, a reinforcer is responsible for increasing behaviour, whether gradually or immediately.



**FIGURE 2.** A behavioural view of Locke's theory of goal setting (Balcazar, Hopkins and Suarez, 1985-86; Prue and Fairbank, 1982).

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Locke et al (1981) also argued that for feedback to be effective, it must be understood by the recipient. Fellner and Sulzer-Azaroff did



not debate this. If feedback is not understood or related directly to performance, it will not function as a reinforcer (Ilgen, Fisher and Taylor, 1979; Duncan and Bruwelheide, 1986). They simply stated that procedures and methodology for measuring such cognitive processes have not yet been developed.

Other resistance to behavioural interventions often refers to the 'behaviour modification' aspects of the methodology (Locke, 1977). These take the form of concerns that employees are being controlled and manipulated, often against their will. Within an organizational framework, this, indeed, is a strange criticism. The reality of organizations requires managers and supervisors to get the most and the best work from employees, to direct them toward an organizational goal. Given this basic fact, it may be easier to introduce managers to methods that focus on direct observation, measurement and the influence of behaviour performance, rather than to have them attempt to determine and manipulate the covert cognitive processes of all individual employees (Fellner and Sulzer-Azaroff, 1984). Organizational behaviour modification has

been developed specifically to meet these needs. While theory provides the basis for determining why or how individuals behave as they do, methodology provides a means for measurement, intervention, and behaviour change (Luthans and Martinko, 1982).

Extensive research using behavioural methodology has confirmed many of Locke's tenets. For example, Rowe (1981) used assigned goals and public feedback of individual performance to improve performance among telephone operators. Rogers et al (1982) used assigned goals, public and private feedback of individual results in increasing performance at a job search program, while Newby and Robinson (1983) used assigned goals and grouped versus individual feedback to improve retail employee performance. The use of goal setting, prompts, praise and feedback to increase retail sales was also demonstrated by Ralls and O'Brien (1986), while Wikoff, Anderson and Crowell (1982) used feedback and praise to increase employee efficiency. Another study, by McCuddy and Griggs (1984), used participative goal setting and public feedback of individual results to improve engineers' completion dates.

All of the above studies used operant procedures: observation to establish baseline performance, introduction of antecedent stimulus (goal setting), performance measures and intervention (feedback, other reinforcers), and reversal to determine extent of performance improvement (where suitable). As well, all of these studies involved field rather than laboratory studies. Locke et al (1981) stated that the effects of goal setting were so pronounced that there was no difference between field and lab studies; in terms of both internal and external validity, research has not shown this. (See, for example, Buller and Bell, 1986). Locke et al appeared to infer, in the 1981 review, that if the field experiments studied had been designed correctly, the observed effect size would have approached that obtained in laboratory studies. However, recent meta analysis (Tubbs, 1986) has confirmed that lab studies show a greater effect size than field studies, making such global statements as Locke's inaccurate. Indeed, one of the problems of quasi-experimental designs is the nonrandom selection of subjects and the potential effects of intervening and/or confounding variables beyond the

control of the experimenter (Cook and Campbell, 1979). Another issue to be considered is the performance of volunteer subjects who may be more sensitive and accommodating to the tasks presented than subjects in an actual employment setting (Rosenthal and Rosnow, 1984).

#### Comparison of cognitive and behavioural viewpoints

Two surprisingly similar field studies attempted to improve employee performance; one used a goal setting/cognitive interpretation, while the second used an operant conditioning/behaviour modification interpretation (Locke, 1980). Although performance increased in both studies, Locke expressed a concern that both studies failed to demonstrate or rule out confounding factors in their results. Regardless, Locke favoured a cognitive interpretation for the results obtained in both studies. While Locke does not argue with some results obtained by operant procedures, he does take exception to the philosophical bases of operant theory (Locke, 1977).

The argument moves, then, to the comparison of the theoretical

bases of data interpretation. While theory is a necessary component for the development of useful interventions/applications, theory alone is not sufficient. In many organizations, managers and supervisors have little or no background in personality theory, motivational techniques, or Theory X and Y. Frequently, they are not concerned with such areas: their major concern is in increasing quality and quantity of performance toward meeting organizational goals (Kreitner, 1982).

Although the two methods utilizing goal setting theory (cognitive and operant) are diametrically opposed (both in theory and methodology), there appears to be at least a move toward integration. Behavioural self-management, taking into account the mediating role of thoughts and feelings while allowing individuals to create self-imposed and self-managed systems of control, is just such a step (Meichenbaum, 1977). As yet, however, the results of such research have been mixed. Wexley and Baldwin (1986) attempted to facilitate the transfer of learning through assigned goals and feedback, participatively set goals and feedback, versus

self-management. Assigned and participative goals did not differ from one another but did bring about more change in behaviour than did self-management alone. Hayes et al (1985) attempted to determine if self-reinforcement procedures were as effective as external-reinforcement procedures in goal setting, but found that self-reinforcement improved task performance only when combined with external feedback. Martin (1980) found that, of twenty-one studies directly comparing types of reinforcement, seventeen failed to determine any difference between the effects of external and self-reinforcement. Such current research also recognizes the necessity of an expanded theoretical basis that integrates operant principles and mediating cognitive processes. (Luthans and Martinko, 1982; Fellner and Sulzer-Azeroff, 1984; McDonald, 1982). With this will come the acceptance that there is the possibility of uniting both cognitive and behavioural viewpoints for both a new theory and methodology.

#### Purpose of study

The intent of this study, based on the above research reviewed,

was first to determine if there was any difference in the effectiveness of private versus public feedback when combined with goal setting. Locke has stated, and it has been demonstrated, that feedback (or KR) is effective when combined with goal setting; however, recent studies, particularly those utilizing a behavioural methodology, have not studied the comparative effectiveness of different types of feedback. Balcazar et al (1985-86) reviewed and analyzed 114 studies that used feedback to effect performance change. They found that the means of the presentation of feedback showed no strong differences in consistent effective results. Studies utilizing public feedback showed consistent results in 39% of all cases, private feedback showed consistent results in 43% of all cases, and public combined with private feedback showed consistent results in 44% of all cases. These studies did not compare the relative effectiveness of the means of presentation of feedback.

Although public feedback is the easiest to administer, particularly when it is based on group results, private feedback may facilitate substantially more performance by increasing information,

specificity and goal-directed performance (Prue & Fairbank, 1981).

However, public feedback may be more time and cost effective, particularly in organizations.

A second purpose of this study was to determine if there were any differences in the perceptions of subjects receiving the two different types of feedback. Disclosure of negative individual performance in a public manner could be aversive, resulting in a decrease in performance. If public feedback is viewed as negative, an assessment of the viability of the two types of feedback could result in the choice of private feedback over public feedback, based not on relative effectiveness but on relative acceptance.

These studies were carried out to answer these questions. One study was used to determine subject perceptions of different forms of feedback issued, and two studies were used to determine if there was a performance difference as a result of type of feedback administered. The first study was in the form of post-test measurement only, the second as a quasi-experimental field study within an organization, and the third as a laboratory experiment.



If, as has been shown by previous research, feedback increases performance when it is combined with goal setting, then the greatest increase was expected to occur within a laboratory setting, where stringent control could be maintained, and the smallest increase in performance to occur in a field setting, where little control could be exerted.

### Study 1

This study was designed to determine if subjects receiving private feedback only would differ from subjects receiving both public and private feedback in terms of type of goal set, expectations of goal achievement and perceptions of feedback. Hayes et al (1985) conducted two studies using public or private goal setting for students seeking help for a self-control problem (studying). Students were assigned to either non-consequence or self-consequence conditions; feedback was not used. Administration of a Likert-type scale at the conclusion of the study indicated that goal commitment was similar for both groups. There were no differences between public or private goal setting groups in either setting goals or level of expected performance outcome. No specific research was conducted to measure the effect of type of feedback on setting goals or expected performance.

Ivancevich (1982) conducted a field study with team leaders and subordinates in an American company to determine the relative

effectiveness of performance appraisal conditions, using both pre- and post-intervention questionnaires. He found that subjects did not differentiate between interventions of feedback only (with presumed self-set goals), feedback combined with assigned goals or assigned goals only. Nor was there a significant motivational or performance impact. Based on Locke's theory, Ivancevich expected that the combination of self-set goals and feedback would result in higher expectations of goal achievement than any of the three conditions. This did not happen.

Earley (1985) administered a post-performance questionnaire to assess goal acceptance and level of personal goals set by students involved in a study where the task used was devising class schedules. Information about the purpose of the task and how to perform the task was found to be a potent enhancer of both goal acceptance and performance. Again, in this study feedback was not supplied or assessed.

Pearce and Porter (1986) assessed the attitudes of managers exposed to a new system of private performance feedback. They found

that, in general, attitudes toward performance appraisal techniques were more positive after private feedback was implemented.

These studies have separated goal setting (public or private) and feedback (private). Locke et al (1981) have emphasized that the combination of the two is necessary to facilitate improved performance. As well, the questionnaires and self-report forms used were provided as a follow up to experimental intervention, rather than as a primary source of data.

The current study attempts to unify both goal setting and feedback, using subjects from two feedback conditions, private feedback only and public plus private feedback. Following Earley (1985) a post-performance questionnaire was administered to students enrolled in certain university courses. The courses chosen were those that were known to provide either private or both private and public feedback about performance. Private feedback was defined as professor's comments and grades noted on the student's written tests, assignments and/or papers, for the view of the student only. Public feedback was provided by the professor in the form of graphic

representation (illustrating individual score ranges distributed on a normal curve of group scores), and/or public posting of individual scores of tests and papers. It was not known whether instructors in those courses set goals for their students at the beginning of the course. The questionnaire assessed the nature of the goals that were set and the student's perception of the goal and feedback. It was expected that the two feedback conditions would be associated with different goal expectations, types of goals set and perceptions of feedback.

Locke et al (1981) and subsequent research has demonstrated that a hard goal is more effective in improving performance than either an easy or 'do best' goal. In many cases students set goals for themselves, independent of those set by course instructors or supervisors. Erez and Kanfer (1983) proposed that externally assigned goals cannot be presumed to be equal to a subject's self-set goal. It was expected that, regardless of type of feedback, subjects who set a hard goal (Q5) would express more frequent expectations of goal achievement (Q6) than subjects who set a general or 'do best'

goal(Q4).

Feedback has specific conditions which contribute to its effectiveness toward goal achievement. Negative feedback may be detrimental to performance, rather than beneficial, regardless of type of goal set (Prue and Fairbank, 1981). Therefore the subject's perception of the feedback is important. The questions were also designed to determine if the feedback was perceived as an accurate gauge of individual performance, as helpful to the subject to increase knowledge and reduce uncertainty, and if the source was perceived as positive. Both the message relayed and the source of the feedback influence the perceived accuracy and acceptance of the feedback received (Ilgen, Fisher and Taylor, 1979). It was expected that subjects who expressed positive views of both the feedback and the source would also report more frequently that they expected to achieve their goals.

## Method

### Subjects

The questionnaire was administered to 205 undergraduate students at Saint Mary's University, during regularly scheduled class time. Seven professors instructing nine classes were approached and agreed to provide the experimenter with access to their classes. Participation was voluntary, and subjects who chose not to complete the questions were informed that they could return the questionnaire blank when all subjects had finished. Neither the professor involved nor the experimenter was aware of individual nonparticipation. Ten blank forms were returned in this manner.

According to descriptions by the professors of type of feedback provided to their students, the responses were classified into two groups: Group 1 (consisting of 99 subjects) received private feedback only on their class work, assignments and tests, while Group 2 (consisting of 96 subjects) received both public and private feedback on their class work.

Of the original 205 subjects, one class of 30 subjects was

eliminated when it was determined that, contrary to the course and instructor's specifications, public feedback had never been supplied to students. This resulted in Group 1 (private feedback) remaining at 99 subjects, while Group 2 (public and private feedback) was reduced to 66 subjects. The age range was from 18 to 50 years ( $M = 22.09$ ; Mode = 20.00), with 63 males, 61 females and 1 unspecified.

Group 1 consisted of 60 males and 39 females, with an age range from 18 to 50 ( $M = 21.38$ ; Mode = 20.00; 1 with age unspecified).

Group 2 consisted of 23 males and 42 females (1 with sex unspecified), with an age range from 19 to 48 years ( $M = 23.25$ ; Mode = 20.00).

### Questionnaire

The questionnaire included in Appendix 1 was designed by the experimenter as a self-report form and was administered after final mid-term examinations but before the final classes for the school year. It sought students' perceptions on the nature of the feedback provided and goals set for their courses.



### Data Analysis

The data was analyzed using the SPSS-X package of the VAX computer system available at Saint Mary's University. General descriptive statistics were used to determine any trends in responses. Following this, chi square analyses were used to assess both between and within group significant responses. As well, Pearson correlations were executed to further explore the significant relationships between responses.

### Results

#### Between Group Differences

As expected, the private and private plus public feedback groups differed in their perceptions of the feedback received, goal expectations and types of goals set (see Table 1). On the whole, the subjects who received private plus public feedback responded positively to the questions more frequently than those receiving private feedback only. There were two exceptions: private feedback subjects reported both that hard goals were set at a higher level and

that expectations of goal achievement were higher.

The Kolmogorov-Smirnov nonparametric two sample test showed only one of these differences to be significant: the public and private feedback group set significantly more goals than the private feedback group ( $p < .026$ ). Chi square analyses showed that three of the between group differences noted in Table 1 were significant.

In classes that received both private and public feedback, 23.3% more subjects reported that they had set a goal for themselves, than those in classes receiving private feedback only ( $\chi^2 = 7.67, p < .01$ ).

Subjects receiving public and private feedback reported more frequently (14.1%) that feedback was helpful to their goal attainment than did subjects receiving private feedback only ( $\chi^2 = 6.93, p < .01$ ).

Finally, 95.5% of those receiving both public and private feedback viewed the source of the feedback as positive, compared to 78.6% of those receiving private feedback only ( $\chi^2 = 7.56, p < .01$ ). There were no significant differences between the groups in terms of the frequencies in type of goal set, expectations of meeting the self-set goal, or perceptions of feedback as either positive or accurate (see

Table 1).

Table 1  
Mean Percentage of Yes Responses and Chi Square Analyses for  
Different Types of Feedback

	Private (n=99)	Public & Private (n=66)	$\chi^2$
Q4: Was a goal set?	43.4	66.7	7.67**
Q5: Was hard goal set?	92.9 <sup>a</sup>	90.9	.17
Q6: Will goal be met?	79.8 <sup>b</sup>	75.8 <sup>c</sup>	.14
Q7: Was feedback positive?	55.6	63.6	.76
Q8: Was feedback accurate?	57.6	66.7	1.02
Q9: Was feedback helpful?	76.8	90.9 <sup>d</sup>	6.93**
Q10: Was source viewed as positive?	78.8	95.5	7.56**

<sup>a</sup> = 1.0% missing<sup>c</sup> = 1.5% missing<sup>b</sup> = 1.0% missing<sup>d</sup> = 3.0% missing\*\* =  $p < .01$ 

The two feedback groups were then subclassified according to  
 whether a general or 'do best' goal had been set (Q4) or a hard goal

had been set (Q5). Chi square analyses were performed on these two subgroups.

Subjects in the private feedback group who set a hard goal reported more frequently that the feedback was helpful ( $\chi^2 = 6.05, p < .01$ ) and that their view of the source was positive ( $\chi^2 = 8.51, p < .01$ ) than subjects who set a hard goal in the public and private feedback group (see Table 2). When those subjects in the public and private feedback group set a general or 'do best' goal, they reported more frequently than the private feedback group that they perceived the feedback as helpful ( $\chi^2 = 5.17, p < .05$ ).

#### Within Group Differences

To understand further these relationships, within group comparisons were made between subject's responses to each of the questions. Again, the data was examined for those subjects who reported that a general or 'do best' goal had been set (Q4) or that the goal set was hard (Q5). Correlations were then established for each pairwise comparison of Q4 through Q10 on this subset of respondents.

**Table 2**  
**Comparison of Positive Responses of Private versus Private and**  
**Public Feedback Groups with Different Types Of Goals Set**

	Easy or 'Do Best' Goal Set $\chi^2$	Hard Goal Set $\chi^2$
Q6: Goal will be met	.01	.24
Q7: Feedback was positive	.00	.53
Q8: Feedback was accurate	3.38	.07
Q9: Feedback was helpful	5.17*	6.05**
Q10: Source was positive	3.42	8.51**

\* =  $p < .05$ ; \*\* =  $p < .01$

#### General or 'Do Best' Goal Set

The two groups varied only slightly in their responses when a general goal was set. In the private feedback group, when subjects reported having set a goal, expectations of goal attainment (Q6) significantly correlated with a view of the feedback as positive (Q7) ( $r = .681, p < .001$ ), accurate (Q8) ( $r = .381, p < .001$ ), helpful (Q9) ( $r = .453, p < .001$ ) and a view of the source as positive (Q10) ( $r = .322,$

$p < .05$ ). See Table 3a.

In the private and public feedback group, when subjects reported having set a goal and had positive expectations of meeting that goal, correlations were similar, except that no correlation with a view of the source as positive occurred. See Table 4a.

It was not demonstrated conclusively that the private and public feedback group showed more frequent positive responses that were intercorrelated than the private feedback group.

The private and public feedback group did show that, when a general or 'do best' goal was set, perceptions of feedback as positive correlated with a view of the feedback as accurate ( $r = .240, p < .05$ ), helpful ( $r = .308, p < .05$ ), and a view of the source as positive ( $r = .310, p < .05$ ) (Table 4a). With subjects receiving private feedback only, feedback perceived as positive correlated only with perceptions of the feedback as helpful ( $r = .491, p < .001$ ) (Table 3a).

Only for the private feedback group did feedback perceived as accurate correlate both with perceptions of the feedback as helpful ( $r = .400, p < .01$ ) and a view of the source as positive ( $r = .428, p < .01$ ).

**Table 3**  
**Correlations Between Positive Responses for Group 1 (Private Feedback)**

**a. When Goal is Set**

	Q5	Q6	Q7	Q8	Q9	Q10
Q5	----	-.1903	-.0598	.2676	.0331	-.1508
Q6		----	.6810***	.3810**	.4529***	.3224*
Q7			----	.2135	.4905***	.1753
Q8				----	.4004**	.4277**
Q9					----	.3939**
Q10						----

**b. When Hard Goal is Set**

	Q5	Q6	Q7	Q8	Q9	Q10
Q4	---	-.3109***	.0115	-.1303	-.0738	-.0693
Q6		---	.3949***	.3482***	.4064***	.2519**
Q7			---	.2719**	.4582***	.1518
Q8				---	.4237***	.4814***
Q9					---	.4459***
Q10						---

one tailed test

Legend:

\*  $p < .05$

Q4 = Goal was set

\*\*  $p < .01$

Q5 = Hard goal was set

\*\*\*  $p < .001$

Q6 = Expectations of meeting goal were positive

Q7 = Feedback was perceived as positive

Q8 = Feedback was perceived as accurate

Q9 = Feedback was perceived as helpful

Q10 = Source of feedback was perceived as positive

**Table 4**  
**Correlations Between Positive Responses for Group 2 (Private and Public Feedback)**

**a. When Goal is Set**

	Q5	Q6	Q7	Q8	Q9	Q10
Q5	----	-.1752	-.0538	-.1752	-.0750	.2849*
Q6		----	.3406**	.5633***	.2367*	.0225
Q7			----	.2400*	.3078*	.3103*
Q8				----	.4402**	.2201
Q9					----	.6417***
Q10						----

**b. When Hard Goal is Set**

	Q5	Q6	Q7	Q8	Q9	Q10
Q4	---	-.2178**	-.1683	.1512	-.0355	-.1264
Q6		---	.4112***	.3547**	.1780	.1057
Q7			---	.2537*	.3482**	.2355*
Q8				---	.3752**	.2441*
Q9					---	.6944***
Q10						---

one-tailed test:

Legend:

\*  $p < .05$

Q4 = Goal was set

\*\*  $p < .01$

Q5 = Hard goal was set

\*\*\*  $p < .001$

Q6 = Expectations of meeting goal were positive

Q7 = Feedback was perceived as positive

Q8 = Feedback was perceived as accurate

Q9 = Feedback was perceived as helpful

Q10 = Source of feedback was perceived as positive



For the private and public feedback group, feedback perceived as accurate correlated only with the perception of the feedback as helpful (and not with a view of the source as positive).

For both groups, feedback perceived as helpful correlated with a view of the source as positive.

#### Hard Goal Set

For both feedback groups, an interesting anomaly occurred when a hard goal was reported as set. Significant negative correlations occurred between the response that a goal had been set (Q4) and expectations of goal attainment (Q6) (see Tables 3b and 4b).

When expectations of meeting the hard goal were positive, the private feedback group showed consistent significant correlations with perceptions of the feedback as positive ( $r = .395, p < .001$ ), accurate ( $r = .348, p < .001$ ), helpful ( $r = .406, p < .001$ ) and a view of the source as positive ( $r = .252, p < .01$ ). However, this didn't occur in the private and public feedback group. In this group, positive expectations of goal attainment correlated only with perceptions of

the feedback as positive ( $r = .411$ ,  $p < .001$ ) and accurate ( $r = .355$ ,  $p < .01$ ). No correlations occurred with perceptions of the feedback as helpful or the source as positive (Tables 3b and 4b).

For both groups, when the feedback was perceived as accurate, significant correlations occurred with perceptions of the feedback as helpful and a view of the source as positive.

A summary of the differences in responses between the two feedback groups, incorporating Tables 1 through 4, is provided in Table 5.

Table 5

Summary of the Differences in Responses Observed in Both Private and Public Plus Private Feedback Groups

1. General Analysis (Table 1)

Private

Public + Private

- more goals set.
- feedback viewed as helpful.
- source viewed as positive.

## II. General Analysis by Group and Goal Set (Table 2)

(Easy/ 'Do Best' Goal)

### Private

### Public + Private

- feedback viewed as helpful.

(Hard Goal)

### Private

### Public + Private

- feedback viewed as helpful.

- view of source positive.

## III. Correlational Analyses by Group and Goal Set (Tables 3 and 4)

(Easy/ 'Do Best' Goal)

### Private

### Public + Private

- setting hard goal correlated with positive view of source.

- expectations of goal achievement correlated with views of feedback as positive, accurate, helpful, and positive view of source.

- expectations of goal achievement correlated with views of feedback as positive, accurate and helpful.

- positive view of feedback correlated with view of feedback as helpful.

- positive view of feedback correlated with view of feedback as helpful, accurate, source as positive.

### III. Correlational Analyses (continued)

#### (Easy/"Do Best" Goal Set)

##### Private

- feedback viewed as accurate  
correlated with view of feedback  
as helpful, source as positive.

##### Public + Private

- feedback viewed as accurate  
correlated with view of feed-  
back as helpful.

#### (Hard Goal Set)

##### Private

- expectations of goal achievement  
correlated with view of feedback  
as positive, accurate, helpful,  
source as positive.

##### Public + Private

- expectations of goal  
achievement correlated with  
view of feedback as positive,  
accurate, helpful.

- feedback viewed as positive  
correlated with view of feedback  
as accurate, helpful.

- feedback viewed as positive  
correlated with view of feed-  
back as accurate, helpful,  
source as positive.

### Discussion


It was expected that those subjects receiving both public and private feedback and who had set a hard goal would report significantly more frequently that they expected to meet their goals. Giving both types of feedback or knowledge of results would increase information about performance, allow necessary adjustments toward the goal and ultimately improve expectations of goal achievement (Locke, 1981). This was not shown. It was also not shown for the group receiving private feedback.

The two groups differed in their responses, but not in the direction expected. Although more subjects in the public and private feedback group reported that they had set a general or 'do best' goal for themselves, there were no significant differences in the types of goals set, expectations of goals set, or perceptions of feedback as positive or accurate (see Table 1). The private feedback group actually reported more frequently that they had set hard goals for themselves (see Table 1). The addition of public feedback of individual results appears to inject a negative or aversive element

affecting the setting of hard goals (Table 5).

In both groups, when a hard goal had been set, a negative correlation occurred between positive responses that a goal had been set (Q4) and expectations of goal achievement (Q6) (see Tables 3b and 4b). Garland (1984) found that subjects continued to work toward a very difficult goal even when they suspected that it could not be obtained. A similar reaction may have occurred here; however, without explicit descriptions of individual perceptions of what is subjectively accepted as a hard goal, the results of this analysis should be viewed with caution.

As well, the relationship between expectations of goal achievement (when a hard goal is set) and some of the perceptions of feedback appears to be affected by the provision of the different types of feedback. The introduction of public feedback appears to affect positive perceptions of both the helpful aspects of the feedback and the source of the feedback. Prue and Fairbank (1981) emphasized that for feedback to be utilized to its fullest, it must be accepted and viewed as accurate and helpful. Public feedback of



individual results may actually adversely affect such perceptions of feedback (Table 5).

Limitations of this study should be noted at this point. The questionnaire used was a subjective measure and open to individual interpretation. Responses to a questionnaire at this point in the academic year may have been affected by a halo effect: subjects may have been biased in their responses by the receipt of their midterm class results.

As well, several other factors could influence these results. Feedback could be viewed as more accurate when it provides information not only about one's own progress toward a goal but one's own goal achievement relative to others (Ilgen, Fisher and Taylor, 1979). However, research has shown that competition is a possible confound in situations where feedback is presented publicly (Komaki et al, 1978; Latham and Baldes, 1975). Pearce and Porter (1986) have argued that performance feedback that one is 'meeting standards' is viewed as negative feedback. In this case provision of public feedback of individual results could be aversive to subjects, particularly in a

highly competitive academic setting.

The personal and subjective definition of a 'hard goal' could vary between groups. In private feedback groups, a hard goal could be based on personal experience and expectations. In a public and private group, a hard goal could be based on extrinsic rather than intrinsic factors. Goal setting could be influenced by the comparison of one's own performance with the performance of others. Hayes (1985) stated that goal setting works because it sets a social standard rather than a self-standard. However, if such resulting goals were both hard and unattainable, then feedback would not be viewed as helpful to goal attainment. Erez and Zidon (1984) found that feedback acceptance negatively correlated with task difficulty, while Huber (1985) stated that setting a difficult goal may adversely affect behaviour if the task is difficult.

The personal attributes of the feedback sources could also be a confounding factor. Power or perceived influence of the source involved in giving feedback has also not been discounted as a possible effect on significant negative or positive responses. Students may



have felt that even though all questionnaires were confidential, their professors would have access to and be influenced by the student responses.

Also, the populations of the different feedback groups could vary simply because of the differing subjects taught. Professors who provide both public and private feedback could mark assignments more stringently and be perceived as more demanding than professors who provide private feedback only. If a specific course is required for a degree, students will be required to enroll and achieve a minimum grade (or goal) regardless of type of feedback provided.

To explore further some of these issues, more objective rather than subjective data was needed. In Study 2, an attempt was made to combine behavioural methodology using objective performance measures and a questionnaire recording subjective responses to interventions.

## Study 2

Study 2 was conducted to determine further the effect of the type of feedback presented on improving performance, when combined with goal setting. Previous studies have used behavioural methodology and have found significant results with the introduction of feedback and/or goal setting. For example, Wikoff, Anderson and Crowell (1982) conducted a field study to determine the effects of feedback and feedback plus praise in increasing efficiency in a furniture manufacturing plant. They used a multiple-baseline design across departments. Both feedback conditions used public and private feedback of individual results. No comparison or separation of the two feedback types was made, nor was there a formal goal setting component introduced. Their results showed that 5 of the 7 feedback only conditions reached statistical significance and that 2 of the 4 feedback plus praise conditions reached significance.

Luthans, Paul and Taylor (1986) replicated an earlier field study using contingent reinforcement to improve performance of salespersons in a retail setting. Although no specific goal setting was

described, subjects were given assigned "established performance standards" (p. 29). A simple reversal design was used, with results based on individual performance. Feedback was not formally described as being provided to subjects; however, employees were informed daily whether they were eligible to receive the contingent reinforcer. In other words, they were informed about their performance toward the goal requirements for reinforcement. Their results showed significant increases in functional, and a reduction in dysfunctional, performance with the introduction of contingent reinforcement, and a return to baseline levels with a withdrawal of reinforcement.

Komaki, Barwick and Scott (1978) used a behavioural approach to improve safety practices in a food manufacturing plant. An assigned goal was used and group performance was posted publicly. As well, praise of appropriate safety performance was implemented on a random basis. Although goal setting was used and both public and private feedback and praise were provided, no comparison of the two types of feedback was conducted. Their results showed that feedback plus goal setting substantially improved levels of safety

performance. When feedback was withdrawn, performance reverted to baseline levels.

In 1982, Komaki, Collins and Penn again studied safety performance in a manufacturing plant; however, this work compared the relative effectiveness of goal setting (assigned) and goal setting plus feedback (public posting of group results). Their results showed that goal setting plus feedback produced superior results compared to goal setting alone.

As goal setting and feedback have been demonstrated to affect performance, a logical next step in research is to determine the relative effectiveness of different types of feedback combined with goal setting. The provision of any form of feedback when combined with goal setting should affect performance levels; however, feedback which included a public component, either by itself or with private feedback, should provide a greater improvement than private feedback alone.

Public feedback does not involve large costs and it is easy to present (Prue and Fairbank, 1981). These two factors are important

considerations in the implementation of new feedback systems, particularly if it can be demonstrated that public feedback is more, or at least as, effective as private feedback. The second study sought to explore the effectiveness of public and private feedback, when a goal had been set, in a field setting. Using a behavioural approach, three performance deficiencies were identified and observations were made to determine baseline measures. Assigned goals for improved performance were used. Interventions of private feedback alone, public feedback alone, and public plus private feedback were provided to employees. Praise, when appropriate, was also used.

Following intervention, a questionnaire was used to determine the subjects' perceptions of the feedback provided. It was expected that there would be some negative repercussions from the subjects, and that the feedback accuracy and view of the source of the feedback could be affected by the type of feedback presentation.

## Method

### Setting

An international retail chain agreed to allow their local branches to participate in a study assessing the relative merits of public versus private feedback. Four stores of the ten located in the Halifax/Dartmouth area participated in the study. Three of the stores were located in major shopping malls, while the fourth was operated as a subdepartment within a major department store.

### Employees

Store A had a full-time staff (excluding the manager) of 2, with 2 part-time employees. Store B had a full-time staff (excluding the manager) of 5 full-time employees and 2 part-time employees. Store C, located within a department store and also supervised by the manager of Store A, had a full-time staff of 2 employees and 2 part-time employees; however, one of the full-time employees was terminated during the study. This termination was not related to performance problems. Store D, supervised by the manager of Store B, had 1 full-time employee and 2 part-time employees. The total

number of employees, excluding the managers, was 18 initially and 17 by the sixth week of the study.

The length of time employees had been employed by the company ranged from a minimum of six months to fifteen years. All employees had completed basic training in all areas, and were considered to be aware of company goals and procedures. It was expected that this standardized background would control for possible training or experience effects (Luthans, Paul and Taylor, 1985).

#### Identification of Behavioural Deficiencies

Through meetings with managers and the area supervisor, three performance problems were analyzed using a behavioural model.

#### Completion of Daily Envelopes

One manager supervised Stores A and C and was responsible for insuring that all paperwork for both stores was completed correctly before it was forwarded to head office weekly. One of the clerical duties to be completed by staff was the completion of detail on the daily cash report envelopes. The required information included

stamping the envelope with the particular store identification stamp, circling the name of the store on the envelope, circling the correct week of the retail cycle, and noting the daily weather conditions (See Appendix 2). Initially, it was believed that this was a problem needing intervention, as the manager had been required to spend considerable time prior to the study insuring that these envelopes were completed correctly. However, after baseline observations, it was determined that this problem had been rectified, as average performance of completing cash envelopes correctly averaged 93% for both stores over four weeks. This clerical task was not identified as a problem in either Store B or D.

#### Housekeeping

The managers expressed concern about the quality of housekeeping within the store. They felt that employees were not always consistent with executing daily tasks to maintain an orderly and neat store appearance for customers. Effective/ineffective performance was operationally defined so that behaviour measures could be easily and unambiguously taken. It was determined that the



behavioural description 'Housekeeping' would encompass the following:

- a. vacuuming performed for entire store in the morning.
- b. store stock straightened and tidied throughout entire store in the morning.
- c. cash desk area straightened in the morning (that is, all paperwork removed, stock not piled in view of customers, etc.)

#### Cash Discrepancies

Cash discrepancies represent an ongoing problem in retail outlets of all types. Although overages and/or shortages may only represent a small amount of cash daily within individual stores, when totalled over all stores within a major chain the total amounts unaccounted for may be substantial. As well, within this chain of stores, for all cash discrepancies of more than \$5.00, managers are required to recheck daily sales receipts in an attempt to discover where the error has occurred. Weekly, this may represent a substantial amount of both the manager's, and the accounting department's, time. 'Cash Discrepancies' were identified as any

amount over/under zero on a daily basis.

#### Establishment of Goals

Employees were not involved in the goal setting decision. The behaviours targeted for intervention were considered within each employee's daily job performance, and prior to this study, the company had continuously expected high achievement in these areas. The goal for performing Housekeeping tasks was set at 100% completion of all tasks daily; the goal for Cash Discrepancies was set at zero (no cash over or under daily). These were considered to be hard, but not unattainable goals for employees.

#### Employee Instructions

After baseline data was collected, employees were informed that the company was going to attempt to help employees solve performance problems. It was emphasized that this was a pilot project only, that observations taken would not be used by the company for performance appraisals and/or disciplinary procedures. It was also emphasized that the experimenter was not associated with the security company used by management to gather covert

evidence on the efficiency and honesty of employees.

Goals were given orally to employees after baseline measures had been collected, and in written and/or graphic form for each of the following interventions.

### Design

Simple behavioural checklists were devised, and a schedule of observations was outlined, to collect baseline data. For Housekeeping, observations included both continuous checks (as the three Housekeeping behaviours could be noted by the managers as either performed or not performed in the morning) as well as random time sampling of the noted behaviours (see Appendix 3). Managers randomly checked twice during each day to see that the cash area was kept clear of clutter; as well, the experimenter visited each store at a random time daily to observe the same. A total score of six could be obtained by each store daily if all tasks were completed.

Interobserver agreement of at least 96% was maintained throughout the study. Only stores A and B were considered to have a problem in this area and were included in this portion of the study.

For Cash Discrepancies, managers were responsible for recording daily discrepancies in all four stores (see Appendix 4).

The following interventions, based on a modified reversal design (AB<sub>1</sub>B<sub>2</sub>CB<sub>3</sub>; Kazdin, 1984), were implemented.

A (Baseline): Discrete observations were taken and recorded to establish baseline measures.

Goal Setting: Once baseline data had been collected, it was assessed to insure that a behavioural problem existed, and that it was a problem of rate or frequency of performance, rather than of the skill or lack of training of employees. Using baseline data, managers calculated target goals for effective performance; employees were informed of this goal and asked to work toward it.

B<sub>1</sub> (Intervention: Private Feedback): Following the establishment of goals, observations were continued on the performance measures. On a schedule of once a week, employees were given written private feedback on the group performance by the store manager in the form of average cash discrepancy for the prior week and/or percentage of

tasks completed daily (for Housekeeping). Through discussion with the area supervisor, written rather than verbal feedback in this phase was deemed most appropriate to facilitate the participation of managers. (See Appendices 5 and 6 for sample private feedback forms.) This was combined with verbal praise and encouragement (where appropriate).

It was determined by the managers that employees would respond best to a pairing of praise with feedback. The company had undergone extensive change in the three years prior to the study and it was believed that some employees would be averse to further change or disruption. Required time for private feedback intervention was 2 weeks.

B<sub>2</sub> (Intervention: Public Feedback): Observations continued. At this point, public feedback was instituted in the form of graphs of group performance toward the required goal. Line graphs illustrating the previous week's performance and the assigned goal were posted in a well-accessed area. Managers explained to all employees what the

graphs represented and provided verbal praise and/or encouragement toward the organizational goal, as appropriate. After one day of public feedback, managers suggested that bar charts be substituted for line graphs, due to some difficulty in the interpretation of graphs by employees. This was immediately remedied. Required time for public feedback was 2 weeks.

C (Return to Baseline): At this point, all feedback was withdrawn. Observations continued. Employees were not informed of the purpose of the withdrawal of feedback. Time for return to baseline was 2 weeks.

B<sub>3</sub> (Intervention: Private and Public Feedback): Observations continued. At this point, both private and public feedback (as described above) were implemented, with verbal praise and/or encouragement as appropriate. Required time for public and private feedback was 2 weeks.

### Employee Followup

The head office of the chain requested an opportunity for all non-management staff members to express their views on the study, with the purpose of providing feedback to the company and its managerial employees. A questionnaire was administered to all employees who participated in the study in an attempt to determine their acceptance of the feedback procedures and of the intervention as a whole (See Appendix 7). A summary of these responses was provided to the company head offices in a general report, maintaining total confidentiality of individual views and opinions.

### Data Analysis

Differences in between- and within-group performance levels were analyzed using the repeated measures program of the SPSS<sup>X</sup> package resident on a VAX computer system at Saint Mary's University.

First, Box's M for homogeneity of dispersion matrices was executed to determine if the groups were homogeneous on both

dependent measures used in this study. Box's test determines whether between group comparisons can be accepted, based on the homogeneity of the performance measures. If the groups are homogeneous, it is acceptable to interpret between group differences. If homogeneity cannot be sustained, then only within-group comparisons are computed.

Second, profile analysis to test for the parallelism of group performances (whether one group performed uniformly better on both measures) was also executed. If the groups are not parallel, then there is evidence of a group by variable interaction (Stevens, 1986).

Third, averaged tests of significance for repeated measures were used to determine significant within-group effects. Planned t-test comparisons were then executed. Scheffé's procedure for minimizing Type I error was not used, as a priori comparisons rather than post hoc comparisons were used (Stevens, 1986).

Fourth, following previous studies utilizing behavioural methodology, graphic or visual analyses of results were also performed. A more effective analysis could be executed using



Autoregressive Integrated Moving Averages Analysis (ARIMA). This analysis is appropriate for time-series data and transforms the data to remove serial dependencies. T-tests are then performed on the transformed data to compare changes in the level of the performance measures across conditions (Komaki, Collins & Penn, 1982). However, this analytical system is not available at Saint Mary's University at this time.

### Results

In this study, Box's M showed the groups to be heterogeneous on both performance measures used (Box's M = 412.01652,  $F(45, 3960) = 7.01724$ ,  $p < .000$ ), making between-group comparisons inappropriate and inaccurate. Only within-group analyses were executed.

#### Housekeeping Performance

As expected, the implementation of goal setting and feedback intervention appeared to affect performance in Stores A and B (see Table 6). Profile analysis confirmed this, with a significant F test illustrating that the groups were not parallel ( $F(4, 18) = 9.08370$ ,  $p < .000$ ), that performance within the stores varied and that there was a

Table 6

Multivariate Tests of Significance for Within-Group Differences

Test Name	Value	Hypoth df	Error df	Exact F
Pillais	.87470	4.00	18.00	31.41***
Hotellings	6.98076	4.00	18.00	31.41***
Wilks	.12530	4.00	18.00	31.41***
Roys	.87470			

\*\*\* $p < .000$ 

group by variable interaction. These changes are also evident from visual inspection of the data (see Figure 3), justifying more detailed analyses.

Averaged tests of significance designed for repeated measures designs (and equivalent to univariate tests) showed that there were significant within-group differences across phases for both the main effect and the interaction between store and performance (see Table 7). These tests allow for the effects of learning and a practice effect of interventions within groups, so that

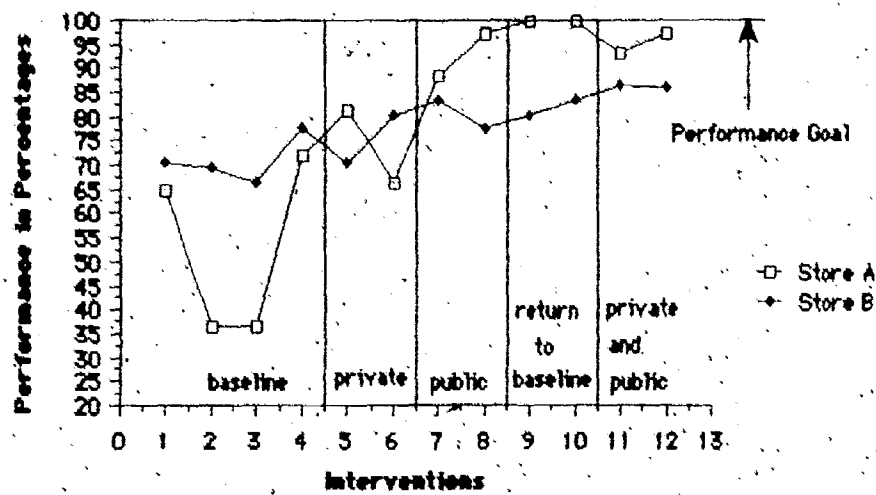


Figure 3

Graphic comparison of weekly averages of housekeeping tasks for Stores A and B.

Table 7

Averaged Tests of Significance for Repeated Measures Using Unique Sums of Squares Involving Housekeeping Within-Subjects Effect

Source of variation	SS	df	MS	F
within cells	90.77	84	1.08	
Housekeeping	89.16	4	22.29	20.63***
Group by Housekeeping	35.81	4	8.95	8.28***

\*\*\* $p < .000$

only robust rather than incidental intervention effects are shown. Consequently, paired t-test comparisons of all phases for both stores were conducted to indicate the significant changes in performance.

For Store A, all feedback interventions showed significantly improved performance over baseline. As well, both public feedback alone and public plus private feedback interventions showed significantly improved performance over private feedback only ( $t = -2.75, p < .019$ ;  $t = -3.38, p < .006$ ) (Table 8).

However, return to baseline did not decrease to below either the intervention levels or the baseline levels for Store A. In this case, the return to baseline was actually significantly higher than either baseline ( $t = -9.93, p < .000$ ) or the private feedback intervention ( $t = -4.00, p < .002$ ).

Although Table 8 shows only one significant change in performance for Store B, Figure 3 suggests that Housekeeping behaviour did change over the course of the study. Housekeeping increased from a baseline rate of 71.2% completion rate to 86.4% by the end of the study, an increase of 15.22%. The t-test comparing the

**Table 8**  
**Comparisons of the Results of All Interventions for Housekeeping Performance**

Comparisons	Store A		Store B	
	t value	p	t value	p
private > baseline	-3.25	.008	-.77	ns
public > baseline	-5.30	.000	-1.59	ns
return to baseline > baseline	-9.93	.000	-1.75	ns
public + private > baseline	-8.25	.000	-3.32	.008
public > private	-2.75	.019	-.54	ns
return to baseline > private	-4.00	.002	-.89	ns
public + private > private	-3.38	.006	-1.79	ns
return to baseline vs public	-1.24	ns	-.23	ns
public + private vs public	-.62	ns	-1.08	ns
return to baseline vs public + private	1.91	ns	-.76	ns

first (baseline), and the final (private plus public feedback) phases showed this increase was significant ( $t = -3.32$ ,  $p < .008$ ). No other comparisons proved significant; again, return to baseline was not

significant. Figure 3 and Table 9 show these comparative performance changes for both stores.

**Table 9**  
**Mean Results for Both Housekeeping and Cash Discrepancies in Each Intervention and All Stores**

Interventions	Cash Discrepancies (\$)				Housekeeping(%)	
	Store A		Store B		Store C	
	A	B	C	D	A	B
Baseline <sup>a</sup>	+00.39	-00.51	+17.03	+02.99	52.58	71.17
Private feedback	-08.63	-02.76	-00.24	-00.66	73.95	75.69
Public feedback	+25.20	+05.50	-00.14	+00.46	93.05	80.55
Return to baseline	-03.16	+02.93	-01.82	+00.75	100.00	81.94
Private & public feedback	-00.39	-00.07	-00.05	-02.12	95.28	86.39

<sup>a</sup> = Baseline measures for Cash Discrepancies gathered over 5 weeks; for Housekeeping over 4 weeks.

### Cash Discrepancies

Expected reductions in Cash Discrepancies did not occur for any of the four stores. MANOVA for repeated-measures showed no significant differences within groups across all phases. Profile analysis confirmed that the two stores were parallel (Hotellings  $T^2$  [12,107] = 1.059,  $p < .401$ ) and that they performed similarly across the phases ( $F$  [3,40] = .38,  $p < .769$ ).

Cash Discrepancies for Store A actually deteriorated over the interventions, returning to baseline by the end of the study. Stores B and C showed some improvements from baseline measures for both phases of feedback and a drop off in performance for return to baseline, as expected. The private plus public phase concluded with a performance increase. Store D improved somewhat over all phases except at the conclusion of public plus private feedback phase (see Table 9).

Figures 4 and 5 demonstrate the variability for all stores. Stores A and B were comparable in size and sales, and are compared in Figure 4. Store A exhibited high variability across all phases, with no

exceptional variance from the performance goal during return to baseline. Store B maintained Cash Discrepancies on a fairly consistent basis.

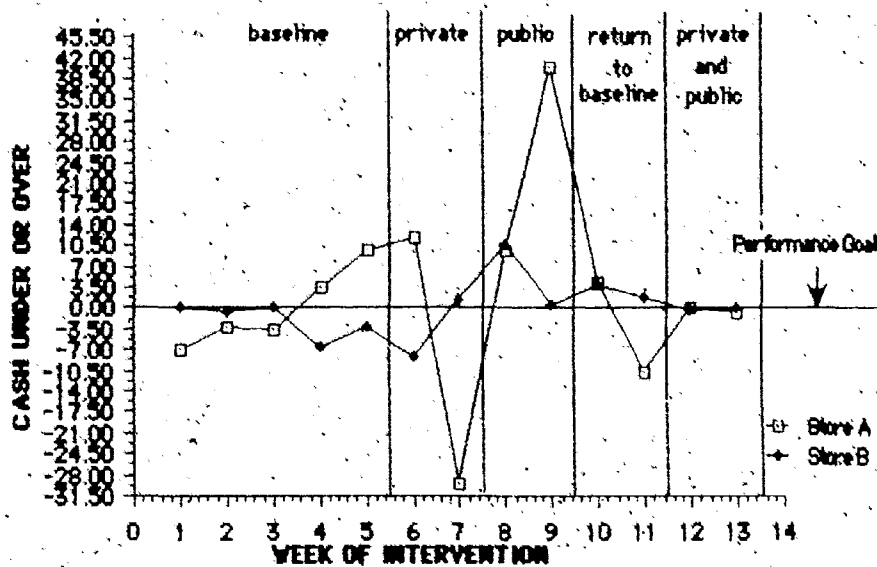
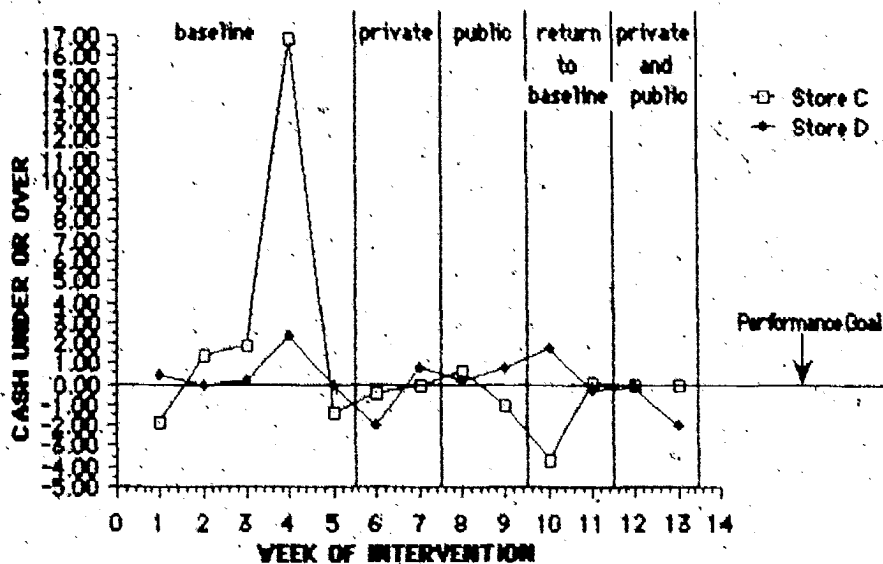


Figure 4.  
Weekly Cash Discrepancies recorded over all interventions for Stores A and B.

Figure 5 compares Stores C and D, the two smaller stores. Store C also showed high variability, while Store D showed consistent approximation to the performance goal (similar to the trend in Store



B). Both stores approached the performance goal during both the private feedback phase and the public feedback phase. Only slight deterioration in performance occurred at the return to baseline. Performance improved again after the implementation of public plus private feedback.



**Figure 5**

Weekly Cash Discrepancies recorded over all interventions for Stores C and D.

Stores A and C were managed by the same person, as were Stores B and D. Figures 6 and 7 compare performance according to manager. Performance in Stores A and B is quite erratic over all phases; performance in Stores C and D is quite consistent. It is important to note the difference in scale used for these comparisons. In retrospect, Cash Discrepancy may not have a meaningful measure of employee performance.

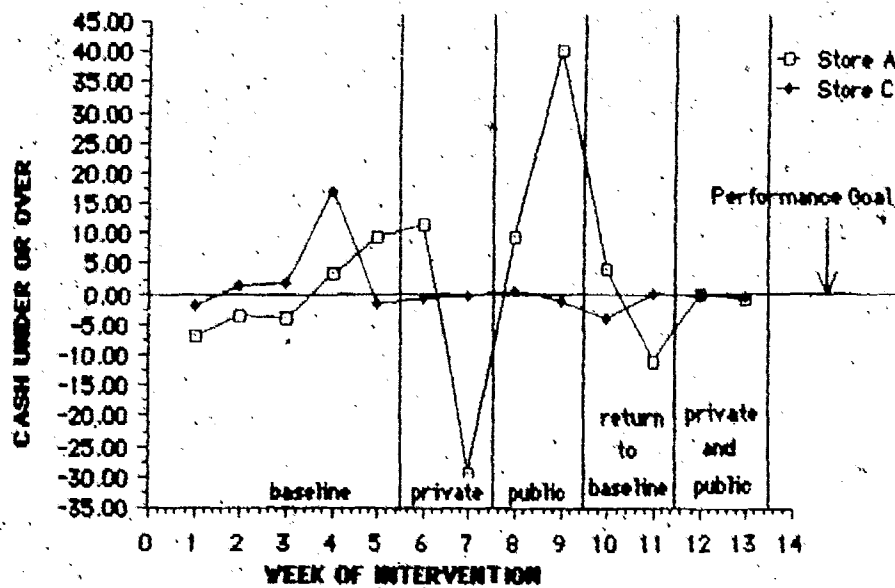
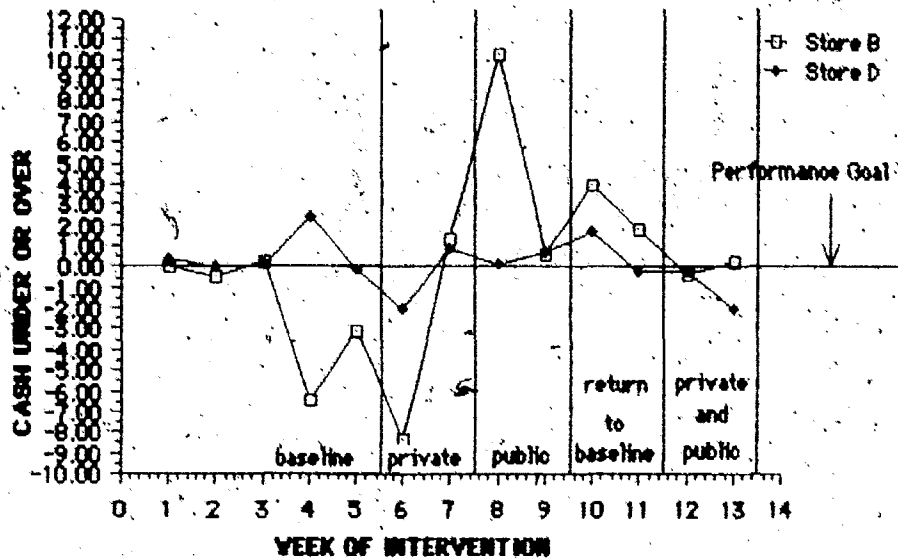


Figure 6

Comparison of weekly Cash Discrepancies for Stores A and C



**Figure 7**

Comparison of weekly Cash Discrepancies for Stores B and D

### Questionnaire Responses

There were 13 questionnaires returned, for a response rate of 58.82%. Individual store response rates varied: for Store A, 75% (or 3); Store B, 29% (or 3); Store C, 66.66% (or 3) and Store D, 100% (or 4). Responses to the questions are summarized in Table 10.

Generally, responses were more positive than was expected.

Employees reported that they didn't object to, or that they actually approved of performance measures being taken (Q2), and that they viewed the private feedback that they received as accurate (Q3). Employees also felt that their individual performance affected their store's overall performance (Q4).

Table 10

Summary of questionnaire responses by employees.

2. How employees felt about managers recording daily performance.

- |                                |     |
|--------------------------------|-----|
| a. didn't mind it.             | 50% |
| b. thought it was a good idea. | 50% |

3. Whether employees thought that private feedback provided accurate view of individual and group performance.

- |         |     |
|---------|-----|
| a. yes. | 90% |
| b. no   | 10% |

4. Whether employees thought that their individual performance contributed to goal achievement.

- |         |      |
|---------|------|
| a. yes. | 100% |
|---------|------|

Table 10 : Questionnaire responses (continued)

## 5. How employees viewed public feedback in the form of graphs.

- |  |     |
|--|-----|
| a. helped to illustrate performance toward goal.       | 60% |
| b. didn't make a difference to individual performance. | 40% |

## 6. General responses to feedback. (13 responses recorded)

- |   |        |
|---|--------|
| a. liked it.  | 30.76% |
| b. would like to see it done regularly.               | 07.69% |
| c. would like to see it done differently.             | 15.39% |
| d. found it encouraging.                              | 15.39% |
| e. found it distracting.                              | 07.69% |
| f. didn't like it.                                    | 07.69% |
| g. thought it was a means of individual surveillance. | 15.39% |
- 

Reactions to the public feedback were mixed. Some employees felt that the graphs helped them to improve their performance, while others stated that they didn't view the graphs as helpful (Q5).

Overall, employees generally felt that the implementation of any form of systematic feedback on a regular schedule would be

preferable to current managerial practices. Some employees did report that they felt that they were being individually judged on their performance, and that they felt uncomfortable with the feedback as presented (Q6).

### Discussion

It was expected that public feedback, either alone, or public combined with private feedback would significantly increase performance on both Housekeeping and Cash Discrepancy measures over both baseline and private feedback alone.

For Housekeeping, Store A did show these expected results. Public feedback did significantly improve performance over both baseline and private feedback, while public combined with private feedback had the same effect. Housekeeping performance in Store B significantly improved over baseline only with the presentation of public and private feedback combined. However, return to baseline did not decrease below intervention levels. Behavioural methodology uses return to baseline as a control condition to determine the effect of

the intervention; given the results shown in Table 8, it is difficult to make conclusive statements regarding the specific cause of the significant improvements that took place in Store A. For causal interpretations to be correct, the return to baseline phase should be significantly lower than performance during any of the interventions. A return to baseline phase can be significantly higher than baseline, due to a learning or a carry over effect on performance, or to subjects exhibiting a ceiling effect where further improvements in performance cannot be gained (Cook and Campbell, 1979). However, the effect of feedback cannot be discounted; the two week period available for the return to baseline may not have been adequate to overcome the lasting effects of the previously administered feedback.

Again, these results should be viewed with caution. The public plus private feedback phase may only exhibit significant changes because of the order of intervention presentation; this significant result may be an additive effect of all previous interventions rather than a specific effect of the feedback type presented at this stage (Stevens, 1986).

Maturation does not appear to be an issue here. All employees had been performing the tasks involved prior to the implementation of the study. Company guidelines included these basic housekeeping tasks within initial training guidelines. Although Store B is larger than Store A, there is a corresponding increase in the ratio of staff available to maintain daily tasks to account for potential problems with any size differences.

The manager of Store A expected a decrement in performance (or at least the maintenance of baseline levels) in both behaviour measures. This expectation was due to ongoing motivational and disciplinary problems with one full time employee. This employee had required daily detailed instruction, direction and discipline to maintain performance at levels that were considered appropriate only for the newest of employees, let alone someone with over one year's experience. Also, this employee was under formal disciplinary review at the time of the study. The manager expected performance levels to be negatively affected, and only to significantly improve when the employee issued an intent to resign at the beginning of the public plus



private phase. This did not occur for Housekeeping tasks. All feedback interventions significantly improved performance over baseline.

Yet, neither store showed a decrement in performance of Housekeeping tasks with a withdrawal of feedback. In Store A performance during return to baseline was significantly higher than performance during the private feedback phase. This significant improvement appears to reflect a Hawthorne effect. It may not be valid to conclude that the different types of feedback had a significant effect on performance (Komaki, 1982), yet the Hawthorne effect should not be dismissed. Employees definitely responded to the study by modifying at least some of their behaviours.

This may also be reflected in the responses of employees on the questionnaire. Generally employees reacted positively to the study. Responses indicated that the employees may have responded to the fact of the study itself, rather than the feedback. They reported that they enjoyed their involvement, would like to see some sort of ongoing interventions and that they felt that it was important for the company to indicate an interest in employees.

A generalized Hawthorne effect should affect both Cash and Housekeeping measures. This was not the case. Cash Discrepancies did not significantly improve with any feedback interventions. It may be that the type of performance required by Housekeeping measures was significantly affected by experimenter intervention, while the performances measured by Cash Discrepancies were neither affected by experimenter intervention nor under the control of the discriminative stimulus of goal setting.

As in Study 1, the introduction of public feedback appeared to effect the perceptions of the feedback received. Private feedback was perceived as accurate by 90% of all employees, but only 60% perceived public feedback as helpful. This may be a confound resulting from the actual questions included in the brief questionnaire. A more comprehensive survey about current performance and feedback in use may illustrate more fully the perceptions of employees toward both the organization and the source of their feedback.

Although Cash Discrepancies did not improve significantly, there was a general improvement trend in Stores C and D. In particular,

Store C reduced its Cash Discrepancies from an average of +\$17.03 during baseline to -\$00.05 with the presentation of public plus private feedback. Although Cash Discrepancies increased for Store A during public feedback, this was also the time period when the manager was away from the store on vacation. This would appear to confirm that the acceptance of the source of the feedback is important to the effectiveness of the feedback in improving performance (Ilgen, Fisher and Taylor, 1979).

Overall, it is not possible to determine the relative effectiveness of public versus private feedback in this study. Other confounds could be operating to effect results here, as it has been demonstrated in other studies that goal setting and feedback do result in significant performance improvements.

As well, the methodology utilized here may not have been entirely appropriate. This company is currently highly unstable, with a recent merger, high employee turnover and major policy changes taking place daily. The involvement of employees through an attitude survey or interviews prior to intervention may have facilitated and

enhanced employee participation.

Another important issue to consider is the content of the feedback provided. Both private and public feedback consisted of group performance toward group goals. Newby and Robinson (1983), in their work with retail sales people, found that accuracy, punctuality and cash handling were all enhanced by individual feedback and individual reinforcement. However, these performance measures were not as effectively improved with the introduction of group feedback.

Nadler (1979), in his review of the research on task group behaviour, proposed that as group feedback reflects performance of the group rather than the individual, it may be difficult for the individual to determine to what extent the feedback reflects his/her performance. Also, the individual's behaviour may have limited impact on the group behaviour.

In this case, individual feedback was not possible, as cash registers were open to all staff, and housekeeping tasks were merely noted as performed/not performed. Since the conclusion of this study, new computerized cash registers have been introduced into all stores,

enabling the managers to determine which employees are functioning below accepted standards.

Based solely on these limited results, it may prove to be both cost and time effective to develop a more extensive and comprehensive system of intervention within this retail chain than was possible in this study. If it is shown that the introduction of prompt feedback can produce an improvement, it may be valuable not only for increased performance and reduced time spent checking cash errors, but also in improving employee commitment and involvement. Because no particular feedback intervention appeared to be relatively more effective than another, future work could deal specifically with the easiest feedback to implement (public). As well, employee and managerial involvement in goal setting, feedback systems and planned changes may facilitate communication and the implementation of any future changes.

### Study 3

The use of posttest, self-report data has inherent problems, such as maturation, attrition of subjects, the tendency of subjects to perform as 'good' subjects' (providing responses that are believed to be preferable to the experimenter) or to respond positively to all questions (Cook and Campbell, 1979; Rosenthal and Rosnow, 1984). As well, field studies exhibit such problems as the attrition of subjects, the interaction of unmeasured confounds within the setting, the nonrandomization of subjects and limited controls (Cook and Campbell, 1979). In light of these potential problems, a laboratory experiment similar to the field study was conducted, to minimize potentially confounding variables.

Erez and Zidon (1984) used a within-subject design to determine the relationship between goal difficulty and task performance. They used a perceptual speed test requiring subjects to identify a specific symbol, then circle each instance of its occurrence and count the number of times it occurred in a row of similar symbols. Subjects completed seven trials of two minutes each; goal difficulty was

increased for each trial. Objective goals were established using a 2 minute pretest trial conducted on another sample of subjects from the same population. The assigned goals ranged from very easy (Trial 1) to very difficult (Trial 7). Feedback was provided at the end of each trial, as the subject was able to compare their assigned goal to the number of rows actually completed. The hypothesis that goal acceptance is negatively related to goal difficulty was confirmed.

Garland (1984) attempted to explore the relationship between effort-performance expectancy and task performance. Here, subjects were required to name as many objects as possible that could be described by a given adjective. A 1 minute pretest trial was given, followed by fifteen 1 minute experimental trials. Subjects were also assigned an easy, medium or hard goal. Subjects were asked to estimate the probability that they would achieve their goals; however, feedback was not provided. Results showed that both goal levels and expectancy of goal achievement made independent contributions to the variance in performance.

Matsui, Kakuyama and Onglatco (1987) conducted research on the

effects of goals and feedback on performance in groups, by contrasting individual and paired performance rates. They used a counting task similar to that used by Erez and Zidon (1984). Subjects were asked to count the number of times a designated number occurred in a row of fifty numbers. No circling of the number was required. The pretest trial was conducted one week before the experiment, and was 2 minutes in length. During the experimental trial, subjects worked at the task for 20 minutes. Both paired and individual goals were self-set. Subjects were informed that they could win a cash prize if their final score fell within the highest six scores in the group. Feedback was not provided during the session. Results showed that regardless of type of goal set, goal acceptance and performance were significantly higher for pairs than individuals.

Ilgen and Moore (1987) researched the effect of the content of feedback on performance. They used a proofreading task requiring subjects to read nine paragraphs (average length was seventy-five words) for spelling errors. Subjects were measured on two assigned goals: number of misspellings identified correctly (quality) and speed



of performance (quantity). Feedback was computer generated and provided at the completion of each paragraph. Three feedback conditions were used: quality only, quantity only, and both quality and quantity. Results showed that the nature of the feedback affected performance on both measures, and that the combination of quality and quantity feedback had the greatest impact on performance.

Using a clerical task similar to those reported above, it was hypothesized as in Study 2 that public feedback alone or public combined with private feedback, when combined with goal setting, would significantly improve both quantity and quality measures of simple task performance over both baseline measures and private feedback alone. Two dependent measures were obtained for each subject: number of tasks completed per phase (quantity), and number of tasks completed correctly (quality). These performance descriptors are similar to those developed by Ilgen and Moore (1987) and Erez and Zidon (1986).

### Method

The test battery presented in Appendix 9 was developed for Study 3. It was based on the Canadian version of the Differential Aptitude Test and included Clerical Speed and Accuracy (Bennett, Seashore and Wesman, 1961), the Comprehensive Ability Battery, Part 2-P (Hakstian and Cattell, 1976), and the number counting task devised by Matsui, Kakuyama and Onglatco (1978). This neutral task was considered to be easy to learn, yet varied enough to prevent boredom.

For each subject group, a total of 12 pages of randomly assigned tasks similar to those presented in Appendix 9 was used. For each group, the order of presentation of tasks was randomly changed to prevent order effects from occurring.

### Pretest

To establish norms for the student population used in the study, the battery was pretested. The pretest group consisted of 48 subjects, undergraduate students at Saint Mary's University, with an age range from 19 to 40 ( $M = 24.62$ ,  $Mode = 19.00$ ). There were 18

males and 30 females. Subjects were tested during class time in two different classes. Participation was voluntary. Subjects were informed that they could choose not to participate; instructors were not present during testing to insure confidentiality of nonparticipation. All materials were returned completed.

The task consisted of four pages of randomly selected tasks; subjects participated for two periods of 2 minutes each. To prevent possible order effects, the presentation of the tasks was randomly varied. The scores on the two sets of tasks were combined, with a resulting mean score for number completed correctly of 20.10 (Mode = 19.00, Standard Deviation = 3.55). This pretest group data was used to establish norms for the laboratory study.

#### Goal Difficulty

Based on the norms established with the pretest baseline data, a hard goal of 2 standard deviations ( $2 S_D = 7.00$ ) over individual baseline was assigned to subjects for number completed correctly. Twelve subjects were run using this goal. However, preliminary

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graphic inspection of these subjects who had been assigned this hard goal revealed a sharp decrease in performance as the feedback interventions were introduced. This was in direct contrast to general research on feedback and goal setting. It was felt that this assigned goal may have been too difficult leading to the performance decrement. At this stage a second group of twelve subjects, assigned an easy goal of  $1 S_D$  ( $1 S_D = 3.5$ ) over individual baseline performance was established. Procedures were identical for both groups.

### Subjects

To insure that subjects would experience some commitment to participation, volunteers from introductory psychology classes were solicited using both a lottery for a cash prize of \$20.00 and credit toward a final psychology course mark as incentives. A total of 24 subjects was used, 12 in each group.

Group 1 (easy goal) consisted of 5 males and 7 females, with an age range of from 19 to 24 ( $M=21.00$ ). Group 2 (hard goal) consisted of 8 males and 4 females, with an age range of from 19 to 26.

(M=20.09).

### Design

A modified reversal design was again used (Kazdin, 1984). In this case, the design was  $AB_1B_2B_3C$ . The interventions phases are summarized in Table 11.

### Introduction

Subjects were tested in small groups of from 3 to 6, and were informed that the task was being used to assess the feasibility of a new employment screening device for entry level clerical positions. This deception was necessary given the nature of the experiment, and the necessity that subjects respond to feedback in as natural a manner as possible. Care was taken to contact all subjects for debriefing after all data had been collected (to avoid contamination among subjects during data collection).

Examples of the three different types of tasks involved were

**Table 11**  
**Feedback Interventions and Measures Obtained**

Intervention	Duration	Measure Obtained	Feedback Intervention Presented at Completion of Phase
Introduction	4 min.	none	none
Phase 1	2 min.	none	none
Phase 2	2 min.	baseline	private + goal
Phase 3	2 min.	results of private + goal	public + goal
Phase 4	2 min.	results of public + goal	public and private + goal
Phase 5	2 min.	results of public and private + goal	'do best' goal only
Phase 6	2 min.	results 'do best' goal	none

**Note:** Time between phases of intervention varied from 3 minutes to 8 minutes, depending on the time required to assign goals to subjects and/or explain feedback issued.

shown on a blackboard and explained. All subjects were assigned a number for their eyes only, by which all scores were identified (both privately and publicly), to prevent any negative repercussions due to the public disclosure of possibly low or poor task results.

### Interventions

#### Phases 1 and 2

Subjects were informed that they would have 2 minutes in which to work, and were asked to do the best that they could, both in speed and accuracy. Subjects worked for 2 minutes for each phase. Results from Phase 1 were not calculated, but were used only to familiarize subjects with the task. Results from Phase 2 (number of individual tasks completed correctly) were used to establish baseline measures for each subject. According to these results and based on the norms established with pretest data, a goal of 1 or 2 standard deviations over individual baseline performance was assigned to subjects for Phase 3 ( $1S_D = 3.5$ ;  $2S_D = 7.0$ , as determined by pretest group). Subjects were given their scores for Phase 2 and the assigned goal

for number completed correctly in a written form on the new score sheets for Phase 3 (private feedback). Subjects were able to determine the number of problems completed visually (quantity) as they worked, as each individual task was numbered sequentially.

### Phase 3

Subjects were asked to try to reach their individually assigned goals, and worked at the task for 2 minutes. Scores were then calculated. Individual scores were posted on a graph at the front of the room (public feedback) and explained by the experimenter. At this stage, individual scores were not noted on individual score sheets. The publicly posted scores were identified by code number only.

### Phase 4

Subjects were again assigned a goal based on their scores in Phase 3. Subjects were asked to try to reach their goals, and worked at the task for 2 minutes. Phase 4 scores were then calculated, posted on the graph (public feedback) and included on the top of individual score sheets for Phase 5 (private feedback).



### Phase 5

Subjects were again assigned a goal, asked to work toward this goal, and worked for 2 minutes, after which scores were calculated. No feedback was given at the end of this phase. Subjects were told that there was one more work set to be completed, and to try to do their best.

### Phase 6

No feedback provided. Data was collected after subjects worked for 2 minutes.

### Data Analysis

The data was analyzed using the same procedures detailed in Study 2; descriptive statistics, MANOVA for repeated measures and paired t-tests were all executed.

### Results

Table 12 reports the mean percentage of problems completed and problems completed correctly for both groups. For Group 1, the

percentage of problems completed per phase increased from baseline measures of 50.42% by over 20% per intervention. The highest increase was for Phase 5: public and private feedback. However, the drop during the reversal or return to baseline phase was a decrease of only 2.09% from the previous phase of intervention.

In Group 1 the actual number of problems completed correctly followed the same pattern as the number completed; however, calculation of the percentage completed correctly (out of all problems) completed showed that these figures dropped from a high of 96.25% during baseline to 93.57% at the end of public and private feedback.

In Group 2 (hard goal) the change in performance in number of problems completed was not consistent with the addition of feedback. Performance increased 8.75% over baseline with private feedback, and 17.29% over baseline with public feedback. An unexpected drop to 2.71% below baseline occurred with the implementation of public plus private feedback. Performance increased again by 16.66% during the return to baseline phase. The number of problems completed correctly

Table 12  
Mean Percentages of Performance for Both Groups

Phases	Group 1 (easy goal)		Group 2 (hard goal)	
	%	SD	%	SD
P2-Baseline				
% completed	50.42	4.95	67.50	4.29
% correct	96.25	4.89	97.59	4.64
P3-Private feedback				
% completed	70.83	4.62	76.25	1.78
% correct	95.03	4.17	94.38	2.98
P4-Public feedback				
% completed	75.42	3.83	84.79	3.29
% correct	93.72	3.44	94.31	4.83
P5-Public & private feedback				
% completed	78.75	3.17	64.79	4.03
% correct	93.57	3.43	91.98	4.76
P6-Return to baseline				
% completed	76.66	4.05	81.45	4.96
% correct	92.55	5.85	91.54	6.07

Note: Calculations for % completed are based on a maximum score of 40 per subject per phase.  
 Calculations for % correct are based on the ratio of number correct to total number completed per subject per phase.

again showed a similar trend as the number completed. Here as well, performance in number completed correctly showed a slight, continual decrease of 5.61% over all phases from baseline measures (Table 12)

These scores are represented in Figures 8 and 9. Figure 8 shows the sharp differences between the two groups in number completed. For Group 2, where subjects were assigned a goal considered hard but attainable, performance increased initially over baseline. However, a noted decrease in performance was evident by Phase 5 (public + private feedback). Performance increased again during the final phase of 'do best' goal with no feedback (see Figure 8).

When subjects in Group 1 were assigned an easy goal, the drop in performance during the private and public feedback phase did not occur. Improvement in performance took place over interventions, with a slight decrease by return to baseline (see Figure 8).

For both groups, a similar trend in number of problems completed correctly occurred over all phases (see Figure 9).

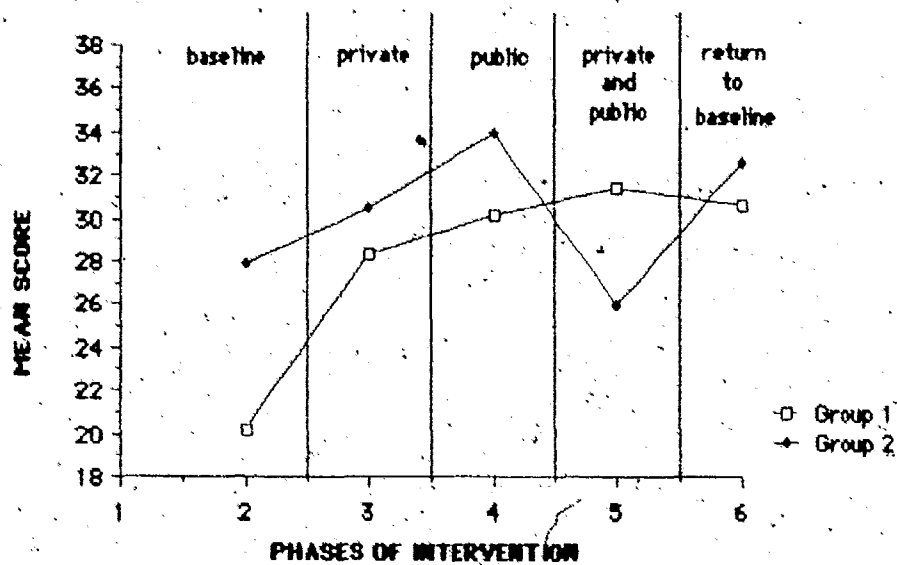


FIGURE 8: Number of problems completed for Group 1 (assigned easy goal) and Group 2 (assigned hard goal).

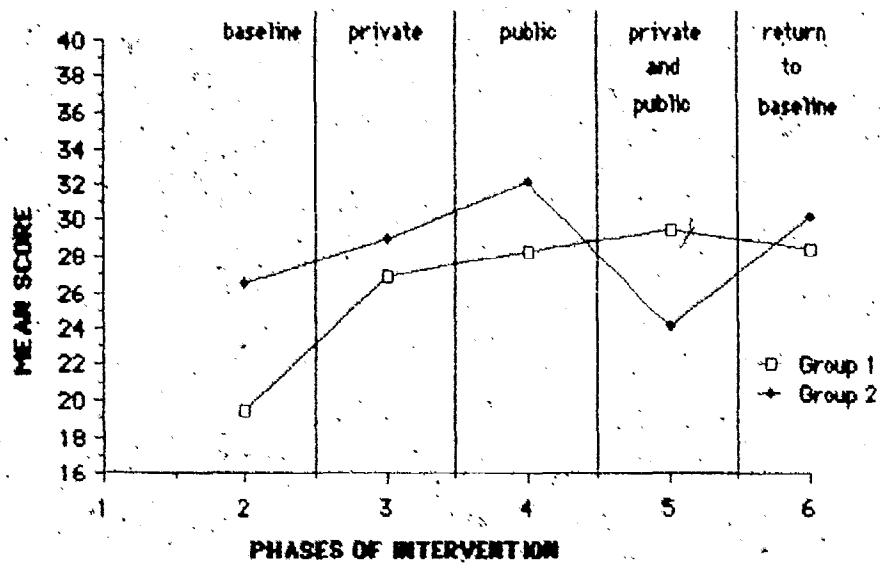


Figure 9: Number of problems completed correctly for Group 1 (assigned easy goal) and Group 2 (assigned hard goal).

MANOVA for repeated-measures design was executed to determine if there was a difference between or within the two groups for both dependent measures. Box's M was included in the analysis to test for homogeneity of multivariate normality. Assumptions of normality were not violated in this case (Box's M = 24.12537,  $F(15, 1948) = 1.20607$ ,  $p = .259$ ). Tests for between-subject effects are summarized in Table 13. These showed specifically that the main effect of group was not significant.

Table 13  
Tests of Significance for Between-Subjects Effects

Number completed (quantity)

Source of variation	SS	df	MS	F
within cells	697.32	22	31.70	
Constant	101442.68	1	101442.68	3200.47***
Group	99.01	1	99.01	3.12

Table 13 (continued)

Tests of Significance for Between-Subjects EffectsNumber completed correctly (quality)

Source of variation	SS	df	MS	F
within cells	1084.37	22	49.29	
Constant	89872.13	1	89872.13	1823.36***
Group	86.70	1	86.70	1.76

\*\*\*  $p < .000$ 

However, tests of significance for within-group differences summarized in Table 14 show significant differences within groups for both measures.

As well, averaged tests of significance developed especially for repeated-measures designs showed that there were significant within-group differences, for both groups across both measures. (See Table 15). There was also a significant group by measure interaction.

Table 14  
Multivariate Tests of Significance for Within-Group Differences

For Number Completed (Quantity)

Test	Value	Hypoth df	Error df	Exact F
Pillais	.82917	4.00	19.00	23.06***
Hotellings	4.85388	4.00	19.00	23.06***
Wilks	.17083	4.00	19.00	23.06***
Rois	.82917			

For Number Completed Correctly (Quality)

Test	Value	Hypoth df	Error df	Exact F
Pillais	.72761	4.00	19.00	12.69***
Hotellings	2.67118	4.00	19.00	12.69***
Wilks	.27239	4.00	19.00	12.69***
Rois	.72761			

\*\*\*  $p < .000$



Table 15

Averaged Tests of Significance for Repeated Measures Using Unique Sums of Squares Involving Within-Subject Effect

Number completed (quantity)

Source of variation	SS	df	MS	F
within cells	1102.10	88	12.52	
Intervention	1097.12	4	274.28	21.90***
Group by Intervention	502.78	4	125.70	10.04***

Number completed correctly (quality)

Source of variation	SS	df	MS	F
within cells	1252.47	88	14.23	
Intervention	760.45	4	190.11	13.36***
Group by Intervention	515.88	4	128.97	9.06***

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\*\*\* $p < .000$

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Based on these general significant results, planned paired t-test comparisons were used to determine statistically significant differences between interventions (Spinner, 1986). For Group 1 (easy goal) performance in all phases improved significantly over baseline,

for both measures. However, no particular feedback intervention significantly improved performance over another (Table 16). For both measures and both groups, the return to baseline phase was actually significantly higher than baseline (number completed, Group 1:  $t = 7.64$ ,  $p < .001$ ; Group 2:  $t = 3.93$ ,  $p < .01$ ; number completed correctly, Group 1:  $t = 5.68$ ,  $p < .001$ ; Group 2:  $t = 2.86$ ,  $p < .01$ ).

For Group 2 (hard goal) public feedback increased both the quality and quantity of performance significantly over baseline ( $t = 4.21$ ,  $p < .001$  and  $t = 2.72$ ,  $p < .05$ ). Private feedback alone significantly improved the quantity ( $t = 2.97$ ,  $p < .01$ ) but not the quality of performance over baseline. Surprisingly, baseline measures for number correct were significantly higher than performance resulting from the combination of public and private feedback ( $t = 2.80$ ,  $p < .05$ ). In this case, performance during Phase 6 (no feedback, 'do best' goal) was significantly higher on both measures than performance during the public plus private feedback phase ( $t = 4.96$  and  $6.08$ ,  $p < .001$ ). Here as well, the return to baseline was significantly higher

Table 16  
Paired T-Test Comparisons Between Interventions for Both Groups

Comparisons	Group 1 (easy goal)		Group 2 (hard goal)	
	* Completed	* Correct	* Completed	* Correct
private vs baseline	4.96***	5.10***	2.97**	1.83
public vs baseline	5.49***	5.13***	4.21***	2.72*
public & private vs baseline	10.90***	8.34***	1.33	2.80 <sup>a</sup>
return to baseline vs baseline	7.64***	5.68***	3.93**	2.86**
public vs private	1.46	1.07	3.83**	3.25**
private vs public & private	1.96	1.73	4.08**	4.05**
private vs return to baseline	1.51	1.03	1.56	.73
public vs public & private	.86	.75	4.36***	3.92**
public vs return to baseline	.26	.15	.78	1.11
return to baseline vs public & private	.95	.83	4.96***	6.08***

<sup>a</sup> = In this case, for Group 2 baseline measure > results of public + private.

two-tailed test

\* =  $p < .05$

\*\*\* =  $p < .001$

\*\* =  $p < .01$

than baseline measures ( $t = 3.93$  and  $2.86$ ,  $p < .01$ ).

Public feedback significantly increased both the quality and quantity of performance over both private feedback alone and public plus private feedback combined (see Table 16).

### Discussion

There were only mixed results for the hypothesis that either public feedback alone or public plus private feedback would increase performance levels on both measures over both baseline and private feedback alone. For subjects assigned an easy goal, there were no differences among feedback presentations. All interventions significantly increased both the quantity and quality of performance over baseline. For subjects assigned a hard goal only, public feedback improved both the quantity and quality of performance, while public plus private feedback appeared to have a detrimental effect, resulting in a decrease on performance. Garland (1983) found that subjects consistently worked toward very difficult goals; this did not appear to be the case in this study.

These results are surprising and are not consistent with previous research in this area. As in Study 1, the introduction of the combined form of feedback (public plus private) appeared to adversely affect subjects. This may be an artifact of the population used in both studies, and needs to be considered before inferences about the outcomes can be made. Such a limited subject pool, which restricts random selection and sampling and may affect motivation to perform, may not provide a valid basis from which to make predictions.

Although the use of within-subject, repeated measures designs should control for this fact, this may not have occurred (Cook and Campbell, 1979). This is a limitation generally found with laboratory studies, and presents a definite restriction on external validity.

Motivation may be a factor here, as well as possible fatigue from the task used. Subjects in the hard goal group in Study 3 may have tried harder to reach their goals initially, but then become discouraged, lost interest or become bored with the task as it became familiar. Performance may have increased again at the announcement of the end of the experiment. For the easy goal group, the goals may

have been progressively hard enough to maintain interest. It may be that there is a problem with the type of task and goal used in this study. This could also account for the lack of significant differences between the phases of intervention and the return to baseline measures. As detailed in Study 2, this is a severe limitation on any causal inferences that could be made here.

Order of presentation of the individual tasks could not have been a confound. Before each experimental session, the problem sheets were randomly assigned order of presentation for both within and between phases. Different subject groups in Group 2 received a different order of tasks, yet performance for the group almost uniformly decreased by Phase 5.

Research has shown no difference for performance increases using either assigned or participatively set goals. However, it has shown that subjects, particularly when performing simple tasks, are more highly motivated to perform when they are able to participate in goal setting (Schnake, Bushardt and Spottswood, 1984). In this case, an opportunity to participate in the goal setting may have improved

goal commitment and ultimately performance.

Although Matsui et al (1987) used one repetitive numerical task for a twenty minute time period and found significant results, their work was conducted using a Japanese subject group. Cultural differences may significantly affect persistence, effort and direction.

### General Discussion

In these three studies it was expected that public or public plus private feedback combined with goal setting would have a positive impact on both goal setting and performance. For Study 1, it was expected that type of feedback received would affect goals set and perceptions of feedback. For Studies 2 and 3, it was expected that public or public plus private feedback would result in increased performance over both baseline levels and private feedback alone, and that these results would be more pronounced in the laboratory setting. Based on the results obtained, only inconclusive statements can be made about the relative efficacy of the different types of feedback.

It was found in Study 1, using a self-report questionnaire, that type of feedback issued did appear to affect goal setting and the perception of feedback as helpful. However, between the two feedback conditions there were no differences in type of goal set, expectations of goal achievement, or perceptions of the feedback as positive or accurate. Within the public and private feedback group, the



presentation of public feedback appeared to affect perceptions of feedback adversely.

In Study 2, the field setting, the results of the provision of feedback were mixed. For one store assigned hard goals, public feedback alone and public plus private feedback resulted in an increase of Housekeeping measures over both baseline levels and private feedback alone. However, the Cash Discrepancy measure used in four stores was not significantly affected by feedback. In this study, the measures did not all return to base rate following cessation of intervention. According to accepted behavioural methodology such results preclude causal attributions to the interventions. This raises the possibility that a Hawthorne effect was operating in the field study.

In the laboratory study conducted in Study 3, public feedback combined with assigned hard goals did result in significant increases of quantity performance over baseline measures, but it did not affect quality of performance. The presentation of individual public plus private feedback actually resulted in a decrease of quantity

performance to below baseline levels. For the laboratory group assigned easy goals, performance increased over baseline with the introduction of feedback, but there were no significant differences among feedback interventions. Although these results do not support previous research, they should not be discounted.

Locke et al (1981) have demonstrated that feedback (or KR) combined with goal setting effectively improves performance. KR has been described and accepted as any information about one's progress toward a goal. However, there appear to be different effects associated with both the type of feedback issued and the content of feedback. These issues have not yet been addressed.

In this current study, feedback of different types was presented. Three types of feedback were utilized: private only, public only, and the combination of public and private. As well, the content of the feedback varied. In Study 1, subjects in both private and public plus private conditions were given feedback on individual performance toward self-set goals. In Study 2, employees were given individual private, public, and public plus private feedback on group performance

toward assigned group goals. In Study 3, subjects were assigned individual goals and provided with individual private, public and public plus private feedback. The results obtained suggest that it may be inappropriate at this time to conclusively state that one type of feedback is more effective than another, and that future comparisons are best made among similar conditions (rather than the diverse ones used here). Further differentiation and description is required when feedback is issued and studied, and 'feedback' as a construct must be clarified further.

Rather than attributing performance differences to feedback type, the effects noted may be the result of feedback content. The provision of individual goals and individual feedback (whether public or private) may have a differing effect on motivation and performance, than the provision of group goals and feedback. Presumably, individual feedback would provide the optimum amount of knowledge about individual performance, allowing for necessary adjustments to meet the performance goal. The group feedback provided in Study 2 may have been too general or nonspecific to affect

individual performance.

Newby and Robinson (1983) found that group feedback was not as effective in increasing performance as individual feedback in a field setting. They felt that subjects may not have been able to interpret accurately the effect of individual performance on achieving group goals. They also believed that subjects in this study may not have found that the informational value of group feedback was as potent as individual feedback.

In the field study conducted here, the ambiguous results observed may be due to two effects. The first may have been due to this difference in feedback content. Employees may not have been provided with sufficient information about individual performance to allow for immediate adjustments in performance. This may be obvious in the lack of results in the measure of Cash Discrepancies. This measure was obtained as a direct result of individual performance. Without explicit individual feedback in this area, it was difficult to pinpoint areas of individual dysfunction. Secondly, the company had assumed that employees were aware of the company's goals for effective

performance. The performance increases seen in this study may have been a direct result of the clarification and specification of goals, similar to the results seen in Management by Objectives programs.

In the laboratory study, subjects were provided specific feedback on individual performance, yet here, as well, results were mixed. In this study, subjects assigned easy goals showed improved performance. Subjects assigned hard goals showed a decrement in performance with the provision of public plus private feedback. Locke (1961) and subsequent research has shown that hard goals and KR result in higher performance increases than easy or 'do best' goals. This was directly contradicted here. This point again raises different issues than the effects of type of feedback presentation: the contributing effects of assigned goals and public feedback.

Both the field and the laboratory study used only assigned goals. This may have had an oversive effect in the laboratory study. The populations used in the two studies were different and it may be difficult to make global comparisons of these results. Employees expect and are paid to accept assigned goals, and, presumably, are

exhibiting goal commitment and acceptance by their continued employment. Latham and Steele (1983) emphasized that:

"goal setting, supportiveness or job understanding are not precluded by an authoritative style of leadership, one that does not emphasize participative decision making." (p. 415).

Students, on the other hand, are expected to assert their own goals, ambitions, and individuality. Assumptions about subjects' goal commitment and acceptance cannot be made in this situation. Locke (1981) has proposed that feedback has a mediating effect on goal commitment, acceptance and choice, but the direct relationship here has not been clarified. More research is required, particularly in field settings, to determine the relationship of these constructs to performance.

Also, in the laboratory setting when subjects received public or public plus private feedback on individual performance, a competitive situation could have developed (Komaki et al, 1978; Latham and Baldes, 1975). Even if the feedback provided on individual performance is positive, the subject's perceptions of their own

performance relative to others could be negative, resulting in a decrease rather than an increase in performance. This aversive element of public feedback could also account for the lack of increased expectations of goal achievement in Study 1.

Another consideration is the possible environmental confound. When subjects in the field setting received feedback on group performance, feedback could have resulted in cooperation toward increasing performance, rather than competition. Students in an academic setting frequently are encouraged (and often are required) to compete with peers. In an employment setting, the reverse is frequently true. More important factors may be teamwork, group membership, and the ability to cooperate toward company goals. This is an effect of the different subjects used, and reflects the importance of including in studies of this nature both cognitive factors and objective behavioural measures.

Consideration must also be given to the types of studies used. Laboratory settings are, by their very nature, artificial and simulated environments. The tasks used in such studies are generally simple and

are performed independently of environmental confounds. Janz (1982) cautioned that laboratory studies may not be indicative of the results of prolonged periods of work and task performance, while Buller and Bell (1986) encountered difficulty in interpreting field study results that did not conform to previous research. Here, they have suggested that because much of the previous research has been coinducted in laboratory settings with simple, routine tasks, the effects of goal setting may be "muted" (p. 324) in situations where tasks are complex, unstructured or interdependent. As well, they encountered difficulties controlling for extraneous effects such as individual goal setting.

Pritchard et al (1986) also emphasized that research previously conducted on goal setting and feedback has limited applicability to groups in organizations. They argued that many previous studies have focused on the performance of simple individual tasks, rather than complex interdependent group tasks and productivity. While such studies may have significance within a controlled setting such as a laboratory, it is still to be determined their practical applications to



field settings. Additionally, Pearce and Porter (1986), in their work on performance appraisals, made the following observations on feedback:

"... performance appraisal takes in a complex social system, and the feedback concerning relative performance is an important signal to employees about how their organizations value them."  
(p. 218).

Hayes et al (1985) proposed that one of the effects of goal setting and public disclosure of both goals and feedback is the improvement of performance to conform to a social standard. This "complex social system" or the benefits of social standards have not been addressed in behavioural research. The results of Study 1 have demonstrated that the effects of feedback cannot be isolated from situational factors. To fully understand and utilize feedback, an integration of theory and methodology is required.

Study 2 has also illustrated this fact. Even when interventions did not result in significantly improved performance, employees expressed interest and involvement in the study. Analyzed from a

strictly behavioural viewpoint, these results may be nonsignificant.

However, unexpected results and reactions emphasize that there is an interaction between employees and the interventions introduced:

further research is required, particularly in field settings, to fully understand such phenomena.

Along similar lines, Nadler (1979) proposed that feedback functions differently for groups and group tasks than for individuals and individual tasks. He has stated that research on feedback and group functioning needs to be both enlarged and integrated with other research. Given that goal setting theory has been well established and empirically proven in laboratory settings, a logical progression is to establish its effectiveness in field settings.

Only inconclusive results can be drawn about the relative effectiveness of the type of feedback presented in these studies.

Future research should consider the following issues:

- the potential situational mediators of the effectiveness of goal setting and feedback, particularly in employment settings (such as competition and social standards).

- the exact impact (whether positive or negative) of different types of feedback presentation on performance.
- the effects of group versus individual feedback.
- the contribution of goal acceptance, commitment and choice to improving performance and goal attainment.
- the contribution of cognitive factors to goal setting.

Following behavioural theory, if behavior is a function of the interaction between the individual and environment (Erez, 1977), then the environment should be examined as frequently as the individual. This would include both subjective measures such as individual perceptions, goals and feedback responses, as well as objective measures such as performance rates or deficits. This approach would emphasize and expand on the integration of both cognitive and behavioural methodology and theory.

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## APPENDIX 1

## QUESTIONNAIRE

## SAINT MARY'S UNIVERSITY

Please answer the following questions as honestly and as accurately as you can, by circling the letter of the response that best applies to you. Circle only one response per question. ALL RESPONSES WILL BE KEPT STRICTLY CONFIDENTIAL! There is no way that you can be identified from your responses, so please do not put your name or student number on this form. Thank you for your time.

1. This course name and number: \_\_\_\_\_
2. Age: \_\_\_\_\_      3. Sex: Male \_\_\_\_\_ Female \_\_\_\_\_
4. When you began this course, did you have an idea of how well you wanted to do, or a goal for your final mark?
  - a. no, I just wanted to do my best.
  - b. yes, I had a specific final grade in mind.
5. Do you consider, that for this course, this final goal will be:
  - a. a hard goal to reach.
  - b. not too difficult to reach
  - c. easy to reach.
6. Do you expect to meet this goal by the end of this course?
  - a. yes.
  - b. no
7. Did the feedback on your exams and/or papers given to you by your professor show your grades to be:
  - a. lower than you expected.
  - b. just about what you expected.
  - c. higher than you expected.



## APPENDIX 1 (continued)

8. Did you find that the feedback given to you ( such as comments, grades, average class scores) helped you to reach the grade you wanted?

- a. yes.
- b. no.

9. Did you think that the feedback provided to you was:

- a. accurate; it reflected my performance.
- b. inaccurate; it didn't seem to be consistent.

10. How would you rate your professor?

- a. excellent; material was well explained, tests were representative of subjects covered in class.
- b. good to very good.
- c. not very good.
- d. poor; tests were too difficult, course was poorly taught.

## APPENDIX 2 : Sample checklist for Cash Envelope Completion.

**FOR WEEK STARTING FRIDAY, APRIL 29**

BEHAVIOUR: COMPLETING CASH ENVELOPES CORRECTLY

MANAGER: \_\_\_\_\_

When checking envelopes at the end of the week, please note how many times per week employees performed the behaviour (for ex., " 5 " means 5 envelopes were stamped, 1 was not)

STORE \_\_\_\_\_ STORE \_\_\_\_\_

envelope stamped  
\_\_\_\_\_name circled  
\_\_\_\_\_week circled  
\_\_\_\_\_weather noted  
\_\_\_\_\_

## APPENDIX 3 : Sample Checklist for Housekeeping Performance.

**FOR WEEK STARTING FRIDAY, APRIL 29**BEHAVIOUR: GENERAL HOUSEKEEPING

MANAGER: \_\_\_\_\_

STORE: \_\_\_\_\_

Make a check next to each item only if it has been completed; leave blank any items for that day that have not been completed, either in the morning or at the time of your spot check.

---

FRI.   SAT.   MON.   TUES.   WED.   THURS.

---

vaccuuming done a.m.

---

store tidied in a.m.

---

cash desk straightened a.m.

---

cash desk straightened

at time of random check

---

cash desk straightened

at time of random check

---

## APPENDIX 4: Sample Checklist for Cash Discrepancies.

**FOR WEEK STARTING FRIDAY, APRIL 29**

BEHAVIOUR: CASH DISCREPANCIES

MANAGER \_\_\_\_\_

Please fill in the amount of overage (+\_\_\_\_) or shortage (-\_\_\_\_) for  
each day.

STORE \_\_\_\_\_

STORE \_\_\_\_\_

FRI.  
\_\_\_\_\_  
\_\_\_\_\_SAT.  
\_\_\_\_\_  
\_\_\_\_\_MON.  
\_\_\_\_\_  
\_\_\_\_\_TUES.  
\_\_\_\_\_  
\_\_\_\_\_WED.  
\_\_\_\_\_  
\_\_\_\_\_THURS.  
\_\_\_\_\_  
\_\_\_\_\_

APPENDIX 5 : Sample Private Feedback Letter for Stores A and B.  
**TO ALL EMPLOYEES**

Copy sent to: \_\_\_\_\_ (employee's name included here)

We at (store name inserted here) are interested in trying to improve overall efficiency in our stores. As part of this move, we are trying new methods that may seem unusual to you. Although this current study does not require any extra work or involvement on your part (other than your usual daily tasks), we would like to thank you in advance for your help and participation.

Below, we have provided for you some information on your store's current progress toward the company goals introduced to you by your manager. We would like to emphasize at this time that none of this information will be used for performance appraisals; rather, it will be used to try to pinpoint areas where additional training may be needed, or where the current methods of working may need revision.

Performance: GENERAL HOUSEKEEPING

Performance Goal: 100 % of All Tasks Completed Daily

Average Performance in Your Store: \_\_\_\_\_

Performance: CASH DISCREPANCIES

Performance Goal: No Errors Made Daily ( 0.00 Over / Under)

Average Performance in Your Store: \_\_\_\_\_

## APPENDIX 6 : Sample Private Feedback Letter for Stores C and D.

## TO ALL EMPLOYEES

Copy sent to: \_\_\_\_\_ (employee's name included here)

We at (store name inserted here) are interested in trying to improve overall efficiency in our stores. As part of this move, we are trying new methods that may seem unusual to you. Although this current study does not require any extra work or involvement on your part (other than your usual daily tasks), we would like to thank you in advance for your help and participation.

Below, we have provided for you some information on your store's current progress toward the company goals introduced to you by your manager. We would like to emphasize at this time that none of this information will be used for performance appraisals; rather, it will be used to try to pinpoint areas where additional training may be needed, or where the current methods of working may need revision.

Performance: CASH DISCREPANCIES

Performance Goal: No Errors Made Daily ( 0.00 Over / Under)

Average Performance in Your Store: \_\_\_\_\_

APPENDIX 7: Sample of letter and questionnaire sent to all  
nonmanagerial employees at completion of field study.

**ALL EMPLOYEES**

I would like to take this opportunity to thank all employees for their patience and participation during the past several months. I am currently completing a Master's thesis at Saint Mary's University on feedback and goal setting, and, as part of my agreement with (company name inserted here), will be providing your head office with a written report of my study.

I would like to emphasize at this point that no individual employee has been or will be identified, mentioned or described either to head office or in my thesis. Strictest confidentiality has been and will continue to be maintained, both of employees and the company. All performances described will be group performances only.

Your head office is interested in hearing what you have to say about this study and the company in general, and has asked me to provide you with a private and confidential means of expressing your views. For this purpose, I have included a short questionnaire.

Please take a few minutes to complete it, and simply drop it in the mail to me. It would provide valuable feedback, both to me and the company. There is no way that I can identify you from the returned form, and your head office will not have access to these questionnaires.

Thank you again.

Brenda Davis

## APPENDIX 7 (contd.)

## STUDY QUESTIONNAIRE

1. Your store is: (Store A) \_\_\_\_\_ (Store C) \_\_\_\_\_  
(Store B) \_\_\_\_\_ (Store D) \_\_\_\_\_

2. How did you feel about your manager recording daily housekeeping tasks and cash discrepancies?

- a. I didn't mind it. c. I thought it was a bad idea.  
b. I thought it was a ~~good~~ idea. d. It made me feel uncomfortable.

3. Did you think that the individual sheets given to you, with your store's performance and goal noted, gave you an idea of how you were doing?

- a. yes.  
b. no.

4. Did you think that your performance could help your store to meet those goals?

- a. yes.  
b. no.



## APPENDIX 7 (continued)

5. What did you think of the graphs that were posted in your store?

- a. They helped me to understand how we were doing.
- b. They didn't make much difference to my performance.
- c. I found them confusing.

6. In general, how did you feel about the feedback that was given to you? (Check off as many of these as you wish.)

- a. I liked it.
- b. I would like to see it done regularly.
- c. I would like to see it done differently.
- d. I found it encouraging.
- e. I found it distracting.
- f. I didn't like it.
- g. I thought it was a way of checking up on me.

Please use the remaining space for any comments you may have, both positive and negative, about either the study or your store.

## APPENDIX B : Sample of Cover Letter for Laboratory Pretest.

**SAINT MARY'S UNIVERSITY  
PSYCHOLOGY DEPARTMENT**

The following information is required to describe the group used in the pretesting procedure only. There is no way that you can or will be identified from the responses you give; all information will be held in strict confidence and be used only for thesis results.

Please answer as accurately as you can.

1. Age: \_\_\_\_\_

2. Sex: Male \_\_\_\_\_ Female \_\_\_\_\_

Comments about the tasks (after completion):

## APPENDIX 9 : Instruction Sheet for Pretest of Laboratory Study.

## SAINT MARY'S UNIVERSITY

## PSYCHOLOGY DEPARTMENT

The following tasks will be used to establish the basis for a new testing procedure. Pretesting is necessary to screen out any potential problems with the format; this is the preliminary text that you will be involved with. Thank you for your cooperation.

**DO NOT TURN TO THE NEXT PAGE UNTIL INSTRUCTED TO BEGIN.**

On the following pages, there are three different types of clerical tasks presented.

1. You will see a list of numbers that looks like this:

6 4397116920532782162202478175945197253328374522567 \_\_\_\_\_

The first number that occurs to the left of the string of numbers is the number that you are to count. In this case, you will count the number of times that 6 occurs in the string of numbers, and write your answer in the space to the right of the row. There are three 6's in this row, so the number 3 should be written in the space.

2. Another problem that you will see looks like this:

91352748	91352748	S _____	D _____
LKUYMPOZ	LKVUMPOZ	S _____	D _____

You are to look at both sets of figures on each line. If they are the same, check in the space following S for SAME. If they are different, make a check in the space following D for DIFFERENT. In this case, the first set of digits is identical, so S should be checked. In the second set of digits, there is a difference in the order of the letters, so D should be checked.

3. The third problem that you will see looks like this:

fk	fk	<u>kf</u>	lf	kl		fk	kf	fk	lf	kl
<u>4X</u>	4V	VX	V4	X4		4V	V4	VX	X4	4X

In the first set of digits on the left, kf is underlined. You are to find and circle kf as it occurs in the set of digits on the right. In this case, it is the second set of letters. In the second set of digits on the left, 4X is underlined. You are to find and circle 4X as it occurs in the set of digits on the right. In this case, it is the fifth set of digits. If you have any questions, ask them now.

**DO NOT TURN TO THE NEXT PAGE UNTIL INSTRUCTED TO DO SO.**

APPENDIX 9 (contd.): Sample of Tasks Used for Pretest and Laboratory Study.

1. 1 0097325337652013586346735487680959091173929274945\_\_
2. 3 7542048056489474296248052403720636104020082291665\_\_
3. 0 8422689531964509303232090256015953347643508033605\_\_
4. 9 9019025290937670715383113116588676743970443627659\_\_
5. 1 2807999708015736147640323665398951168771217176833\_\_
6. YZ VY VX XY ZY                      YZ VX VY XY ZY
7. b9 c6 69 96 6c                      b9 69 6c 96 c6
8. ou oa ua uo ao                      ua uo ao oa ou
9. lc lo ol oc co                      oc ol lc lo co
10. X7 V9 V5 X9 V7                      V7 X9 V9 V5 X7
11. 1013295                      1012395                      S\_\_\_\_ D\_\_\_\_
12. krqpdisu                      krqpdisu                      S\_\_\_\_ D\_\_\_\_
13. 79318453                      79318435                      S\_\_\_\_ D\_\_\_\_
14. KLSQAEPD                      KLSQAEPD                      S\_\_\_\_ D\_\_\_\_
15. pdesqidt                      pdesqidt                      S\_\_\_\_ D\_\_\_\_
16. 6 6065747173407276850366973617065813398851119929170\_\_
17. 3 1060108054557182406353034261486799074392340309732\_\_
18. 8 5269776020205165692686657481873053852471862388579\_\_
19. 6 3573321350532547048905535754828468287098349125624\_\_
20. 7 3796457530352964778358083428260935203443527388435\_\_

GO ON TO NEXT PAGE

1. JQRASMNP      JQRASNMP      S\_\_\_\_      D\_\_\_\_
2. RMAPIQUV      RMAPIQUV      S\_\_\_\_      D\_\_\_\_
3. jnlvupdi      jnluyvdi      S\_\_\_\_      D\_\_\_\_
4. 59412675      59412765      S\_\_\_\_      D\_\_\_\_
5. jlnvoprdi      jlnoprdi      S\_\_\_\_      D\_\_\_\_
6. 9 8520177671490568607221094055860970934335050073998\_\_
7. 1 1805054313980827732507256824829405242015277567851\_\_
8. 8 3452996340628898083137467007818475406106871177817\_\_
9. 8 8685402008650758401367666795190364764932960911062\_\_
10. 9 9594673488751764969918260892893785613682347834113\_\_
11. wm um mu wu mw      mw wu mu wm um
12. pp qq pq pg qp      qq qp pq pg pp
13. nv nx xn vx xv      xv vx nx nv xn
14. nu un um mn mu      mn un nu mu um
15. zn zz nz nn mn      nn zz zn mn nz
16. 3645179      3645179      S\_\_\_\_      D\_\_\_\_
17. KRINQUSR      KRINQUSR      S\_\_\_\_      D\_\_\_\_
18. VFGARTUX      VFGARUTX      S\_\_\_\_      D\_\_\_\_
19. 54678769      54687769      S\_\_\_\_      D\_\_\_\_
20. dfrtnjul      dfrtnjul      S\_\_\_\_      D\_\_\_\_